

WORLD METEOROLOGICAL ORGANIZATION

EXECUTIVE COUNCIL

FIFTY-FOURTH SESSION

GENEVA, 11–21 JUNE 2002

ABRIDGED FINAL REPORT WITH RESOLUTIONS

Copyright in this electronic file and its contents is vested in WMO. It must not be altered, copied or passed on to a third party or posted electronically without WMO's written permission.



WMO-No. 945

Secretariat of the World Meteorological Organization - Geneva - Switzerland

REPORTS OF RECENT WMO SESSIONS

Congress and Executive Council

- 883 — Executive Council. Fiftieth session, Geneva, 16–26 June 1998.
902 — Thirteenth World Meteorological Congress. Geneva, 4–26 May 1999.
903 — Executive Council. Fifty-first session, Geneva, 27–29 May 1999.
915 — Executive Council. Fifty-second session, Geneva, 16–26 May 2000.
929 — Executive Council. Fifty-third session, Geneva, 5–15 June 2001.
932 — Thirteenth World Meteorological Congress. Proceedings, Geneva, 4–26 May 1999.

Regional associations

- 891 — Regional Association I (Africa). Twelfth session, Arusha, 14–23 October 1998.
924 — Regional Association II (Asia). Twelfth session, Seoul, 19–27 September 2000.
927 — Regional Association IV (North and Central America). Thirteenth session, Maracay, 28 March–6 April 2001.
934 — Regional Association III (South America). Thirteenth session, Quito, 19–26 September 2001.
942 — Regional Association VI (Europe). Thirteenth session, Geneva, 2–10 May 2002.
944 — Regional Association V (South–West Pacific). Thirteenth session, Manila, 21–28 May 2002.

Technical commissions

- 881 — Commission for Instruments and Methods of Observation. Twelfth session, Casablanca, 4–12 May 1998.
893 — Commission for Basic Systems. Extraordinary session, Karlsruhe, 30 September–9 October 1998.
899 — Commission for Aeronautical Meteorology. Eleventh session, Geneva, 2–11 March 1999.
900 — Commission for Agricultural Meteorology. Twelfth session, Accra, 18–26 February 1999.
921 — Commission for Hydrology. Eleventh session, Abuja, 6–16 November 2000.
923 — Commission for Basic Systems. Twelfth session, Geneva, 29 November–8 December 2000.
931 — Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology. First session, Akureyri, 19–29 June 2001.
938 — Commission for Climatology. Thirteenth session, Geneva, 21–30 November 2001.
941 — Commission for Atmospheric Sciences. Thirteenth session, Oslo, 12–20 February 2002.

**In accordance with the decision of Thirteenth Congress,
the reports are published in the following languages:**

Congress	— Arabic, Chinese, English, French, Russian, Spanish
Executive Council	— Arabic, Chinese, English, French, Russian, Spanish
Regional Association I	— Arabic, English, French
Regional Association II	— Arabic, Chinese, English, French, Russian
Regional Association III	— English, Spanish
Regional Association IV	— English, Spanish
Regional Association V	— English, French
Regional Association VI	— Arabic, English, French, Russian
Technical Commissions	— Arabic, Chinese, English, French, Russian, Spanish

WMO issues authoritative publications on scientific and technical aspects of meteorology, hydrology and related subjects. These include manuals, guides, training materials, public information and the WMO *Bulletin*.

WORLD METEOROLOGICAL ORGANIZATION

EXECUTIVE COUNCIL

FIFTY-FOURTH SESSION

GENEVA, 11–21 JUNE 2002

ABRIDGED FINAL REPORT WITH RESOLUTIONS



WMO-No. 945

**Secretariat of the World Meteorological Organization - Geneva - Switzerland
2002**

© 2002, World Meteorological Organization

ISBN 92-63-10945-1

NOTE

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Meteorological Organization concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

CONTENTS

	<i>Page</i>
GENERAL SUMMARY OF THE WORK OF THE SESSION	
1. ORGANIZATION OF THE SESSION	1
1.1 Opening of the session.....	1
1.2 Approval of the agenda.....	2
1.3 Establishment of committees.....	2
1.4 Programme of work of the session.....	2
1.5 Approval of the minutes.....	2
2. REPORTS	2
2.1 Report by the President of the Organization.....	2
2.2 Report by the Secretary-General.....	3
2.3 Reports by the presidents of regional associations.....	3
2.4 Report of the Financial Advisory Committee.....	3
2.5 Reports on the 2001 and 2002 Meetings of the Presidents of Technical Commissions.....	3
2.6 Report of the Chairperson of the Intergovernmental Panel on Climate Change.....	4
3. WORLD WEATHER WATCH PROGRAMME	5
3.1 WWW basic systems and support functions; the report of the president of CBS.....	5
3.2 Instruments and Methods of Observation Programme; the in-depth report of the president of CIMO....	9
3.3 WMO satellite activities.....	10
3.4 Tropical Cyclone Programme.....	13
4. WORLD CLIMATE PROGRAMME	14
4.1 World Climate Programme and its coordination.....	14
4.1.1 Report of the Executive Council Advisory Group on Climate and Environment.....	14
4.1.2 Report of the president of CCI; and the report of the thirteenth session of CCI.....	16
4.1.3 World Climate Data and Monitoring Programme.....	18
4.1.4 World Climate Applications and Services Programme, including CLIPS and climate as a resource.....	19
4.2 Coordination activities within the Climate Agenda.....	20
4.3 Global Climate Observing System.....	21
4.4 World Climate Impact Assessment and Response Strategies Programme.....	23
4.5 World Climate Research Programme.....	24
5. ATMOSPHERIC RESEARCH AND ENVIRONMENT PROGRAMME	25
5.1 Atmospheric Research and Environment Programme; the report of the president of CAS; and the report of the thirteenth session of CAS.....	25
5.2 Support to ozone and other environment-oriented conventions.....	27
5.3 Global Atmosphere Watch.....	27
5.4 World Weather Research Programme.....	28
5.5 Tropical Meteorology Research Programme.....	28
5.6 Programme on Physics and Chemistry of Clouds and Weather Modification Research.....	29
6. APPLICATIONS OF METEOROLOGY PROGRAMME	29
6.1 Public Weather Services Programme.....	29
6.2 Agricultural Meteorology Programme; the in-depth report of the president of CAgM.....	31
6.3 Aeronautical Meteorology Programme; the in-depth report of the president of CAeM.....	33
6.4 Marine Meteorology and Associated Oceanographic Activities Programme; the report of the co-president of JCOMM; and the report of the first session of JCOMM.....	37
7. HYDROLOGY AND WATER RESOURCES PROGRAMME	38
7.1 Hydrology and Water Resources Programme; the report of the president of CHy.....	38
7.2 Programme on Basic Systems in Hydrology.....	40

	<i>Page</i>
7.3 Programme on Forecasting and Applications in Hydrology.....	41
7.4 Programmes on Sustainable Development of Water Resources and on Capacity Building in Hydrology and Water Resources.....	42
7.5 Programme on Water-related Issues.....	42
8. EDUCATION AND TRAINING PROGRAMME	43
9. TECHNICAL COOPERATION PROGRAMME.....	46
10. REGIONAL PROGRAMME, INCLUDING THE REPORTS OF THE THIRTEENTH SESSIONS OF RA III (SOUTH AMERICA), RA V (SOUTH-WEST PACIFIC) AND RA VI (EUROPE)	50
11. DISASTER REDUCTION ACTIVITIES.....	52
12. PROGRAMME AND BUDGET FOR THE FOURTEENTH FINANCIAL PERIOD (2004–2007).....	53
13. MAJOR ISSUES FACING WMO.....	54
13.1 Role and operation of NMHSs.....	54
13.2 International exchange of data and products.....	61
13.3 Cooperation with other disciplines and programmes	63
14. LONG-TERM PLANNING	63
14.1 Evaluation of the implementation of the Fifth WMO Long-term Plan.....	63
14.2 Preparation of the Sixth WMO Long-term Plan	64
14.3 Report on the review of the WMO structure	65
15. COOPERATION WITH THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS	67
15.1 United Nations	67
15.2 Follow-up to the United Nations Conference on Environment and Development, including the activities of the United Nations Commission on Sustainable Development	67
15.3 Specialized agencies and other international organizations.....	68
16. INFORMATION AND PUBLIC AFFAIRS PROGRAMME.....	69
17. PROGRAMME SUPPORT SERVICES AND PUBLICATIONS	70
17.1 Conferences.....	70
17.2 Publications.....	70
17.3 Office automation and information technology support.....	71
18. GENERAL, LEGAL AND ADMINISTRATIVE MATTERS.....	71
18.1 Forty-seventh International Meteorological Organization Prize	71
18.2 Constitutional and regulatory matters	71
18.3 Preparations for Fourteenth Congress.....	74
18.4 Staff matters.....	75
18.5 Financial matters (including the report of the External Auditor)	78
18.6 Designation of acting member(s) of the Executive Council.....	79
18.7 Review of panels and other bodies of the Executive Council	79
19. SCIENTIFIC LECTURES AND DISCUSSIONS	79
20. REVIEW OF PREVIOUS RESOLUTIONS OF THE EXECUTIVE COUNCIL	79
21. DATE AND PLACE OF THE FIFTY-FIFTH AND FIFTY-SIXTH SESSIONS OF THE EXECUTIVE COUNCIL	80
22. CLOSURE OF THE SESSION	80

RESOLUTIONS ADOPTED BY THE SESSION

Final Session
No. No.

			<i>Page</i>
1	2.6/1	Intergovernmental Panel on Climate Change	81
2	4.1.2/1	Report of the thirteenth session of the Commission for Climatology.....	81
3	5/1	Report of the thirteenth session of the Commission for Atmospheric Sciences.....	81
4	6.2/1	Report of the twelfth session of the Commission for Agricultural Meteorology	82
5	6.2/2	Drought and desertification	82
6	6.2/3	Training and education in agricultural meteorology.....	83
7	6.4/1	Report of the first session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology	84
8	10/1	Report of the thirteenth session of Regional Association III (South America).....	85
9	10/2	Report of the thirteenth session of Regional Association V (South-West Pacific).....	85
10	10/3	Report of the thirteenth session of Regional Association VI (Europe)	85
11	15.1/1	Reports of the Joint Inspection Unit.....	86
12	15.2/2	World Summit on Sustainable Development.....	86
13	18.2/1	Amendments to the Rules of Procedure of the Executive Council	87
14	18.2/2	Amendments to the Convention and the General Regulations — Changing the term “Regional Association”	87
15	18.2/3	Amendments to Annex II of the General Regulations	88
16	18.2/4	Amendments to Article 13 of the WMO Convention and to the General Regulations.....	88
17	18.5/1	Consideration of the accounts of the World Meteorological Organization for the biennium 2000–2001.....	89
18	18.5/2	Consideration of the accounts for 2000–2001 — WMO projects and trust funds financed from the United Nations Development Programme	89
19	20/1	Review of previous resolutions of the Executive Council	89

ANNEXES

I	Recommendations of the Financial Advisory Committee (agenda item 2.4 of the general summary)..	91
II	Natural disaster reduction in coastal lowlands (paragraph 2.5.12 of the general summary)	92
III	GCOS climate monitoring principles (paragraph 4.3.5 of the general summary)	93
IV	Revised terms of reference of the Commission for Atmospheric Sciences proposed by CAS-XIII (paragraph 5.6 of the general summary)	94

V	WMO Statement on the scientific basis for, and limitations of, weather and climate forecasting (paragraph 5.1.8 of the general summary).....	95
VI	A concept for an intergovernmental review and action mechanism on fresh water (paragraph 7.1.15 of the general summary).....	99
VII	Provisional VCP(F) status and proposed allocation for 2002 (paragraph 9.25 of the general summary)...	101
VIII	Report of the Executive Council on the Secretary-General's proposed programme and budget for the fourteenth financial period (paragraph 12.10 of the general summary).....	102
IX	Key performance indicators for the fourteenth financial period (2004–2007) presented in relation to the nine strategies of the 6LTP (paragraph 12.12 of the general summary).....	102
X	Evaluation of the implementation of the 5LTP: overall assessment of WMO Programmes (2000–2001) (paragraph 14.1.6 of the general summary)	104
XI	WMO procedures of follow-up on JIU reports (paragraph 15.1.2 of the general summary)	118
XII	Draft working arrangements between WMO and the Caribbean Meteorological Organization (paragraph 15.3.3 of the general summary).....	118
XIII	Draft working arrangements between WMO and the International Committee for Weights and Measures (paragraph 15.3.3 of the general summary).....	119
XIV	Draft working arrangements between WMO and the Niger Basin Authority (paragraph 15.3.3 of the general summary)	119
XV	Draft programme of sessions of constituent bodies during the fourteenth financial period (2004–2007) (paragraph 17.1.1 of the general summary).....	120
XVI	Draft provisional agenda for Fourteenth Congress (paragraph 18.3.3 of the general summary)	120
XVII	List of international organizations to be invited to Fourteenth Congress (paragraph 18.3.6 of the general summary)	122
XVIII	Situation of women in the WMO Secretariat (January 1995–June 2002) (paragraph 18.4.11 of the general summary)	123
XIX	Proposed revisions to the Financial Regulations (paragraphs 18.5.10 to 18.5.12 of the general summary) .	125

APPENDICES

A.	List of persons attending the session	126
B.	Agenda	128
C.	List of abbreviations	133

GENERAL SUMMARY OF THE WORK OF THE SESSION

The Executive Council (EC) of the World Meteorological Organization (WMO) held its fifty-fourth session at the WMO Headquarters from 11 to 21 June 2002, under the chairpersonship of Mr J. W. Zillman, President of WMO.

1. ORGANIZATION OF THE SESSION (agenda item 1)

1.1 OPENING OF THE SESSION (agenda item 1.1)

1.1.1 The President of the Organization, Mr J. W. Zillman, opened the session at 10 a.m on 11 June 2002.

1.1.2 In his opening remarks, the President extended a warm welcome to all members of the Executive Council, to their alternates and advisers, to the presidents of the technical commissions and to representatives of the United Nations and other international organizations.

1.1.3 The President extended a special welcome to the new ex-officio members of the Council, Messrs Woon Shih Lai and F. Quintas Ribeiro, presidents of RA V and RA VI, respectively, and to the recently elected acting members Messrs D. Nadison and C. C. Fuller. One additional acting member, Mr M. Lamine Bah, was later designated by the Council. A complete list of the participants is given in [Appendix A](#) to the report.

1.1.4 The President paid tribute to the outgoing members of the Council, Messrs G. C. Schulze, A. Jaime and K. Konaré, who recently ceased to be members of the Council and who had made important contributions to the work of the Council and to the wider international meteorological and hydrological communities during their terms of office. The President also placed on record the Council's appreciation to Messrs R. Sri Diharto and I. Mersich, the former acting presidents of RA V and RA VI, respectively, for their outstanding services to their respective Regions and to the Council as a whole.

1.1.5 The President drew attention to some of the major issues that must be addressed over the next two weeks. Those should be reflected in the draft Sixth WMO Long-term Plan that would be submitted to Fourteenth Congress, in the programme and budget for the fourteenth financial period, and in the Council's decisions on many issues that had implications for the international community. In that context, the enhancement of the role and effective operation of NMHSs would be essential. It would be important for WMO to generate new momentum in many of those areas and to continue to provide leadership in international meteorology, hydrology and related fields especially in those areas bearing on the safety, security and general welfare of communities worldwide. In that regard, the use of public-private partnership models must be coupled with explicit recognition of the public good responsibilities of NMSs, and maintenance of the free and unrestricted

exchange of essential data and products, built into the Convention and traditions of WMO. He also mentioned the importance of effective preparation for Fourteenth Congress, which would take some decisions of profound significance for the future of international meteorology and hydrology and the related geophysical sciences.

1.1.6 Vice Admiral Conrad C. Lautenbacher, Jr, Under-Secretary of Commerce for Oceans and Atmosphere and Administrator of NOAA, emphasized the importance of international partnerships in meteorology, hydrology and oceanography. He said the WMO was an essential partner in facilitating and coordinating international cooperation in the environmental sciences. Adm. Lautenbacher announced a United States Presidential initiative to improve the global observing system for climate in developing countries and called on other developed countries to become partners in that initiative. He said that an essential element — about US\$ 8 million, half atmospheric and half oceanic — was for NOAA to improve the global observing system. He also said that the United States was prepared to assist financially the GCOS Office at WMO to prepare for the Second Report on the Adequacy of the Global Observing System. Adm. Lautenbacher recognized the growing importance of satellite information in climate monitoring and noted that improvements in our understanding of the global climate depended on sharing data between nations on a full and open basis.

1.1.7 Mr Musa S. Mbenga, Executive Secretary of CILSS, thanked WMO for the invitation extended to him and expressed his appreciation for the long-standing fruitful cooperation that existed between CILSS and WMO. He stressed the importance of the cooperation between CILSS and WMO for sustainable development and, in particular, for sustainable agriculture and food security in the region. He emphasized that CILSS and WMO had several other areas of common interest in which future collaboration would be beneficial. He looked forward to enhancing the collaboration between the two Organizations, preferably through the conclusion of appropriate working arrangements.

1.1.8 Mr Patricio A. Bernal, Assistant Director-General of UNESCO and Executive Secretary of IOC addressed the Council on 14 June 2002. He conveyed the greetings of Messrs Su Jilan, Chairperson of IOC and Koichiro Matsuura, Director-General of UNESCO. He expressed his appreciation for the long-standing cooperation that existed between IOC and WMO and for the establishment of JCOMM, as a pioneering new mechanism of coordination within the United Nations system. He hoped that such mechanism would be emulated in other areas of activity of the system. Mr Bernal reported on recent achievements in IOC activities, in particular, on the creation and operation of new regional offices in

support of the development GOOS, and JCOMMOPS. He stressed that the existing collaboration between WMO and IOC in IGOS was an important development in which the two Organizations would play a leading role. He looked forward to the continued strengthening of the excellent cooperation that existed between IOC and WMO.

1.2 APPROVAL OF THE AGENDA (agenda item 1.2)

The Executive Council adopted the agenda, which is reproduced in [Appendix B](#) to this report.

1.3 ESTABLISHMENT OF COMMITTEES (agenda item 1.3)

1.3.1 The Executive Council decided to establish three Working Committees with the various agenda items shared among those Committees. Committee A was chaired by Mr J.-P. Beysson, the First Vice-President, with Mr J. R. Mukabana as vice-chairperson; Committee B by Mr A.-M. Noorian, the Second Vice-President, with Mr N. Al-Shalabi as vice-chairperson; and Committee C by Mr Y. Salahu, the Third Vice-President, with Mr H. H. Oliva as vice-chairperson.

1.3.2 A Coordination Committee was established in accordance with General Regulation 28. It was composed of the President, the three Vice-Presidents and the vice-chairperson of the Working Committees, the Secretary-General or his representative as well as others invited by the President, as necessary.

1.3.3 The Council decided to establish two subcommittees to consider specific items:

(a) A subcommittee on the programme and budget for the fourteenth financial period (2004–2007), co-chaired by Messrs R. R. Kelkar and U. Gärtner. The subcommittee included the following core members: Messrs J. J. Kelly, A. J. Dania, K. Yamamoto, A. Ndiaye and A. Bedritsky. The meetings of the subcommittee were open to all members of the Council;

(b) A subcommittee on the membership of the WMO/ICSU/IOC Joint Scientific Committee for WCRP, with Mr R. R. Kelkar as chairperson and Messrs A. I. Bedritsky, M.-D. Everell and Mrs G. K. Ramothwa as members. That subcommittee was also open to all members of the Council.

1.3.4 The Council appointed Mr A. Athayde as Rapporteur to Review Previous Resolutions of the Executive Council.

1.4 PROGRAMME OF WORK OF THE SESSION (agenda item 1.4)

The necessary arrangements concerning the working hours and the allocation of agenda items to plenary meetings, its meetings of the Committee of the Whole and the Working Committees were agreed. A full list of documents presented at the session is contained in [Appendix B](#) to this report.

1.5 APPROVAL OF THE MINUTES (agenda item 1.5)

The Executive Council noted the decision made at its fiftieth session and confirmed by Thirteenth

Congress that no minutes of plenary meetings at sessions of the Executive Council, regional associations and technical commissions should be prepared unless otherwise decided for special items. Tape recordings of plenaries would continue to be made and would be retained for record purposes.

2. REPORTS (agenda item 2)

2.1 REPORT BY THE PRESIDENT OF THE ORGANIZATION (agenda item 2.1)

2.1.1 The Executive Council noted with appreciation the report of the President on the activities of the Organization since its fifty-third session, which provided a very broad overview of the achievements of the constituent bodies, the work of the Bureau and other subsidiary bodies of WMO. The President pointed out that the fulfilment of the mission and purpose of WMO in the Convention was dependent on a high level of cooperation and interaction with other organizations both intergovernmental and non-governmental as well as the civil society. In that context, he emphasized that the planning and implementation of the WMO Programmes must take account of a wide range of influences and developments in the rapidly changing world. Those included the international security situation, the burgeoning demands on meteorology, the resource pressures on NMHSs, the increased focus on disaster reduction, globalization and the free trade agenda, the global framework for meteorological service provision and the role of public-private partnerships. The President also stressed the importance of the preparation for Fourteenth Congress as the present session was the last one of the Council before Congress. In that regard, he noted a number of issues that the Council would have to address, such as modernization of the WMO Convention, the vision and strategy of the 6LTP and the programme and budget for the fourteenth financial period.

2.1.2 The Council confirmed the actions taken by the President on its behalf since its last session under General Regulation 9(7) on the following items:

(a) Approval of the extension of the appointments of:

- (i) Director, Climate Modelling, World Climate Research Programme until 30 June 2002;
- (ii) Chief, Hydrology Division, Hydrology and Water Resources Department until 31 August 2002;
- (iii) Secretary of IPCC until 31 May 2002;
- (iv) Acting Director, World Weather Watch Applications Department until 31 December 2002;
- (v) Director Coordinator, Support to Scientific Programmes until 31 December 2002;
- (vi) Chief, Fellowship Division until 31 March 2003;

(b) Approval of the inter-part budgetary transfers within the 2000–2001 appropriations;

(c) Approval of Recommendation 9 (CBS-01), containing additions to the *Manual on Codes* (WMO-No. 306), for implementation on 7 November 2001 related to

new data entries in GRIB edition 3 and in BUFR, mainly for satellite and oceanographic data;

- (d) Approval of the postponement of the entry into force of some amendments to the METAR, SPECI and TAF code forms.

2.1.3 The other issues raised in the report requiring actions and decisions were dealt with under the relevant agenda items.

2.2 REPORT BY THE SECRETARY-GENERAL (agenda item 2.2)

2.2.1 The Executive Council noted with appreciation the comprehensive report by the Secretary-General on the effective implementation of the programmes and on the activities of the Organization since the last session of the Council, in spite of the stringent budgetary constraints. The Secretary-General highlighted the major challenges, trends and developments of concern to NMHSs and WMO including those of environmental, technological, social and economic origin, in particular, the rapid changes in technology, globalization and commercialization. He noted the WMO initiatives in a number of areas including natural disaster reduction, environment protection, climate, climate variability and change, pollution monitoring and water resources management. He informed the Council on the involvement of the Organization in a growing number of relevant global and regional events that had implications for WMO and the NMHSs. In particular, he mentioned WMO's active participation in the preparations for the World Summit on Sustainable Development (Johannesburg, August/ September 2002) and the World Food Summit (Rome, June 2002). He emphasized the need for WMO to support the least developed countries and the small island developing States, as well as joint bodies including IPCC and GCOS. He urged the Council to provide the necessary resources to enable the Organization to maintain its comparative advantage in meteorology, hydrology and related geophysical sciences, and to continue to provide the support that Members had come to expect in areas of concern, especially in the context of the WMO Long-term Plans.

2.2.2 The other issues raised in the report requiring actions or decisions were dealt with under the relevant agenda items.

2.3 REPORTS BY THE PRESIDENTS OF REGIONAL ASSOCIATIONS (agenda item 2.3)

2.3.1 The Executive Council noted with appreciation the reports of the presidents of regional associations and expressed satisfaction at the effective manner in which the activities of the associations were being undertaken. It commended the presidents for the continued dedication with which they worked in their respective associations to assist in the development of the NMHSs of their Members.

2.3.2 The Council expressed its appreciation to Messrs R. Sri Diharto (Indonesia) and I. Mersich (Hungary) for their valuable contribution while they served as acting president of Regional Associations V

and VI, respectively, and to Mr K. Jaigopaul (Guyana) who served as vice-president of Regional Association III.

2.3.3 The views of the Council regarding activities reported by the presidents of regional associations were reflected under agenda item 10.

2.4 REPORT OF THE FINANCIAL ADVISORY COMMITTEE (agenda item 2.4)

The Executive Council considered the report of the Financial Advisory Committee. It noted with appreciation the various recommendations of the Committee contained in [Annex I](#) to this report. The Council took account of those recommendations in making its decisions under the various related agenda items.

2.5 REPORTS ON THE 2001 AND 2002 MEETINGS OF THE PRESIDENTS OF TECHNICAL COMMISSIONS (agenda item 2.5)

2.5.1 The report of the 2001 Meeting of the Presidents of Technical Commissions, held in Geneva on 24 and 25 October 2001, was presented by Mr J. P. Beysson, First Vice-President, who chaired the Meeting.

2.5.2 The Executive Council noted that the presidents had revisited the issue of representation of technical commissions at sessions of regional associations and vice versa, and had agreed that commissions should further consider experience, such as that of CBS, in interaction with regional associations and participation of experts from developing countries in the work of the commissions and their subsidiary bodies. The Council welcomed that view and urged the presidents of technical commissions and regional associations to address the issue together.

2.5.3 The Council took note of the presidents' view that due consideration should be given by the Executive Council and eventually by Thirteenth Congress to the provision of adequate funds in the WMO regular budget for the implementation of the scientific and technical programmes of the Organization. The Council agreed to take that view into account when considering budget proposals for Fourteenth Congress.

2.5.4 The Council noted that the presidents had agreed to bring to its attention the need to consider an integrated data management system in the context of the future WMO integrated system. The Council supported that view and requested the relevant bodies, including those of CBS, to take appropriate actions.

2.5.5 Regarding the recommendation that the Council review the coordinating role of the Inter-agency Committee on the Climate Agenda, the Council recorded its views under agenda item 4.1

2.5.6 With respect to participation of the presidents in the WMO long-term planning process, the Council noted their suggestions for lead responsibilities for the WMO Programmes and related issues. The Council supported the proposals to rename in the SLTP, item 2.2 within the World Climate Programme to read "Support to climate change-related activities" and to rename item 4.4 within the Application of Meteorology Programme,

to read "Marine meteorology and oceanography activities".

2.5.7 The Council further noted the presidents' views that, for the time being, it was appropriate to retain the Intercommission Task Team on Natural Disaster as the lead responsible body for the proposed Natural Disaster Prevention and Mitigation Programme. The Council recorded its decision on that and related matters under the agenda items related to the programme and budget for the next financial period and to long-term planning.

2.5.8 The Council noted that, on the issue of natural disaster prevention, the presidents had discussed the document "WMO technical commissions: a joint programme to contribute to natural disaster reduction in coastal lowlands" submitted by the co-president of JCOMM, Mr J. Guddal, and agreed to continue planning of the project. The Council recognized the importance of that intercommission project and expressed support of that joint activity.

2.5.9 The Council also supported the view of the presidents that the WMO mandatory publications and technical documents should be updated in a timely manner in order to include the latest data and modern scientific and technological developments, and that a review of some mandatory publications (*Manuals*, *Guides*, etc.) should be undertaken to avoid duplication. The Council requested the Secretary-General to initiate appropriate actions.

2.5.10 The report of the 2002 Meeting of the Presidents of Technical Commissions, held in Geneva from 25 February to 1 March 2002, was presented by Mr Y. Salahu, Third Vice-President, who chaired the Meeting. The Meeting of Presidents of Technical Commissions was held in conjunction with the session of the Executive Council Working Group on Long-term Planning and that of the Task Team on WMO Structure. The Executive Council noted that that arrangement had presented an opportunity for presidents to participate fully in the deliberations of the Working Group and the Task Team and helped ensure that the tasks and aspirations of technical commissions would be highlighted in the long-term plan and in the review of the WMO structure.

2.5.11 The Council further noted that the Meeting had focused on two issues, namely, intercommission cooperation in natural disaster prevention and quality management certification.

2.5.12 The Council noted with appreciation that, following general endorsement by its fifty-third session, the Meeting had discussed the intercommission project on natural disaster reduction in coastal lowlands presented by the co-president of JCOMM. The Council noted and broadly endorsed the proposal (given in [Annex II](#) to this report) for the project, which had been prepared following the recommendation of the Meeting. The Council requested the presidents concerned to submit, as appropriate and in consultation with the Secretary-General, specific proposals on the implementation of tasks included in the project. The Council further requested that the implementation plans for

2004–2007 include an indication of activities at the national level.

2.5.13 The Council noted that the Meeting had discussed the quality management certification matter with a view to contribute to an analysis of experience within WMO and to the development of the Organization's position on that matter. The Council further noted the Meeting's recommendations:

- (a) To establish an intercommission task group to develop a framework for a WMO quality management system;
- (b) To develop standard operating and routine calibration procedures for all measured hydrometeorological and related parameters, and to establish data quality objectives for them; and
- (c) To integrate quality management procedures and processes into the WMO system of Technical Regulations, *Manuals* and *Guides*. The Council recorded its decisions on the quality management issue under agenda item 13.1.

2.6 REPORT OF THE CHAIRPERSON OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (agenda item 2.6)

2.6.1 The Executive Council congratulated the new Chairperson of the IPCC, Mr R. Pachauri, on his election and expressed its appreciation for his report.

2.6.2 In his report, Mr Pachauri noted that IPCC had completed its Third Assessment Report and had now committed to undertake a Fourth Assessment Report. Work on the Fourth Assessment Report would commence in 2003, with the aim of completing the Working Group I Report in the first quarter of 2007, followed rapidly by the Working Groups II and III Reports in mid-2007 and, if required, a Synthesis Report towards the end of 2007.

2.6.3 Mr Pachauri noted that because there was an ever-present danger of asking too much of the world's small, greenhouse-specific, scientific community, the IPCC would establish a decision framework that ensured that the key scientists were not overloaded by the effort of preparing Special Reports and the like. In particular, IPCC would consult with its sponsors, WMO and UNEP, and with SBSTA to the UNFCCC, and other relevant organizations, to ensure that it only undertook assessments that could be used to inform key decision-making processes.

2.6.4 Mr Pachauri concluded his report by noting that IPCC would continue to follow processes aimed at ensuring that its work was viewed as authoritative, that it had scientific integrity, that it was policy relevant but impartial, and that the workings of the Panel were transparent to all of its 192 Member countries.

2.6.5 The Council noted that the Third Assessment Report was completed under the extremely capable leadership of the previous Chairperson of the IPCC, Mr Robert T. Watson, and through the high quality contributions of dedicated climate change scientists from around the world, and was of a very high standard. The Council also noted that, as with previous IPCC

assessments, the Third Assessment Report was seen as an objective statement of the consensus view of the world's science community on climate change science and wished the new Chairperson well in maintaining the standards set by the IPCC, in its three completed assessments, as it prepared the Fourth Assessment Report.

2.6.6 The Council noted the need for continued strong support for IPCC by WMO. It further noted that there was still considerable work to be done in reducing the uncertainties associated with the understanding of climate change and that the key elements of what was known needed to be communicated more effectively to the community at large. Some members encouraged IPCC to focus its assessment work down from the global scale to consider regional, national and even local climate change issues.

2.6.7 The IPCC was encouraged by members of the Council to work closely with CCI, with the various bodies responsible for the components of WCP and with the GCOS Steering Committee and Secretariat in recruiting scientists for its Fourth Assessment Report and in selecting the times and locations of its various meetings and workshops. It was also encouraged to resolve the issue of whether it would undertake the preparation of a technical paper on what might be considered to be a dangerous level of anthropogenic greenhouse gas concentrations in the atmosphere. Finally, it was noted that in addition to greenhouse gases, aerosols played a significant role in climate change and that the IPCC should take the broadest possible view when seeking to identify the causes of climate change.

2.6.8 In that connection, the Council adopted [Resolution 1 \(EC-LIV\)](#).

3. WORLD WEATHER WATCH PROGRAMME (agenda item 3)

3.1 WWW BASIC SYSTEMS AND SUPPORT FUNCTIONS; THE REPORT OF THE PRESIDENT OF CBS (agenda item 3.1)

3.1.1 The Executive Council noted with appreciation the report of the president of CBS on the activities of the Commission since its fifty-third session. The Council expressed its appreciation for the actions which were being undertaken by the Commission on a number of issues raised by the Council, including an investigation on innovative collaborative efforts on the implementation of the WWW and recommendations on total quality management. The Council also appreciated the intersessional accomplishments in preparing substantial revisions and additions to the WMO regulatory material including the various *Manuals* related to the operation of WWW for which CBS was responsible.

3.1.2 The Council was pleased to note that CBS had considered the concept of total quality management and ISO 9000 certification and had appointed a Rapporteur on Total Quality Management at its twelfth session to investigate whether and how the concept of total quality management could be applied to the WWW system. It thanked the president of CBS for the report on that issue, which had been submitted to the Executive

Council Advisory Group on the Role and Operation of NMHSs (see agenda item 13.1) and requested the Secretary-General to make information material on ISO 9000 and related quality management systems available to Members. The Council expressed concern at the high cost involved with setting up and implementing a quality management system in NMHSs. Several Council members felt that it might be preferable to consider development of a WMO-specific quality management system and certification scheme in lieu of ISO 9000.

GLOBAL OBSERVING SYSTEM

3.1.3 The Council noted with satisfaction that in the past two years, the overall implementation of surface and upper-air stations in the RBSNs had shown increasing stability. It however noted that in 2001, the number of SYNOP reports received daily at MTN centres of the GTS varied from 51 per cent in Region I to 92 per cent in Region VI, giving a global average of 75 per cent of expected reports. Availability of TEMP reports varied from 29 per cent in Region I to 87 per cent in Region IV with a global average of 61 per cent. The Council noted that gaps, especially in upper-air data coverage, persisted over certain areas in Africa, Asia, the South-West Pacific and South America mainly due to obsolete equipment and lack of consumables. The Council also noted certain improvements in the data availability in RAs I, II, III and V, which were achieved through continued individual and multilateral efforts of Members, including VCP support to activate and improve RBSN operation. The Council encouraged efforts to develop and implement projects for strengthening GOS stations in some countries in Africa, in particular in the framework of a strategic plan for implementation and improvement of the basic systems in Region I.

3.1.4 The Council noted with appreciation the work that was continuing in CBS on the redesign of the GOS, which had been assessing the evolution of the in situ and remote-sensing observing systems, on the one hand, and the development of the GOS requirements of all WMO Programmes, on the other. The Council looked forward to receiving the recommendations on the strategic elements of the future composite GOS along with proposals on how Members should implement them. It recalled, that in keeping with the strategies adopted in the 5LTP, the structure of the future GOS and the implementation of new technologies should be driven by Members' requirements rather than by technological opportunities. New technologies should be implemented as soon as practical to replace older, more costly observing systems with a view to reducing the expenditures. The Council also recognized the value of the revisions that were being made to the GOS regulatory material, taking into account the technological progress in surface-based and space-based subsystems of the GOS, and the planned incorporation of R&D satellites as a new component into the GOS.

3.1.5 The Council noted the additional actions taken to enhance coordination and collaboration between CBS and GCOS at the regional level. It welcomed the fact that

the concept of an RBCN had already been adopted by several regional associations. It also expressed the expectation that such a network would provide visible justification for maintaining the CLIMAT reporting stations necessary to meet the regional requirements, to strengthen the GCOS and to facilitate effective monitoring of those stations in the framework of the WWW monitoring procedures. The Council emphasized that the GOS provided the foundation on which the capacity for climate monitoring in the Regions continued to be built and that most WWW observing stations would function as part of both the RBSN and RBCN. The Council noted, in that connection, the intention of RA I to adopt a unified network and observational programme for both RBCN and GCOS stations. The Council was pleased to note that a very recently held joint CBS/GCOS expert meeting had addressed those aspects of improving the availability of GCOS surface and upper-air reports through setting up a more effective monitoring of the network performance which should be based on specialized CBS Lead Centres for GCOS Data and through proposals to coordinate assistance to rehabilitate stations or support operations of stations. Those centres should work on the same principles as the CBS Lead Centres for Data Quality Monitoring and should maintain a direct link to the countries with problems in their GCOS station operations. The Council noted with appreciation that the German Weather Service, JMA and the National Climatological Data Centre of the United States were proposed to host the CBS Lead Centres for GCOS Data on a trial basis.

GLOBAL TELECOMMUNICATION SYSTEM

3.1.6 The Council noted the continued progress in the upgrading of GTS connections and procedures, including operational GTS management information (e.g. new catalogue of meteorological bulletins and RTHs routing directories). In Region I, despite serious economic difficulties, continuous efforts had enabled some improvement of GTS circuits via leased lines, satellite-based telecommunications (in particular SATCOM) and public data networks, including the Internet. Satellite-based data-distribution systems (MDD, RETIM and SADIS) and data-collection system (METEOSAT/DCS) continued to play a crucial role. There were still serious shortcomings and the strategy for enhancing WWW basic systems was being developed to enable sustainable development, in particular of meteorological data communications. The RMTN in Region II was being improved by the step-by-step implementation of improved data communication services, such as frame relay services, complemented by satellite-based distribution systems and the use of the Internet.

3.1.7 In South America, the RA III RMDCN project was entering its implementation phase with the planned international tender; the Secretary-General had established a coordinated cooperation project including a Trust Fund with a view to providing the necessary resources for facilitating its implementation. The two-way satellite-based RMTN of Region IV continued to be

fully operational, but the replacement of the GTS/GDPS PC-based terminal equipment at NMCs was becoming a high priority.

3.1.8 Significant progress had been made in Region V RMTN with the implementation of frame relay services, the inclusion of additional circuits, in particular in the Pacific, and the expansion of satellite-based communications (ISCS, EMWIN). There had also been an increasing use of the Internet, in particular for the collection of observational reports. The RA VI RMDCN, based on a shared managed network service managed by ECMWF, was interconnecting 33 RTHs and NMCs. Provisions had been agreed to extend the RMDCN services, in particular to include interregional and MTN GTS circuits. The other RA VI Members were operating leased point-to-point GTS circuits. Satellite-based distribution systems (FAX-E, RETIM and MDD) were also playing an important role.

3.1.9 The Council noted that a number of satellite-based data distribution systems (e.g. ISCS, EMWIN, RETIM, FAX-E, MDD) covering several Regions were planned to be upgraded in the near future. It emphasized the importance of providing technical and cost information on the impact of the upgrade on receiving equipment to all NMHSs concerned in order to facilitate the early planning of the upgrade or the replacement of receiving systems. The Council also noted that the improved MTN project was making some progress and it encouraged Members concerned to facilitate effective multilateral cooperation, with the assistance of the Secretariat as necessary, in particular with respect to the procurement, contractual and financial framework to foster its early implementation. The Council emphasized the importance of pursuing the development and upgrade of the regional and global components of the GTS in order to meet the increasing data exchange requirements, in particular for processed information and satellite data. It also underlined the importance of the national component of the GTS for ensuring an efficient observational data collection.

3.1.10 With respect to radio-frequency matters, the Council was pleased to note the CBS activities and WMO's participation in ITU-R preparation to the WRC-2003. It requested CBS and the Secretariat to pursue as a matter of high priority those activities to secure adequate radio-frequency allocations for meteorology, and in particular to radiosondes, meteorological satellites, weather radars and space-borne passive remote sensing. In that respect, it noted with high concern the threat on portions of the band 1 675–1 690 MHz, which might seriously hamper the development of meteorological satellites and the operation of radiosondes, in particular in Regions II, III, IV and V. It urged Members to ensure that their respective national radiocommunication authorities were fully aware of the impact of the relevant WRC-2003 issues for meteorological operations. The Council noted with appreciation the joint ITU/WMO publication *Handbook on Use of Radio Spectrum for Meteorology*, and the WMO Workshop on Radio Frequencies for Meteorology planned for October 2002.

GLOBAL DATA-PROCESSING SYSTEM

3.1.11 Concerning GDPS, the Council welcomed the fact that activities in 2001 placed emphasis on the enhancements and capacity building of Members' data-processing facilities for the advanced GDPS Centres as well as for developing NMCs. Advanced centres had continued to improve the EPSs, especially for short- and medium-range forecasts, and long-range forecasts with coupled ocean-atmosphere models. Sixteen centres ran global models. It noted that many NMCs now ran NWP models making use of modern workstation technology running regional and local models as well as post-processing of model output. To assist developing NMCs, regional strategies for enhancing basic GDPS facilities had been developed, which comprised the computerization of the basic functions of NMCs including PC-based modelling and post-processing. The Council noted the concerns of several regional associations on the need to improve the basic systems in their Regions, in particular for upgrading and/or improving forecasting facilities and capabilities to respond to natural disaster reduction, mitigation and preparedness. The Council expressed the hope that innovative arrangements for continued support and collaboration could be found for strengthening sub-regional and regional centres, like the DMCs Nairobi and Harare, AGRIHMET (Niger) and RSMC Nadi (Fiji), and the needs identified for education and training activities.

3.1.12 The Council was pleased to note that CBS had addressed issues related to procedures and arrangements for making EPS products widely available to Members as well as related necessary training issues. Other areas of priority addressed were the ways and means by which advanced centres could provide support to NMHSs through the dissemination and use of EPS products. That would include the generation of NWP guidance on severe weather events and the experimental implementation of standard verification systems, in particular for long-range forecasts. The Council noted that more product types and services depended on the data-processing and forecasting systems. For example, modelling was being applied with some success to the dispersion of chemicals, radioactive materials, volcanic ash, propagation of airborne diseases and other hazards related to natural disaster. The development of EPSs also opened the door to a number of applications, such as the probability of a particular event to occur, and to the assessment of the likelihood of different occasions, such as probability of heavy precipitation, high winds and other severe events. Those were viewed as important activities, as they had an impact on health, on safety and on socio-economic activities. It contributed to better decision making in case of emergency and to increase the visibility of NMHSs.

3.1.13 The role of the WWW basic systems in the provision of basic infrastructure for the generation of seasonal to interannual forecasts, in collaboration with other relevant technical commissions, was further addressed through designated CBS expert teams, and in the framework of the Intercommission Task Team on RCCs. A list of products which could be made available by global producing centres had been developed.

3.1.14 The Council was informed of progress made in the further development of the Strategic Plan for the implementation and improvement of the basic systems in Region I. It was noted that in order to avoid current weaknesses in addressing gaps in WWW facilities by piecemeal solutions, the strategy adopted a continental approach covering all the African countries. That aimed at avoiding errors of the past where some countries lay far behind others and at providing sustainability by introducing some uniformity in the technologies deployed. The Strategy envisaged the integration of training activities. In that connection, the Council was pleased to note that WMO organized survey missions to various RA I countries to identify concretely problems in the implementation and operation of the WWW facilities in RA I that proposed possible subregional and continental strategies. The identified problems and strategic proposals were considered in an Implementation Coordination Meeting that was held in Nairobi in April 2002. That Meeting would be followed by the preparation of detailed project proposals for submission to, and discussion with, possible donors. There would be a progress report on the implementation of the Strategy to XIII-RA I, planned for November 2002. The Council agreed that in order to achieve a satisfactory implementation of the Strategy, integrated coordinated subregional/regional proposals needed to be developed and possible funding sought. It welcomed the fact that other WMO Regions would also benefit from the experience and success in implementation of the RA I Strategy.

EMERGENCY RESPONSE ACTIVITIES

3.1.15 The Council noted with satisfaction that within the Emergency Response Activities programme, in addition to updates to procedures for response to nuclear and non-nuclear incidents causing large-scale air pollution and health hazards, better means of transmitting information to NMSs and other users using Web technology were further developed, including plans for reliable back-up information dissemination. The Council noted the need to review further the arrangements for response to nuclear incidents in order to achieve full coordination between the arrangements of WMO and those of relevant other international organizations, in particular with IAEA, in the light of changed requirements for response to radioactive release, including those without potential to cross national boundaries. The Council was pleased to note that progress was made in WMO's collaboration with CTBTO in the provision of NWP and transport model products to CTBTO and in the provision of meteorological observations from CTBTO monitoring stations to WMO. Arrangements had been successfully implemented for the routine dissemination of the meteorological observations from CTBTO monitoring stations on the GTS in a WMO code; the Council expressed its appreciation to Canada for having facilitated the processing and insertion on the GTS of that data in the Canadian Meteorological Centre in Montreal in collaboration with the CTBTO Provisional Technical Secretariat in Vienna.

WMO ANTARCTIC ACTIVITIES

3.1.16 The Council welcomed the fact that the *Handbook on Antarctic Forecasting* had been published in close collaboration between the Australian Bureau of Meteorology and the Secretariat. The Council noted that a meeting of the Executive Council Working Group on Antarctic Meteorology would be held later in 2002 and looked forward to receiving its recommendations.

FUTURE WMO INFORMATION SYSTEM

3.1.17 The Council was pleased that further progress had been made in the development of the future WMO information system. In particular, it noted that the Interprogramme Task Team on Future WMO Information Systems had clarified and expanded the description of the vision for the future WMO information system. The Council considered that a window of opportunity existed now to arrive at an agreed standard for the future WMO information system and that any delay in necessary coordination could result in multiple incompatible systems.

3.1.18 The Council was pleased to note that the Task Team had dedicated considerable discussion to the requirements and capabilities of less developed versus more developed NMHSs. The Team had noted that NMHSs spanned a range of capabilities and developed a proposed path to improve capabilities that NMHSs could follow as WMO migrated to its future information system. The vision developed by the Task Team stated that small and developing NMHSs with few resources should be able to deliver and receive all required information through inexpensive PC-based systems relying upon satellite broadcast and dial-up connections to the Internet. The Council noted that although e-mail did not guarantee the timely delivery of data, the Task Team felt that it was an inexpensive solution for those NMHSs that could not afford a full implementation of the GTS and should be recognized as an extremely useful mechanism for those NMHSs to provide data to their RTH for injection into the GTS and the future WMO information system.

3.1.19 The Council noted that the Interprogramme Task Team had reviewed current and emerging technologies and that the rapid proliferation of the Internet and its associated technology, low cost satellite communication systems and extensible mark-up language could have an impact on the development of the future WMO information system. The Task Team had also agreed that WMO could benefit from the experience of the open-source software community in the collaborative development of software and recommended increased efforts to involve the university and research communities in collaborative software development with NMHSs.

3.1.20 The Council noted that the Task Team had agreed that work should continue through development of a catalogue of products, proof of concepts through pilot tests and upgrade of the GTS. The development of the catalogue should be the highest priority since it was essential for the implementation and maintenance of a modernized WMO communications system. The

Council was pleased to note that a draft WMO directory-level metadata standard had been developed and was being circulated for review.

3.1.21 The Council, recognizing that the proposed system would likely require changes in operational and institutional arrangements, agreed that there were several technical and policy-level issues that needed further consideration. It requested CBS to refine further the concept and to develop more detailed technical information on specific requirements for the future WMO information system and on how the proposed system would function and address those requirements. CBS should also specify how the existing WWW system and centres would evolve into the new structure, thus ensuring a smooth transition with no interruption in essential services. The Council requested CBS to provide the outcome of that work to the Executive Council Advisory Group on the Role and Operation of NMHSs.

3.1.22 The Council also recalled the policy issues raised at its fifty-third session, namely:

- (a) The possible impact of the introduction of a future WMO information system on Members' responsibilities and resources;
- (b) The extent to which the functions and responsibilities of existing infrastructure and centres should be used or revised.

It requested that a study be undertaken to explore those and other policy-level implications of the future WMO information system, based on the outcome of CBS at its extraordinary session, to be held in December 2002. The Council requested the Executive Council Advisory Group on the Role and Operation of NMHSs to consider the results of the study, to analyse the relevant policy issues and to report its findings to Fourteenth Congress.

DATA REPRESENTATION FORMS

3.1.23 The Executive Council recalled that CBS had embarked on developing a well-coordinated phased approach for a WMO-wide progressive transition from the use of character-based WMO codes to table-driven data representation forms BUFR and CREX. The ultimate goal of that strategy was to enable the NMCs of all Member countries to exchange observational data in table-driven data representation forms. In order for WMO to achieve that goal, the strategy would need to include support projects for training and decoding/encoding software distribution mainly for developing countries. The Council urged Members to provide assistance for training events and to develop training material such as distance learning tools. The Council urged CBS to study thoroughly all the implications, both operational and resource-related, that Members would have to face in that transition process, giving specific attention to the situation and needs of the developing countries in that regard, and to develop the appropriate proposals for support and training. The Council also invited the regional associations to consider the implementation aspects of the transition strategy and to determine the realistic time frame for implementation from the perspective of their Members with a view to

achieving a smooth transition without operational interruptions or disadvantages to Members.

OPERATIONAL INFORMATION SERVICE

3.1.24 The Council was pleased to note the continued improvement in the WWW operational information service. The use of information technology made it possible for the WMO Secretariat to receive updates from the WWW centres quicker than in the past and to keep the information updated in an electronic format. As from 2002, *Weather Reporting* (WMO-No. 9) and the *International List of Selected, Supplementary and Auxiliary Ships* (WMO-No. 47) would be distributed on CD-ROM; most parts of the operational information had been made available on the WMO server for direct access. The *WWW Operational Newsletter* had been converted to e-format for addressed e-mail delivery to registered recipients. Applications to facilitate the interactive access to the information were being developed.

PUBLIC WEATHER SERVICES

3.1.25 The Council was pleased to note that, in addition to the basic systems components of the WWW, CBS had made significant strides in its implementation of the PWS Programme over the last intersessional period of the Commission. The overall support of the Commission had been important in the efficient manner in which the various PWS OPAG teams had accomplished their tasks under their respective terms of reference and in advancing the aims and objectives of the Programme. The Council considered the PWS Programme under agenda item 6.1.

FUTURE DEVELOPMENT OF THE WWW

3.1.26 In conclusion, the Council agreed and emphasized that WWW continued to be the most important core Programme of the Organization, which provided the basic infrastructure that supported all other WMO Programmes. It noted that, traditionally, the WWW Programme received less extrabudgetary support than other programmes and depended mainly on its higher proportion of the regular budgetary resources to fulfil the core activities of the Organization. The Council agreed that particular attention was needed to ensure that the budget of the WWW Programme reflected the highest priority attributed to that Programme and that it was sufficient to carry out its important activities, in particular funding for the implementation support related to the various WWW infrastructure components, functions and services.

3.2 INSTRUMENTS AND METHODS OF OBSERVATION PROGRAMME; THE IN-DEPTH REPORT OF THE PRESIDENT OF CIMO (agenda item 3.2)

3.2.1 The Executive Council noted with appreciation the in-depth report of the president of CIMO, Mr S. K. Srivastava (India). It was pleased with the progress made in the work programme of the Commission, including the efforts to coordinate and strengthen better the RICs and the effective preparation

and implementation of instrument intercomparisons. The Council thanked all Members that supported the work of CIMO by making available experts and especially those Members that hosted RICs and instrument intercomparisons. The work performed under the Instruments and Methods of Observation Programme greatly benefited all Members and was particularly important in view of the increasing demands for accuracy, coverage, homogeneity and reliability of observations by other technical commissions and programmes.

3.2.2 In that connection, the Council was pleased to note that an update to the *Guide to Meteorological Instruments and Methods of Observation* (WMO-No. 8), reflecting the progress achieved by the rapid development in techniques and technology, as well as containing supplementary chapters on requirements in new instrument fields, had been prepared and was expected to be approved for publication. The Council recognized the high value of the technical publications prepared by CIMO containing the results of intercomparisons, specific studies and status reports on various instrument systems, for achieving homogeneity and high quality in meteorological and related geophysical and environmental measurements.

3.2.3 As requested by Thirteenth Congress, the Council expressed its appreciation that several activities had been initiated to involve better manufacturers and suppliers of meteorological equipment in the work of CIMO and in related technical conferences and exhibitions. The Council welcomed the steps taken by the Secretary-General towards strengthening the cooperation between WMO and manufacturers to collaborate and combine better their expertise. Those led to the establishment of HMEI in September 2001 (see agenda item 15.3). The Council underlined the need for close collaboration with manufacturers as that would also help in creating possibilities to set up facilities for conventional instruments in developing countries with the aim of facilitating technology transfer, decrease production cost and make the countries more self-reliant with respect to spare parts and consumables.

3.2.4 The Council recognized the importance of collaboration with international organizations, such as ISO, ITU and BIPM. It welcomed the active participation of experts from some Members in the work of ISO related to meteorological instruments, observing and calibration techniques. That collaboration had resulted in the development of new ISO standards that were of great interest for the meteorological community worldwide. The Council requested the Commission to continue to work closely with ITU in order to protect the radio-frequency bands assigned to meteorological and related instruments, in particular radiosondes and wind profilers.

3.2.5 The Council recalled the usefulness of the Instrument Catalogue, which had been produced by CMA, under the auspices of CIMO, for assisting Members in selecting the most suitable instruments for application within their operational networks. The Council urged the Commission to take the appropriate measures to keep the Instrument Catalogue up to date.

3.2.6 The Council noted with satisfaction the large degree of interaction between CIMO and other technical commissions and the responsiveness of the Commission to the requirements expressed by them. It was also pleased that CIMO and CBS had cooperated actively in several aspects related to the operational use of AWSs in response to the increasing automation of national networks. Those aspects specifically included the automatic generation of visual observations and standards for data transmission.

3.2.7 The Council recalled that the GPS radiosonde systems, introduced widely during 1998, were found to have a significantly higher operational failure rate. In 1999, CIMO provided technical advice to CBS in preparing a survey used to identify the true magnitude of the problems. The collaborative work of many experts and flight testing of the systems generated numerous recommendations on manufacturing and operating GPS radiosondes. Those helped the manufacturers identify the origins of production faults and inherent system problems. A new survey carried out by CIMO on some 23 000 GPS radiosonde launches showed a marked improvement in system performance, but significant operational problems still remained if compared with the average failure rate of non-GPS-based radiosondes. The Council therefore agreed that activities should be continued to improve further the reliability of operational radiosondes systems.

3.2.8 As regarded the activities of CIMO on capacity building in the field of instruments and methods of observation, the Council regretted that training workshops for instrument specialists could not be held to the extent required by the developing countries, mainly due to budgetary constraints. In underlining the importance of training for securing an uninterrupted operation of instruments and the generation of data of high quality, it urged Members as well as the private industry to sponsor training events of the Instruments and Methods of Observation Programme, support RICs and instrument intercomparisons, attend technical conferences as well as make available experienced experts to participate in the challenging work of the various bodies of CIMO. In that regard, the Council recognized the need of developing countries for assistance, such as maintenance of the instrument network, expert advice, provision of consumables and spare parts at a reasonable cost, and replacement of obsolete instruments or equipment damaged during natural disaster events. The Council also recognized the need of developing countries to become more self-reliant and, therefore, urged to build further the capacities of Members in need by strengthening the RICs, the provision of training to instrument specialists, (calibration) workshops and seminars.

3.2.9 The Council emphasized again the continuing need for organizing intercomparisons and calibration campaigns for instruments to ensure accuracy and reliability of the equipment and to ensure long-term homogeneity of observations. It referred in that context, to operational radiosonde systems, AWSs, radiation measurement instruments and air quality sensors. The

Council also stressed the need for setting up calibration centres for ultraviolet instruments, possibly at the regional level, including existing facilities such as the European Commission Joint Research Centre in Ispra, Italy.

PROFESSOR DR VILHO VAISALA AWARD

3.2.10 Four papers were received for the seventeenth Dr Vilho Vaisala Award in 2002. The Selection Committee of the Council, consisting of Messrs A. J. Dania, (chairperson), H. M. Bongmum and S. K. Srivastava, president of CIMO, recommended that Dr Rolf Philipona (Switzerland) should receive the seventeenth Professor Dr Vilho Vaisala Award for the paper entitled "Sky-scanning radiometer for absolute measurements of atmospheric long-wave radiation" published in *Applied Optics*, Volume 40, Number 15, 20 May 2001. The proposal of the Selection Committee was approved by the Council.

3.3 WMO SATELLITE ACTIVITIES (agenda item 3.3)

3.3.1 The Executive Council was pleased to note that the second Consultative Meeting on High-level Policy on Satellite Matters was held in Geneva on 18–19 February 2002.

EXPANSION OF THE SPACE-BASED COMPONENT OF THE GOS

3.3.2 The Council recalled that at its fifty-third session it had endorsed the Guidelines for requirements for observational data from operational and R&D satellite missions. The Council was pleased to learn that at the second Consultative Meeting, several R&D space agencies responded positively. NASA confirmed its commitment to WMO and to the world community to make observations available without restriction. It further indicated that that policy would apply to all relevant missions. Therefore, since data from NASA's Earth observation missions were readily available, its satellites could be considered de facto as part of the space-based component of the GOS. ESA confirmed that it was establishing a dialogue towards the development of information for WMO Members concerning the availability of specific data and products from ESA's Earth observation satellite missions, and in particular from the ENVISAT mission launched in March 2002. ESA further indicated that it would propose to its Programme Board for Earth Observation to organize jointly a dedicated, specific Announcement of Opportunity to foster the use of ESA Earth observation data by the WMO community. The National Space Development Agency of Japan indicated that its future satellite missions including ADEOS II and the GCOM series were candidate systems to contribute to the new R&D constellation for the space-based component of the GOS. Finally, the Russian Aviation and Space Agency confirmed that experimental and R&D instruments on board its operational METEOR 3M N1 satellite as well as on its future ocean series and other missions could be considered as a potential contribution to the space-based component of the GOS.

UTILITY OF R&D SATELLITE DATA FOR THE OPERATIONAL USER COMMUNITY

3.3.3 The Council recalled that it had requested a report that would be a synthesis of input from the operational user communities on the utility of existing R&D data including persuasive arguments relating to their impacts from R&D satellite missions. It noted that the second Consultative Meeting had reviewed the report and agreed with it.

3.3.4 The Council was convinced that the short synopsis demonstrated that many R&D satellite missions were already being used operationally by WMO Members in support of many applications and the impacts had been impressive. The expansion of the space-based GOS to include formally appropriate R&D satellites to complement the existing operational meteorological satellites should provide global observations to assist WMO Members in meeting their ever-increasing challenges.

3.3.5 The Council felt strongly that the report, including the synopsis, would be very beneficial to WMO Members and, thus, it was important that there be wide distribution among WMO Members. Furthermore, it felt that similar reports should be prepared on a regular basis. The reports on the utilization of R&D data and products by the operational user communities should be prepared on a biennial basis to be phased with the Application of Satellite Technology Progress Report series. That would provide for a report on the operational use of R&D satellite data and products every second year, with reports from the Application of Satellite Technology Progress Report series in the intervening years.

GLOBAL CONTINGENCY PLANNING FOR THE SPACE-BASED COMPONENT OF THE GOS AND EQUATOR CROSSING TIMES

3.3.6 The Council was informed that the second Consultative Meeting had discussed the issue of Equator crossing-time planning as presented by CGMS. The CGMS presentation had included the current status of planning for operational polar-orbiting satellites and their data formats and frequency.

3.3.7 The Council noted the complexity of the issue and that more in-depth analyses would need to be performed. However, an optimized Equator crossing-time plan based on the totality of user requirements was essential. Such an optimization would also allow the development of contingency plans for the polar orbit. With regard to Equator crossing times, the Council agreed that Congress should be informed of the need to articulate formally system requirements for an optimized Equator crossing-time plan. It also felt that it was very important that the direct broadcast service from all satellite operators should strive to standardization in terms of frequency, data format and content, where possible, and thus allow commonality among ground-receiving stations.

3.3.8 The Council was informed that a meeting of the CGMS Working Group on Global Contingency

Planning had taken place immediately following the second Consultative Meeting. Since WMO requirements for satellite data for climate purposes as contained in the GCOS principles were relevant to both geostationary, and especially polar-orbiting satellites, and could involve significant resources to meet, the CGMS Working Group felt that it would be appropriate if such requirements could be formulated as a resolution by Congress. The Council agreed and requested the GCOS Programme to prepare the necessary draft resolution for consideration by Fourteenth Congress.

GEOSTATIONARY CONTINGENCY PLANNING

3.3.9 JMA informed the Council that on 10 May 2002 the Governments of Japan and the United States exchanged diplomatic notes for the implementation of a procedure to backup GMS-5 with GOES-9, if required, starting in the second quarter of 2003. JMA had provided all WMO Members in the service area for GMS-5 with more detailed information concerning the backup. Concurrently, NOAA/NESDIS and JMA intended to begin discussions on a long-term contingency back up agreement. Such a long-term agreement would take effect once both agencies had established their planned baseline configuration. That baseline configuration, planned to be in place sometime in the next decade, would provide for a robust national programme and would also have some capability to back up the other agency's programme in an emergency situation.

3.3.10 The Council was informed that CMA intended to launch FY-2C by the end of 2003. CMA's intention was to launch a geostationary satellite every three years but would have the capability to launch a satellite, if required, with only one year's notice. CMA noted that it planned to maintain a nominal two satellite configuration, one at 86 and one at 105 degrees East longitude with the contingency to use an "on-demand launch", if required.

3.3.11 The Council also noted that ROSHYDROMET intended to maintain its nominal one geostationary satellite configuration at 76 degrees East longitude. ROSHYDROMET indicated that GOMS N2 was an approved programme with a planned launch date in 2005. The imager, MSU-GS, on GOMS N2 would be similar in capabilities to SEVIRI on the MSG series of EUMETSAT satellites.

3.3.12 The Council agreed that a major milestone had been achieved in the discussions on geostationary contingency planning. First, most CGMS satellite operators had either in place, were developing, or would consider when nearing nominal configuration, regional contingency plans. Secondly, the satellite operators would follow the principles of "help your neighbour" and be willing to be "helped by your neighbour". Thirdly, nominal configurations for most satellite operators included either an "in-orbit spare" or an "on-demand launch". The Council noted that the set of regional contingency plans would constitute a global contingency plan in response to the WMO requirements.

POLAR-ORBITING CONTINGENCY PLANNING

3.3.13 With regard to polar orbiting contingency planning, the Council noted that the CGMS Working Group had first discussed the principles for such plans. The CGMS Working Group had noted that the basic WMO requirement for the polar orbit was for two satellites — one in the AM and one in the PM orbit. The CGMS Working Group had agreed that in order to meet WMO's requirement for contingency planning, a constellation of four polar-orbiting satellites would be required, two in the AM orbit capable of serving as backup to the other and two in the PM orbit also capable of serving as backup to the other.

3.3.14 The Council was pleased to note that both ROSHYDROMET and CMA, taking into account their respective national requirements, would be willing to consider the possibility of using the PM orbit for their future Meteor 3M and FY-3 series to assure the necessary redundancy in order to meet WMO's contingency requirements.

STATUS OF THE SPACE-BASED COMPONENT OF THE GOS

3.3.15 The Council was informed on the status of the operational meteorological satellite systems by EUMETSAT, NOAA/NESDIS, JMA, IMD, ROSHYDROMET, CMA/SMC, including the recent launch of FY-1D and HY-I on 15 May 2002, as well as Morocco's new experimental satellite. The Council noted the contributions being made by the operational meteorological satellite operators for education and training, especially at the co-sponsored Centres of Excellence at the RMTCs in Niamey, Nairobi, Costa Rica, Barbados, Nanjing and Australia's BMTC, as well as through focused user forums. The Council also noted the role that WMO and EUMETSAT had played in the European Union-sponsored PUMA project including the establishment of a WMO Trust Fund for Members in northern Africa. The Council, in noting the large dependency that WMO Members had for satellite data, products and services, expressed its deep appreciation to the satellite operators for all of their direct and related capacity building contributions.

SATELLITE DATA DISSEMINATION

3.3.16 The Council also noted the issue of ADM for the distribution of satellite data and products from the operational meteorological satellites. The Council urged CBS to review the ADM concept, as a matter of urgency, to include data and products from R&D satellites in order to provide WMO Members with guidance on how the valuable satellite information could be made available in an optimized distribution system. Candidates for ADM included Internet and commercial telecommunication satellites. The Council was pleased to learn that CBS had made significant progress in reviewing ADM with the expectation that the Commission would finalize a distribution concept at its next session.

WMO SPACE PROGRAMME

3.3.17 The Council noted that the second Consultative Meeting on High-level Policy on Satellite

Matters reviewed a proposal related to enhanced coordination within a future space-based component of GOS.

3.3.18 The Council was informed that the Consultative Meeting had suggested that WMO conduct a review of WMO satellite activities to ensure that it was optimum for the present and perceived future needs. WMO satellite activities should provide for an appropriate framework for efficient interaction both internally within WMO as well as with external coordination mechanisms such as CGMS and CEOS. That review should take into consideration the emphasis that WMO placed on the contribution which environmental satellite systems were making to WMO and its supported programmes and the large expenditures by those space agencies contributing to the space-based component of the GOS. The Consultative Meeting also agreed that the present programme was insufficient to respond to the new demands resulting from the expansion of the space-based component of the GOS to include the R&D constellation. In order for WMO to take advantage of the new technologies to serve better its Members, it was of primary importance to enhance coordination. The Consultative Meeting agreed that such a review could also lead to enhancement of the WMO interface with external coordination mechanisms.

REVIEW OF WMO SATELLITE ACTIVITIES

3.3.19 The Council noted that, as requested by the Consultative Meeting, a review had been performed. It agreed that the review clearly demonstrated significant growth during the last decade in all areas for which WMO satellite activities had responsibilities. The recent agreement by the fifty-third session of the Executive Council to expand the space-based component of the GOS to include appropriate R&D environmental satellite missions was a landmark decision. The implications of the expansion were immense to WMO Members with a corresponding near magnitude increase in responsibility for the WMO satellite activities. The Council also noted the tremendous impact resulting from just two sessions of the Consultative Meeting on High-level Policy on Satellite Matters. It was also convinced that the now established dialogue between WMO and the environmental satellite communities in the Consultative Meetings had matured rapidly to the great benefit of all and should be institutionalized.

3.3.20 The Council agreed that the WMO satellite activities had grown and that it was appropriate to establish a WMO space programme as a matter of priority. The scope, goals and objectives of the new programme should respond to the tremendous growth in the utilization of environmental satellite data, product and services within the expanded space-based component of the GOS that now included appropriate R&D environmental satellite missions. Thus, the Council asked the Secretary-General to make appropriate proposals in the 6LTP and the programme and budget to be submitted for consideration by Fourteenth Congress in liaison with the chairperson of the Executive Council Working Group on Long-term Planning. It also suggested that

Congress should consider ways to institutionalize the Consultative Meetings on High-level Policy on Satellite Matters in order to establish more formally the dialogue and participation of environmental satellite agencies in WMO matters. In considering the important contributions made by environmental satellite systems to WMO and its supported programmes as well as the large expenditures by the space agencies, the Council felt it appropriate that the overall responsibility for the new WMO space programme should be assigned to CBS and the new institutionalized Consultative Meetings on High-level Policy on Satellite Matters. Since the Consultative Meetings were attended by the Directors of environmental satellite operating agencies, the Council felt that the assignment of joint lead responsibility could be conducive to support for the WMO space programme by the satellite operating agencies. Such support on the part of the satellite operators could complement the WMO commitment established by a WMO space programme and assist the new Space Office with specific projects and initiatives, as appropriate.

3.3.21 The Council felt strongly that additional emphasis in the programme and budget for 2004–2007 should be placed on education and training in satellite matters especially for data and products from R&D satellites.

3.4 TROPICAL CYCLONE PROGRAMME (agenda item 3.4)

3.4.1 The Executive Council noted with appreciation the significant achievements and progress made by the TCP in fulfilling its commitment to assist Members in their efforts to mitigate tropical cyclone disasters. It noted with satisfaction the efforts towards contributing to the integration of sustainable development of NMHSs in accordance with the comprehensive Regional Cooperation Programme of the five Tropical Cyclone regional bodies. In that regard, the Council urged the Secretary-General to continue to support the work of those tropical cyclone regional bodies, at least in the same level as in the past years.

3.4.2 The Council expressed satisfaction that the link to tropical cyclone information and advisories being provided by tropical cyclone RSMCs and Tropical Cyclone Warning Centres now appeared on the front page of the TCP Web site. The Council expressed its appreciation to Hong Kong, China for its role in launching, on an experimental basis in the Typhoon Committee region, the Severe Weather Information Centre Web site which would facilitate the access to official NMHS warnings. The Council was informed that a regional Web site was under construction in Region IV. During the hurricane season, operational, graphical and alphanumerical tropical cyclone information would be included in that Web site.

3.4.3 The Council commended the publication in August 2001 of the first issue of the *Annual Summary of Global Tropical Cyclone Season 2000* (WMO/TD-No. 1082, TCP-46). It noted that the next issue was under preparation and would be published in August 2002.

3.4.4 The Council recognized the importance of establishing coordination and cooperation between tropical cyclone regional bodies having common interests such as the RA I Tropical Cyclone Committee and the RA V Tropical Cyclone Committee in the South Indian Ocean, and the Typhoon Committee and the Panel on Tropical Cyclones in the Asian region. In that context, it urged the WMO Secretariat to assist the regional bodies in developing joint programmes or projects. In terms of such cooperation, the success of joint activities of the Typhoon Committee and the Panel on Tropical Cyclones was specifically mentioned. A good example of joint activity was the planned second Regional Technical Conference on Tropical Cyclones, Storm Surges and Floods to be held in 2004.

3.4.5 The Council noted with concern the slow progress in the implementation of the Project on Storm Surge Disaster Reduction in the Northern Part of the Indian Ocean as well as the fact that only one Member of the Panel on Tropical Cyclones responded to the request of the WMO Secretariat to develop national project proposals on storm surges. The Council urged Members to submit the outstanding proposals which would then be used by the WMO Secretariat to complete the regional framework for the storm surge project and find funding for its national components. To that effect, it invited IHP, IOC and WMO to increase their efforts to secure funding from the donor agencies. The Council also encouraged Panel Members concerned to mobilize resources at the national level from governmental and non-governmental organizations and the private sector, if feasible.

3.4.6 The Council was pleased that the close collaboration that existed between JCOMM and TCP had been further enhanced. In that context, it noted that the first Workshop on South China Sea Storm Surge, Wave and Ocean Circulation Forecasting, a joint undertaking by JCOMM and TCP for Members of the Typhoon Committee, was successfully conducted in Hanoi, Viet Nam from 21 to 24 January 2002.

3.4.7 The Council noted with deep appreciation the continued contributions made by Australia, France and the United States through their support to the training activities for tropical cyclone forecasters, which included the Southern Hemisphere Training Course on Tropical Cyclones organized by the Bureau of Meteorology, Australia; the RA I Training Course on Tropical Cyclones by *Météo-France* and the Workshop on Hurricane Forecasting and Warning by NOAA. Continued support was required from WMO and the Members for those very important training activities during the fourteenth financial period in a similar way as in the past. The Council agreed that more emphasis should be placed on the participation of forecasters from small island developing States and requested the Secretary-General and donor Members to continue their efforts to support that endeavour which was within the framework of sustainable development. However, the Council noted that the budgetary provisions to implement the training activities under the TCP for 2003 were

very limited. The Council urged the Secretary-General to explore ways of augmenting the present budget, including extrabudgetary sources of funds, for activities of the TCP especially for those related to human resources development.

3.4.8 The Council was informed that Hurricane Awareness Tours were conducted by NOAA in the Central America and the Caribbean and supported its continuation. The Council also noted with pleasure the attachment during the hurricane season to RSMC Miami-Hurricane Center of forecasters from NMHSs in RA IV with the financial assistance from NOAA, the attachment in July 2001 of two typhoon forecasters from Cambodia and Viet Nam to the RSMC Tokyo-Typhoon Centre and a storm surge expert from Sri Lanka to the India Institute of Technology. The Council invited India, Japan and the United States to continue with that activity in the future and requested other tropical cyclone RSMCs to promote that activity during the cyclone season. The Council also appreciated the attachment of forecasters to the Tropical Pacific Desk in the RSMC Honolulu-Hurricane Center and mentor training for meteorologists in the South-West Pacific organized by the Bureau of Meteorology, Australia.

3.4.9 The Council was pleased to note that the fifth International Workshop on Tropical Cyclones would be held in Cairns, Australia from 3 to 12 December 2002. The Council strongly encouraged the support of Members by ensuring maximum representation at that important quadrennial event which had served as a forum for operational forecasters and researchers in establishing a coordinated approach on solving tropical cyclone forecasting problems and in developing future research projects. In view of the limited availability of funds for that event, the Council urged Members and donor countries, able to do so, to provide funding for the participation at least of many operational forecasters and hydrologists in the Workshop.

3.4.10 The Council was informed that arrangements were being made to organize the fourth Tropical Cyclone RSMCs Technical Coordination Meeting in Nadi, Fiji, from 26 to 29 November 2002, prior to the fifth International Workshop on Tropical Cyclones. It recalled that in accordance with the request of its fifty-second session, the meeting would involve not only the six tropical cyclone RSMCs but also relevant Tropical Cyclone Warning Centres. It was envisaged that the Meeting would formulate future plans and activities, assess their requirements and work on standardizing procedures related to tropical cyclone tracking and forecasting. At that Meeting, one discussion item would be the proposed establishment of a uniform system of analysing tropical cyclone intensity, which was a requirement in the compilation of a global tropical cyclone climatology. It was envisioned that the outcome of the meeting would be submitted to the fifth International Workshop on Tropical Cyclones.

3.4.11 The Council noted that the RA V Tropical Cyclone Committee, at its ninth session held in Manila in May 2002, had requested the Secretary-General to

assist in the formulation of a project proposal which would facilitate the implementation of the Committee's technical plan and meet other urgent requirements of its Members.

3.4.12 The Council was pleased to learn that TCP had continued to maintain close collaboration with other international and regional organizations involved in tropical cyclone disaster mitigation activities, in particular with ESCAP, the IOC of UNESCO, ISDR, the Indian Ocean Commission, IFRC, UN/OCHA and ADPC. It requested the Secretary-General to maintain that high level of cooperation specifically with UN/OCHA and the ISDR Secretariat in connection with the forthcoming World Summit on Sustainable Development.

4. WORLD CLIMATE PROGRAMME (agenda item 4)

4.1 WORLD CLIMATE PROGRAMME AND ITS COORDINATION (agenda item 4.1)

4.1.1 REPORT OF THE EXECUTIVE COUNCIL ADVISORY GROUP ON CLIMATE AND ENVIRONMENT (agenda item 4.1.1)

4.1.1.1 The Executive Council received the report of the second session of the Advisory Group on Climate and Environment that it had established at its fifty-first session and expressed its appreciation to the chairperson of the Group, Mr A. Noorian, to its members and to the Secretariat for the excellent work in laying out the critical issues in its report for the Council's consideration.

4.1.1.2 The Council took note of the emphasis placed by the Group on the need for WMO to develop a comprehensive training programme on climate and environmental matters, including not only the scientific and technical aspects but also issues related to the increasingly complex social and economic aspects. The Council was pleased to note, in that regard, the completion of a training compendium for Class 1 meteorologists on the introduction to climate change. It urged that consideration be given to preparing or identifying training material in other aspects of climate and the environment that would improve the ability of NMHSs to address community needs.

4.1.1.3 The Council took particular note of the Group's suggestion on how best to develop the modalities for coordination and cooperation between WMO Programmes with respect to natural disasters. In recalling the decision of the Executive Council to identify natural disasters as a cross-cutting issue for the 6LTP and for the fourteenth financial period, the Advisory Group in its report, drew attention to the successful collaboration that existed between several commissions in identifying the role and functions of RCCs. That collaboration had come about through the establishment of an Intercommission Task Team (under General Regulation 37), with well focused terms of reference and an established time period for reporting back to the Executive Council, in that case through the president of CCL.

4.1.1.4 The Advisory Group also noted in its report to the Council that some of the commissions were adopting an approach to their programmes and projects characterized by the identification of a few key

programme areas served by a management group, expert teams and regionally-balanced implementation coordination teams. Within those structures, the commissions were paying particular attention to the need to involve representation from other commissions and the regional associations on the teams. The Council agreed with the Group's assessment that that should also prove to be an effective means of ensuring improved collaboration between WMO Programmes on climate and environmental matters, although it might be necessary to consider how best to monitor and assess the effectiveness of that matrix approach. The Council agreed that that matter should be taken up collectively by the presidents of the commissions and the regional associations.

4.1.1.5 The access to, and competition for, financial resources were becoming increasingly complex and difficult, in view of the changing world economic situation. Noting the overall decrease of technical assistance globally, WMO had nevertheless continued to take various initiatives with funding and donor agencies to assist the development of NMHSs in a number of Regions. The Council noted the increasing requirement for initiatives to be seen to be emanating from countries, with agencies of the United Nations system acting in a support role. The Council supported the Advisory Group's recommendation that WMO's success stories in resource mobilization could be more widely publicized in order to encourage other NMHSs to become more active in seeking additional funds for capacity building activities.

4.1.1.6 The Council noted the view of the Advisory Group that the World Summit on Sustainable Development, which would take place in Johannesburg in August/September 2002, could lead to a number of outcomes that would provide a new overall setting for WCP, GCOS and the Climate Agenda. While it was difficult to predict what the nature of that setting would be, the Council agreed with the Group's assessment that it could provide a suitable context in which to consider an evaluation of the performance of the WCP, to assess its strengths and weaknesses and to consider whether its current composition and structures were appropriate for the years ahead. A restructured and, where appropriate, refocused WCP could draw for inspiration on its own successes and those, for example, of IPCC. The aim would be to ensure that WMO maintained its leadership role in that area of fundamental importance to the societies of the world, their economies and the environment. The Council noted the Advisory Group's recommendation that, in the context of the outcomes of the World Summit on Sustainable Development, Congress be given the opportunity to consider the need for an evaluation and possible restructuring of the WMO's climate programmes and activities, including consideration of WCP, GCOS and IPCC. The Council, noting that world attention on climate issues was continuing to increase, requested the Secretary-General to propose to Fourteenth Congress, based on the work of the Advisory Group, the methodology for developing a

new and invigorated framework for WMO's role in climate and environmental activities that would continue to demonstrate WMO's strong leadership role.

4.1.1.7 During its session, the Advisory Group had been informed of discussions under way on the topic of international environmental governance. Those discussions had been focusing on a range of models of international institutional arrangements that could be put in place by Governments to improve the performance of the United Nations system in areas of concern with respect to the environment. Much of that discussion had taken place within various forums organized by UNEP, including the alternating sessions of its Governing Council and Global Ministerial Environmental Forum. The Secretary-General had taken steps to ensure WMO representation in those forums, and also that Permanent Representatives of WMO Members be kept informed on the course of the discussions. With respect to the proposal for an Intergovernmental Panel on Global Environmental Change, the Council expressed the view that, in the light of the extensive contributions already being made by IPCC to assessments of global environmental change, it would be more appropriate to extend its mandate, as necessary, rather than to create a separate body to "fill in the gaps".

4.1.1.8 The Council noted that, notwithstanding the somewhat uncertain situation with respect to high level international coordinating mechanisms and structures on environmental governance, the need for a coherent international approach to resource mobilization for critical, climate-related programmes remained valid. While the World Summit on Sustainable Development might help clarify many of the key priorities, it was unlikely that it would provide all the answers for successfully achieving sustainable development. It might therefore be appropriate in a post-Summit world to strengthen efforts at improving coordination between the major stakeholders supporting international climate-related programmes, especially in the area of resource mobilization. The Council recalled that the Interagency Committee for the Climate Agenda was a mechanism that had been set in place for that purpose and remained a body reporting to the Council. Considering that the Interagency Committee had been dormant for several years, the Council agreed that rather than attempting to revive it at the present time, the Secretary-General should include consideration of new advisory mechanisms as part of the evaluation process and proposed a new framework referred to in general summary paragraph 4.1.1.6.

4.1.1.9 The Council noted that one of the strong messages emerging from the preparatory process associated with the World Summit on Sustainable Development was the notion of partnerships. The Council endorsed the Advisory Group's view on the importance of WMO's involvement in major partnership initiatives, while at the same time being cognizant of the overheads they brought in terms of demands on resources to the Organization. It was important for WMO to apply rigorous criteria in determining when it was appropriate

to invest time and effort into the development of a partnership, keeping a close eye on the relative rate of return in terms of the ultimate benefits to Members, and in particular, to NMHSs. For example, partnerships involving the IPCC were likely to be well supported by Members since NMHSs were already familiar with, and well linked into, its processes. The Council also observed that, since many NMHSs were already adopting a partnership approach at the WMO regional and subregional levels, it might be advantageous to use the terminology of partnerships in that context as well, in view of the weight being placed upon them as a desirable outcome of the Summit.

4.1.1.10 The Council was informed of two major international conferences on global climate change to be held in Beijing in March/April 2003 and in Moscow in September/October 2003. The Council expressed its strong support for both conferences, noting that the two conferences were highly complementary. The Beijing Conference would focus on the science of climate change, while the main purpose of the Moscow Conference was to engage participants in a comprehensive discussion of the climate change issue. The latter conference will take into account both natural and anthropogenic factors and would identify social and economic measures for adaptation and justified approaches to reduce the anthropogenic impacts on the climate system. The Moscow Conference aimed at conducting its deliberations within a framework of mutual understanding among scientists, Governments, business interests and the community at large.

4.1.1.11 The Council recalled the recommendation of the Advisory Group to its previous session with respect to the holding of a third World Climate Conference sometime early in the next financial period. The Council considered that the World Summit on Sustainable Development and those two climate conferences, in combination with a reinvigorated framework for WMO's role in climate activities, as discussed in general summary paragraph 4.1.1.6, could set the stage for a third World Climate Conference. It was noted, in particular, that within that time frame, the results of research on the possible future impacts of human activities on climate would be emerging. However, while the timing was propitious for beginning the planning for a third World Climate Conference, which should be equal in stature to the first two Conferences, it was important not to underestimate the effort involved in terms of the financial and human resources required. The Council heard a number of views on that matter, including the fact that there were several major summits being planned during the next five years and that there would be very significant implications for the budget if the third World Climate Conference were to be held during the fourteenth financial period. The Council therefore agreed that it should recommend to Fourteenth Congress that consideration be given to scheduling the third World Climate Conference sometime early in the following financial period, perhaps to coincide with the release of the IPCC Fourth Assessment Report.

4.1.2 REPORT OF THE PRESIDENT OF CCI; AND THE REPORT OF THE THIRTEENTH SESSION OF CCI (agenda item 4.1.2)

4.1.2.1 The Executive Council noted the report of the president CCI on its activities since the fifty-third session. The thirteenth session of CCI (Geneva, 21–30 November 2001) recorded a significant increase in the level of participation of Members. One hundred and forty-nine participants from 82 Members and seven international organizations attended the session. The Council adopted [Resolution 2 \(EC-LIV\)](#).

4.1.2.2 The Council took special note that CCI-XIII had established a new structure for its work consisting of a Management Team, three OPAGs, three Implementation Coordination Teams and 16 Expert Teams along with several independent rapporteurs. The Council commended CCI on that new structure and expressed confidence that that would improve the delivery of climate services, especially in developing countries. The Council concurred with the CCI vision statement as shown below:

The vision of CCI is to stimulate, understand and coordinate international technical activity to obtain and apply climate information and knowledge in support of sustainable socio-economic development and environmental protection.

4.1.2.3 The Council expressed its appreciation to the Commission for the efforts made to promote increased cooperation with other bodies by seeking joint sponsorship of the GCOS AOPC. The Commission informed the Council that the GCOS AOPC had requested the monitoring centres in Germany, Japan, the United Kingdom and the United States to expand the monitoring to include all CLIMAT and CLIMAT TEMP stations. The Council endorsed the Commission's efforts for joint sponsorship of AOPC with the GCOS Steering Committee and the WCRP Joint Scientific Committee.

4.1.2.4 The Council was pleased to note that the Commission's Management Group and WMO Secretariat had implemented the recommendations and new working structure established at CCI-XIII in an expedient manner. In that regard, the Council recognized the efforts to support the Intercommission Task Teams on RCCs and noted the progress being made on establishing RCCs. The Council expressed its appreciation for the kind offers of China, Japan and the Russian Federation to host RCCs. However, the Council noted that no endorsements or implementations of RCCs had taken place yet.

4.1.2.5 The Council expressed its appreciation for the actions, which had been taken on several issues raised by the Council. In particular, it noted the efforts of CCI in planning for, and starting, the organization of Part 2 of the *Guide to Climatological Practices* (WMO-No. 100), while noting that Part 1 was now virtually complete. The Council endorsed the Commission's desire to use a structured development approach for Part 2 of the *Guide*, with the initial efforts being to determine both the requirements and the topics necessary to be included in Part 2. The Council urged rapid completion of Part 2 of the *Guide*.

4.1.2.6 The Council considered that the Technical Conference on Climate Services for the Twenty-first Century, which was held for two days prior to CCI-XIII had added to the success of the CCI session. Nearly 90 attendees at the Conference stayed on for the Commission meeting. The Council expressed its appreciation to Professor Peter Lamb of the Cooperative Institute for Mesoscale Meteorology at the University of Oklahoma, for chairing the scientific conference. There were 116 participants at the Conference, of which WMO provided financial assistance to participants from 17 least developed countries and from 46 developing countries.

4.1.2.7 The Council acknowledged that external funding had been made available to enable participants from developing countries and countries with economies in transition to participate in that important Conference. The Council expressed its appreciation to the Bureau of Meteorology, Australia for seconding a scientist to assist in the coordination of the Conference and to the United Kingdom and EUMETSAT for funding support. The Council noted that a CD-ROM was distributed to all the Conference participants, which contained both the speakers' and the poster session abstracts.

4.1.2.8 The Council noted the intention of the Management Group to start early preparations for the next Technical Conference, to be organized in conjunction with the next session of the Commission, in 2005. The Management Group retained the title "Climate as a resource" for that Conference.

REGIONAL CLIMATE CENTRES

4.1.2.9 The Council was pleased to receive the report from the Intercommission Task Team on RCCs. The Council expressed its sincere appreciation for the quality of the work undertaken by the Task Team and, while recognizing that an important foundation had been laid, commented that more detailed preparation still needed to be made as a preparation for the establishment of RCCs. Future work was needed to secure the leading role of NMHSs in the delivery of services, to ensure that the development of climate services within the NMHSs of developing countries was not held back and that there was close collaboration between relevant WMO commissions and between WMO and all other bodies involved.

4.1.2.10 Noting that the concept of RCCs was widely supported within the contributing commissions, the Council reiterated its support for the establishment of such Centres without undermining the role of NMHSs in their provision of seasonal to interannual forecasts.

4.1.2.11 The Council stressed the importance of ensuring that the RCC concept was further developed within an integrated framework of global, regional and national meteorological and related service provision so that it did not lead to any artificial division in the continuum of weather and climate services. In re-emphasizing that climate service provision was an integral part of the meteorological service role of NMSs and that the WMO system of Regional/Specialized Meteorological Centres for supporting the work of NMSs was well established,

the Council further stressed that the definition of the functions, operating procedures and terminology for the issue of climate products should be carried out in close coordination with CBS, in respect of both its basic systems and public weather service responsibilities. The Council confirmed that the designation of RCCs should follow established procedures for the designation of RSMCs in order to take full account of the climate-related functions being carried out by existing GDPS RSMCs. The Council encouraged CCI, CBS and the regional associations to coordinate carefully the designation and implementation of the RCCs as soon as possible.

4.1.2.12 The Council noted the report of the second meeting (25–28 March 2002) of the Intercommission Task Team on RCCs, recognized that sufficient requirements had been proposed as functions for RCCs and acknowledged that it was now time to proceed to the establishment of the network of RCCs. The Council further noted that, based on the work of the Task Team, the regional associations should consider the issue of designating those Centres.

4.1.2.13 The Council noted and concurred with the recommendations of the Task Team. Specifically, the Council concurred that as the regional associations proposed RCCs and their functions, they should be flexible in determining the functions based on individual regional needs. However, the Council reminded the regional associations that they should consider the entire suite of climate services necessary as they determined which services were necessary within the Region. The Council noted the importance of the various functions that needed to be performed, including the continuation and expansion of the Climate Outlook Forums, climate predictions and general capacity building within the Regions.

4.1.2.14 The Council considered that in some Regions, a virtual RCC might meet the needs of the regional associations, while in others, an RCC more focused on a single institution might be required. That would be determined on a Region-by-Region basis.

4.1.2.15 The Council noted that JMA had established the Tokyo Climate Centre to provide services for Japan. However, it further noted that some of the functions of that Centre might support the NMHSs within the Asia/Pacific area on climate information services, in particular the services on seasonal and interannual forecasts. In that connection, the Meeting of National Meteorological and Hydrological Service Directors on Advanced Climate Services in the Asia/Pacific Region was scheduled to be held in Tokyo in July 2002.

4.1.2.16 The Council concurred with the Task Team and strongly supported the need for a workshop of global producers of seasonal to interannual forecasts, including GDPS centres and institutions outside of WMO that were committed to make those products available on an operational basis. The meeting, to be coordinated by CBS, would give the state of commitments of those Centres in determining which products they were willing to make available. It would also

provide an opportunity to agree on standards, formats and arrangements to make the products available on an operational basis, as well as the establishment of the operational schedule necessary for supporting the RCCs.

4.1.2.17 The Council commended the members of the Task Team for the excellent work accomplished and, especially, to the chairperson, Mr S. Mildner, and the president of CCI, Mr Y. Boodhoo.

4.1.2.18 The Council concurred with the Task Team that the work associated with the terms of reference was completed. The Council further recognized that should the need arise for further consideration of the matter, adequate structures existed within CCI and CBS for appropriate follow-up actions. The Council further concurred that through the presidents of the regional associations and the technical commissions concerned, the programme implementation of regional associations should now consider the specific RCC functionalities within each Region and begin the establishment of the RCC network.

4.1.3 WORLD CLIMATE DATA AND MONITORING PROGRAMME (agenda item 4.1.3)

OBSERVING REQUIREMENTS AND STANDARDS

4.1.3.1 The Executive Council recalled the recommendation of its fifty-third session on CLIMAT reporting performance of the GSN stations. It noted that monitoring results had shown no significant improvement in the percentages of GSN CLIMAT and GUAN CLIMAT TEMP reports received by the German and Japanese monitoring centres in comparison with the reception rates for the CLIMAT and CLIMAT TEMP networks as a whole. The Council was pleased that the Secretary-General had sent notification of those results to Members and urged Members to work to improve the transmission of their messages. The Council noted that CCI had urged that regular feedback between the monitoring centres and country focal points be established to ensure prompt corrective actions on data and transmission errors. The Council further noted the high cost in many countries of consumable supplies and urged donors to assist in solving problems related to observing systems.

CLIMATE SYSTEM MONITORING

4.1.3.2 The Council was pleased to learn of the effort of the Commission to seek collaboration from other technical commissions in building appropriate data banks for use by the climate community. It endorsed the view of the president of CCI that phenological data could become an important tool for monitoring the variability in climate and encouraged the work of the joint CCI/CHy/CagM Expert Group on that subject. In the same context, the Council encouraged the Commission to work closely with the satellite community and JCOMM to accelerate the collection of climate-related data from the oceans.

4.1.3.3 The Council noted the progress on developing indices made by the CCI/CLIVAR Joint Working Group

on Climate Change Detection, reconstituted by CCI-XIII as an Expert Team on Climate Change Detection, Monitoring and Indices. It noted with satisfaction that index results were used in the preparation of the IPCC Third Assessment Report. It welcomed the planned capacity building in developing countries and supported the Expert Team's intention to incorporate climate change detection index information in routine and special climate system monitoring reports.

4.1.3.4 The Council welcomed the CCI-XIII decision to accelerate the preparation for a seventh Global Climate System Review for the period mid-1998 through mid-2001. The Council considered the series of Reviews, along with the annual climate statements, to be important resources on the major climate processes and anomalies.

CLICOM PROJECT

4.1.3.5 The Council noted the progress in the review of the testing and documentation of the various climate database management systems being offered by some Members. The Council requested the Secretary-General to inform all Members of the availability of those systems and their evaluation results. The Council stressed the critical importance of that activity, especially for developing countries, and encouraged the VCP donors to give high priority to the implementation of future systems, including training.

4.1.3.6 The Council noted that the CLICOM data management system was still in use in many countries and recommended that all three language versions of CLICOM 3.1 software continue to be supported. The Council was pleased that the Russian version of CLICOM 3.1 could be downloaded directly from the Web site of the Russian Research Institute of Hydrometeorological Information, or through the WMO Web site. The Council noted with appreciation that ASECNA had made available a CLICOM software module to output airport climatological summaries in standard format.

4.1.3.7 The Council recalled that its fifty-third session had noted the success of the drought preparedness project and had noted further that much of that success was attributed to the provision of 11 CLICOM systems to the participating countries. The Council noted the WMO thrust in disaster prevention and commended both CCI and the Secretariat for their support while encouraging future similar activities.

DARE PROJECT

4.1.3.8 The Council stressed the importance of high quality, homogeneous climate datasets, and urged that the DARE project be extended to more countries. The Council endorsed the plan to use digital scanners and cameras to produce computer-accessible images from climate archives (paper, microfilms and microfiches). The Council welcomed the proposal to harmonize data rescue in the different regions to develop a coherent strategy to create national, regional and global digital archives of climate data and to undertake needs surveys in regions before developing data rescue projects.

4.1.3.9 The Council supported the recommendation of CCI to combine within the DARE project the ARCHISS activities, which aimed at rescuing data from non-meteorological archives. The Council noted with appreciation the effort by France to rescue climate data for 14 African countries from its archive and urged coordination with ASECNA. It also expressed appreciation for the project under way with support from the United States on upper-air data rescue in seven African countries.

4.1.3.10 The Council noted the recommendation of the DARE meeting to rescue data currently held in media that could no longer be read due to the breakdown of hardware and the deterioration of media, or incompatibility of hardware and software. The Council urged Members to ensure that data already in computer-compatible media be routinely migrated to new storage media. It requested the Secretary-General to explore ways to provide appropriate assistance to Members, particularly to those whose hardware was no longer operable and/or media was no longer readable.

DATA HOMOGENEITY

4.1.3.11 The Council noted the results of the survey on homogenization of climatological time series, and on metadata. The Council recommended that the appropriate CCI Expert Team should develop guidelines to help Member countries in climatological time series homogenization, taking into account the concept of an integrated quality control system with well-defined levels.

4.1.4 WORLD CLIMATE APPLICATIONS AND SERVICES PROGRAMME, INCLUDING CLIPS AND CLIMATE AS A RESOURCE (agenda item 4.1.4)

4.1.4.1 The Executive Council commended the continued development of networks of CLIPS Focal Points and further commended the process of nominating the CLIPS Focal Points within each NMHS and the focus on capacity building activities for those nominees. The Council noted with appreciation that workshops for CLIPS Focal Points were continuing to be organized for the regions. It further noted with appreciation that they were being led by international and regional experts and involved scientific, management (including project management) and applications modules. The Council expressed satisfaction with the structure of the workshops and recommended their continuation in all regions.

4.1.4.2 The Council stressed the importance of projects that had demonstrated the value of climate services and the importance of developing within those projects decision methods and processes that converted climate information and predictions into actions maximizing the benefits. The Council called for further projects of that type to be developed in different parts of the world and recommended their implementation, as they became available.

4.1.4.3 The Council noted the potential benefits that could be realized through enhanced links between CLIVAR and CLIPS with respect to R&D across the climate timescales. The Council also acknowledged that the development of regional climate models embedded in

global climate models might provide future downscaled predictions that were more suitable for applications than those directly available from the global-scale models. The Council encouraged further steps to be taken to extend links between CLIPS and the WCRP CLIVAR programme.

4.1.4.4 The Council expressed its appreciation of the continued development of the Regional Climate Outlook Forums in various Regions and noted the significant role those were now playing in the Regions. It further noted the important role the Forums were playing in educating climate prediction and information users through involving them in the Forums. The Council further expressed satisfaction with the involvement of the CLIPS project in the organization of those meetings and encouraged that to continue. The Council noted with satisfaction the progress being made by different regions to implement the follow-up recommendations on the global review of the International Expert Meeting on Regional Climate Outlook Forums (Pretoria, 16–20 October 2000).

CLIMATE AND HUMAN HEALTH

4.1.4.5 The Council noted the interest within CCI in biometeorological activities, including the development of a variety of climate indices. It noted, in particular, the CCI activity for exploring the need for a universal thermal climate index, an activity initiated as a result of the Memorandum of Understanding signed between WMO and the International Society of Biometeorology. The Council urged CCI, in collaboration with CBS, to determine the efficacy and validity of such an index for the operational assessment of human stress in extreme thermal environments and to ensure that it took into account local health effects. The Council further noted the report of the Workshop on Health Impacts of ENSO and Climate-related Severe Events in the Greater Horn of Africa, held recently in Nairobi from 11 to 15 February 2002. The Council was informed of the recently completed Conference on Climate Variability and Change and their Health Effects in the Caribbean (Barbados, 21–25 May 2002), which was co-sponsored by WMO, WHO, PAHO and UNEP.

SHOWCASE PROJECTS: HEAT/HEALTH WARNING SYSTEMS

4.1.4.6 The Council was informed of progress in the Showcase Projects on Heat/Health Warning Systems. It noted with appreciation that the heat/health warning systems in Rome and in Shanghai had progressed on schedule. The Council stressed the need for capacity building for NMHSs in such methodologies, and urged CCI to continue to support those activities by organizing other showcase projects on other climatological factors, in addition to heat, and by expanding them to other cities.

URBAN AND BUILDING CLIMATOLOGY

4.1.4.7 The Council was pleased to learn of the activities that addressed environmental issues related to megacities and urban areas, in particular those which

dealt with urban issues in the context of human health. The Council noted that CCI had given considerable emphasis to that theme and requested that it be further developed by the Commission.

4.1.4.8 The Council noted that CCI-XIII agreed that it should expand its activities in climate services for energy to provide more emphasis on renewable energy (climate as a resource). The Council was pleased that the Commission had established an expert team on the subject. The Council further noted that that team was currently developing a poster and brief report on opportunities for using climate data and services to support the exploitation of renewable energy development for sustainable development. The Council welcomed that initiative of CCI.

4.1.4.9 The Council recognized the growing demand for climate data and services to support the various energy sectors. It noted that initiatives to limit greenhouse gas emissions, driven by international concerns and agreements about climate change, were likely to lead to greater demand for services to support the development and operation of renewable energy generation.

4.1.4.10 The Council concurred with the Commission's request to have Members update their instrumentation and to enhance or establish networks for solar radiation and wind measurements, including using satellite remote-sensing data. The Council noted that those enhanced measurements would assist in describing and in identifying atmospheric conditions that might benefit the development of renewable energy sources. The Council encouraged CCI to prepare a report on climate data needs for supporting renewable energy development. The Council pointed out the necessity for capacity building and the development of guidelines for Members in that important area.

4.2 COORDINATION ACTIVITIES WITHIN THE CLIMATE AGENDA (agenda item 4.2)

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

4.2.1 The Executive Council noted with appreciation the actions taken by the Secretary-General to ensure the continued active participation of WMO and the NMHSs of its Member countries in the work of UNFCCC bodies, as well as the support of WMO to the UNFCCC Secretariat.

4.2.2 The Council underscored the importance of the points made by the Secretary-General in his address to COP-7 to the UNFCCC. In particular, the Secretary-General had drawn attention to the continuing need to support the strengthening of all climate-related observing programmes and systems. He had also stressed to the Convention the importance of ongoing climate research in the context of the WCRP and other related global change research programmes. The Council noted in that regard the important role that WMO was continuing to play through its sponsorship of IPCC.

4.2.3 The Council took special note of the decisions of COP-7 to the UNFCCC with respect to the adverse

effects of climate change. It noted, in particular, the view that funding should be made available through the Global Environment Fund and other mechanisms for support activities on information and methodologies and on vulnerability and adaptation to climate change. The Council urged NMHSs of Members, especially those in least-developed countries, to recognize the significance of the establishment of the new funding arrangements with respect to their own activities and to participate actively in their national programmes being designed to take advantage of them. NMHSs had a high potential to contribute to, and benefit from, support activities on adaptation, such as the monitoring of diseases and their vectors and natural disaster preparedness. Equally, NMHSs had an important role in capacity building within their respective communities. The Council requested the Secretary-General to assist wherever possible with the provision of relevant information and guidance.

4.2.4 The Council recorded its gratification on the further progress being made by the Convention and its subsidiary bodies with respect to measures to improve systematic observations of the climate system. The Council took up that matter in more detail under agenda item 4.3. The Council was also informed of the proposed involvement in the implementation of Article 6 of the Convention dealing with education, training and public awareness. The WMO sponsored book, *Climate into the 21st Century*, which contained a considerable amount of material based on the IPCC Third Assessment Report in an easily accessible form, would serve as a solid base for WMO's contribution.

UNITED NATIONS CONVENTION TO COMBAT DESERTIFICATION

4.2.5 The Council expressed its appreciation to the Secretary-General for his wide-ranging actions in support of UNCCD, including the organization of the WMO/FAO/UNEP Roving Seminar on the Application of Climatic Data for Drought Preparedness and Management of Sustainable Agriculture at the CMA Training Centre in Beijing (15–24 May 2001) and the active participation of WMO at COP-5 to the Convention. The Council noted with satisfaction that Members were informed of the major decisions taken at COP-5.

4.2.6 The Council noted that the priority issue to be addressed in depth at COP-6 by the Committee on Science and Technology should be land degradation, vulnerability and rehabilitation: an integrated approach. It urged Members to work closely with national focal points in ensuring that the input of NMHSs on that priority issue was included in the national reports to COP-5.

4.2.7 The Council also took note of the continued support to the Convention Secretariat. It requested the Secretary-General to continue to foster the participation of WMO in the UNCCD activities and to keep Members fully informed of ongoing developments in matters related to the Convention.

4.2.8 The Council expressed its satisfaction with WMO's active participation in the International

Symposium on Drought (Fès, Morocco, 12–14 November 2001), the Workshop on Mitigation of Climate-induced Natural Hazards (Delft, Netherlands, 12–13 December 2001) and the Regional Seminar on Drought Preparedness and Drought Management, which was organized by the Environmental Agency of Slovenia (Ljubljana, Slovenia, 17 December 2001). The Council agreed that drought preparedness and drought management strategies were key to sustainable development, especially in the arid and semi-arid regions and it requested the Secretary-General to ensure WMO's continued participation in such seminars.

CONVENTION ON BIOLOGICAL DIVERSITY

4.2.9 The Council expressed its appreciation to the Secretary-General for the report on the seventh session of the CBD SBSTTA in November 2001. The Council noted that increasing attention was now being paid by the CBD to several important weather- and climate-related issues related to biological diversity.

4.2.10 The Council noted the agreement by IPCC to prepare a technical paper on the interlinkages between biological diversity and climate change, as requested by the SBSTTA in its Recommendation VI/7, as input to the Convention's pilot assessment on biological diversity and climate change.

4.2.11 The Council welcomed the decision of SBSTTA to invite relevant Conventions, agencies and organizations to enhance collaboration in research and monitoring activities on forest biological diversity and climate change, and to explore possibilities of establishing an international network to monitor and assess the impact of climate change on forest biological diversity.

4.2.12 Prevention and mitigation of the adverse effects of forest fires and fire suppression, including the development of systems for risk assessment and early warning were important for the conservation and sustainable development of forests. The Council expressed its agreement with the emphasis placed by SBSTTA on those aspects and on the need to advise on fire-risk prediction systems, surveillance, public education and community-based approaches to fire prevention and management.

4.2.13 The Council invited the Secretary-General to continue the participation of WMO in CBD activities and to keep Members fully informed of ongoing developments in matters relating to the Convention.

4.3 GLOBAL CLIMATE OBSERVING SYSTEM (agenda item 4.3)

4.3.1 The Executive Council welcomed the report from the chairperson of the GCOS Steering Committee, Mr P. Mason, on the progress being made by the programme. Major activities carried out by GCOS in the previous year included implementation and further planning of the GCOS baseline networks; continued interactions with UNFCCC, including progress in the GCOS Regional Workshop Programme; and pursuit of the resources needed for GCOS and the GCOS Secretariat to meet those substantial demands.

4.3.2 The Council was pleased by the continuing close collaboration that existed between GCOS and several other WMO Programmes, notably WWW and WCP regarding GSN and GUAN; AREP regarding GAW; and HWRP in establishing a Global Terrestrial Network for Hydrology.

4.3.3 The Council noted with appreciation the continuing close cooperation that existed between GCOS and relevant WMO technical commissions, in particular CBS, CCI, CHy and JCOMM. It was particularly pleased by the active participation of GCOS in CCI-XIII and by the agreement that GCOS/WCRP AOPC would work with CCI to carry out several common objectives.

4.3.4 The Council noted the progress in the implementation of the GSN and the GUAN under the leadership of AOPC, while recognizing the need to improve the availability and quality of data from many of those stations. It reiterated the importance of strong collaboration and coordination between CBS and GCOS Centres concerning practical aspects of monitoring the performance and data quality of CLIMAT and CLIMAT TEMP reporting and expressed strong appreciation for the recent CBS/GCOS Experts Meeting on Coordination of the GSN and GUAN (Offenbach, 15–17 May 2002), hosted by Germany, which had focused on those issues. The Council welcomed the proposal from that meeting to establish a CBS Lead Centre for GCOS data and expressed its appreciation to the GCOS Monitoring Centres and Analysis Centres (the German Weather Services, JMA and NCDC) that had agreed to carry out that function on a trial basis. The Council urged Members to continue and, where possible, to strengthen their support for the GSN and GUAN networks, noting that robust, backbone networks which met the goals of GCOS could provide significant benefits for many other objectives.

4.3.5 The Council noted with appreciation the excellent collaboration that existed between GCOS/AOPC, CCI and the CBS Expert Team on Observational Data Requirements and Redesign of the Global Observing System in developing statements of guidance on the need for observations in support of climate applications. That collaboration also involved other components of the climate community (e.g. WCRP) and was leading to widely-accepted statements of guidance for the providers of both in situ and space-based observations for climate. The Council noted with satisfaction the participation of GCOS in the WMO Consultative Meetings on High-Level Policy on Satellite Matters and the increased attention that climate requirements had received at the second meeting. The Council expressed its full endorsement of the GCOS climate monitoring principles as finalized by the GCOS/WCRP AOPC (see [Annex III](#) to this report) and requested the GCOS Secretariat to prepare a draft resolution in support of those principles for consideration by Fourteenth Congress.

4.3.6 The Council noted with satisfaction the solid progress in establishing an operational ocean observing system for climate under the guidance of the

GCOS/GOOS/WCRP OOPC. It noted in particular the positive developments related to the SOOP, VOS and DBCP programmes under the coordination of JCOMM and the encouraging increase in commitments of floats for the Argo initiative, as well as the completion of an Implementation Plan for GODAE and the progress made by the OOPC/AOPC Working Groups on Sea-Surface Temperature and on Surface Pressure. The Council noted with appreciation the support UNESCO's IOC for GCOS and the IOC commitment to ongoing financial support for GCOS. It recognized that the climate module of GOOS was the ocean component of GCOS and that GCOS provided an essential mechanism for carrying to the UNFCCC the message about the adequacy of the global observing systems for climate. The Council recognized the important role that GCOS and GOOS played in aiding sustainable development and welcomed the promotion of GCOS and GOOS at the upcoming World Summit on Sustainable Development in Johannesburg in August/September 2002.

4.3.7 The Council noted with appreciation the results of the Meeting on the Implementation of a Global Terrestrial Network-Hydrology, held in Koblenz, Germany in June 2001, that had been hosted by the German Weather Service to further the establishment of a Global Terrestrial Network for Hydrology, and the close collaboration among GTOS, HWR and GCOS in that effort, under the leadership of the GCOS TOPC. It urged Members and the relevant technical commissions, such as CHy and CBS, to consider actions for implementing the Global Terrestrial Network for Hydrology.

4.3.8 Recognizing the considerable progress that had been made in implementing the GCOS baseline networks, the Council expressed its appreciation to those Members that had made significant contributions to the GCOS programme. It nevertheless noted that the demands on the GCOS Secretariat had increased beyond the capabilities of the current level of resources as additional networks were being defined and implemented, and strongly urged Members to consider additional support for the GCOS Secretariat through secondment of appropriate personnel and/or contributions to the Climate Observing System Fund. The Council noted with appreciation the commitment of the United States to support the work of the GCOS Secretariat.

4.3.9 The Council commended the actions taken by the GCOS Secretariat, on behalf of WMO Members and the global observing systems for climate, in responding to Decision 5/CP.5 — Research and systematic observation, of the UNFCCC COP-5 and to the related components of Resolution 3 (EC-LII) — Global Climate Observing System. It noted with appreciation the actions taken by the Secretary-General in addressing the Parties at COP-7 and in encouraging Members to participate actively in the preparation of detailed national reports on systematic observations and in their national delegations to COP. The Council was pleased to note that representation of Members in informal consultations on systematic observation had increased significantly at COP-7/SBSTA 15 in comparison with

previous sessions and expressed its appreciation to those Members who had provided support to their delegations and the GCOS Secretariat in carrying out that work.

4.3.10 The Council welcomed the high priority placed by the GCOS Steering Committee to respond to the decisions of the UNFCCC and reaffirmed its strong support for GCOS efforts in that regard. It agreed that the process currently under way of engaging the UNFCCC and its subsidiary bodies regarding systematic observations should be actively continued in order that Governments be clearly given the opportunity to address deficiencies in the observational system required to meet their needs in all aspects of climate change and variability.

4.3.11 The Council noted with appreciation the efforts of the GCOS Secretariat in preparing the document "Global Climate Observing System: Progress report on developments in the global observing system and activities related to Decision 5/CP.5" (FCCC/SBSTA/2001/MISC.9) for presentation to COP-7 through SBSTA 15 (Marrakesh, November 2001), on behalf of the agencies participating in the Climate Agenda. It noted the concern expressed by SBSTA 15 for "the ongoing deterioration of global observation systems for climate" and its encouragement to GCOS "to continue to address that problem, working with its sponsors and its partners in global observation systems".

4.3.12 The Council confirmed its strong support for the proposal from the GCOS Steering Committee to prepare a second report on the adequacy of global climate observing systems based on the third National Communications to the UNFCCC and detailed reports from Parties on systematic observation, as well as other available information. It noted the endorsement of that work by SBSTA 15 and its expression of urgency "to complete the adequacy report in the shortest possible time in order to provide a framework for further work to improve global monitoring systems". The Council urged Members to provide support to the GCOS Secretariat in carrying out those tasks through whatever means available. The Council encouraged GCOS to take an integrated approach to the second Adequacy Report by including satellite as well as in situ observations and by including a broad range of experts.

4.3.13 The Council reiterated its strong support for the GCOS Regional Workshop Programme, noting that the programme had helped to increase the visibility of observing system issues. It was pleased to note that SBSTA had also confirmed its support for that Programme following review at its sixteenth session of the two Regional Action Plans (for Pacific Island countries and for countries of eastern and southern Africa) produced during the Programme's pilot phase. The Council expressed satisfaction that the third workshop in the series, for the countries of Central America and the Caribbean, had recently been completed and that the development of an Action Plan for that Region was under way. It reiterated the need for the Regional Workshop Programme to maintain its momentum and for the Action Plans to lead to concrete results.

4.3.14 The Council welcomed the continuing support of the Global Environment Facility for the Regional Workshop Programme and recognized that matching funds would be needed for its full implementation. It noted that SBSTA had urged GCOS to expedite the remaining workshops in the programme and urged Members to assist in providing the needed matching support to the extent feasible. The Council also noted that SBSTA 16 (Bonn, 5–14 June 2002) encouraged the Parties to the UNFCCC to explore the full range of funding options for implementing Action Plans resulting from regional workshops. It observed that SBSTA had asked the Global Environment Facility to report at COP-8 (New Delhi, 23 October–1 November 2002) on its progress and plans for supporting the implementation of Action Plans.

4.3.15 The Council welcomed the interim report on the synthesis and analysis of national reports from UNFCCC Parties provided in accordance with Decision 5/CP.5, that had been prepared by the GCOS Secretariat for SBSTA 16. It noted with appreciation that SBSTA 16 had endorsed the priority issues that the GCOS Steering Committee had highlighted in that report, such as ensuring data availability at international data centres. The Council also stressed the importance of ensuring effective national coordination of the contributions to GCOS by the various national agencies with direct linkages to the international sponsors of GCOS. It therefore encouraged the Permanent Representatives to take a lead in establishing appropriate national coordination mechanisms for GCOS.

4.3.16 The Council urged Members to identify deficiencies in meteorological and oceanic observations as called for in Decision 5/CP.5 and to work with the GCOS Secretariat to address those deficiencies and to identify options for funding. The Council welcomed the statement by the United States to initiate an effort to address critical deficiencies on a matching basis with other donors. It urged, in addition, that regional associations consider how they might further the conduct of specific workshops in their Regions, perhaps in concert with their colleagues in the oceanographic and terrestrial communities.

4.3.17 The Council urged Members to provide support to the GCOS Secretariat in carrying out its increasing responsibilities on behalf of WMO and other GCOS sponsors in the UNFCCC forum, and reiterated its strong appreciation to those who had been able to do so in the past. It noted that such support could be targeted directly to designated activities such as the organization of regional workshops; the development of proposals for building capacity in developing countries; the analysis and synthesis of national reports on systematic observation as requested by UNFCCC; and/or the development of the second climate observing system adequacy report for COP.

4.3.18 The Council recognized the efforts of the Secretary-General to provide support to the GCOS Secretariat during the preceding biennium, as urged by Thirteenth Congress and by its fifty-third session, and

requested that high priority be given to enhancing such support during the current biennium using whatever flexibility existed within approved resources.

4.4 WORLD CLIMATE IMPACT ASSESSMENT AND RESPONSE STRATEGIES PROGRAMME (agenda item 4.4)

4.4.1 The Executive Council expressed its appreciation to Mr F. Schlingemann, Director of the UNEP Regional Office for Europe for the report on progress made in the implementation of the WCIRP and on UNEP's development of a more comprehensive strategy on climate change. The Council was informed that UNEP was proposing to revitalize the WCIRP as an effective umbrella programme for the climate-related activities of UNEP within the context of Thrust 3 of the Climate Agenda. The UNEP representative noted that while activities related to climate variability generally fell outside the mainstream of the UNEP Climate Change Strategy, they were considered to be an important part of the WCIRP. The successful collaboration that existed between WMO, UNEP and other agencies on reducing the impact of environmental emergencies through early warning and preparedness as was the case of the 1997–1998 *El Niño* was an excellent model on which to build that new effort. For example, it would be useful to conduct a follow-up evaluation of whether or not Governments, especially those involved in the study, were now better prepared to cope with natural disasters such as *El Niño*.

4.4.2 The Council was informed that UNEP was proposing to strengthen its activities related to sustainable development, especially in areas of relevance to the UNFCCC and its Kyoto Protocol. The Council noted the increased effort by UNEP in regional approaches to energy-related sustainable development including renewable energy sources and the efficient use of energy. In that respect, the Council encouraged UNEP, under the WCIRP, to continue those efforts in close coordination with the CCI Expert Team on Climate Services for Energy.

4.4.3 The Council was informed of UNEP's initiatives on climate change and land use change and forestry. The Council appreciated UNEP's efforts within the Clean Development Mechanism of the Kyoto Protocol and encouraged close collaboration between UNEP and CCI.

4.4.4 The Council noted UNEP's continued support of IPCC and GCOS, which, together with the contributions from WMO and other agencies, would lead to improvements in observations and networks as well as a better understanding of climate and global change.

4.4.5 With regard to the UNEP and WMO collaboration for the World Summit on Sustainable Development, the Council was pleased to note UNEP's interest in working closely with WMO in the process leading to the Summit. The Council noted that within the remit of WMO was agricultural meteorology, which led to sustainable food production and the application of climate

data to renewable energy production and health. That close collaboration could lead to joint activities that would benefit all countries.

4.5 WORLD CLIMATE RESEARCH PROGRAMME

(agenda item 4.5)

4.5.1 The Executive Council expressed its appreciation of the achievements of, and advances being made in, WCRP undertaken jointly by WMO, IOC and ICSU. The Council acknowledged the importance of the results of WCRP in laying the basis for operational climate prediction services by NMHSs and in underpinning scientific assessments of climate change, in turn feeding into scientific advice that could be offered by NMHSs on climate change issues. The Council stressed that the continuing development of WCRP and the co-sponsorship by WMO were, thus, of the utmost importance.

4.5.2 The representative of IOC also emphasized that the Commission would continue to play an active role as co-sponsor of WCRP, in particular by maintaining the same level of financial support. IOC recognized the great value of the results of WOCE which was now nearing its conclusion (see general summary paragraph 4.5.7). Additionally, it was foreseen that the CLIVAR study would lead to understanding of, and forecasting climate change on, decadal timescales. Support to that important CLIVAR research would be provided by the IOC/WMO/UNEP/ICSU GOOS. The representative of IOC further noted that, jointly with GOOS and GCOS, WCRP was a key sponsor of OOPC, which had prompted GODAE and the global profiling float programme ARGO. Excellent progress was being made in those initiatives.

4.5.3 The Council noted the progress in WCRP core activities. Of particular interest were the regional studies being undertaken in CLIVAR and which focused on African climate variability, VAMOS, and the Asian-Australian monsoon. Activities specific to the Atlantic, Pacific and Southern Ocean basins and adjacent areas were also being organized. Another fundamental concern was ocean-atmosphere interaction; the strategy for refining estimates of ocean-atmosphere fluxes was being considered. Together, that range of efforts provided the comprehensive perspective needed to advance the understanding of the natural variability and predictability of the Earth's coupled climate system. The Council stressed that attention should also be given to the applications and applicability of CLIVAR scientific results.

4.5.4 Another initiative of interest was the GEWEX Coordinated Enhanced Observing Period over 2001–2003, in which common data sets were being collected from all the GEWEX regional hydrological and atmosphere studies. The Coordinated Enhanced Observing Period, in conjunction with other components of the WCRP, would enable progress in assessing the influence of continental heat and moisture sources and sinks on the global climate system and its anomalies. The Council noted that the Fourth International Conference on GEWEX had been held in Paris in September 2001, focusing on themes central to GEWEX including the microphysics of clouds and cloud/aerosol

interactions, the global water cycle and its sensitivity to climate change, and remote sensing and land-surface processes.

4.5.5 In the area of polar research, the Council noted that an initial implementation plan was being drawn up for the WCRP CliC study, in preparation for an international commitments conference in 2003. The Council encouraged all Members having an interest in the Arctic, Antarctic and Southern Ocean to support and participate in CliC to the limit of available resources. In the meantime, the WCRP ACSYS, with the more restricted objective of assessing the role of the Arctic in global climate, was proceeding as planned with extensive new data sets on the Arctic Ocean circulation, temperatures and salinity, sea-ice, and exchange of water masses with the North Atlantic being collected.

4.5.6 The Council was informed of the successful planning and implementation of the Darwin Area Wave Experiment in October–November 2001 under the auspices of the WCRP SPARC study. Scientists from Australia, Japan and the United States participated in the experiment which was designed to characterize the forcing of the middle atmospheric circulation by the wave field generated during intense diurnal convection over northern Australia in the Austral spring.

4.5.7 As had the representative of IOC, the Council particularly recognized the achievements of WOCE, which was now well into the final stage of synthesizing the measurements collected during the field programme (1990–1998) into a dynamically-consistent view of the ocean circulation in the 1990s. WOCE had stimulated major advances in techniques of observing the oceans (e.g. automated floats, satellite sensors for precise ocean topography) and the understanding of the deep ocean structure and circulation had been greatly expanded. A substantial book on the ocean circulation and climate based on WOCE findings had been published and the latest version of the WOCE data set had been distributed on CD-ROMs. Work had begun towards preparing a series of large-format atlases of the physical and chemical properties of the global ocean based on WOCE observations.

4.5.8 The Council was encouraged by the continuing active development of WCRP climate modelling activities. In cooperation with IGBP, a comparison of results produced by fully coupled atmosphere-land-ocean-carbon models with specified carbon dioxide emissions scenarios was being undertaken. With WCRP encouragement, several multi-year reanalyses of the atmospheric circulation with state-of-the-art assimilation/analysis schemes, essential for investigation of many aspects of climate, had been prepared. In that respect, the Council was pleased to hear that good progress was being made in the new comprehensive 40-year reanalysis at ECMWF and that the JMA was undertaking a 25-year reanalysis (1979–2004) expected to be completed in 2005.

4.5.9 The Council was briefed on the status of the work of the WCRP Task Team on Climate Research for Arid and Desert Regions. The Team considered that

before realistic assessments of the implications of future climate conditions in arid regions could be made, the variability of past and present local climates had to be adequately characterized. However, there were only sparse long-term observational records in those regions, whose representativeness was uncertain and only few studies of impacts of past climate changes. Simulations of climate models in desert regions had also not been adequately verified. The appropriate development of climate observing and data management systems able to serve many applications ranging from climate research to policy issues was required as well as efforts to reconstruct past climates and elaboration of suitable regional climate models. It was planned to organize a multi-disciplinary workshop to frame strategies to meet those goals and to begin to answer the scientific questions involved. The Council stressed the importance of arranging that event and of making progress in the study of climate conditions in arid regions as urgently as possible. The Council recalled that the Workshop to Develop Priority Climate Indices for Africa (sponsored jointly by CLIVAR and CCI) had successfully taken place in Morocco in February 2001. The results obtained were highly relevant to arid region studies and it was suggested that that approach should also be pursued.

4.5.10 The Council welcomed the developing cooperation between WCRP and the other global environmental change programmes (IGBP and IHDP). A particular highlight of that collaboration in the past year was the Global Change Open Science Conference: Challenges of a Changing Earth (Amsterdam, Netherlands, 10–13 July 2001), which brought together some 1 600 scientists and policy makers from over 100 countries. The Conference was jointly sponsored by WCRP, IHDP and IGBP (together with DIVERSITAS, a research programme on the world's biodiversity conducted by UNESCO, the Scientific Committee on Problems of the Environment, the International Union of Biological Sciences and the International Union of Microbiological Societies). The Conference formally endorsed the Amsterdam Declaration, which again reiterated the realities of global change and called for urgent action. The Declaration also emphasized the importance of the cooperative approach to global environment now being developed by the global environmental change programmes. In that context, the projects being implemented jointly by WCRP, IGBP and IHDP on issues of major relevance to society and global sustainability (the carbon cycle, food systems and water resources), requiring an integrated approach across a wide spectrum of research disciplines, were introduced. The Council urged that the relevant WMO Programmes also be fully involved in the planning of those projects.

4.5.11 The Council decided on its final proposal for the list of candidates to serve on the WCRP Joint Scientific Committee. The list would be discussed with ICSU and IOC in order to select replacements for outgoing members or to extend their terms of appointment.

5. ATMOSPHERIC RESEARCH AND ENVIRONMENT PROGRAMME (agenda item 5)

WMO RESEARCH AWARD FOR YOUNG SCIENTISTS

Based on the recommendation of its Selection Committee, the Executive Council conferred the 2002 WMO Research Award for Young Scientists upon Mr S. K. Satheesh (India) for the paper entitled "Characteristics of aerosols over a remote island, Minicoy in the Arabian Sea: Optical properties and retrieved size characteristics", published in the *Quarterly Journal of the Royal Meteorological Society*, Volume 126, Number 562, January 2000 Part A.

5.1 ATMOSPHERIC RESEARCH AND ENVIRONMENT PROGRAMME ; THE REPORT OF THE PRESIDENT OF CAS; AND THE REPORT OF THE THIRTEENTH SESSION OF CAS (agenda item 5.1)

REPORT OF THE THIRTEENTH SESSION OF CAS (OSLO, 12–20 FEBRUARY 2002)

5.1.1 The Council noted with appreciation the report submitted by Mr A. Eliassen, president of CAS, who had been elected by acclamation at the thirteenth session of the Commission. The Council furthermore congratulated Mr A. V. Frolov on his election as vice-president of CAS.

5.1.2 The Council expressed satisfaction at the manner in which CAS was conducting its activities when the report of the thirteenth session was considered. It considered the revised terms of reference of the Commission, amended by CAS-XIII, as appropriate and consistent with the role of CAS in support of WMO Programmes and Long-term Plans. In addition, the revised terms of reference, by emphasizing the need to determine customer requirements, technology transfers and strengthen research on the policy, social and economic impacts of scientific advances, addressed many of the desired outcomes of the draft 6LTP. The revised terms of reference are given in [Annex IV](#) to this report.

SIXTH WMO LONG-TERM PLAN (2004–2011)

5.1.3 The Council noted that the present orientation and priorities of activities would significantly contribute to the WMO vision, desired outcomes, strategies and associated goals of the 6LTP. For example, it stressed the role of the WWRP in addressing aspects regarding the socio-economic consequences of high impact weather and its activities with respect to improved forecast technologies which would allow WMO Members to meet their responsibilities regarding the protection of life and property. In addition, the contribution of GAW to the protection of the environment, on scales from local to global, was also highlighted.

SUPPORT TO OZONE AND OTHER ENVIRONMENT-ORIENTED CONVENTIONS

5.1.4 The Council noted that the Commission strongly supported a number of activities within GAW

that had led to high quality atmospheric composition information from that programme to be used by scientists and policy makers in support of a number of environmental conventions. Those conventions related to stratospheric ozone destruction, long-range transboundary air pollution in Europe, environmental impacts of persistent organic pollutants and climate change. The Council, furthermore, agreed with the views expressed by the Executive Council Panel of Experts/CAS Working Group on Environmental Pollution and Atmospheric Chemistry that GAW should increase its international visibility by initiating scientific assessments on the state and evolution of one or more of the greenhouse gases and aerosols.

GLOBAL ATMOSPHERE WATCH

5.1.5 Bearing in mind the continued public and governmental concerns for environmental issues, the Council supported the overall strategy for implementing GAW in the period up to 2007, as approved by the Commission and recommended that high priority be maintained for that programme in view of its importance to global and regional environmental concerns. It noted that the network of GAW regional and global stations was being stabilized and complemented by infrastructure improvements in areas such as education and training, quality assurance mechanisms, station audits and scientific assessments. Those, the Council emphasized, were necessary for maintaining consistent and known data quality in the GAW programme. Members and the international GAW community were kept informed of programme developments through the dissemination of newsletters and, increasingly, through the World Wide Web.

5.1.6 The Council agreed with the Commission that the urban component of GAW, the GURME project, was viewed by Members as an important undertaking by WMO. It provided an international framework for air pollution modelling and other environmental issues while underscoring the role the NMHSs had in supporting urban environments. The Council recognized that that project needed to work with other WMO partners such as WWRP, WCP and CIMO, as well as WHO and city governments.

WORLD WEATHER RESEARCH PROGRAMME

5.1.7 In reviewing progress with the WWRP, the Council supported the view of CAS that that programme had made an excellent start since its creation at the twelfth session of CAS and that it was of high priority as it was concerned with reducing socio-economic consequences of high impact weather. It had concentrated on high impact weather events that had realistic chances of being addressed through research campaigns, were judged as having the capacity to produce a verifiable and significant outcome, and were important for society. The Council agreed with the Commission that the programme should not over-extend itself, but should rather concentrate on a relatively small number of high priority projects. In that regard, the Council recognized the

importance of THORPEX and endorsed the views of CAS that its development should be strongly encouraged. THORPEX, it was recalled, was being developed as a research programme that would seek to improve predictions of cyclones of oceanic (or remote continent) origin in data-sparse areas. In addition, the Council supported the view of CAS that the programme established enhanced systematic procedures to secure sufficient resources to sustain approved projects over a number of years.

5.1.8 The Council commended the Commission for its substantial efforts in developing a WMO Statement on the scientific basis for, and limitations of, weather and climate forecasting. The Council approved the Statement (see [Annex V](#) to this report), which presented the issues in a balanced manner and which would provide important guidance for NMHSs in their dealings with government officials, users, the media and the general public.

TROPICAL METEOROLOGY RESEARCH

5.1.9 In its consideration of that priority programme, the Council agreed that considerable progress had been made since the Tropical Meteorology Research Programme was re-designed by the twelfth session of the Commission. The Council recognized that great challenges existed for improving the prediction of tropical cyclone landfall and welcomed the close collaboration that existed between the WWRP and the Tropical Meteorology Research Programme in that initiative. In an effort to expand the international expertise available for tropical cyclone forecasting studies, the Council noted with satisfaction the United States programme to study hurricane structure, motion and amplification, and the similar activities being conducted in Australia; China; Hong Kong, China; Japan and the Republic of Korea in the western Pacific region.

PHYSICS AND CHEMISTRY OF CLOUDS AND WEATHER MODIFICATION RESEARCH

5.1.10 The Council acknowledged the active role which CAS continued to play in promoting the improved understanding of the underlying science associated with the physics and chemistry of clouds and the translation of that knowledge into practical applications such as weather modification. The programme also provided the WMO Statement on the status of weather modification and the Guidelines for advice and assistance related to the planning of weather modification activities for use by Members. The Council recommended that those roles continue.

REPORT ON THE RECOMMENDATIONS OF THE THIRTEENTH SESSION OF CAS

5.1.11 In considering the report of CAS-XIII, the Council approved [Resolution 3 \(EC-LIV\)](#). In doing so, the Council commended the efforts of CAS to keep the Organization in the forefront of research in atmospheric sciences and to apply increasingly the results of that research to socio-economic issues.

5.1.12 The Council also considered that a CAS working group on environmental pollution and atmospheric chemistry, reporting through the president of CAS, would be the appropriate mechanism to provide authoritative advice on the state of the atmosphere, to organize scientific assessments on matters concerning the long-term monitoring of global atmospheric composition and related physical characteristics and to provide strategic guidance to WMO's GAW programme. In accordance with General Regulation 32, the Executive Council, therefore, authorized the president of CAS to establish the CAS Working Group on Environmental Pollution and Atmospheric Chemistry with appropriate terms of reference. As a consequence, the Council did not re-establish the Executive Council Panel of Experts/CAS Working Group on Environmental Pollution and Atmospheric Chemistry.

5.1.13 In a similar manner, the Council agreed that a CAS working group on physics and chemistry of clouds and weather modification research should be available to provide scientific expertise in the fields of physics and chemistry of clouds in view of the key role that those fields played in the atmospheric sciences and in weather modification research. In accordance with General Regulation 32, the Executive Council, therefore, authorized the president of CAS to establish the CAS Working Group on Physics and Chemistry of Clouds and Weather Modification Research with suitable terms of reference. As a consequence, the Council did not re-establish the Executive Council Panel of Experts/CAS Working Group on Physics and Chemistry of Clouds and Weather Modification Research.

5.2 SUPPORT TO OZONE AND OTHER ENVIRONMENT-ORIENTED CONVENTIONS (agenda item 5.2)

5.2.1 The Executive Council noted the continued efforts to maintain the quality of the global ozone monitoring network through Dobson spectrophotometer intercomparisons for instruments located in Europe and the South-West Pacific. In addition, the Council was pleased that the Hong Kong Observatory had increased the frequency of ozone soundings from monthly to weekly and that regular Macquarie Island (Australia) ozone soundings were now assured.

5.2.2 The Council recalled that the 2001–2007 strategy for GAW made explicit mention of the need to expand the use of GAW data for, inter alia, scientific assessments. The Council, therefore, urged CAS, in cooperation with relevant programmes and agencies, to investigate the possibility of conducting periodic assessments on, for example some of the greenhouse gases and aerosols. Such assessments, it was agreed, would provide important information to both the IPCC and the Parties to the UNFCCC.

5.3 GLOBAL ATMOSPHERE WATCH (agenda item 5.3)

5.3.1 In reviewing GAW progress since its last session, the Executive Council noted with satisfaction that the programme was active in a number of areas and, where appropriate, collaborated with partner

programmes and agencies. Those included continued development of a future global atmospheric composition measuring system comprising satellites and ground-based systems in the context of the multi-agency IGOS partnership; expert groups on ultraviolet instruments, aerosols/aerosol optical depth, carbon dioxide concentrations and related tracers measurement techniques; and participation in the Sixth Carbon Dioxide Conference (Sendai, Japan, 1–5 October 2001). With respect to aerosol measurements, the Council urged that additional stations in the GAW network undertake such observations in view of their importance in the climate warming issue. The Council welcomed the initiative of China to add three additional GAW regional stations over the next five years.

5.3.2 The Council was pleased that an initiative had been launched to catalogue the current situation on the operation of both regional and global stations in the GAW network. That initiative, GAWGIS, would eventually become a searchable database available through the Internet and would contain detailed information on each station. The Council expressed its appreciation to Japan and Switzerland for their substantial contribution to the development of GAWGIS which would lead to improved coordination with, and between, stations and better communication with data users.

5.3.3 The Council also expressed its appreciation to the Government of Germany for its important support of GAWTEC and to the Czech Republic for conducting training in the operation of Dobson spectrophotometers. With respect to GAWTEC, the Council noted that during 2001, the Centre had conducted two separate courses on various procedures which were important to GAW station personnel and that its facilities and courses were open to participants from around the world. The Council emphasized that the training and education needs for GAW participants from developing countries would need to be a continuing priority for GAW. In that regard, the Council commended GAW centres and collaborating national organizations for their considerable support in providing such training.

5.3.4 Satisfaction was expressed by the Council with respect to continued GAW assistance and advice provided to address urgent environmental problems such as transboundary smoke and haze in South-East Asia and long-range atmospheric transport and deposition of persistent organic pollutants and heavy metals. The Council urged that GAW continue to provide its expertise to existing and emerging environmental issues, where possible.

5.3.5 In reviewing the GAW GURME project, the Council noted that a second air quality forecasting workshop was planned for later in the present year in Mexico with the support of NOAA. The Council emphasized that the workshop should focus on information exchange in operational and applied air quality forecasting capabilities. In addition, training, technology transfer and capacity building strategies on air quality forecasting should also be a priority item of the workshop.

5.3.6 The Council was pleased with the excellent progress being made with the GURME pilot projects in Beijing and Moscow. Regarding the Beijing Pilot Project, the Council noted that an integrated field experiment had been conducted during January and February 2001 with measurements of the boundary layer, including air pollutants. Profile data of ozone, sulphur dioxide and nitrogen dioxide in the boundary layer were collected. Continuous measurements of sulphur dioxide, nitrogen oxides, ozone and carbon monoxide, were taken at different heights with automatic instruments positioned on tall buildings. The Council also noted that a prediction system for air pollution had been developed. The output of the GURME Beijing Project had exerted an important influence on air pollution protection activities conducted by the local government. With respect to the Moscow project entitled "Meteorological servicing for the sustainable development of the Moscow megapolis", it noted that the requirements of various users for hydrometeorological information had been analysed and summarized and that the results were used to plan and carry out modifications to the observing system within the megapolis and in the surrounding regions. Those analyses were needed to develop specialized models, methods and techniques for analysis and forecasting, including models for the meteorological conditions of air pollution, pollution levels and hydrological and agrometeorological conditions; to integrate the collection systems, process and display information; and to develop a complex information system for users. A total of 46 meteorological observing stations were now employed when only six existed in 1999.

5.3.7 The Council was pleased to note that Australia and the United States had developed a prototype database containing results of a number of research campaigns relating to transport and dispersion of atmospheric pollutants. Those results would be of great interest to the modelling community in conducting both sensitivity and verification studies. The Council noted that the database had been provided to each RSMC for emergency response.

5.3.8 The Council stressed that GAW was a complex, international and multilayered system and would benefit from a new mechanism focused on assisting the CAS Working Group on Environmental Pollution and Atmospheric Chemistry promote GAW more widely, on seeking additional resources and on facilitating broad international cooperation. That matter should be the subject of discussions between the president of CAS, the Working Group and the Secretariat.

5.4 WORLD WEATHER RESEARCH PROGRAMME (agenda item 5.4)

5.4.1 The Executive Council noted with satisfaction the continued progress made in that programme aimed at facilitating international action to improve forecasting of high impact weather. It was noted that the programme focused on weather events where there was a good likelihood of garnering sufficient international

resources and where such research would lead to a verifiable and significant outcome.

5.4.2 The Council was informed that both the WWRP Mesoscale Alpine Programme, whose objective was the understanding and prediction of intense weather in mountainous areas, and the Aircraft In-flight Icing Project were successfully conducting research campaigns. The Council, aware that both those projects were addressing topics which affected the safety of human life, encouraged the international research teams in their efforts to develop societal applications of their work. With respect to a possible WWRP project on sand and duststorms, the Council noted with satisfaction that an international workshop, co-sponsored by WMO and CMA, on that matter was planned for 2003 in China.

5.4.3 The Council was pleased with the international interest and progress made in developing THORPEX and MEDEX on cyclones that produced high impact weather in the Mediterranean. The Council was encouraged that JMA was studying the feasibility of conducting a THORPEX experiment in the north-west Pacific with the goal of improving forecasts of typhoon tracks and winter/summer monsoons. THORPEX, the Council agreed, held the prospect of improving and extending significantly weather forecasts through new observing systems and numerical models, thus benefiting the core activities of Members. It emphasized the need, therefore, that both the research and operational meteorological communities be fully engaged in developing THORPEX within the WWRP. In view of the importance of that project to many NMHSs, the Council requested the Secretary-General, in collaboration with the president of CAS, to prepare a document on THORPEX for consideration by Fourteenth Congress. The Council also stressed the importance of the MEDEX project and urged Members in the Mediterranean basin to participate in that project by providing data and expertise.

5.4.4 Following the success of the WWRP Forecast Demonstration Project surrounding the Olympic Games in Sydney, the Council was supportive of the developing Athens 2004 Forecast Demonstration Project and the plans by CMA to conduct such a Project in association with the Olympic Games in Beijing in 2008. It encouraged CMA to prepare a formal proposal for consideration by the CAS Science Steering Committee for the WWRP.

5.4.5 The Council agreed with the sentiments of CAS-XIII that the WWRP, under the able leadership of its Science Steering Committee, had formulated a programme with a number of vigorous elements. The Council also agreed with CAS that more systematic and integrated procedures needed to be developed to obtain funds to conduct its R&D projects at a level that could be sustained for a number of years.

5.5 TROPICAL METEOROLOGY RESEARCH PROGRAMME (agenda item 5.5)

5.5.1 The Executive Council noted the progress evident in that programme since its last session. It recalled that the series of International Workshops on Tropical

Cyclones had been a feature of WMO's Tropical Meteorology Research Programme for many years and had resulted in the publication of textbooks and a forecast guide. The Council, therefore, was pleased that plans for the fifth workshop in the series were well advanced. The fifth workshop would take place in Cairns, Australia in December 2002 with the essential global and forecaster-researcher character of the series to be maintained. The Council strongly recommended that all Members with an interest in tropical cyclones participate.

5.5.2 The Council was informed of an important initiative being led by the scientific community in France, which was developing an ambitious programme of research into the west African monsoon. That research programme would address:

- (a) Interannual variability of the west African monsoon and its causes;
- (b) The convective cloud systems — their dynamics, and links to the easterly waves;
- (c) The transport of chemical species between the surface and the tropopause by convective cloud systems;
- (d) The hydrology of large African rivers;
- (e) The optimal use of satellite data over west Africa.

The Council viewed that campaign as presenting an important opportunity for scientists and NMHSs from both developed and developing countries to make contributions to the various research needs.

5.5.3 With respect to the role of the Monsoon Activity Centres in Kuala Lumpur, Nairobi and New Delhi the Council agreed with the CAS Working Group on Tropical Meteorology Research that those Centres should also serve as dissemination and coordination centres for NWP products relevant to monsoon forecasting, as well as data centres for ENSO and interannual variability studies in the region. The Council urged the Working Group to provide the necessary guidance and technical assistance to those Centres with their increased responsibilities.

5.6 PROGRAMME ON PHYSICS AND CHEMISTRY OF CLOUDS AND WEATHER MODIFICATION RESEARCH (agenda item 5.6)

The Executive Council expressed its satisfaction with the manner in which the Programme on Physics and Chemistry of Clouds and Weather Modification Research was being conducted under the guidance of its Panel and that it also served as a CAS Working Group. It noted that the events organized served to improve the understanding of the underlying science associated with the physics and chemistry of clouds and the translation of the knowledge into practical applications, such as weather modification. In particular, the Council noted that the eighth WMO Scientific Conference on Weather Modification would be held in Casablanca, in April 2003 and requested the CAS Working Group to take a lead role in its scientific programme.

6. APPLICATIONS OF METEOROLOGY PROGRAMME (agenda item 6)

6.1 PUBLIC WEATHER SERVICES PROGRAMME (agenda item 6.1)

6.1.1 The Executive Council noted with appreciation the report of the PWS Programme. It welcomed the Programme's continued development and efforts over the past year in assisting Members to improve the effectiveness of their national public weather services. The Council noted the increasing emphasis on the implementation phase of recommendations and guidelines prepared by PWS experts and expressed confidence that those efforts would result in improved capability and better national image and status of NMSs.

6.1.2 The Council reiterated that a major task of the PWS Programme was to promote the use, especially by the media, of official NMS forecasts, warnings and information, with appropriate acknowledgement, thereby preserving the unique authority of the NMS. It was pleased to note that in addition to maintaining meaningful dialogue with international media representatives on important matters of mutual interest, the PWS Programme was actively providing additional and continuing guidance to NMSs on relevant, sensitive service strategies. Those included improved coordination and communication with the media, through ensuring that the media was aware of NMSs' products, and that media-skilled NMS staff was available to interact with the media.

6.1.3 The Council was updated on two pilot projects directly related to media issues that were being developed and maintained by Hong Kong, China. The Council expressed its appreciation to the Hong Kong Observatory and complimented the PWS Programme for making steady, measurable progress on both projects. The Severe Weather Information Centre Web site to facilitate access to official NMS warnings was launched on an experimental operational basis in September 2001. The site would provide, as a first step, official forecasts and warnings of tropical cyclones in the western North Pacific issued by NMSs in the region. Up-to-date information on tropical cyclones that transcended national boundaries, in the form of advisories and warnings from participating countries, were displayed on the Web site. It was envisaged that further evolution would lead to global application to other weather events.

6.1.4 The Council was informed that the second project, the World Weather Information Service Web site, would provide the media and the public with authoritative, official global city weather forecasts. The objective was to counteract adverse effects on NMS image and authority and on public safety caused by increased amounts of unofficial city forecasts issued by the media, and widely available on the Internet. Over 50 per cent of WMO Members worldwide had indicated their intention to participate in the project. The first phase, involving the posting of city climatological information, was launched in December 2001; the second phase, to be completed during 2002, would consist of posting medium-term city forecasts.

6.1.5 The Council was also informed that the World Weather Information Service Web site provided climatological information for 579 cities of 149 Members, as well as hyperlinks to the Web sites of 70 Members. The Web site handled 330 000 hits since December 2001 and at last count carried forecasts of 352 cities from 34 Members, with seven more Members ready to join. The Council noted with appreciation that Oman would host and maintain the Arabic version of the Web site and welcomed the offer made by Hong Kong, China, to assist other Members who might be interested in hosting Web sites in other languages. Furthermore, the Council appealed to Members to participate actively in the pilot projects, especially by providing forecasts for more cities.

6.1.6 The Council noted with appreciation the information on the ROSHYDROMET pilot project directly associated with mass media issues. It was noted that ROSHYDROMET had created an open-access Web site for the mass media and the general public at www.hmn.ru; that the site contained information from all areas of meteorology, including reports and general weather forecasts both for Russia and various regions of the world and weather reports relating to various (sport, culture, political, historical and general interest) events; and that the main aim of developing such a site was to raise awareness of meteorology, disseminate meteorological knowledge, publicize ROSHYDROMET's activities and increase NMHS prestige. It also noted that solving the problem of providing a direct channel to operational hydrometeorological information would enable the mass media and the general public to use more official information from ROSHYDROMET, in accordance with the objectives of the PWS Programme. Average visits to the site at the time of the Executive Council stood at approximately 20 000 requests per day.

6.1.7 The Council was pleased to note that following the success of the cooperation with CAS during the 2000 Sydney Olympics, discussions are under way to have further PWS/WWRP demonstration projects at the 2004 Athens Olympics.

6.1.8 In the light of increasing emphasis on combating the disastrous impacts of severe meteorological and hydrological events, the Council was pleased to note that PWS experts had considered the continuing need for improved and increased public understanding of NMS warnings and the cross-border exchange of those warnings, and had proposed strategies for the international exchange of public weather information. It welcomed the development of relevant guidelines to assist NMSs. The Council also asserted that NMSs should be prepared to demonstrate their competence, and the usefulness and relevance of their products.

6.1.9 The Council welcomed the preparation by experts within the PWS Programme of the following Technical Documents, noting their focus on media issues, the application of new technology and research, and service assessment, and that they especially targeted NMSs in developing countries:

(a) *Guidelines on Graphical Presentation of Public Weather Services Products* (WMO/TD-No. 1080);

(b) *Weather on the Internet and Other New Technologies* (WMO/TD-No. 1084);

(c) *Guidelines on the Improvement of NMSs — Media Relations and Ensuring the Use of Official and Consistent Information* (WMO/TD-No. 1088);

(d) *Guidelines on Application of New Technology and Research to Public Weather Services* (WMO/TD-No. 1102);

(e) *Supplementary Guidelines on Service Assessment* (WMO/TD-No. 1103).

The Council noted that the publications had been distributed to all Members.

6.1.10 The Council acknowledged the pressing need to enhance the capability of NMSs to provide comprehensive weather and related services to ensure community safety and welfare, and appreciated the PWS Programme's enabling capacity building strategies. As part of those capacity building activities, a PWS workshop for Members of the RA I Tropical Cyclone Committee was held in conjunction with the RA I Second Training Course on Tropical Cyclones and the Public Weather Services, at La Reunion during November 2001. Another PWS workshop was organized in conjunction with the RA IV Workshop on Hurricane Forecasting and Warning in Miami in April 2002 with the participation of Members from the Hurricane Committee region. The Council expressed appreciation to the Governments of France and the United States for hosting the respective training events.

6.1.11 The Council recalled its previous advice that the PWS Programme give priority to issues related to dissemination and presentation of forecasts and warnings and to assist Members to define their basic requirements and needs for suitable systems. In that regard, the Council noted that requests for VCP support in the past year had been mainly for acquisition of television media presentation systems and relevant maintenance and media presentation training. The Council expressed appreciation to those Members who had provided equipment and training through the VCP for the further improvement of public weather services in developing countries and urged donors to continue their generous support in the future.

6.1.12 The Council strongly supported the increased emphasis in the PWS Programme on the application of new technology and research to public weather services. It agreed that advances in computer technology, in the form of improved workstations and servers that could better assimilate diverse data, run local numerical models and automate the generation of public forecast products in graphical, digital and narrative formats would continue to benefit public weather services. Furthermore, improved quality of observations from satellites, radar and other remote-sensing systems and improved distribution of data and forecast-related products to television, radio, wireless technologies and the Internet would give an enhancing boost to Members' public weather services efforts. The Council welcomed the prospects, especially on behalf of developing countries, of using the new technology for providing

education and training beyond the traditional forms of instruction, through the use of computer-assisted learning and interactive training modules. In that regard, guidelines on the application of new technologies and research to public weather services were especially appreciated.

6.1.13 The Council recalled earlier guidelines on service assessment and welcomed the new supplementary guidance material on service assessment that integrated scientific verification with user-based assessments for specific applications. It acknowledged that the quality and effectiveness of weather services to the public were enhanced through the application of assessment techniques that were carefully selected for the meteorological and climatological context within which the forecast element or event being assessed was produced.

6.1.14 The Council emphasized that the weather sensitivity of communities continued to increase in the face of the challenge of survival and development in the current, rapidly changing global economic environment. Meteorological information and weather and climate forecasts and warnings impacted profoundly on national businesses and economies, and on health, lifestyle and fortunes of individuals, communities and nations. As people became aware of the real potential for mitigation of adverse effects of weather, the meteorological community must be equipped to satisfy their growing demand for more detailed, accurate and useful meteorological information. The Council urged Members to increase support for their national public weather services efforts and observed that Members' needs continued to validate strongly the mandate of WMO's PWS Programme. In that regard, the Council urged that the PWS Programme, in collaboration with relevant WMO Programmes, continue to assist Members to strengthen and improve their capacity to deliver effective public weather services, with particular emphasis on:

- (a) Making relevant weather products and services more readily available to the public and improving the use of official, consistent information, thus facilitating the international exchange of public weather products and making weather information available on the Internet;
- (b) Raising the level of public awareness, understanding and response to weather warnings as part of natural disaster mitigation efforts and enhancing public awareness of the economic benefits of meteorological services;
- (c) Applying new technology in NMS systems and operations, and the use of research in the design, development and dissemination of new and improved PWS products and services in order to provide high quality weather services to the public;
- (d) Continuing capacity building activities and transfer of technology, including training in media handling and presentation skills, and coordinating and collaborating with emergency management, the media and other government agencies;
- (e) Promoting wider adoption by NMSs of performance evaluation, including service assessment, and

utilizing user feedback to determine user needs and requirements;

- (f) Continuing to provide, especially to developing countries, advice and guidance to pursue programmes and practices aimed at positive enhancement of the NMS image, visibility and status.

6.2 AGRICULTURAL METEOROLOGY PROGRAMME; THE IN-DEPTH REPORT OF THE PRESIDENT OF CAgM
(agenda item 6.2)

6.2.1 The Executive Council noted with appreciation the report of the president of CAgM, Mr R. P. Motha, on recent activities of the Commission. The Council considered the progress achieved as significant, especially in accomplishing the tasks of working groups and rapporteurs, in publishing CAgM reports, proceedings and reports and in organizing an interregional workshop, expert group meetings and training events.

6.2.2 The Council noted that a CD-ROM with free software for agroclimatic data management was released along with the *Proceedings of the Expert Group Meeting on Software for Agroclimatic Data Management* (WMO/TD-No. 1075), held in Washington, D.C. in October 2000. The Council congratulated the United States Department of Agriculture and the Secretary-General for that excellent collaboration as the CD-ROM was a valuable source of software to everyone engaged in agroclimatic data management. The Council also expressed its appreciation to the University of Nebraska and the Secretary-General in bringing out the *Proceedings of the International Workshop on Automated Weather Stations for Applications in Agriculture and Water Resources Management: Current Use and Perspectives* (WMO/TD-No. 1074) held in Lincoln, Nebraska, United States in March 2000.

6.2.3 The Council was pleased to note that WMO, in collaboration with NOAA, had organized the Interregional Workshop on Improving Agrometeorological Bulletins, held in Bridgetown, Barbados in October 2001, on improving the effectiveness and distribution of agricultural meteorological bulletins issued by NMHSs. It noted, in particular, that the workshop addressed the needs of small farmers, who typically did not have direct access to advanced electronic methods for obtaining information. Improving the availability of information to small farmers could often be assisted through collaborative efforts with local and regional agricultural extension services. The Council noted the recommendation of the Workshop to create a common Web server to share experiences in the preparation of agrometeorological products and to facilitate the exchange of new ideas. The Council expressed its appreciation to the Secretary-General for establishing the Web Server and encouraged all Members to post routinely their agrometeorological products on it. The Council expressed its appreciation to the Secretary-General for the finalization and wide distribution of the report of the Workshop.

6.2.4 The Council noted with appreciation the collaboration that existed between WMO, the Met Office

(United Kingdom), ACMAD and NOAA in co-sponsoring the Seminar on Radio and Internet for Diffusion of Agrometeorological Information and Monsoon Research in India, which was organized by the India Meteorological Department in Pune on 30 and 31 July 2001. The Seminar covered several issues including diffusion of agrometeorological information, developments in the weather information and education page and the climate information pages of radio and Internet-2000 and communication technologies. A special feature of the Seminar was an interactive session with several farmers. The Council noted the emphasis placed by the Seminar on better understanding user needs and the active involvement of users in the design and specification of seasonal weather forecasts, agrometeorological and other products and dissemination methods, including the time and spatial scales of the information, and the use of probability forecasts.

6.2.5 The Council was informed that the Seminar on Monsoon Research in India included sessions on monsoon monitoring and field experiments, monsoon variability, monsoon teleconnection and monsoon forecasting. It took note of the recommendation of the Seminar that a field experiment like MONEX 1979 could be planned and executed to address some of the issues of Indian and African monsoons and that as a precursor to the designing of field experiment, an international workshop on African and Indian monsoons, under the auspicious of the African CLIVAR programme, could be organized.

6.2.6 The Council expressed its appreciation for the initiative taken by UNDP to organize a Regional Seminar on Drought Mitigation, held at the Iranian Centre for International Conferences in Tehran from 28 to 29 August 2001. WMO participated actively in the Seminar, which enabled countries in the region to become familiar with each other's experiences in preparing for drought, in assessing drought damage and in mitigating its consequences. The Council suggested the proposal to organize a subregional workshop on hydrometeorological aspects of drought which could bring together meteorologists and hydrologists in the subregion for a detailed analysis of droughts in the area. It noted that UNDP, New York; UNDP, Tehran; and the Disaster Task Force of the Ministry of Interior of the Islamic Republic of Iran had expressed their full support for the organization of such a workshop.

6.2.7 The Council noted with appreciation the proposal by the Advisory Working Group of the Commission to adopt a new structure for the Commission that would make it more effective, flexible and responsive in carrying out well-defined CAgM tasks. The Council endorsed the proposal of the Advisory Working Group to establish three OPAGs:

- (a) Agrometeorological services for agricultural production;
- (b) Support systems for agrometeorological services; and
- (c) Impacts of climate change/variability and natural disasters on agriculture;

and to establish Expert Teams and Implementation/Coordination Teams for each OPAG. The Council also endorsed the proposal that coordination of two priority cross-programme focal areas, i.e. policy support systems for agrometeorological services, and training, education and extension would be assumed by the Management Group.

6.2.8 The Council emphasized that the applications of agrometeorology were most important for increasing and sustaining agricultural production, especially in the developing countries. For countries in Africa, Asia and Latin America, agrometeorological applications, especially those related to medium- to long-range weather forecasts as well as seasonal to interannual climate forecasts, were crucial to ensure food security. The Council requested the Secretary-General to continue to assist the developing countries in improving their ability to provide more effective and useful agrometeorological bulletins and advisories to assist the farmers in their operational decisions at the farm level. In that connection, the Council suggested that the Agricultural Meteorology Programme be considered a high priority activity of WMO and that increased resources be made available for its implementation activities, including training and capacity building in the developing countries.

6.2.9 The Council suggested that applications of agricultural meteorology should be made an integral part of national plans for sustainable development. In that connection, the Council noted that NEPAD, endorsed by the Heads of State and Governments of Africa in July 2001, offered an excellent opportunity to promote applications of agricultural meteorology in Africa. The Council requested the Secretary-General to facilitate contacts between the WMO and NEPAD Secretariats to ensure that agrometeorological applications were appropriately structured into the sectoral priorities on agriculture and market access and science and technology of NEPAD.

6.2.10 The Council stressed the increasing importance of a rigorous demonstration of the benefits of agrometeorological services. It therefore encouraged the Commission, to give attention in its work programme for the next intersessional period to the development and application of methodologies for demonstrating the economic benefits of agrometeorological services. The Council suggested that the Commission might consider sponsoring a series of economic evaluation case studies for different types of services in different countries.

6.2.11 The Council was informed that the Interstate Council on Hydrometeorology of the Countries of the Commonwealth of Independent States had decided to establish a Drought Monitoring Centre in the Russian Federation to provide early warnings on droughts based on a continuous monitoring and assessment of drought conditions in the region.

6.2.12 The Council noted with appreciation the initiative taken by WMO to co-sponsor the training Workshop on Agrometeorology in Promotion of Agricultural Sustainable Development and Food Security for the Twenty-first Century, which was held in Hanoi,

Viet Nam from 9 to 18 July 2001. The Council requested the Secretary-General to continue to seek co-sponsorship for the organization of such events.

6.2.13 The Council noted that during 2001, four international postgraduate courses in applied meteorology were held in Israel with the participation of more than 100 graduates from developing countries. The major effort of those courses was to demonstrate the practical application of meteorology in agricultural planning.

6.2.14 The Council approved the proposal of the Selection Committee for the Norbert Gerbier-MUMM International Award for 2003 and conferred the 2003 award on Drs V. Ramaswamy, M.-L. Chanin, J. Angell, J. Barnett, D. Gaffen, M. Gelman, P. Keckhut, Y. Koshelkov, K. Labitzke, J.-J.R. Lin, A. O'Neill, J. Nash, W. Randel, R. Rood, K. Shine, M. Shiotani, and R. Swinbank for their paper entitled "Stratospheric temperature trends: observations and model simulations", published in *Reviews of Geophysics*, Volume 39, Number 1, February 2001.

6.2.15 The Council recalled that the provisional report of the twelfth session of CAGM, which was held in Accra, Ghana in February 1999 was circulated, in view of the lack of quorum at the session when the PINKS were adopted, to the Permanent Representatives by correspondence for final decision. The Council took note that the final decision on the report was taken on 1 October 1999 and recorded its decisions on the recommendations adopted at the twelfth session of CAGM in [Resolution 4 \(EC-LIV\)](#).

6.2.16 In the light of the above discussion, the Council adopted [Resolutions 5 \(EC-LIV\)](#) and [6 \(EC-LIV\)](#).

6.3 AERONAUTICAL METEOROLOGY PROGRAMME; THE IN-DEPTH REPORT OF THE PRESIDENT OF CAeM (agenda item 6.3)

6.3.1 The Executive Council noted with appreciation the in-depth report of the president of CAeM, Mr N. Gordon, highlighting progress made to meet the goals and objectives of the Aeronautical Meteorology Programme since CAeM-XI in March 1999. The Council expressed its gratitude to all CAeM members for their valuable contribution to the achievements of the Commission. Achievements of the Commission related, among other things, to training, progressive implementation of WAFS, fostering contacts with users, the update of relevant regulatory and guidance material, and their contribution to the increased availability of global high-quality and high-resolution automated aircraft reports with significant benefits for NWP model accuracy. The Council recalled, as indicated in the survey conducted in December 2000, that aviation was the most important national economic application sector served by NMSs, and urged that adequate resources be provided to support the Programme, as an investment in the future sustainability of NMSs.

TRAINING IN AERONAUTICAL METEOROLOGY

6.3.2 The Council recalled that, while training under the Programme in the 5LTP was given the highest

priority, there was a disparity between earmarked training resources under the regular budget and the growing training needs of Members. Nevertheless, the Council noted with satisfaction that, as a result of cooperation of Members and parent Organizations, 12 training events had been conducted and attended by a total of 408 participants from all Regions since March 1999. The Council expressed its appreciation to the United Kingdom for continuing to convene jointly with WMO the annual Seminar on Aviation Forecasting for participants from Regions I, II and VI, and to the United States for providing significant financial resources to fund various seminars convened for participants from the Americas and the Asia Pacific Regions. The Council thanked other Members for their valuable support in hosting those training events.

6.3.3 Many members of the Council highlighted the need for training in the use of the new WAFS workstations and the decoding of BUFR-coded WAFS SIGWX products, as well as in aeronautical meteorological service cost recovery from aviation. In view of the importance of such training in all WMO Regions, it was urged that relevant financial resources should be provided in the regular budget for the next financial period. The Council, in recognizing that ongoing training activities would continue to be vital to ensure the sustainability of aeronautical meteorological services, urged Members to continue to support future training activities and encouraged the Secretariat to find the necessary resources to support future training events not funded from the Programme's regular budget.

6.3.4 The Council noted with interest the contribution of the CAeM Working Group TREND to the development of a strategic plan for training in aeronautical meteorology as well as the new initiatives for training proposed by Mr H. Puempel, chairperson of TREND. The Council encouraged that Working Group to continue to publish its series of Newsletters, which provided relevant useful technical and scientific information on aeronautical meteorology to CAeM members. The Council noted with satisfaction that a preliminary version of the *Compendium on Tropical Meteorology for Aviation Purposes* (WMO-No. 930) had been published by the Secretariat.

FOSTERING CLOSER CONTACTS WITH THE AVIATION COMMUNITY

6.3.5 The Council recognized that fostering closer links among NMSs, aeronautical meteorology service providers and users was particularly important given the serious situation facing many airlines as a result of the 11 September 2001 tragic events and the increasing trend toward the recovery of aeronautical meteorological costs from the aviation industry.

6.3.6 The Council noted that mutual participation of ICAO and WMO at meetings convened by the two Organizations and attended by other aviation stakeholders, such as IATA and ASECNA, had contributed to fostering closer contacts between meteorological service providers and users and to enhancing those services to meet users' needs.

6.3.7 The Council was pleased to learn that the *Guide to Practices for Meteorological Offices Serving Aviation* (WMO-No. 732) was being updated and would include guidance material on closer contacts at the national level between service providers and users. The Council endorsed the emphasis placed on enhancing the provider/user interface as a component of the Programme in the 6LTP.

COST RECOVERY

6.3.8 The Council recalled with satisfaction that, at the request of WMO, the ICAO Global Conference on the Economics of Airports and Air Navigation Services, held in Montreal in June 2000, had agreed not to modify the current policies and guidance material on cost recovery from aviation. It called on Members to maintain that position at the forthcoming conjoint session of CAeM and the Meteorology Divisional Meeting. The attention of the Council was drawn to topics that would be discussed by that conjoint event, in particular to agenda item 4 dealing with the important issue of institutional changes and trends in the provision of meteorological services to international air navigation. Under that item, topics of particular importance to NMSs would be discussed, namely cost recovery, commercialization and privatization of NMSs, aeronautical meteorological information exchange, in particular the use of the Internet and training issues. In view of the importance of those topics, the Council felt that every effort should be made to ensure the participation of as many representatives of NMSs as possible.

6.3.9 The Council was informed that, at the request of three Members, joint ICAO/WMO missions had been successfully conducted to assist them in finding appropriate ways to resolve differences related to the recovery of costs for meteorological service provided to the aviation industry. In that regard, two Council members from countries that benefited from those missions expressed their appreciation to the ICAO and WMO Secretariats for their positive contribution to the success of those joint missions. The need for continued WMO and ICAO assistance in implementing cost recovery in Member countries was highlighted. In that regard, it was indicated that assistance in direct negotiations with the state entity tasked with recovering charges from aviation would be needed in the future.

6.3.10 The Council was informed that WMO was represented at a series of meetings of the EUROCONTROL Task Force on Met Costs held during 2001. The Council noted that there could be a future re-examination of the rules related to the manner in which air navigation services, including meteorological services, would be delivered within the European Economic Area. It was pointed out that that would have an impact on cost recovery and on the current role and responsibility of the Meteorological Authority.

6.3.11 The Council was informed that ICAO had reactivated the Air Navigation Services Economics Panel tasked with reviewing the current guidance on cost recovery for services provided to international air

navigation. The Council invited Members that would have experts on the Panel, and the representative of the WMO Secretariat, to cooperate during the Panel sessions and to be vigilant with regard to future amendment proposals to the current guidance material.

IMPLEMENTING A COST RECOVERY FRAMEWORK FOR AERONAUTICAL METEOROLOGICAL SERVICES

6.3.12 The Council was aware that the president of CAeM had informed the fifty-third session of the Executive Council that draft guidance material on cost recovery and alternative service delivery had been prepared. That session noted with appreciation the information and requested that the draft should be submitted to the Executive Council Advisory Group on the Role and Operation of NMHSs for comments and refinement.

6.3.13 In line with the wishes of the Council session, six members of the Advisory Group on the Role and Operation of NMHSs submitted constructive suggestions that were subsequently incorporated in the draft and submitted to the full meeting of that Advisory Group held in April 2002. The Advisory Group meeting considered that the draft contained many of the elements to meet the needs and concerns of Members on that subject and suggested further improvement by, among other things, focusing more on how to implement a cost recovery model given a variety of delivery mechanisms. As a result of the Group's suggestions, the draft was reviewed by a member of the Advisory Group in collaboration with the president of CAeM. The Council reviewed the material, made suggestions for improvement and agreed that it should be provided to the forthcoming session of CAeM.

6.3.14 The Council discussed the very important matter of the designation by countries, for ICAO purposes, of the Meteorological Authority. It reaffirmed its earlier views on the advantages of the NMS being so designated, while recognizing that alternative arrangements existed in light of varying situations among countries. There were a few cases where the NMS was the designated Meteorological Authority but service was provided by others (under contract or some other arrangement) and also where the NMS was not the designated Meteorological Authority but was contracted to provide the service. The various possibilities provided a range of alternative options for NMSs for ensuring, or helping to ensure, that appropriate meteorological services for aviation were effectively provided, particularly to ensure safety.

QUALITY MANAGEMENT SYSTEMS

6.3.15 The Council welcomed the decision of the meeting of the CAeM Working Group on PROMET, held in October 2001, to establish a Task Team on Quality, which had subsequently started preparing a document summarizing the objectives, expected results, milestones and means of implementing ISO 9000 quality systems, as well as highlighting difficulties that could be encountered, the costs for implementing such quality system, and its advantages, based on experiences from various Member countries. It was indicated that any mandatory

implementation of ISO 9000 would lead to considerable expenses to NMSs that were providers of aeronautical meteorological services and to widening the gap between developed and developing countries. The Council was of the view that the current, optional provisions related to quality systems, including ISO 9000, contained in ICAO Annex 3/WMO Technical Regulation [C.3.1] should not be made mandatory.

6.3.16 The Council also noted that, for the conjoint CAeM/Meteorology Divisional Meeting to be held in September 2002, draft recommendations would be submitted for the development of a manual on guidance for quality management, that would be undertaken by ICAO in close coordination with WMO.

6.3.17 The Council stressed the need for ongoing close coordination of activities related to the above issues to be carried out within CAeM and CBS through an intercommission task group on quality (see general summary paragraph 13.1.42). It endorsed the aims indicated in the 6LTP to assist all Members in working towards the implementation of quality management systems. The Council agreed that an important aspect of quality systems, reflected in the Plan, was the implementation of globally consistent and user-oriented verification of key products such as TAFs and SIGMETs. With regard to the overall WMO policy on the establishment of quality management systems, the decisions of the Council are recorded under agenda item 13.1 (general summary paragraphs 13.1.34 to 13.1.42).

IMPLEMENTATION OF WAFS

6.3.18 The Council was pleased to note the transfer of full responsibilities from the remaining RAFCs in Region I early in the present year to the WAFC London, and those of the remaining RAFCs to WAFC Washington by the end of July 2002. It noted the continued harmonization of the activities between the two WAFCs, including improved backup procedures. Furthermore, progress was being made to ensure that aeronautical meteorological service providers were able to prepare all WAFS charts locally. In that regard, the Council noted with appreciation that both the United Kingdom and the United States had offered to assist in providing training to aeronautical meteorology service providers to enable them to access and use the GRIB and BUFR-coded WAFS products for the local preparation of WAFS charts. The representative of ASECNA expressed appreciation for support on BUFR training which had already been provided by the United Kingdom, together with the WMO and ICAO Secretariats. The issue of the mandatory cost for access to the SADIS broadcasts was raised. The Council was informed that that cost could be recovered under cost recovery mechanisms. Furthermore, since the cost for access to SADIS had become mandatory as the result of an ICAO Council decision, any concerns over that matter should be raised with ICAO.

OBSERVATIONS IN THE TERMINAL AREA

6.3.19 The Council welcomed the active participation of WMO at the three meetings of the ICAO AMOSSG,

held between 2000 and 2002. The Council noted with interest that those AMOSSG meetings had addressed, among other issues, the requirements for meteorological observations and reports at aerodromes, the assessment of the capabilities of automated weather observing stations and the development of relevant guidance material. The results of the AMOSSG work including amendment proposals to current ICAO/WMO regulatory and guidance material would be submitted for consideration by the CAeM/Meteorology Divisional Meeting in September 2002. Caution was expressed over the potential widening of the gap between developed and developing countries that could result from more widespread adoption and acceptance of automated observing systems.

FORECASTS AND WARNINGS IN THE TERMINAL AREA

6.3.20 The Council was pleased to note that the results of the two pilot projects on TAF verification established by PROMET, one being led by France and the other by Australia, would be presented to CAeM-XII in September 2002.

6.3.21 The Council noted with interest that the forthcoming conjoint session of CAeM/Meteorology Divisional Meeting would have a specific agenda item on tailoring meteorological information format, content and timeliness to support improvements in airport capacity. It recognized the importance of ensuring and enhancing the accuracy and usefulness of forecasts and warnings for the terminal area and noted that aeronautical meteorology might be entering a new era given rapid advances in techniques and technologies including nowcasting and fine-scale models.

6.3.22 The Council endorsed the initiatives of the 6LTP to "improve and tailor forecasts of terminal weather to benefit the safety and efficiency of aviation operations" as well as the new focus on novel products and techniques including forecasting of conditions conducive to wake vortex formation and disruptive phenomena such as fog and dust. In that regard, it was pointed out that progress would need to be made in the development, application and technology transfer of nowcasting techniques and that economic benefits should come through the availability of new products that would provide longer lead-time forecasts of disruptive weather conditions.

AUTOMATED AIRCRAFT OBSERVATIONS

6.3.23 The Council was pleased to note the continued progress made by the AMDAR Panel in implementing the AMDAR programme. Despite recent difficulties experienced by the aviation industry, the number of AMDAR observations exchanged on the GTS was about 130 000 per day, representing over 2.5-fold increase compared to 1998 when the AMDAR Panel was established. The Council noted in particular the advances made in the development of a single universal software for automated aircraft observations, the reporting of air turbulence and the inclusion of humidity data in a number of AMDAR reports on an experimental basis. The Council

highlighted the importance of the availability of humidity information from AMDAR reports and encouraged further work on the development and implementation of such sensors. One of the most outstanding achievements of the Panel had been the development and approval for publication of an AMDAR *Reference Manual* that comprised a comprehensive technical description of AMDAR ranging from sensor systems to the final output data. The Council requested that that *Manual* be published as soon as possible.

6.3.24 The Council was pleased to learn that the next session of CBS in December 2002 would be considering proposals for abbreviated bulletin headers, which would facilitate access by NMCs to regional AMDAR observations of their direct interest. It encouraged closer cooperation between the AMDAR Panel and ASECNA to bring the benefits of AMDAR observations to the ASECNA area of interest.

6.3.25 The Council was informed that the EUMETNET AMDAR programme continued to focus on delivering a modern and flexible European AMDAR observation network and on generating large volumes of automated wind and temperature data in an optimized manner. The Council noted with appreciation that EUMETNET-AMDAR was allocating approximately 20 per cent of its resources to supply AMDAR data from the global data-sparse areas of the world in support of the WWW Programme.

6.3.26 The Council was aware that all the achievements of the Panel were due to the kind financial contributions provided by Members to pay in particular for the very valuable services of the AMDAR Technical Coordinator. In view of that, the Council reiterated its appeal to Members to continue to provide, on a voluntary basis, financial support for the implementation of the AMDAR programme. Some Members felt that, given that automated aircraft reports were an increasingly vital component of the WWW GOS, the activities of the AMDAR Panel in developing and coordinating AMDAR programmes should also receive funding from the regular budget, in line with the high priority given to other aspects of the WWW Programme.

UPDATING REGULATORY AND GUIDANCE MATERIAL

6.3.27 The Council was aware that WMO Technical Regulation [C.3.1] was updated as a result of the implementation of Amendment 72 to ICAO Annex 3 in November 2001 and that, as a result of that, consequential changes were introduced in the WMO *Technical Regulations* (WMO-No. 79) [C.3.3] Appendix 1 — Flight documentation — model charts and forms, in the WMO *Manual on Codes* (WMO-No. 306) Volume I.1, Part A and in *Aerodrome Reports and Forecasts: A User's Handbook to the Codes* (WMO-No. 782). In that context, the Council was informed that the next conjoint CAeM session and Meteorology Divisional Meeting would address a number of important amendment proposals to ICAO Annex 3/WMO Technical Regulation [C.3.1] as well as the restructuring of those two guidance and regulatory documents.

AVIATION AND THE ENVIRONMENT

6.3.28 The Council noted with appreciation that members of the Working Group on TREND had finalized the preparation of the booklet *Aviation and the Global Atmospheric Environment* that was based on the Special Report on Aviation and the Global Atmosphere published in 1999 by IPCC. The Council was pleased to note that WMO and UNEP were considering to jointly publish that booklet. The Council encouraged the Working Group to continue to cooperate with the ICAO Committee on Aviation Environmental Protection on TREND, particularly on environmental climate change issues.

FUTURE PLANS OF THE COMMISSION

6.3.29 With regard to the structure of the Commission, the Council noted that the CAeM Advisory Working Group meeting, held in February 2002, had proposed adopting some of more relevant new CBS working practices but not a full move to a structure based on OPAGs. The Council welcomed the proposal for the establishment of a CAeM Management Group to replace the current Advisory Working Group under which each member would have specific responsibilities for delivering results on items contained in the Programme in the 6LTP and for supporting the overall work of the Commission.

6.3.30 During discussions on the future work of the Commission, major issues facing aeronautical meteorological services were highlighted. Those major issues included the trend towards privatization and alternative service delivery for aeronautical meteorological services. The Council felt that guidance and assistance were urgently needed by Members facing such changes, as well as further seminars on the implementation of cost recovery. The Council also noted the imminent advent of the final phase of WAFS, which had come about through the visionary work that commenced more than 20 years ago. It agreed with the president's assessment that aeronautical meteorological services were at the threshold of major breakthroughs in providing benefit to aviation in the terminal area, through innovative services based on a combination of new observing systems and the application of nowcasting techniques, including frequently run, very-high resolution models. The Council recognized that, while the worldwide implementation of such innovative services would take many years, the time was right to take the first steps towards making it happen. It agreed with the president that that would need substantial planning and development with trial implementation at a number of airports, together with the necessary training and technology transfer. In order to achieve that, the Council requested the Secretary-General to ensure adequate support and funding from the WMO regular budget, to explore ways of augmenting the present budget of the Programme, including funding from extrabudgetary sources of funds and urged all CAeM members to continue their dedicated efforts to implement fully the Programme.

6.4 MARINE METEOROLOGY AND ASSOCIATED OCEANOGRAPHIC ACTIVITIES PROGRAMME; THE REPORT OF THE CO-PRESIDENT OF JCOMM; AND THE REPORT OF THE FIRST SESSION OF JCOMM
(agenda item 6.4)

6.4.1 The Executive Council noted with interest and appreciation the report of the co-president of JCOMM, Mr J. Guddal, on the results of the first session of the Commission (Akureyri, Iceland, June 2001) and on the work undertaken subsequently towards the implementation of its workplan. It expressed its thanks to him, to his co-president, Mr S. Narayanan, to the outgoing co-president, Mr D. Kohnke, to the chairpersons and members of the JCOMM component bodies and to all members of the Commission for their valuable efforts on behalf of WMO. The Council expressed its full satisfaction with the work of JCOMM as manifested in the final report of the session and in the comprehensive workplan for the current intersessional period.

6.4.2 The Council emphasized the importance of the Marine Meteorology and Associated Oceanographic Activities Programme, including in particular its work in support of maritime safety services, and noted that JCOMM now had sole responsibility for the overall coordination and oversight of that programme. It recognized that both the marine programme itself and the role of JCOMM did not only cover the meteorological and oceanographic applications and services area. They also provided substantial support to other WMO and IOC programmes, notably the WWW, global climate monitoring, research and prediction, and the GOOS in general. In that context, the Council noted with approval the close links and coordination mechanisms which had been put in place by JCOMM with CBS and the appropriate bodies responsible for GOOS and GCOS.

6.4.3 The Council acknowledged the substantive achievements under CMM, IGOSS and all the other components of JCOMM during the past intersessional period. Those included, inter alia:

- (a) Further consolidation in the marine broadcasting system for the GMDSS, the MPERSS, the MCSS, the GTSP and the GDSIDB;
- (b) Implementation of the VOSCLIM Project, of the Worldwide Recurring ASAP project and of an operational SOOP;
- (c) Substantial enhancements to global data buoy deployments and the commencement of the Argo project of sub-surface profiling floats;
- (d) The implementation of the electronic JCOMM Products Bulletin;
- (e) Major capacity building activities, including the SEACAMP and WIOMAP projects and the preparation of a comprehensive JCOMM Capacity Building Strategy.

It congratulated the Commission for those achievements and urged members that work in those ongoing priority areas should continue.

6.4.4 At the same time, the Council noted with approval the new priority areas to be addressed by

JCOMM during the coming intersessional period. Those included, in particular:

- (a) The phased implementation of a fully integrated, operational ocean observing, data management and services system, using to the maximum extent the existing structures of WMO and IOC;
- (b) Implementation of JCOMMOPS;
- (c) Close collaboration with GOOS and GCOS, in particular in ocean observations and data management for climate;
- (d) Implementation of the new JCOMM Capacity Building Strategy, which would include a number of new regional development projects and close interaction with potential external funding mechanisms.

6.4.5 The Council noted with interest and approval the new sub-structure adopted by JCOMM, which was organized around four Programme Areas: Services, Observations, Data Management and Education, Training and Capacity Building. Within each Programme Area, work would be undertaken by various expert teams, task teams and rapporteurs, with coordination and integration being provided by a Programme Area Coordinator, assisted by a small Coordination Group. Overall management of the work of JCOMM would be undertaken by a Management Committee, membership of which included equal numbers of meteorologists and oceanographers. The Council further noted with approval that the Management Committee and all Programme Area Coordination Groups had met during the first half of 2002 and had developed a well-planned, integrated approach to implementing the workplan, and also maintained the enthusiasm and impetus which had been generated during the Commission session. In addition, the new Ship Observations Team, which grouped the existing VOS, ASAP and SOOP Panels, had held its first session in Goa, India, in February/March 2002, as a first step towards a significant integration of in situ marine meteorological and oceanographic observing systems. The team had also addressed issues relating to the eventual operational use of voluntary ships for a range of non-physical ocean observations, including ocean carbon dioxide, which was a critical variable for global climate studies. The Council strongly supported that development and urged that it be extended wherever feasible.

6.4.6 In a broad general discussion on the marine programme and the work of JCOMM, the following specific points were emphasized by the Council:

- (a) Continued support for, and expansion of, an integrated ocean observing system was essential, including atmospheric, surface and sub-surface platforms and variables, with particular emphasis being placed on the value of the new Argo project. That ocean observing system was important not just for marine services and operational meteorology, but also for global climate studies;
- (b) Marine meteorological products and services were essential to many aspects of national socio-economic development, including maritime safety and maritime commerce and industry. NMSs

should therefore give priority to those services and make every effort to enhance their status and visibility among marine users;

- (c) The future success of JCOMM and the marine programme would depend on the full involvement of all maritime countries, not just the developed ones, as was largely the case at present. In that regard, the JCOMM capacity building programme was of great importance, including a comprehensive programme of workshops and related training events;
- (d) Increased marine pollution resulting from maritime commerce and industry underlined the importance of the full implementation of the MPERSS;
- (e) The JCOMM Electronic Products Bulletin was of potential value to many different types of ocean users, but it was important to provide Members with additional information describing the structure and operations of the Bulletin;
- (f) Ocean satellites constituted an essential component of an integrated ocean observing system, and JCOMM should therefore give priority to enhancing coordination and cooperation with the operators of such satellites.

6.4.7 The Council noted with interest a report from the representative of IOC on the results of the recent thirty-fifth session of the IOC Executive Council, in particular regarding JCOMM. A progress report on JCOMM was given to the IOC Executive Council by the co-president, Mr Savi Narayanan. The IOC Executive Council was pleased to note the progress made, while recognizing that the initial focus was on oceans and climate. For the future, it was important to assess to what extent, and how, non-physical observations might be dealt with under JCOMM. The IOC Executive Council adopted Resolution EC-XXXV-4, which endorsed the report of JCOMM-I and approved Recommendations 1 to 6 (the remaining recommendations being relevant to WMO only).

6.4.8 The IOC representative further informed the Council that the IOC Executive Council had also adopted Resolution XXXV.2, establishing a task team to develop a unified, comprehensive IOC strategic plan for oceanographic data and information management, for presentation to the IOC Assembly in July 2003. The creation of the JCOMM Data Management Coordination Group, the requirement for a JCOMM Data Management Strategy, and the publication of a GOOS Data and Information Strategy, had led to the need to integrate data management activities under GOOS, JCOMM and IOC/IODE. JCOMM would play a major role in that development.

6.4.9 The Council recorded its decisions on the recommendations of JCOMM-I in [Resolution 7 \(EC-LIV\)](#). Relevant budgetary provisions for the implementation of the work of JCOMM during 2002/2003 were made by the fifty-third session of the Executive Council.

6.4.10 Finally on that subject, the Council recognized the important role being played by IOC, as a full and equal co-sponsor of JCOMM. It expressed its sincere appreciation to IOC Member States and the Executive

Secretary, Mr P. Bernal, for their significant and very active participation in, and support for, JCOMM-I. The Council underlined once more the necessity of the full cooperation of the meteorological and oceanographic communities, both nationally and internationally, for the successful implementation of many of the major programmes of both Organizations. It also reiterated the willingness of WMO to continue to assist IOC, as required, in developing its capabilities to support JCOMM and its work programme.

7. HYDROLOGY AND WATER RESOURCES PROGRAMME (agenda item 7)

7.1 HYDROLOGY AND WATER RESOURCES PROGRAMME; THE REPORT OF THE PRESIDENT OF CHy (agenda item 7.1)

7.1.1 The Executive Council noted with appreciation the report of the president of CHy, Mr D. G. Rutashobya, and expressed its gratitude to all CHy members and to the Secretariat for their valuable contributions to the work undertaken by the Commission since June 2001, particularly the outcome of the sessions of the three CHy Working Groups.

7.1.2 The Council noted that, over the past 12 months, CHy had concentrated its efforts on laying plans for the future and had started implementing some of the activities under those plans. In that regard, particular reference was made to the session of the CHy Advisory Working Group that had been held in Geneva from 17 to 21 September 2001.

CHy PROJECTS

7.1.3 CHy-XI had decided that, within the subject-oriented working groups, activities would be carried out in the form of specific projects involving a number of experts and, where required, associate experts. In the light of the above decision, five project plans were developed at the meeting of the subject-oriented working groups and their brief outlines were discussed during the Advisory Working Group session. The projects were on risk management, automated real-time stage-discharge, analysis of hydroclimatological variability and trends, metadata and global/regional short-term hydrological forecasting systems.

EXCHANGE OF HYDROLOGICAL DATA

7.1.4 Work was carried out by CHy in response to Resolution 25 (Cg-XIII) — Exchange of hydrological data and products. A technical report on the exchange of hydrological data and products, which CHy had arranged for drafting, was revised on the advice of the Executive Council Advisory Group on the International Exchange of Data and Products and subsequently reviewed by the Regional Hydrological Advisers. The Advisory Working Group then endorsed the text. The Council requested that that text be circulated to all its members for comments before being finalized for publication.

7.1.5 Regarding the dissemination and promotion of Resolution 25 (Cg-XIII), the AWG had strongly recommended that the brochure entitled *Exchanging*

Hydrological Data and Information: WMO Policy and Practice (WMO-No. 925) on the policy and practice set out in the Resolution and the technical report referred to above be distributed as widely as possible, and that the English-language version of the report should be sent to all at first, with the other language versions to follow when available. Following that recommendation, it was planned to circulate the brochure to Permanent Representatives of Members and their Hydrological Advisers together with a questionnaire designed to assess the current status of data exchange. The technical report would be distributed in a similar fashion once finalized.

ROLE OF NHSS

7.1.6 The technical document entitled *The Role and Operation of National Hydrological Services* (Technical Report in Hydrology and Water Resources No. 72, WMO/TD-No. 1056) that had been drafted by CHy, revised and then endorsed by the Executive Council Advisory Group on the Role and Operation of NMHSs, had been published. The CHy Advisory Working Group considered the potential value of convening a high-level meeting on the role of NHSSs, either as a stand-alone event or in conjunction with CHy-XII in 2004, and the Council noted future plans for regional meetings on that topic.

ACQUISITION OF HYDROLOGICAL DATA

7.1.7 The Advisory Working Group expressed the need to establish a comprehensive set of criteria for the acquisition of hydrological data on the basis of defined projects. In particular, hydrological time series were needed for pristine basins in order to detect signals of climate variability and change in those time series. There was, therefore, the need to establish a high profile hydrological network of stable and pristine basins for that purpose.

COLLABORATION WITH OTHER TECHNICAL COMMISSIONS

7.1.8 CHy had been collaborating with one or more of the other technical commissions of WMO in a number of current and proposed projects. The Commission had been, or would be, collaborating with CIMO, CBS, CAS and CCI in areas such as information systems, NWP modelling, hydrological modelling, impact of climate variability and change on water resources, regional climate centres, natural disaster reduction and coastal lowlands. Other areas included short-term hydrological forecasting, medium- to long-term forecasting, probable maximum precipitation and network design.

RAISING THE PROFILE OF HYDROLOGY

7.1.9 The Council considered in broad terms the state of the world's water resources, noting that:

- (a) Water was essential to our livelihood and yet too many people in the world did not have adequate access to fresh water;
- (b) Water was essential to ecosystem health. Biodiversity in many aquatic ecosystems was under great threat in both developed and developing countries;

- (c) There were many bodies of water that provided freshwater resources and those were linked in nature, but not necessarily in management. Integrated use and management of those resources was essential to sustainable development; and
- (d) People from different walks of life, from politicians to farmers, were becoming increasingly aware of the importance of, and threats to, water resources. At no time in the past had the issue of water been so high on the political, environmental and social agendas.

7.1.10 The Council saw that as providing a great opportunity for WMO, in particular because:

- (a) Assessment of the availability of the resource, both temporally and spatially and in quantity and quality, was the basis for its sustainable development and a fundamental role of the Members of WMO;
- (b) Management of the resource in times of excess and scarcity (floods and droughts) to minimize the impact on society was also a key responsibility of the Members of WMO; and
- (c) Climate variability and change were driving forces behind the availability of the resource and the characteristics of the resource which must be understood to support biodiversity of aquatic ecosystems.

7.1.11 In view of that, the weather, climate and water programmes of WMO must collaborate so as to address those key components of water resources management. Each could gain considerably by the opportunities that would arise through that collaboration. In general, WMO must promote the vital role it played in those areas and should provide adequate resources to ensure that that was possible.

ROLE OF HWR WITHIN WMO

7.1.12 The Council recalled the view of CHy-XI that WMO could play a more significant role in the field of hydrology and water resources, provided its activities were strengthened accordingly and provided it was seen by the wider community as being a major actor in that field. In that regard, particular attention focused on the request by the fifty-third session of the Executive Council for the president of CHy to bring to the fifty-fourth session a specific proposal for a subtitle of WMO which would reflect adequately the Organization's responsibilities in hydrology and water resources. That subtitle would address the dilemma of the lack of any reference to hydrology in the title "World Meteorological Organization" and would be in line with the "vision" of the Organization. It would also serve to educate the many people around the world who assumed that WMO dealt only with meteorology, and not with fresh water. The Council re-affirmed that there was no intention of changing the title of the Organization. It then considered the alternatives for the wording that might be included in a subtitle for WMO that were proposed by the CHy Advisory Working Group and agreed that the words "weather, climate and water" would best reflect the main areas of work of the Organization.

7.1.13 Accordingly, it recommended to Congress that the subtitle be "weather, climate and water". The Council requested the Secretary-General to provide guidance to Fourteenth Congress on the status of the subtitle and how and when it could be used, and also how well the subtitle translated into other languages.

7.1.14 The Council noted the continuing desire of CHy that WMO's activities in hydrology and water resources be given a higher profile both within the Organization and in its external relations. The question of representation of hydrology on the governing bodies of WMO was again mentioned, the matter being referred to discussions on the WMO structure for consideration there. One proposal that was made in that respect was to have the regional associations designate Regional Hydrological Representatives rather than Regional Hydrological Advisors.

AN INTERGOVERNMENTAL REVIEW AND ACTION MECHANISM ON FRESH WATER

7.1.15 The Council was informed of a concept for an intergovernmental review and action mechanism on water that had been prepared as a collaborative effort by the president of CHy and the WMO Secretariat. The main objective of the concept was to initiate a process which ultimately would lead to greater intergovernmental interest and coordination in water issues. The concept was presented in [Annex VI](#) to this report.

7.1.16 That concept had been discussed and endorsed by the CHy Advisory Working Group, which recommended that it be presented to the present session of the Executive Council for its consideration and advice. It had also been discussed informally with representatives of other United Nations agencies. Before taking it further, however, it was felt desirable to seek the views of, and possible endorsement by, the Executive Council.

7.1.17 The concept outlined in [Annex VI](#) to this report was seen by the Council as being of considerable interest and of potential value, provided it served to bring together the fragmented freshwater programmes of the United Nations agencies and did not lead to duplication of effort. The Council requested that the president of CHy and the Secretary-General develop the concept further in consultation with other United Nations agencies and prepare more specific plans for the aims, terms of reference, composition, status and secretarial support for the mechanism for the consideration of Fourteenth Congress.

7.2 PROGRAMME ON BASIC SYSTEMS IN HYDROLOGY (agenda item 7.2)

CHy WORKING GROUP ON WATER RESOURCES

7.2.1 The Executive Council noted that the CHy Working Group on Water Resources had met in Geneva in September 2001 to plan its future activities, based on the workplans of the individual CHy Experts who constituted its members.

7.2.2 The Council was informed that a CD-ROM containing the English and French versions of the fifth

edition of the *Guide to Hydrological Practices* (WMO-No. 168) had been issued in September 2001 and that the preparation of the Russian and Spanish versions in a similar format was under way. The Council reiterated its view that, in view of the rate of change of technology in the field of hydrology, consideration should be given to updating the *Guide* every five years.

WATER RESOURCES ASSESSMENT

7.2.3 The Council was pleased to note the efforts that were being made by the WMO Secretariat to promote the use of the methodology contained in the WMO/UNESCO *Water Resources Assessment: Handbook for Review of National Capabilities*. The English, French, Russian and Spanish versions of the *Handbook* were now accessible through the WMO Web site.

7.2.4 The Council appreciated the steps that had been taken by the WMO Secretariat in organizing several regional workshops to promote the use of the *Handbook*, the next of which was to be held in Cairo in July 2002. It appreciated the assistance provided by Chinese experts in translating the *Handbook* into Chinese. That made the *Handbook* available in all the official languages of WMO.

7.2.5 The Council was informed of the recommendation of the CHy Advisory Working Group to develop a similar methodology for the assessment of the water resources themselves.

WHYCOS

7.2.6 The Council was informed of the progress in the development and implementation of the WHYCOS programme. The pilot phase of AOC-HYCOS, funded by France, would continue through the year 2002, while the first phases of SADC-HYCOS, funded by the European Commission, and of MED-HYCOS, funded by the World Bank, terminated in 2001.

7.2.7 A proposal for a second phase of SADC-HYCOS had been developed and the Netherlands had expressed interest in supporting its implementation. Activities in MED-HYCOS would be continued with support expected from the European Commission.

7.2.8 The Council expressed its appreciation for the efforts that were being made to develop the various WHYCOS components but pointed to the need to move the projects more rapidly into the implementation phase. It noted that funding for that purpose was at present fully dependent on extrabudgetary sources and urged that WMO made some provision for initial start-up activities.

7.2.9 The Council endorsed the views of the CHy Advisory Working Group that the sustainability of HYCOS projects when external support ended should be taken into account in the early development stages and that an end-of-project objective evaluation should be undertaken so that lessons could be learned and used in future planning.

7.2.10 It was noted that, while capacity building should be seen as a key component of the WHYCOS project, it was essential that the individual HYCOS

projects met specific needs of the countries involved. That meant that they should lead to the solution of regionally-identified hydrological problems and support to water management activities.

7.2.11 The Council was pleased to note that a set of guidelines for the development of WHYCOS was being prepared by the Secretariat which would serve to clarify issues such as the global concept and ownership of WHYCOS and the governance of the HYCOS project implementation.

7.2.12 The Council noted the review and coordination functions provided by the meetings of the WHYCOS International Advisory Group and the WHYCOS Coordination Group, as established by the Secretary-General.

TECHNOLOGY IN OPERATIONAL HYDROLOGY

7.2.13 The Council noted that the development of HOMS, revitalized in recent years and with an active presence on the Internet, continued satisfactorily. The *HOMS Reference Manual* currently contained close to 200 state-of-the-art components updated regularly. It was being consulted and utilized with ever-increasing frequency by hydrologists worldwide, especially since the components descriptions were now available online in English, Russian and Spanish, with the French version scheduled to follow later in the year.

7.2.14 It was recognized that improvements were still needed, especially regarding the number of components in certain technical areas, such as remote sensing or modern measuring instrumentation. It was worth noting that the widespread recent emphasis on cost-recovery in NHSs had meant a reduction in the time voluntarily offered to technical assistance programmes, even from the NHSs of the most advanced countries. In view of the above situation, the Council was pleased to learn of successful training initiatives such as the Workshop on Flood Forecasting for participants from RA V, held in Wellington, New Zealand in January 2002 and the planned workshop on Canadian HOMS components related to floods and low flows frequency analysis for trainers from RAs I and IV, to be held in Ottawa in September 2002.

REGIONAL ACTIVITIES

7.2.15 The Council noted the various activities in hydrology and water resources being undertaken in the six Regions, including in particular the work of the regional association's Working Groups on Hydrology.

7.2.16 The Council was informed of the completion of the pilot phase of the Historical Hydrological Data Rescue Pilot Project in eight countries of RA I. The success of that project was welcomed and its continuation and extension to other countries encouraged.

7.2.17 The Council noted the activities related to flood forecasting in RA II and the efforts to link those with activities related to disaster preparedness and reduction. The Council noted with appreciation the development of HYCOS projects in the Region, namely HKH-HYCOS and plans to develop a Mekong-HYCOS

based on a Memorandum of Understanding with the Mekong River Commission, and activities related to floodplain management.

7.2.18 The Council noted the scope and progress of activities related to hydrology and water resources in RAs III and IV which confirmed the high priority given to hydrology and water resources activities in the Regions, including the establishment of a CARIB-HYCOS and collaborative activities such as in the La Plata and Amazon Basins. It was informed of the efforts being made to secure funding for CARIB-HYCOS and noted with appreciation the interest of France in assisting with the further development of the project.

7.2.19 The Council further noted that the session of the RA V Working Group on Hydrology had been held in Wellington in January 2002 and that the session of the RA VI Working Group on Hydrology had been held in Berlin in February 2002, the latter in parallel with a meeting of IHP National Committees of Electoral Groups I and II of UNESCO. Those meetings had been organized in a very cost-effective manner and provided useful forums for sharing experience, for establishing coordinated approaches to common water-related problems and for developing proposals for regional projects.

INFOHYDRO

7.2.20 Following a recommendation of CHy-XI, the Advisory Working Group had initiated a review and revision of the contents and scope of INFOHYDRO. The objective was to retain most of the valuable information contained in previous editions, while at the same time making it easier for Members and the Secretariat to update the information. The aim was to have a draft revised version of INFOHYDRO available for CHy-XII.

7.3 PROGRAMME ON FORECASTING AND APPLICATIONS IN HYDROLOGY (agenda item 7.3)

7.3.1 The Executive Council was informed that the CHy Working Group on Hydrological Forecasting and Prediction had met in Geneva in September 2001. Each member of the Group had prepared a work programme, which had subsequently been approved by the CHy Advisory Working Group. The Group also initiated the development of projects on risk management and global forecasting and warning. The Council reiterated its view on the need to strengthen flood forecasting activities and noted with interest the idea of developing regional flood information centres which could serve in an advisory role to Members. The Council was informed of plans to develop a global project on drought prediction and management. The Programme on Forecasting and Applications in Hydrology would be supported by the development and implementation of relevant HYCOS projects.

HYDROLOGICAL ASPECTS OF DISASTERS

7.3.2 The Council noted that, in conjunction with the Global Water Partnership, an Associated Programme on Flood Management — Global Coordination had been launched in August 2001 with the support of Japan. The

Netherlands was now also supporting the project. The project considered flood management as a broad concept that used a combination of policy, regulatory, financial and physical measures to focus on coping with the hazard posed by floods, while recognizing that floods could have positive as well as negative impacts. The Council was informed that activities were planned for four regions: Central America, South America, South Asia and Southern Africa.

7.3.3 It was noted that continuous support was being extended to the development of hydrological components of the TCP.

7.3.4 The Council appreciated the progress made in assisting Members in flood forecasting but noted that, in some regions, activities in the development of the hydrological components of the TCP had not been taken up by Members with the priority they deserved. The Council, however, noted the efforts made by several Members, in collaboration with the Secretariat, to promote the improvement of flood forecasting in the further development of the hydrological components of the TCP.

HYDROLOGY IN THE CONTEXT OF GLOBAL ENVIRONMENTAL ISSUES

7.3.5 The Council noted that an expert meeting had been held on 21 and 22 June 2001 in Koblenz, Germany on the formal establishment of the Global Terrestrial Network — Hydrology, following an agreement to set up such a network based on existing data centres and observing programmes such as WHYCOS, GRDC GPCP and FRIEND. The governance structure for the network and its plan of implementation had been established.

7.3.6 The Council noted with satisfaction the continued work of the GRDC and especially its important role in the promotion of Resolution 25 (Cg-XIII) — Exchange of hydrological data and products. Future work of the GRDC would focus on issues such as the development of data products and the assembling of tools to provide uniform access to near-real-time data available through the Internet. The Council expressed its expectation that the GRDC would continue to provide useful products to the climate and water resources communities based on its global river data sets.

7.3.7 The Council was advised that WMO and UNESCO had convened the second Meeting of the WCP-Water Steering Committee in Geneva from 23 to 25 January 2002. The main objective of the Meeting had been to develop a strategy by which WMO and UNESCO would contribute to new projects and programmes in climate, hydrology and water resources management and develop and implement their own projects. The focus of project development was envisaged to be on vulnerable river basins, mainly in arid and semi-arid areas of the world. The analysis of long-term trends and variability in hydrological series and the development of methodologies on flood and drought frequency analysis were also among the priority areas of work of the programme.

7.3.8 The Council was informed of the collaboration that existed between WCP-Water and the Dialogue on

Water and Climate, which had recently been established by the World Water Council and the Global Water Partnership.

7.3.9 The Council noted with satisfaction that, in January 2002, the Netherlands had initiated work on a preliminary phase of the IGRAC and encouraged Members and appropriate United Nations Agencies to support and collaborate in the establishment and functioning of the Centre.

7.3.10 The Council recognized the urgent requirements for hydrological data on lakes and reservoirs on a global scale for water resources assessment and climate research. The Council noted with appreciation the efforts of the Russian Federation to establish an International Centre on Lakes and Reservoirs and encouraged its early implementation.

7.4 PROGRAMMES ON SUSTAINABLE DEVELOPMENT OF WATER RESOURCES AND ON CAPACITY BUILDING IN HYDROLOGY AND WATER RESOURCES (agenda item 7.4)

7.4.1 The Executive Council noted that the third session of the Editorial Task Force in Hydrology had been held in Geneva from 11 to 15 February 2002, as a joint endeavour of the ETR Programme and the HWRP to prepare Volume II – Hydrology of the *Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology* (WMO-No. 258). The Council was informed that the publication would include basic instruction packages for hydrologists and related professionals and also for hydrological technicians. The topic of continuing education and training would also be covered and examples of job competency requirements in the main branches of activity would also form part of the publication.

7.4.2 The Council appreciated the efforts of the Secretariat to implement activities under the Programme on Sustainable Development of Water Resources with the very limited funds available. It noted that an assessment had been made of the hydrological needs of the small island States of the Pacific and projects had been prepared for the training of hydrological technicians and for the improvement of water resources monitoring. The Council encouraged the WMO Secretariat to investigate ways of implementing those projects in partnership with regional bodies.

7.5 PROGRAMME ON WATER-RELATED ISSUES (agenda item 7.5)

7.5.1 The Executive Council considered the recent developments in the wider international community regarding with fresh water, especially as they related to the HWRP.

7.5.2 It was noted that the ACC Subcommittee on Water Resources had met in the WMO Headquarters in September 2001, chaired by WMO, that the ACC had been renamed the United Nations System's Chief Executives Board for Coordination (CEB) and that it had dismantled most of its subsidiary structure, leaving the Subcommittee on Water Resources in a very unclear

situation. Given that the Subcommittee had important ongoing mandates to fulfil, some even given by the United Nations General Assembly, that there was no one lead agency for fresh water within the United Nations system, and that the Subcommittee had proved very effective in coordinating inter-agency activities over more than 30 years, the Council strongly endorsed the past efforts of the Secretary-General to ensure that that inter-agency mechanism remained effective and encouraged him to pursue every means to put back in place a single inter-agency body to fulfil that vital role.

7.5.3 The joint activities of the former Subcommittee focused on the World Water Assessment Programme, the principal outcome of which would be the *World Water Development Report*. The Council noted that WMO was actively contributing to the preparation of the *Report*, a final draft of which would be available at the time of the WSSD in Johannesburg, the full first edition being presented in March 2003 at the third World Water Forum in Japan.

7.5.4 The Council was informed of the outcome of the International Conference on Freshwater that had been convened by Germany in Bonn from 3 to 7 December 2001 to provide input to the WSSD, which was discussed by the Council under agenda item 15.2.

7.5.5 The Council noted that WMO's membership of the World Water Council and its Board of Governors gave the Organization a direct link with the planning of the third World Water Forum, which would be held in Kyoto, Shiga and Osaka from 16 to 23 March 2003. The Forum would include sectoral and regional sessions, plus a series of panels and workshops. The Council considered that WMO should be actively involved in the Forum.

7.5.6 WMO's membership of the Global Water Partnership had led to the Organization taking the lead in establishing the Associated Programme on Flood Management — Global Coordination (see general summary paragraph 7.3.2). Along with the World Bank and some Member States, WMO had been invited to become a "sponsoring partner" of the Global Water Partnership Organization, the Secretariat of the Global Water Partnership. In May 2002, the Swedish Parliament had approved the establishment of the Global Water Partnership Organization as an intergovernmental organization, located in Stockholm. The Council agreed that WMO should accept that invitation provided that that placed no financial obligations on the Organization.

7.5.7 The Council was advised of recent developments in the joint activities with UNESCO, most notably as regarded the *International Glossary of Hydrology*, and the formal recognition in March 2002 of the International Institute for Infrastructural, Hydraulic and Environmental Engineering in Delft as the UNESCO Institute for Water Education.

7.5.8 The representative of UNESCO spoke of the need for WMO and UNESCO to mobilize resources and work together on all environmental issues, especially so as to cope with the looming water crisis. He outlined the

programme of activities planned under the sixth phase of UNESCO's International Hydrology Programme with the general theme "Water interactions: systems at risk and social challenges". He stressed the great value that UNESCO placed on its cooperation with WMO and its desire to strengthen ties in the field of water-related disasters.

7.5.9 The Council expressed its support for continuing the close links with UNESCO in the field of fresh water and suggested that consideration be given to establishing a joint committee on water resources assessment as a next step towards more formal integration of the water programmes of the two Organizations.

7.5.10 The Council noted with interest the proposal for the establishment of an intergovernmental mechanism/platform on water presented by the Swiss delegation to the preparatory meetings for the WWSD. Given the similarity between that proposal and the concept outlined in Annex VI to this report, it was recommended that contact be established with the relevant Swiss Authorities when developing further the concept, as recommended in general summary paragraph 7.1.17.

7.5.11 The Council noted that WMO had co-sponsored the Sixth Scientific Assembly of the International Association of Hydrological Sciences, which had been held in Maastricht, Netherlands in July 2001, and a number of other international scientific events convened by Members or non-governmental organizations.

8. EDUCATION AND TRAINING PROGRAMME (agenda item 8)

GENERAL

8.1 The Executive Council recalled the decisions of Thirteenth Congress on WMO activities in the field of education and training and, in particular, Resolution 17 (Cg-XIII) — Education and Training Programme. The Council also noted with satisfaction the information on WMO activities which had taken place in education and training since its last session. It stressed that training activities were vital for the success of all WMO Programmes. It also appreciated the assistance provided to regional and national training institutions for the implementation of regional and national aspects of the ETR Programme.

8.2 The Council expressed appreciation on the collaboration with education and training programmes of international organizations within the United Nations family and other agencies, particularly the collaboration that existed between the Secretariat and ITU in allowing WMO RMTCs to participate at the Internet Training Centres Initiative for Developing Countries and recommended that similar assistance and cooperation with other agencies should be continued and expanded, within the available resources. The Council also noted the collaboration that existed with UNESCO, UNEP, EUMETSAT, NOAA, COMET and ITU, aimed at assisting in the assimilation of new technologies and scientific achievements in the education and training process.

8.3 The Council stressed the importance of education and training as a major factor for capacity building for NMHSs and emphasized the need to give high priority to that Programme in the provisions of the fourteenth financial period. The Council also noted the importance of ISO 9000 and its impact on the delivery of high quality training and setting of professional standards. The Council was also informed that the subject of quality training would be discussed as one of the major topics during the next WMO Symposium on Education and Training in April 2003.

EXECUTIVE COUNCIL PANEL OF EXPERTS ON EDUCATION AND TRAINING

8.4 The Council noted the report of the twentieth session of its Panel of Experts on Education and Training, held in Quezon City, Philippines from 15 to 19 April 2002 and commended the work carried out by the Group under the chairpersonship of Mr J. W. Zillman. The Council considered the views and recommendations of the Panel, and its comments and decisions thereon were recorded in the relevant paragraphs below.

HUMAN RESOURCES DEVELOPMENT

8.5 In noting that, as agreed by Thirteenth Congress, a global survey of Member's training requirements would be undertaken in 2002. Considering its value for a proper assessment and planning of the Organization's education and training activities and for the introduction of improvements to the ETR Programme itself, the Council reiterated its previous calls for an active participation of Members, by carefully completing the newly designed questionnaire and by providing the requested information.

8.6 The Council appreciated that, in order to enhance further human resources development, letters were forwarded to all relevant chairpersons of technical commissions and presidents of regional associations to request their rapporteurs, whose activities were related to the ETR Programme, to forward copies of their reports to the Secretariat in order to ensure that their observations, problems and suggestions in respect of education and training were henceforth incorporated in the recommendations of the Executive Council Panel of Experts on Education and Training.

8.7 The Council was informed that the next session of the CHy Advisory Working Group would discuss the issue of establishing Regional Hydrological Training Centres. In that context, the alternative option for a better integration of hydrological training in the existing network of RMTCs was also suggested.

NEW CLASSIFICATION OF PERSONNEL IN METEOROLOGY AND OPERATIONAL HYDROLOGY

8.8 In relation to the new WMO classification of personnel in meteorology and operational hydrology, approved by its fiftieth session to be effective from 1 January 2001, the Council noted that a consolidated version of the new edition of the *Guidelines for the Education and Training of Personnel in Meteorology and*

Operational Hydrology (WMO-No. 258), Volume I — Meteorology, was prepared following the receipt of Members' comments and suggestions on the preliminary version. The Council appreciated that the publication was distributed to all Members, in line with the directives of its fiftieth session and of Thirteenth Congress, for gradual implementation of the new classification. It also appreciated that a supplement to that publication would be distributed soon to all Members for their information and application, if appropriate.

8.9 The Council also noted that preparation of Volume II — Hydrology, was under way and it was planned that education experts worldwide would review the consolidated text before the end of 2002. It was envisaged that the formal publication of the English version would be done by the first quarter of 2003 (see also general summary paragraph 7.4.1).

8.10 The Council emphasized previous calls to encourage WMO Members and RMTCs to initiate coordinated actions oriented towards reviewing and updating the related curricula, followed by their gradual implementation into their own education and training process, taking into account the new WMO classification of personnel in meteorology and operational hydrology.

8.11 The Council noted the high cost of training of personnel in meteorology and operational hydrology and financial constraints experienced by many Members. The Council therefore recommended that assistance, within the available resources, be provided to Members in developing countries to assist them to train their staff in line with the new WMO classification of personnel in meteorology and operational hydrology.

TRAINING ACTIVITIES

8.12 The Council noted that a considerable number of training events on a range of subject areas on the major WMO scientific and technical programmes had been organized and co-sponsored by WMO, including training in specialized areas, such as the management of NMHSs and cost recovery and marketing of meteorological products and services.

8.13 The Council was informed of training activities at RMTCs in China, Egypt, India, the Islamic Republic of Iran, Israel, Kenya, Niger and the Russian Federation, as well as national initiatives, such as those of Fiji and Poland. The Council noted with appreciation those initiatives and requested the Secretariat to consider co-sponsoring such training activities subject to the available resources.

8.14 The Council noted the use made by Members of the services provided by the Training Library and the efforts being made to update the Virtual Training Library as a learning portal providing Web-based training resources in meteorology and hydrology. It encouraged the Secretariat to continue and expand those actions.

8.15 The Council expressed satisfaction with the progress made in the preparation of training publications. The Council noted, in particular, the release of the following publications during the intersessional period:

- (a) Part I of the *Notes for the Training of Instructors in Meteorology and Operational Hydrology* (ETR-16);
- (b) The second edition of the *Lecture Notes for Training Class II and Class III Agricultural Meteorological Personnel* (WMO-No. 551);
- (c) *Introduction to Climate Change: Lecture Notes for Meteorologists* (WMO-No. 926);
- (d) The *Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology*, Volume I — Meteorology (WMO-No. 258);
- (e) The updated Part V of the *Compendium of Training Facilities for Meteorology and Operational Hydrology* (WMO-No. 240), including the training programmes of WMO RMTCs for 2002 and 2003.

The Council expressed appreciation to Members and individuals for their collaboration and assistance.

8.16 The Council noted with appreciation the successful outcome of the fifth International Conference on Computer-aided Learning and Distance Learning in Meteorology, held in Recife, Brazil from 9 to 13 July 2001, organized by the SCHOTI Working Group on Computer-aided Learning and co-sponsored by WMO.

8.17 The Council was pleased to learn that the Spanish Meteorological Institute had offered to host the next WMO Symposium on Education and Training in Madrid in April 2003 and thanked the Spanish authorities for such a generous offer. It supported the Panel's suggestions that the title of that event would be WMO Symposium on New Perspectives of Education and Training in Meteorology and Hydrology and that the Symposium would consider the national, regional and global actions, schemes and activities associated with the new challenges the NMHSs and training institutions would face in the implementation of the new classification of meteorological and hydrological staff. Of particular importance were the promotion of continuous education and training and life-long learning; the introduction of new specialization and the quality of the education and training offered (e.g. recognition, validation and accreditation of studies).

REGIONAL METEOROLOGICAL TRAINING CENTRES

8.18 The Council noted that a majority of RMTCs in the RMTCs network continued to contribute positively to the training of operational personnel from their regions. It encouraged WMO RMTCs to continue their contribution to the ETR Programme by offering, as far as possible, training opportunities to satisfy regional needs and requested the Secretariat to continue its assistance to RMTCs, within the available resources.

8.19 The Council welcomed the initiative supported by COMET and UCAR to launch a MeteoForum pilot project aimed at developing a virtual centre through which WMO RMTCs in RAs III and IV could access data and training provided by WMO, UNIDATA, COMET and universities and share resources with each other. It encouraged the Secretariat to explore the possibility of launching similar initiatives in other WMO Regions.

8.20 The Council noted with satisfaction that following the mechanism for the continuous monitoring

of RMTC's activities agreed by its forty-eighth session and endorsed by Thirteenth Congress, three RMTCs, those located in Kenya, Niger and the Philippines, were externally reviewed. It agreed with the Panel recommendations, which considered the reports of the external assessment teams, that those training centres should continue to be recognized as WMO RMTCs.

8.21 The Council also noted the proposed Guidelines on the practical application of the Executive Council criteria for the recognition of WMO RMTCs which had been considered by the Executive Council Panel of Experts on Education and Training at its last session. It supported the Panel's views that those Guidelines might help concerned bodies, such as regional associations, the Secretariat, individual Members, as well as RMTCs themselves, apply more rigorously existing regulations and mechanisms for establishing new, or for reviewing, the existing RMTCs.

8.22 The Council noted that the Panel considered a draft concept paper on the future role and operation of RMTCs with the following aims:

- (a) To document and promote the idea of a general review in meteorological and hydrological education and training, with a view to strengthening the endogenous capacities of each country, particularly developing and transition countries. Also, to raise Members' awareness on the need for launching a reforming process in the RMTCs' organization and operation, including their optimal regional networking;
- (b) To stimulate region-wide policy dialogue on RMTCs' development, aimed at an overall agreement to strategic priorities and joint views between the hosting Governments and the regional associations; and sustainable cooperation between all major stakeholders of RMTCs;
- (c) To endorse a philosophy favouring quality education in meteorology and operational hydrology; favouring in particular continuing change and rapid adaptation of training provision by RMTCs according to the evolving requirements of Members;
- (d) To initiate preparation of strategic action plans for the RMTCs' sustainability, to be agreed, periodically reviewed and constantly supported by all concerned, in order to ensure the effective achievement of the foremost objective of meeting expressed regional training needs in meteorology.

8.23 The Council also noted that that draft concept paper identified a number of strategic questions involving WMO Members, RMTCs and stakeholders (host NMHS and Government, Members potentially to be served, regional associations as a whole, Executive Council, Panels and the Secretariat). The paper also suggested a reform framework, which identified the main lines of actions for its implementation, including proposed roles and responsibilities for different stakeholders and other concerned bodies.

8.24 The Council endorsed the proposed Guidelines on the practical application of the Executive Council

criteria for the recognition of WMO RMTCs and the concept paper on the future role and operation of RMTCs and requested the Secretariat to take the necessary action, within the available resources, for the implementation of those initiatives.

8.25 The Council was informed of the offer made by the Government of Venezuela at the thirteenth sessions of RAs III and IV to extend the capabilities of the RMTC hosted by the Central University of Venezuela through an additional component under the Technical School of Aviation, Maracay providing training at a technical level in meteorology. The Council noted the positive consideration of that offer by both Regions and supported the Panel's view that before making a final decision, it was necessary to request that the Rapporteurs on Education and Training, through the presidents of the regional associations, assess the regional training needs that would be addressed by the new component (in line with the Guidelines on the practical application of the Executive Council criteria for the recognition of WMO RMTCs).

8.26 The Council was informed that a proposal was received in the Secretariat from the Permanent Representative of China with WMO to strengthen the capability of RMTC China by offering the training facilities and opportunities available at the CMA Training Centre in Beijing as a component of the RMTC Nanjing for continuing education and training. Noting the positive views of the Secretariat and the Executive Council Panel, the Council considered that those arrangements would very much contribute to enhance the capability of RMTC China for the benefit of Members in the Region, and acknowledged with appreciation that contribution.

8.27 In noting the request regarding the possibility for establishing an RMTC for central Africa originated by RA I, the Council supported the Panel's recommendation that the president of RA I and the RA I Rapporteurs on Education and Training be informed of, and provided with, the Panel's Guidelines on the practical application of the Executive Council criteria for the recognition of WMO RMTCs and that when evaluating the training requirements in central Africa, the Rapporteurs should also evaluate the existing training offers. It recalled the views of Twelfth Congress that every effort should be made to ensure that recognized RMTCs were functioning at the required level of efficiency and effectiveness in preference to the establishment of new centres. The Council was informed of the present status of RMTC Angola and of other possible alternatives to facilitate a more adequate level of training offered for Portuguese-speaking countries. The above issues would be considered in the forthcoming session of the RA I (November 2002).

EDUCATION AND TRAINING FELLOWSHIPS

8.28 The Council noted with satisfaction that a total of 304 fellowships were awarded during 2001, under all programmes, which were about 10 per cent more than those awarded in 2000. The Council further noted that all the fellowships from the regular budget were awarded in line with the criteria established by its fifty-second

session. The Council acknowledged with appreciation the generous contributions of VCP donor Members and appealed to them to maintain, and if possible, to increase further their contributions to the fellowships programme. The Council noted with concern that the gap between the requests for fellowships and the awards made continued to increase, mainly as a result of rising fellowship costs, the shortage of funding and the increasing demand. It encouraged the Secretariat to continue to promote tripartite cost-sharing arrangements, as well as initiatives in soliciting voluntary contributions from extrabudgetary sources. The Council was informed of such tripartite activities between RMTC Nairobi and RMTC Bet Dagan and co-sponsored by WMO, which were beneficial to the Region. The Council finally appealed to donor Members to make additional efforts to assist in satisfying the increasing needs and demands for training through fellowships.

8.29 The Council supported the Panel's recommendation that the Secretariat strictly adhere to the present criteria for the award of fellowships under the regular budget, in particular concerning the emphasis in awarding fellowships for continuing education and training in meteorology and operational hydrology rather than basic education, and in giving priority to long-term fellowships for periods not exceeding 18 months. It also requested the Secretariat to explore the initiation of an evaluation of the impact of the fellowship programmes by analysing the career progression and activities of former WMO fellows.

9. TECHNICAL COOPERATION PROGRAMME (agenda item 9)

9.1 The Executive Council noted that Members continued to benefit from the activities carried out under the TCO Programme, which covered several areas such as project and programme development, resource mobilization and capacity building. Those activities were implemented within the framework of various funding sources such as UNDP, the WMO VCP, Trust Funds, the Global Environment Facility, the World Bank and regional development banks and other sources.

9.2 The Council noted that the total delivery for technical assistance activities during the year 2001 amounted to US\$ 24 million, of which US\$ 5.01 million were from UNDP, US\$ 7.37 million from the VCP, US\$ 11 million from Trust Fund projects and approximately US\$ 0.62 million from the WMO regular budget. It should be noted that the delivery had increased in 2001 in comparison to 2000.

PROGRAMME IMPLEMENTATION ACTIVITIES

WMO VOLUNTARY COOPERATION PROGRAMME

9.3 The Council noted that contributions in cash and in kind to the WMO VCP in 2001 provided by 30 Members amounted approximately to US\$ 7.3 million. Ninety-nine VCP projects for equipment and 457 requests for fellowships were circulated among donor Members. Thirty-six VCP projects for equipment

obtained partial or full support and 174 short-term and 36 long-term fellowships were newly awarded under the VCP in 2001. It expressed its gratitude to donor Members that had made contributions to the VCP in the form of funds, equipment and services as well as fellowships. The Council further noted that in spite of substantial offers of support obtained every year, approximately 300 VCP projects for equipment and 200 requests for fellowships remained unsupported or not fully supported. Noting with appreciation that donor Members indicated their willingness to continue or to enhance the support to the VCP Programme at the Informal Planning Meeting on the VCP and related TCO Programmes, held in Geneva in March 2002, the Council urged Members to participate more actively in the Programme by making contributions.

9.4 The Council was pleased to note that the TCO and VCP Web pages were regularly updated and further enhanced to contain the latest information on the TCO/VCP-related activities, including highlights of ongoing projects. It further noted that presentation materials (MS-PowerPoint files) were developed and made available on the TCO Home Page with planned regular update, to assist the resource mobilization activities of the Secretariat and Members, for introducing the TCO and VCP Programmes and the WMO Emergency Disaster Assistance. A further enhancement of the Internet Web pages (with a new look) and preparation of a VCP brochure for publicity were under way in 2002. The Council encouraged the Secretary-General to continue strengthening the Programme.

UNDP AND RELATED ACTIVITIES

9.5 The Council noted that in RA I, two UNDP-funded projects were being implemented during the year, one in Kenya and the other in the Libyan Arab Jamahiriya. In RA II, the Meteorological Services in Bahrain continued to be strengthened though a UNDP project mainly through the introduction of new facilities and manpower development. Six automatic weather stations were delivered. Under an ongoing project in the United Arab Emirates, a network of 32 automatic weather observing stations was established and a mobile weather radar was procured. In the Maldives, a project was under way to build the capacity in the Department of Meteorology and in Region V, several support services for programme and policy development projects for the Pacific island countries were prepared and submitted to the UNDP Office in Samoa in support of efforts to climate change adaptation measures.

9.6 The Council was pleased to note the fact that the total UNDP resources in 2001 marked the first reversal of the long downward trend in the last seven years and the continued fruitful cooperation with WMO during the past 50 years. The Council requested the Secretary-General to continue his efforts in enhancing cooperation with UNDP through furthering the proactive participation in the Country Common Assessment and the United Nations Development Assistance Framework processes at the country and regional levels.

TRUST FUND PROJECTS

9.7 The Council noted with satisfaction the resource mobilization efforts for generating Trust Fund activities. In RA I, under a project funded by the United States Agency for International Development, the DMC in Nairobi continued to carry out regular functions of providing weather and climate-related advisories to the countries in the eastern African subregion. In southern Africa, support continued to be provided to the SADC DMC in Harare under a Belgian funded project. The project "Early Warning and Agricultural Yield Forecasting, Phase 2" for the CILSS countries in RA I, with a contribution from the Italian Government, continued to be implemented satisfactorily. The Swiss Development Cooperation Department was contributing towards implementation projects by strengthening and extending the operational meteorological assistance to the rural communities in Mali and Chad.

9.8 The Council also noted that in RA II, the project for the establishment of a radar network in the Islamic Republic of Iran was being completed, with the installation of three radars and the provision of training courses for the staff of the Islamic Republic of Iran Meteorological Organization. Within the framework of the agreement between WMO and NOAA on technical assistance to the Meteorology and Environmental Protection Administration of Saudi Arabia, the project supported activities related to satellite data reception, duststorms forecasting, numerical modelling and AMDAR.

9.9 The Council noted further that in RA III, the WMO/ANEEL Programme of Hydrologic Georeferencing and Monitoring for Power Usage had been successfully implemented in a joint venture and in close collaboration between the Brazilian National Electricity Agency and WMO. The Council also noted that an Agreement had been concluded with the Brazilian Agency for Cooperation for the implementation of the preparatory phase of a new project which aimed at facilitating within the National Water Agency, the elaboration of the Programme of Technological Update of the Hydrologic Monitoring and Georeferencing Systems and Technical Training for Water Resources Management. In that regard, the Council noted with satisfaction that the Brazilian Authorities had agreed to share the products and outputs of their projects, free of charge, and requested the Secretariat to ensure that such products be made available to Members upon request.

9.10 The Council noted further that a Memorandum of Cooperation was signed between WMO and Ecuador for the creation of a Trust Fund related to the establishment, operation and development of the International Research Centre for the *El Niño* Phenomenon.

9.11 The Council noted that in RA IV, activities continued developing satisfactorily under the ongoing agreement between WMO and the National Water Commission of Mexico, whose purpose was the provision of technical assistance services in several project components, as part of the implementation of the

large-scale Water Resources Management Project, funded by the World Bank and the Mexican Government.

9.12 The implementation of the Project on Preparedness to Climate Variability and Global Change in Small Island Developing States: Caribbean Region, funded by the Government of Finland, started its activities in May 2001. The objective of the Project was to provide tools for better planning for sustainable development in the Caribbean region, by strengthening the National Meteorological Services of CMO countries, the Bahamas, Cuba, Dominican Republic, Haiti, Jamaica and the Netherlands Antilles.

9.13 The Council noted that in RA VI, the trust fund agreement between the Czech Republic and WMO for assistance in meteorology, hydrology and air pollution in developing countries was being successfully implemented with yearly instalments from the Ministry of Environment of the Czech Republic. The project was not dedicated only to Newly Independent States but also to countries from Asia and Africa.

OTHER RELATED TECHNICAL COOPERATION ACTIVITIES

9.14 The Council noted the success of RMDCN in RA VI based on a shared commercially-provided network service managed by the ECMWF.

9.15 The Council noted with satisfaction the progress made in the support to the transition to the new standard of satellite distribution systems (HRIT/LRIT), in particular by the Task Team on PUMA.

9.16 The Council noted that as part of the coordination mechanism, the WHYCOS International Advisory Group held its fourth meeting in June 2001. One of the main subjects of discussion was the future plan for the MED-HYCOS and SADC-HYCOS projects for which external support terminated during the year 2001 and for the Pilot Phase of AOC-HYCOS which would terminate in mid-2002.

9.17 In view of the mission of the GCOS to ensure the availability and quality of the atmospheric, oceanographic and terrestrial data critical to a wide variety of climate users and to promote improvements in climate observing systems where needed, the Council noted that gaps and deficiencies in observing system networks were especially significant in developing countries. Aware of those deficiencies, the UNFCCC COP, in its Decision 5/CP.5 — Research and systematic observation, invited GCOS, in consultation with relevant regional and international bodies, to launch a regional workshop programme to facilitate improvements in observing systems.

COLLABORATION WITH THE WORLD BANK AND THE INTER-AMERICAN DEVELOPMENT BANK

9.18 The Council noted with satisfaction that under the framework of the Memorandum of Understanding signed with the World Bank and IDB, WMO continued the cooperation with those institutions in areas of mutual interest that included climate change, national disaster prevention and mitigation, the *El Niño* phenomenon and integrated water resources management. Workshops on *El Niño* and natural disaster prevention

and mitigation were organized jointly by WMO and IDB in Panama and Colombia. The cooperation of WMO with those funding institutions also considered the eventual participation of WMO in the formulation and implementation of meteorology/hydrology project components as part of larger projects funded by the World Bank or the IDB. The execution of the IDB/WMO regional project on ENSO continued being executed by WMO with the collaboration of the International Research Institute for Climate Prediction, the International Food Policy Research Institute, the Office of Global Programmes and the Office of the Chief Economist of NOAA. The Council encouraged the Secretariat to develop similar collaboration arrangements with the African and Asian Development Banks.

TECHNICAL COOPERATION AMONG DEVELOPING COUNTRIES AND BILATERAL COOPERATION

9.19 The Council reaffirmed the importance and cost-effectiveness of TCDC scheme and tripartite cooperation arrangements in support of meteorological and hydrological services. It expressed its gratitude to the Members participating in those cooperation activities and urged Members to expand further the use of those schemes. Furthermore, the Council encouraged NMHSs to sensitize their bilateral agencies on the importance of providing funding support to national and regional meteorological and hydrological activities.

PROCUREMENT ACTIVITIES

9.20 The Council noted that in 2001, equipment and services were purchased for more than 40 field projects and for the WMO Regional and Subregional Offices. A total of 152 purchase orders were issued and the volume of procurement reached US\$ 7.45 million, considerably exceeding that of 2000. Goods such as meteorological radars, automatic weather stations, computer equipment, telecommunication systems, vehicles and upper-air stations had been purchased for an amount of US\$ 6.10 million and major services had been attributed for an amount of US\$ 1.35 million.

PROGRAMME DEVELOPMENT AND RESOURCE MOBILIZATION ACTIVITIES

9.21 The Council noted with interest that within the framework of WMO's resource mobilization activities, the Secretary-General had met with the President of the European Commission, Mr Romano Prodi, on improving collaboration between WMO and the European Commission. Project briefs, among which IPM&IS and TRACECA, were submitted to the Commission for consideration and funding. A Memorandum of Understanding between WMO and the European Commission was also under negotiation.

9.22 The Council noted that several pipeline projects had been developed. In Region I, the Project Vulnerability Assessment in the Sahel for the AGRHYMET Regional Centre had been submitted to the Italian Government for final agreement. As a follow up to the recommendation of the third tripartite review

meeting on the SADC/WMO/Belgium project held in Harare in December 2001, WMO was collaborating with SATCC to prepare a proposal for Phase II of the project for submission to the Belgian Government. In eastern Africa, the USAID/REDSO Regional Office in Nairobi had agreed to fund the operations of the Nairobi Drought Monitoring Centre for two years in 2002 and 2003, while arrangements were being made to transform the Centre into an IGAD specialized institution. WMO had been assisting the National Meteorological Office of the Dominican Republic in the rehabilitation and recovery of the meteorological infrastructure damaged as a result of the impacts caused by Hurricane *Georges* in 1998. Several project initiatives continued being promoted during 2001 in Latin America and the Caribbean region, including the Carib-HYCOS and Ibero-American Climate projects. The promotion and negotiation of funding for the execution of those project proposals for selected countries had been made with the World Bank, the IDB, the European Commission and CIDA, among others. In Region VI, an integrated project for the development of a monitoring and information system for the assessment of environmental status of the Caspian Sea had been adopted by CASPCOM and submitted to the European Commission for consideration.

EXECUTIVE COUNCIL ADVISORY GROUP OF EXPERTS ON TECHNICAL COOPERATION

9.23 The Council noted that the fourth meeting of the Executive Council Advisory Group of Experts on Technical Cooperation was held in Geneva from 7 to 8 March 2002, immediately after the Informal Planning Meeting on the VCP and related technical cooperation programmes, held in Geneva from 4 to 6 March 2002. The Group reviewed the progress made in the implementation of the TCO Programme including follow-up actions taken on relevant decisions of Thirteenth Congress and the following sessions of the Executive Council and endorsed the views and suggestions of the Informal Planning Meeting on various VCP-related issues. The Council expressed its appreciation to the members of the Group and invited experts. It noted the outcome of the Group and endorsed its recommendations.

9.24 Following the recommendations of the Group, and taking into consideration the needs of Members and the trends in technological developments, the Council approved the following VCP coordinated programmes:

- (a) Improvement of the global network of upper-air stations with special emphasis on GCOS upper-air network;
- (b) Improvement of the telecommunication systems, including common carrier technologies and the use of Internet technology, specifically for transmission of satellite data;
- (c) Improvement of the performance of NMCs;
- (d) Support to the TCP;
- (e) Support to PWS activities;
- (f) Support to climate data management and CLIPS;
- (g) Support to training and human resource development for meteorology and operational hydrology;
- (h) Support for ACMAD activities.

9.25 The Council reviewed the report on the use of the VCP(F) in 2000–2001 and approved the allocations of VCP(F) for 2002, based on estimated income amounting to approximately US\$ 220 000, as given in [Annex VII](#) to this report. The Council authorized the Secretary-General to implement the projects as funds became available.

9.26 The Council also reviewed the status report on the use of the WWW Implementation Support Revolving Fund. It noted with pleasure that, through the utilization of the diplomatic channels and with assistance of Regional and Subregional Offices, five countries took action for reimbursement of their loans in 2000–2001.

9.27 The Council noted further development of the Secretariat response to the emergency and disaster situations, including the development of an EDRG Situation Report and the secondment of a Junior Professional Officer by Japan dedicated to, among other things, liaison with ISDR and the monitoring of natural disasters from all possible sources for triggering the WMO emergency and disaster response activities. The Council further noted with appreciation that, in addition to the approved allocation of US\$ 80 000 from the VCP(F) in 1999–2001, several Members made cash contributions for emergency assistance activities. It urged Members and the Secretariat to implement the agreed mechanism for emergency assistance activities, with the advice of EDRG, in line with the established implementation procedures of EART. In that regard, the Council requested the Secretary-General to make a proposal for the inclusion of a modest allocation for emergency assistance in the WMO regular budget for the fourteenth financial period.

9.28 The Council noted that the 2002 Informal Planning Meeting had reviewed the process of the evaluation of VCP projects, the evaluation questionnaire and VCP request forms in view of the necessity of modification to identify clearly the outcomes of the projects. In that regard, the Council approved the proposal on the improvement of the evaluation process of VCP projects and requested the Secretary-General to initiate the implementation of the proposed evaluation of projects, to be followed by the fifth biannual worldwide evaluation planned for July–October 2002.

9.29 The Council noted that the 2002 Informal Planning Meeting had also reviewed its role on the VCP. Its draft terms of reference were unanimously supported and endorsed by the Group. The Council fully endorsed the terms of reference of the Group on the VCP.

9.30 The Council noted that following the third United Nations Conference on the Least Developed Countries, held in Brussels in May 2001, the draft framework for a WMO programme for LDCs to support the implementation of the programme of action for the LDCs for the decade 2001–2010, had been prepared by the Secretariat and reviewed by the Executive Council Advisory Group of Experts on Technical Cooperation. The WMO programme for the LDCs was further improved based on the comments and recommendations of the Group. The Council expressed support for

such a programme which would contribute to capacity building, poverty alleviation and sustainable development of the LDCs, and requested the Secretary-General to prepare a comprehensive proposal for submission to Fourteenth Congress. The proposal should highlight the implementation strategy, including at the regional and subregional levels, as well as the funding for the programme, including extrabudgetary resources.

9.31 Concerning the promotion of technical cooperation and resource mobilization, the Council agreed that it was necessary to:

- (a) Encourage the establishment of stronger partnerships between the WMO Secretariat and the NMHSs of Members in the development and implementation of joint projects and programmes and in the mobilization of resources from bilateral and multilateral agencies;
- (b) Enhance the promotion of Trust Fund projects;
- (c) Collaborate with the private sector, especially foundations and non-governmental organizations, taking into account the intergovernmental nature of WMO, based on a mutual recognition of roles and expectations;
- (d) Encourage Members to contribute to the established Trust Fund for Technical Cooperation Programme Development Activities created in 1999 (general summary paragraph 3.7.1.34 of the *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902)).

The Council requested the Secretary-General to take the necessary actions.

9.32 The Council noted that the Regional and Subregional Offices continued to play an important role in technical cooperation activities. It requested the Secretary-General to continue the harmonization and coordination process of the WMO Regional, Technical Cooperation, and Education and Training Programmes to ensure that adequate support was given to the Members in the area of capacity building.

10. REGIONAL PROGRAMME, INCLUDING THE REPORTS OF THE THIRTEENTH SESSIONS OF RA III (SOUTH AMERICA), RA V (SOUTH-WEST PACIFIC) AND RA VI (EUROPE) (agenda item 10)

10.1 The Executive Council noted with satisfaction that the implementation of regional events proceeded successfully during the intersessional period and that the Regional Offices continued to serve effectively their respective regional associations and to assist their presidents.

10.2 The Council reviewed the activities of the WMO Subregional Offices for Western Africa (Lagos, Nigeria), for Eastern and Southern Africa (Nairobi, Kenya), for Northern America, Central America and the Caribbean (San José, Costa Rica) and for the South-West Pacific (Apia, Samoa). The Council expressed its appreciation to the Secretary-General for ensuring that the activities of the Subregional Offices contributed to

supporting the efforts of NMHSs of the respective subregions. In that regard, the Council recalled that at its fifty-second session it had reviewed the assessment report on Subregional Offices and had agreed that those Offices had made a significant contribution in support of NMHSs by enhancing the visibility of WMO in the regions (general summary paragraph 10.4 of the *Abridged Final Report with Resolutions of the Fifty-second Session of the Executive Council* (WMO-No. 915)). The Council requested the Secretary-General to bring to the attention of Fourteenth Congress the result of that assessment accompanied by updated information on the activities and performance of the Subregional Offices.

10.3 The Council noted the opinion expressed by RA IV at its thirteenth session that the Subregional Office in San José, Costa Rica needed to be upgraded to Regional Office and that Regional Offices and Subregional Offices should have the same level of independence and flexibility within the WMO Secretariat structure. The Council reiterated its view, as expressed during its fifty-second session, and requested the president of RA IV to submit a document on that issue, in consultation with the Secretary-General, for consideration by Fourteenth Congress. It agreed that the preparation of such a document should not incur additional cost to WMO.

10.4 The Council noted with appreciation that WMO continued its collaboration with subregional economic groupings in Africa. It noted, in particular, that missions had been carried out to the Secretariat of CEMAC with a view to developing meteorological and hydrological programmes in the Central Africa Subregion. To that end, the second meeting of the Directors of NMHSs in Central Africa had been programmed for the second half of 2002 and the signing of a Memorandum of Understanding between WMO and CEMAC as well as between WMO and IGAD were being followed up, while the existing working arrangements with ASECNA should be strengthened in order to assist better the Members concerned.

10.5 The Council was informed that following the request of Thirteenth Congress, a study was carried out by the Secretary-General concerning the financial implications that a possible transfer of the Regional Office for the Americas might have for WMO. The study was made and presented to the thirteenth session of RA III, which took place in Quito from 19 to 26 September 2001. The Council noted that the RA III session discussed that issue and agreed to transfer the office from Asunción, Paraguay to Brasília, Brazil. Consultations were under way to determine the views of Members of RA IV before action was taken on that matter. The Council also noted that there had been decisions of Congress on matters related to the change of location of a Regional Office.

10.6 As regarded the establishment of the Subregional Office for Asia, the Council noted that an invitation had been sent by the Secretary-General to all RA II Members in August 2000 to consider hosting the WMO Subregional Office for Asia and that replies were received from six Members. It noted with interest the

offers from Bahrain; the Islamic Republic of Iran; Macao, China; Nepal; Pakistan; and Thailand to host the Subregional Office for Asia. WMO missions had been carried out in those Member countries and the Secretary-General was examining the reports of the missions for further action.

10.7 The Council noted with satisfaction that a WMO consultancy mission on the establishment of a Subregional Office for Europe was carried out. The Council also noted that preliminary steps were taken so that activities related to RA VI were being carried out by a short-term staff in the WMO Secretariat pending the eventual establishment of the Office during the fourteenth financial period. It thanked France, Portugal, Switzerland and the United Kingdom for their financial contributions to enable the recruitment of the short-term staff to assist in carrying out WMO activities related to RA VI. It also thanked the Members, namely Germany, Italy and Spain who expressed their intention to provide financial support for that purpose. The Council supported the inclusion of budgetary provision in the programme and budget proposal for 2004–2007 for the establishment of the Office.

10.8 The Council noted with appreciation the progress made in the development of the RA I Strategic Plan for the implementation and improvement of the WWW basic systems in Africa, in particular, the surveys and expert missions carried out to various RA I countries for that purpose. It extended its thanks to the United States and other donors who had contributed in organizing such missions. It further encouraged VCP and other donors to provide assistance towards the implementation of the strategy, including the preparation of detailed project proposals and the use of modern technologies such as Internet, RANET and RETIM, among others things, for sustainable solutions to address the shortcomings in GOS, GTS, GDPS, PWS and data management.

10.9 The Council noted that ECOSOC had urged the United Nations system to support NEPAD as the Region strived to achieve sustainable development. In that regard, the Council was informed that the RA I Strategic Plan for the implementation and improvement of the WWW basic systems in Africa, when implemented, would go a long way in contributing to the objectives of NEPAD. It, therefore, encouraged WMO Members and the Secretary-General to continue to support and contribute to the implementation of NEPAD and other initiatives, such as the African Monitoring of the Environment for Sustainable Development.

10.10 The Council encouraged the NMSs in RA II to continue to implement the Strategic plan for the enhancement of the NMSs in RA II (Asia) and agreed for support to be provided for the implementation of the Strategic Action Plan for the Development of Meteorology in the Pacific region in RA V. The Council requested the Secretary-General to continue to assist the Members of both Regions in that respect.

10.11 The Council noted the natural disaster prevention and mitigation efforts in all Regions and agreed that

that issue should be given high priority. The Council further noted the need for improving warning services, through timely dissemination of information, access data and products from designated RSMCs and other advanced Meteorological Services. The Council took note of the developments achieved concerning the study of the implementation of the International Research Centre for the *El Niño* phenomenon in Ecuador, as well as of the benefits obtained in the climatic forums of MERCOSUR.

10.12 The Council noted the concern of RA V on the need to pay special attention to facilitate full integration of all developing NMHSs in the Region including new and potential Members, in the work of WMO. The Council requested the Secretary-General and the developed NMHSs to assist those developing NMHSs in that respect.

10.13 The Council noted that climate change, sea-level rise and related environmental issues were of great concern to Governments in all Regions, in particular to small island States. Future climate scenarios in a regional context and on seasonal, interannual and shorter time scale should be developed to enable Members to provide relevant advice to their respective government policy makers.

10.14 The Council also noted that climate, drought and water resource issues were of concern in various Regions and encouraged the Secretary-General to continue to provide support to the ongoing HYCOS projects in the various Regions and to expedite the implementation of the new projects, such as Pacific-HYCOS, which would contribute substantially to hydrological forecasting and flood control in the various Regions.

10.15 The Council noted the concerns expressed by regional presidents, particularly on the gaps that existed in the implementation of observational networks, telecommunication and data-processing systems, in several Member countries. The Council requested the Secretary-General to give that matter high priority and to continue to support the efforts of Members in addressing the deficiencies in the basic meteorological systems in various Regions.

10.16 The Council noted with concern the lack of qualified professionals in many Member countries, in particular from small island States and LDCs. Therefore, further attention should be given to the ETR Programme, including the provision of fellowships, to assist Members in the development of their human resources. In that regard, the Council encouraged the implementation of joint activities among WMO RMTCs in various Regions to meet better the needs of the Members. The Council expressed its appreciation to all Members who provided support for training activities of WMO and contributed to joint training events.

10.17 The Council noted the increase in close cooperation between WMO and regional and subregional grouping and encouraged the Secretary-General to strengthen further the formulation and implementation of joint projects or programmes in meteorology, climatology, hydrology and related fields. In that regard, the

Council emphasized the need for such cooperation on the regional, multilateral as well as bilateral levels.

10.18 The Council expressed its appreciation to the Governments of Ecuador and the Philippines, for having hosted the thirteenth sessions of RA III and RA V, respectively. The Council invited all the regional associations to continue their efforts to strengthen implementation of WMO Programmes within their respective Regions in the intersessional period.

10.19 The Council considered the reports of the thirteenth sessions of RA III, RA V and RA VI and embodied its decisions in [Resolutions 8 \(EC-LIV\)](#), [9 \(EC-LIV\)](#) and [10 \(EC-LIV\)](#), respectively.

11. DISASTER REDUCTION ACTIVITIES (agenda item 11)

11.1 The Executive Council noted that WMO continued to act as a permanent member of the Inter-agency Task Force for the ISDR. The Council reiterated that WMO should play a lead role in the Task Force and promote scientific and technical aspects as well as the input of operational activities of NMHSs in the implementation of the Strategy. The Council emphasized that the NMHSs could contribute to all phases of disaster management at the national and regional levels, including preparedness measures, forecasting and early warning, observing the development of a disaster, and recovery and rehabilitation. The Council agreed that the participation of WMO in the ISDR should also serve as a means to raise the profile and visibility of partnership of NMHSs in national disaster reduction strategies. In that connection, the Council particularly emphasized the importance of interaction with the media, including weather presenters and forecasters, in order to make maximum use of them as a credible means to communicate with the public at large.

11.2 The Council stressed the primary role of NMHSs with respect to the management of a wide spectrum of disasters of meteorological and hydrological origin, including disasters related to weather phenomena of various time and space scales. The Council noted the activities of the ISDR Working Group 1 on Climate and Disasters, for which WMO was the lead agency. The Council particularly appreciated the generation of a number of *El Niño* outlooks during the past year, which were prepared by WMO in collaboration with the International Research Institute for Climate Prediction and with the participation of other partners. The outlooks drew on the individual assessments of several major analysis and prediction centres and from a number of NMHSs with direct experience in dealing with ENSO monitoring and prediction. The Council further noted that the Group was continuing to review the effectiveness of the information flow on climate-related hazards from the major global centres, through regional centres and climate outlook forums, to the social and economic user communities. In that regard, the Council emphasized the increasingly important role of regional focused institutions, including WMO Drought

Monitoring Centres and ACMAD. A further topic on the Group's agenda related to the potential for operationalizing new research results on estimating probabilities of extreme events from ensemble-based seasonal predictions recognizing also the important step of conveying that information in a meaningful and useable way. The Council strongly supported those activities and requested the Secretary-General to ensure that WMO's lead role in pursuing the important relationships between disasters and climate variability and change was maintained.

11.3 The Council noted the activities of EDRG within the WMO Secretariat. The Council was informed that the WMO Secretariat was using the services of a Junior Professional Officer seconded by the Government of Japan. In that regard, the Council wished to express its gratitude to Japan for that support.

11.4 The Council noted the international activities in the field of landslide research, and risk mitigation and protection, including the establishment of an International Consortium on Landslides. The Council supported WMO's involvement in those activities and requested the Secretary-General to ensure that WMO's role in major aspects of landslide prevention and mitigation would be properly recognized, including through establishing appropriate working relationship with the Consortium. The Council also requested the Secretary-General to ensure the provision of appropriate advice to NMHSs in order to enable them to respond adequately and in a timely manner to national demands for services related to landslide prevention and mitigation.

11.5 The Council noted that heat waves had been claiming high death tolls and exerting strong pressure particularly on urban communities, thus exacerbating difficult climatic life conditions in urban areas; the impact of heat waves on economic sectors was also very significant. The Council therefore urged CCI to accelerate the development of appropriate guidelines to assist Members in preparing and providing early warnings of heat waves to Governments and the general public.

11.6 The Council recognized that natural disaster reduction would be an important item at WSSD. The Council noted with appreciation the actions taken by the Secretary-General in the course of the preparatory process for the Summit to promote the role of WMO and NMHSs in, and their contribution to, natural disaster reduction. The Council also invited the Permanent Representatives of Members with WMO to bring to the attention of their national delegations to the Summit the critical role of WMO and NMHSs in disaster reduction activities.

11.7 The Council underscored the contribution of NMHSs and regional centres, such as the Drought Monitoring Centres, to disaster reduction in achieving sustainable development, particularly through reducing the consequences of disasters that impeded poverty eradication and the protection of the environment. In that connection, the Council considered that strengthening disaster management and reduction mechanisms at the regional level was particularly important. Increased involvement of local communities in communicating

relevant information, including early warnings, and knowledge to public should be ensured. The Council also underscored the increasing role of Internet in the provision of information and warnings.

11.8 The Council recalled the periodic articles in the WMO *Bulletin* on the human and economic effects of extreme weather events. Noting that the information for those articles was not always easy to compile, the Council considered that a more systematic standardized approach was required to obtain objective information on natural hazards and their impact. The Council further considered that the task of developing proposals for such approach should be undertaken particularly within the new programme on disaster prevention and mitigation. In that regard, the Council noted that a project was already under way within the ISDR partnership to improve linkages between databases on natural disasters and climate databases.

11.9 The Council considered the incorporation of natural disaster reduction issues into the WMO Long-term Plan and the programme and budget under agenda items 14 and 12, respectively.

12. PROGRAMME AND BUDGET FOR THE FOURTEENTH FINANCIAL PERIOD (2004–2007) (agenda item 12)

12.1 In accordance with Article 3.4 of the WMO Financial Regulations, the Executive Council examined the Secretary-General's estimates of maximum expenditure for the fourteenth financial period.

12.2 The Secretary-General presented his programme and budget proposals for the fourteenth financial period (2004–2007) which had been prepared on the basis of a maximum expenditure of SFR 252 300 000 (referred to as zero nominal growth option) corresponding to the maximum expenditure approved by Thirteenth Congress for the thirteenth financial period (2000–2003). He indicated that the cost of continuing the same volume and scope of activities in the fourteenth financial period as were supported in the thirteenth financial period (a zero real growth budget) would have required an additional amount of SFR 20 911 700. Included in his proposals was budget option 2, amounting to SFR 13 000 000, which contained additional resources devoted to the four key programme areas identified by the fifty-third session of the Executive Council as well as resources required for other activities.

12.3 The Secretary-General indicated that under the zero nominal growth option, the volume and scope of activities must be reduced in order to find sufficient funding for inflationary cost increases and statutory staff cost increases, estimated at SFR 19 755 700. Furthermore, freezing of certain posts would be required for some or all of the fourteenth financial period.

12.4 The Council considered the Secretary-General's proposals together with the report of the Financial Advisory Committee including its Recommendation 1 as recorded in Annex I to this report.

12.5 A number of members expressed their deep concern about the negative impact on all areas of WMO activities caused by not increasing the budget. There was a general recognition that neither the current assessed contributions of SFR 248 800 000 nor the enhanced figure of SFR 252 300 000 would be adequate to pursue programmes wanted by Members. At the same time, many members expressed equal concern about the affordability of any increase in assessed contributions.

12.6 The Council noted Recommendation 1 of the Financial Advisory Committee that the Executive Council should invite the Secretary-General to propose: (i) an optimized programme based on assessed contributions of SFR 248 800 000; and (ii) a number of incremental additions to that programme, which should total a maximum amount of SFR 20 000 000. Consistent with results-based budgeting, the proposed programmes under item (ii) should clearly identify the additional outputs and benefits.

12.7 The Council was of the view that in identifying additional activities to be carried out within the options, the Secretary-General should concentrate on specific projects (e.g. two annual tropical cyclone workshops in the WWW Programme) so that the costs of ongoing activities were, to the maximum extent possible, able to be absorbed into the baseline figure of SFR 248 800 000.

12.8 Having discussed the four options presented by the Secretary-General, the Council expressed its wish: (i) to at least maintain, as far as possible, the current level of programme delivery; (ii) to reflect the areas of priority through the relative allocation of funds; and (iii) to take into account the affordability of costs involved.

12.9 The Council concentrated the discussion on the level of information needed for Congress to support the options proposed and requested the Secretary-General to provide relevant documents to Fourteenth Congress.

12.10 Considering the needs and constraints with respect to programme delivery and affordability, and including the option of an optimized programme of SFR 248 800 000 corresponding to the assessed contributions approved by Thirteenth Congress and supported by some members, the Council concentrated its deliberations on two options (assessed contributions): (i) SFR 253 800 000; and (ii) SFR 258 800 000, and finally recommended those options for consideration by Fourteenth Congress. That was likely to result in the relative proportions for the individual scientific and technical programmes indicated in [Annex VIII](#) to this report.

12.11 The Council expressed its satisfaction with the presentation of the budget in a results-based budgeting format, as requested by its fifty-third session.

12.12 The Council recognized the importance of performance measurement and reporting in the results-based budgeting process, and agreed that the nine key performance indicators proposed by the Executive Council Task Force on Key Performance Indicators, contained in [Annex IX](#) to this report, should be used by the Executive Council and Congress to measure the

Secretariat's performance in programme and budget implementation for the fourteenth financial period. It was suggested that the monitoring of the implementation of the programme and budget for 2004–2007 could be performed by the Working Group to be established by the fifty-fifth session of the Executive Council for the monitoring of the 6LTP. The targets to be used for performance measurement and reporting should be set by the Executive Council, based on proposals by the Secretary-General, the technical commissions and regional associations.

12.13 The report of the Council on the Secretary-General's proposals is reproduced in the Annex VIII to this report.

13. MAJOR ISSUES FACING WMO (agenda item 13)

13.1 ROLE AND OPERATION OF NMHSs (agenda item 13.1)

13.1.1 The Executive Council considered the report of the chairperson of the Executive Council Advisory Group on the Role and Operation of NMHSs. It expressed its appreciation for the work carried out by the Group. It noted that the report of its second session, held in Geneva from 8 to 12 April 2002, had been circulated, in English only, to all members of the Council and that that provided useful background information.

REVIEW OF THE ROLE AND OPERATION OF NMSs

13.1.2 The Council took stock of the work that had been carried out since the first session of the Advisory Group in February 2000, including an assessment of the current situation of NMSs worldwide through a comprehensive questionnaire and follow-up studies on a number of major issues facing NMSs which had been identified at the first session.

FINDINGS FROM THE QUESTIONNAIRE

13.1.3 The Council noted the findings from a preliminary analysis of the December 2000 questionnaire on the role and operation of NMSs, which made use of all 128 responses received.

13.1.4 The Council agreed that the analysis provided a useful overview of the state of NMSs around the world and a good indication of the diversity of the situations obtained in individual NMSs.

13.1.5 The Council noted a number of significant findings from the analysis of responses to the questionnaire. Among those were:

- (a) The most important national goals served by NMSs' operations were: safety of life and protection of property, reduction of the impact of natural disasters and national sustainable development;
- (b) Aviation was the most important national economic application sector served by NMSs. That was followed by disaster management, agriculture, environmental protection and mass media;
- (c) The main issues currently facing NMSs were: over-all level of government funding, modernization,

provision of aeronautical services, capacity building and the role of the NMS at the national level;

- (d) In most cases, the costs of providing public services were met by Governments;
- (e) A significant number of countries met the cost of provision of specialized services to other sectors, such as aviation, through cost recovery arrangements;
- (f) Members gave the highest ratings on WMO support they received in the areas of operations, training and policy. They identified training, technical assistance and research as the three areas where enhanced WMO support was most needed;
- (g) About 60 per cent of the respondents felt that the level of awareness of the NMS within their countries was high to excellent.

13.1.6 The Council agreed that a complete analysis of the results, including explanatory text, should be produced and made available to all Members in the near future. That should include an executive summary highlighting the major findings.

13.1.7 The Council considered that the information obtained through the questionnaire would serve as a useful benchmark and agreed that an abridged version of the questionnaire should be prepared to study the evolution of some of the key measures and indicators over time.

13.1.8 The Council agreed that there was a need for caution in interpreting some of the results in view of certain possible sampling problems and the subjective nature of the responses to a number of questions. Moreover, analyses indicated some variation in responses across countries and regions as well as when comparing results for countries grouped by level of development (i.e. developed, developing, least developed and countries with economies in transition).

STUDIES OF MAJOR ISSUES

13.1.9 The Council reviewed the results of the work that had been carried out under the auspices of the Advisory Group on a number of major issues bearing on the future role and operation of NMSs. That included studies on:

- (a) The economic framework for the provision of meteorological services with a particular focus on issues relating to the funding of NMSs;
- (b) Legal instruments governing the operation of NMSs;
- (c) The scope for regional cooperation in assisting NMSs in the discharge of their national responsibilities;
- (d) The changing environment for the provision of aeronautical meteorological services;
- (e) The concept of WMO standards for weather forecasting;
- (f) Quality management certification for NMS services;
- (g) The scientific basis for, and limitations of, weather and climate forecasting.

13.1.10 The Council considered the conclusions and recommendations of its Advisory Group on those and several other issues that had emerged from the analysis of the questionnaire and from Council deliberations and

it agreed on the need for follow-up work on a number of matters.

ECONOMIC FRAMEWORK AND FUNDING ISSUES

13.1.11 The Council noted that an Expert Meeting on the Economic Framework for Meteorology had been organized in the WMO Secretariat in Geneva from 25 to 27 March 2002. The Meeting resulted in a report for the consideration of the Advisory Group which dealt with the following topics:

- (a) Economic framework for the provision of meteorological services;
- (b) Methodologies for the assessment of costs and benefits of meteorological services;
- (c) Guidelines on the economic aspects of meteorological services.

13.1.12 The Council agreed with the Advisory Group that it was becoming increasingly important for Members to establish a robust economic framework for the provision of meteorological and related services within their national borders and to agree on an appropriate framework for international cooperation in the provision of services beyond their national borders and in extraterritorial areas. It agreed that the economic framework suggested by the Expert Meeting provided a useful starting point.

13.1.13 It was noted that an overall economic framework for meteorological service provision would need to take account of the economic characteristics of meteorological services and include a rigorous cost-benefit framework appropriate for both basic and specialized services. The Council encouraged Members to foster collaboration between their meteorological and economic communities in pursuing further work in that area.

13.1.14 It was noted that the Expert Meeting undertook a survey of methodologies for the assessment of costs and benefits of meteorological services and of the associated literature. It was felt that that provided a useful initial response to the current need in that area. Nonetheless, further work was needed, particularly to compile a set of examples of how methodologies had been used in connection with the valuation of individual meteorological products and services.

13.1.15 The Council noted that the Advisory Group had considered some draft guidelines on the economic aspects of meteorological services prepared by the Expert Meeting. While generally in agreement with those guidelines, the Group had provided some specific suggestions to be taken into account in their revision and further development.

13.1.16 The Council considered the recommendations of the Advisory Group in respect of follow-up work in that area. The Council concurred with the following recommendations:

- (a) WMO should facilitate and assist NMSs in their efforts to undertake economic valuation assessments and in the related institutional capacity building;
- (b) WMO should initiate action to promote the undertaking of interdisciplinary economic

assessments, such as through the organization of regional workshops or similar events. Case studies for each Region, to serve as examples, should be encouraged;

- (c) Certain WMO RMTCs could be designated as lead institutions to assist in providing training in meteorological economics;
- (d) In that connection, the WMO activities in the development of curricula in the area of meteorological economics (under the WMO ETR Programme) should be further pursued;
- (e) A concise compendium of relevant literature, including a literature survey, should be prepared. That should contain a small number of relevant case studies which were simple, appropriate and applicable to the situation of NMSs of both developed and developing countries. It should also include specific examples of how the various methodologies were used;
- (f) The Secretary-General should be requested to arrange for the compilation of a set of references to facilitate making relevant literature available to Members, upon their request;
- (g) WMO should keep close watch on relevant developments that could have potential implications for the international access and use of meteorological information. Those included the General Agreement on Trade in Services, under the aegis of the World Trade Organization, and the discussions at the World Intellectual Property Organization on the protection of databases;
- (h) The economic consideration relating to the provision of meteorological services should be taken as an ongoing commitment in the WMO community and the relevant processes relating to that subject should be further pursued.

13.1.17 It was agreed that the substance of the above recommendations should be incorporated in the consolidated set of guidelines on the role and operation of NMSs (see general summary paragraphs 13.1.49 to 13.1.51).

LEGAL INSTRUMENTS

13.1.18 The Council recognized the importance of national legislation which defined the role and operation of NMSs. The Council agreed that the compilation and analysis of relevant legal instruments prepared by the Secretariat would be helpful to countries formulating new legal instruments and/or to those revising/ updating existing ones. Following further update and revision, it agreed that the compilation should be made available to Members. Members should also be informed on how they could access specific national legal instruments of possible interest to them, e.g. by contacting the countries directly, through the Secretariat or possibly by electronic access through the WMO Web site.

13.1.19 Consideration should also be given to updating the scope and content of *Meteorological Services of the World* (WMO-No. 2) which contained details of NMSs

and other State meteorological organizations and institutions, as well as related information. The inclusion of brief information on pertinent legal instruments related to each of the NMSs should be given consideration.

13.1.20 The Council agreed that the substance of the compilation and analysis of legal instruments should be incorporated in the consolidated set of guidelines on the role and operation of NMSs. The Council agreed on the approach of identifying elements of an appropriate legal instrument and providing indicative examples for various elements culled from relevant legal instruments received from Members. Those were made available as examples for the information of Members and should not be interpreted as recommended texts.

AERONAUTICAL METEOROLOGICAL SERVICES

13.1.21 The Council recalled its earlier concerns relating to problems which had arisen in the provision of aeronautical meteorological services and the priority it attached to meeting the need for guidance expressed by many Members.

13.1.22 The Council agreed that, in that connection, the designation by countries, for ICAO purposes, of a national Meteorological Authority to provide, or to arrange for the provision of, meteorological services for international air navigation on behalf of countries, was a matter of great importance. It reaffirmed its earlier views on the advantages of the NMS being designated as the national Meteorological Authority for ICAO purposes, while recognizing that alternative arrangements existed in light of varying situations among countries. There were a few cases where the NMS was the designated Meteorological Authority but service was provided by others (under contract or some other arrangement) and also where the NMS was not the designated Meteorological Authority but was contracted to provide the service. The various possibilities provided a range of alternative options for NMSs for ensuring, or helping to ensure, that appropriate meteorological services for aviation were effectively provided, particularly to assure safety.

13.1.23 The Council recognized that cost recovery for aeronautical meteorological services was a continuing area of concern in spite of extensive guidance material already provided by WMO and ICAO. It welcomed the CAeM initiative in preparing draft guidance material on cost recovery and alternative service delivery for aviation (see agenda item 6.3).

REGIONAL COOPERATION

13.1.24 The Council recalled that regional cooperation could take various forms, from collaboration in implementing a joint numerical weather prediction centre to the adoption of a common approach to the procurement of meteorological equipment and supplies, among other things.

13.1.25 It was recognized that regional cooperation could also take the form of one country or NMS assuming a lead responsibility in the Region for a particular field, with another country or NMS serving in a similar way for another field. While each NMS would remain

the primary channel for provision of service to its national community, the use of complementary arrangements for the operation of components of the infrastructure or for the preparation of individual services could increase the overall efficiency of service provision. Indeed, regional cooperation arrangements could strengthen the role, operation and capability of all the NMSs in the Region.

13.1.26 The Council noted that certain regional collaboration schemes could take the form of "e-NMSs", in which the geographical locations of the specific NMS service provider and the service user/client (another NMS) would not be a major consideration or constraint.

13.1.27 It was noted that in some cases, regional strategic plans had been adopted by groups of countries to serve as a framework for prioritizing and supporting regional projects or initiatives that were of interest to a group of countries.

13.1.28 Moreover, various other mechanisms for regional cooperation had been carried out in particular geographical areas and for realizing different objectives. Collaboration under the auspices of regional/subregional economic groupings had been a very effective way for countries to work together in meteorological and related fields, to their mutual advantage. Indeed, in a number of subregions, economic groupings had adopted a meteorological programme which provided an umbrella or framework for regional cooperation. That approach had also been effective in enhancing resource mobilization.

13.1.29 The Council emphasized that, in many circumstances, regional cooperation would benefit from being planned and carried out through the WMO TCO and Regional Programmes. The Council also recognized the benefits which could be obtained through the large number of subregional economic and geographical groupings which had regular meetings of Directors of NMSs.

13.1.30 In the light of its consideration of the scope for strengthening NMSs through regional cooperation, the Council agreed that a consolidated paper on regional cooperation should be prepared for inclusion in the set of guidelines on the role and operation of NMSs. That should be based on the documents considered by the Advisory Group and should include the following elements, among other things:

- (a) Rationale for collaboration;
- (b) Principles of collaboration;
- (c) Useful mechanisms and practices (including specific examples).

At the same time, regional cooperation should be complementary to the NMSs' developing strategic alliances at the national level, such as with other government entities and the non-governmental sector.

WMO STANDARDS FOR WEATHER FORECASTS

13.1.31 The Council recalled its earlier consideration of proposals for developing standard and/or recommended practices and procedures for preparing weather forecasts and international formats for the texts of

forecasts and warnings issued by the NMSs. It recognized the need to take into account the varying situations among countries and the possible diversity in the need for, and appreciation of, such standards.

13.1.32 The Council agreed that the establishment of a WMO standard and/or recommended practice for weather forecasting techniques would assist in producing more reliable forecasts, using optimally the current levels of meteorological science and technology.

13.1.33 It noted that a standard and/or recommended practice for weather forecasting might include a series (or chain) of mandatory and desirable elements representing the stages of weather forecast preparation. While care would be needed to avoid giving the impression that weather forecasting was a purely mechanical linear process, each element of that practice could be described by a set of standard and/or recommended procedures.

QUALITY MANAGEMENT

13.1.34 The Council noted that some aspects of quality management had been addressed already by CBS and CAeM as well as by the 2002 Meeting of Presidents of Technical Commissions. The Council took account of the views of the commissions in its consideration of how to address the quality management issue in WMO Programmes.

13.1.35 The Council noted the available information and discussed the options that could be relevant to WMO in connection with quality management. It agreed that WMO should work towards its own quality management framework by making use of the already developed comprehensive system of documented WMO procedures and practices in the *Technical Regulations* (WMO-No. 49), *Manuals*, *Guides*, *Guidelines* and *Technical Publications*. It recognized that WMO standards, elements of quality control, performance monitoring and training standards of professionals, among other things, were found in a number of those publications, but additional work needed to be done to update and/or revise those materials.

13.1.36 In the development of the WMO quality management framework, the technical review needed to be performed for the assessment of available documentation with respect to conformity with quality management procedures. The Council requested the technical commissions, through their presidents, to develop additional documentation which should describe the quality management procedures and practices to be followed and the resources required for implementation. That additional documentation would be adopted by WMO Members through established WMO mechanisms.

13.1.37 The Council agreed that in the preparation of the WMO quality management framework, a certification (registration) process should be developed and that the following elements needed to be studied further:

- (a) Monitoring of the performance of elements of the system;
- (b) Assessment of conformity to the WMO established procedures and recommended practices;

- (c) The need for an independent "certification" or "registration" body or mechanism.

The Council emphasized the importance of an independent auditing component.

13.1.38 The Council agreed with the view of CBS that the development of quality management processes within the existing approach, structure, procedures and practices would be the most appropriate. It requested CBS, through its OPAGs responsible for GOS, GTS, GDPS and PWS, to develop additional documentation that described the quality management procedures and practices to be followed, and the resources to be allocated in the provision of WWW functionality, which would enable the overall quality, in particular, of the WWW outputs to be monitored and continuously improved. That documentation, to be adopted by WMO Members, would be a part of the implementation of all activities that contributed to the delivery of the WWW and the PWS.

13.1.39 The Council noted the views expressed by the president of CBS that development of additional documentation to incorporate specific quality management procedures into the WMO Technical Regulations, at a level of detail similar to the ISO 9000 procedures, would amount to a challenging task because the operational *Manuals*, such as those *on the GOS* (WMO-No. 544), *on the GTS* (WMO-No. 386) and *on the GDPS* (WMO-No. 485), had evolved over decades and would need fundamental revision and restructuring. Other more recently produced guidance material, such as the *Guide to Public Weather Services Practices* (WMO-No. 834) and the *Guide on World Weather Watch Data Management* (WMO-No. 788), contained elements of quality management which would need to be adjusted or expanded for that purpose. If CBS was requested to carry out that work, it would need additional resources for that purpose.

13.1.40 Through that process, the WWW could advance further the implementation of quality management systems at the national level without committing Members to the costs of implementation of more general systems developed for application outside meteorology. The integration of quality management procedures and processes within the *WWW Manuals* and *Guides* would also benefit those Members that chose to implement ISO 9000; possibly serving as a component of the latter. While WMO guidance was provided, it was clear that Members would need to consider their options on the basis of their particular situations.

13.1.41 The Council recognized that quality standards were set for the assessment, as well as for enhancement, of products and services delivered. In that connection, it was important to recall that the users' perspective should be taken into account and that the assessment and/or enhancement of products and services should be considered also from the point of view of the level of usefulness of those products and services.

13.1.42 The Council emphasized that there were also relevant contributions from the other WMO Programmes. It agreed with the recommendation of the 2002 Meeting of Presidents of Technical Commissions

for the establishment of an intercommission task group on quality to develop an overall approach for the WMO quality management framework referred to earlier.

WMO STATEMENT ON WEATHER AND CLIMATE FORECASTING

13.1.43 The Council recalled its request to CAS to prepare the draft of a WMO Statement on the scientific basis for, and limitations of, weather forecasting and climate projections for use by WMO Members. It expressed its appreciation for the good work done by the Commission in preparing the Statement approved by CAS-XIII.

13.1.44 The Council endorsed the scientific content of the Statement approved by CAS. It further agreed that the "Introduction" in the CAS draft should be modified to explain better the background and rationale for such a Statement along the lines recommended by the Advisory Group (see general summary paragraph 5.1.8). It considered that that Statement would be useful to NMSs when explaining the capabilities and limitations of their services to their national communities, particularly in circumstances where particular forecast errors became the subject of unjustified public or media criticism.

13.1.45 The Council underscored the importance of developing an accompanying public information material, based on, and consistent with, the Statement, written for the media and the general public, to promote a better appreciation of the scientific basis for, and limitations of, weather and climate forecasting.

MECHANISMS FOR STRENGTHENING NMSs

13.1.46 The Council reviewed the various mechanisms and initiatives that had been proposed to assist in strengthening the role and operation of NMSs. It noted the progress reported by the Advisory Group on four specific initiatives that had been considered at the fifty-second and fifty-third sessions of the Executive Council as followed:

- (a) Preparation of a WMO statement on the role and operation of NMSs;
- (b) Preparation of a consolidated set of guidelines on the role and operation of NMSs;
- (c) Convening of a high level conference on the role and socio-economic benefits of NMHSs;
- (d) Amendment of the WMO Convention to highlight the role of NMSs in line with the Geneva Declaration of Thirteenth Congress.

STATEMENT ON THE ROLE AND OPERATION OF NMSs

13.1.47 The Council recalled its agreement that the work of the Advisory Group should lead to a WMO policy statement on the role and operation of NMSs which either confirmed, updated and/or refined the Executive Council April 1999 Statement on the National Meteorological Service and alternative service delivery and which elaborated the Geneva Declaration of the Thirteenth World Meteorological Congress.

13.1.48 The Council noted that the Advisory Group had requested its chairperson to arrange for the

preparation of a draft of the proposed statement on the basis of the April 1999 statement and the outcome of its second session. The Council reviewed the draft prepared by the chairperson and provided suggestions for its improvement. The Council agreed that the revised draft statement should be circulated to all Executive Council members for their suggestions and for further improvement. A new draft, taking account of the proposals from Executive Council members, would be circulated for final clearance, by correspondence, as a basis for approval by the President on behalf of the Council.

GUIDELINES ON THE ROLE AND OPERATION OF NMSs

13.1.49 The Council noted that, on the basis of the work of the Advisory Group and in close consultation with the chairperson of the Group, the Secretary-General was in the process of assembling a consolidated set of guidelines on the role and operation of NMSs to update and complement the earlier 1993 Guidelines on the role of National Meteorological and Hydrometeorological Services in the implementation of Agenda 21 and the UNFCCC and the 1997 Guidelines on management of National Meteorological and Hydrometeorological Services.

13.1.50 While recognizing that their structure and content could not be finalized at the present stage, the Council agreed that the consolidated Guidelines should incorporate chapters/sections on:

- (a) Purpose of the Guidelines;
- (b) The role of Meteorological Services;
- (c) Economic framework for the provision of meteorological services;
- (d) Scientific basis for weather and climate forecasting;
- (e) The role of NMSs at the national level;
- (f) The charter, mission and functions of NMSs;
- (g) Legal instruments;
- (h) Organization models;
- (i) Regional and global cooperation;
- (j) Planning and management;
- (k) Training and staff development;
- (l) Quality management;
- (m) Evaluating the benefits of NMS operations and services;
- (n) Funding and charging for meteorological services;
- (o) Collaboration with the private sector, the media and academia;
- (p) Participation in WMO.

13.1.51 The Council agreed that it would be appropriate to trial the usefulness of the Guidelines in regional workshops held in conjunction with the regional Technical Conferences on Management of Meteorological and Hydrological Services.

HIGH-LEVEL CONFERENCE

13.1.52 The Council recalled that it had expressed its support for the holding of a high-level conference on the role and the socio-economic benefits of NMHSs as well as on further enhancing the visibility and status of NMHSs.

13.1.53 In that context, it considered two specific proposals canvassed by the Advisory Group at its second session:

- (a) A WMO high-level conference on the role and socio-economic benefits provided by NMHSs;
- (b) A high-level segment or Ministerial segment of Fourteenth Congress.

13.1.54 Taking into account the financial resources required for the organization of a high-level conference and the resources available for 2002–2003, the Council agreed that the organization of such a conference during the next financial period should be considered by Fourteenth Congress.

13.1.55 Concerning the second proposal, the Council considered the necessary elements to ensure that its success could be met, such as:

- (a) The specific purpose, theme and desired results(s) were clearly identified and agreed;
- (b) The particular features that would attract high-level personalities (including the opportunity to make a national statement, decision-making, adoption of a declaration) were also well understood;
- (c) The inclusion of all parts of the meteorological and hydrological communities;
- (d) The additional human and financial resources necessary to mount that event could be made available.

The Council considered that at the present time, the above-mentioned elements for success could not be met appropriately. The Council, therefore, agreed that a high-level or Ministerial segment of Fourteenth Congress would not be organized. Nonetheless, it was of the view that should Ministerial or high-level personalities be present at Fourteenth Congress, the opportunity should be provided to enable them to address Fourteenth Congress.

AMENDMENT OF THE WMO CONVENTION

13.1.56 The Council recalled its earlier decision to assess the benefits and risks of proposing to Fourteenth Congress that the WMO Convention be amended to represent more clearly the essential role and primary responsibilities of NMSs in carrying out the purposes of WMO. It noted that the President of WMO had established a task team for that purpose. It also noted that the Advisory Group had supported the task team's proposal to amend the Preamble of the Convention making use of the 1999 Geneva Declaration adopted by Thirteenth Congress and to include in the Convention a provision that would allow for the adoption of protocols, with the understanding that that support was for the provision for adopting protocols but not for any specific protocol to be adopted during Fourteenth Congress. It further noted that the Advisory Group endorsed the idea of using Fourteenth Congress for government representatives to express their views on the future of WMO, which might have implications for possible future changes in the WMO Convention. The Council's consideration of that proposal was recorded under agenda item 18.2.

COOPERATION WITH RELATED DATA AND SERVICE PROVIDERS

13.1.57 The Council agreed with the Advisory Group that cooperation with related data and service providers fell largely within the topic of involvement of the

media, the private sector and academia. Its conclusions on that subject were therefore reflected below.

INVOLVEMENT OF THE MEDIA, THE PRIVATE SECTOR AND ACADEMIA

13.1.58 The Council agreed that there was a growing recognition of the importance of cooperation with the media, the private sector and academia and of the need to consider the opportunities that such cooperation could provide while recognizing the associated challenges. It recognized that that included both the involvement of the media, the private sector and academia in the international programmes of WMO and cooperation, at the national level, between those sectors and the NMHSs.

INVOLVEMENT IN WMO PROGRAMMES

13.1.59 It was recalled that, according to General Regulation 6, Permanent Representatives of countries with WMO "shall maintain contact with the competent authorities, governmental or non-governmental, of their own countries on matters concerning the work of the Organization." In that connection, it was suggested that a possible mechanism for involvement of the media, the private sector and academia in the work of WMO could be through the establishment of national committees on WMO activities. Another would be through direct participation of those sectors in the work of the constituent bodies of WMO such as through attendance as advisers to Executive Council members at sessions of the Council and through membership in national delegations to sessions of the other WMO constituent bodies. NMSs could also be more proactive in initiating and/or participating in relevant national committees such as those dealing with pertinent issues like natural disaster mitigation, climate change and water resources management.

COOPERATION WITH NMSs

13.1.60 The Council recognized that the nature of the interaction between NMSs and the private sector could vary from country to country, in view of the different environments (e.g. political, economic) in which the NMSs operated. In certain cases, there were increasing constraints on public funding, including in NMSs, which led some to develop commercial activities in addition to traditional public weather and climate services. In some, the NMSs did not feel that they were sufficiently developed and the interaction with the private sector was a definite challenge; while in others, the private sector service providers engaged in activities which were complementary to those of the NMSs.

13.1.61 The Council stressed that a particular area of cooperation discussed by the Group was associated with having NMSs recognized, by all concerned, as the single official voice for meteorological and hydrological warnings.

13.1.62 The Council concurred that strategic alliance with the private sector, the media and academia could lead to the strengthening of NMSs, including developing constituencies who would advocate the maintenance and/or enhancement of government support for the infrastructure of the NMSs.

13.1.63 The Council was informed of various mechanisms that had been adopted in individual countries. The Council agreed that mechanisms which had been used to facilitate the desired interaction should be identified, described and taken into account in the preparation of the consolidated set of Guidelines on the role and operation of NMSs. Members should be encouraged to make use of mechanisms appropriate to their national situations, taking into account their relevant international (regional and global) commitments.

COOPERATION WITH OTHER INTERNATIONAL ORGANIZATIONS

13.1.64 The Council stressed the importance of cooperation with other international organizations as that would facilitate the implementation of WMO programme activities. That would have an impact on the role and operation of NMHSs. Such collaboration could also help to enhance the image and visibility of NMHSs and WMO.

13.1.65 Moreover, WMO collaboration with international organizations could help to promote the cooperation between the national corresponding institution of the particular international organization and the national meteorological/hydrological community, particularly the NMHSs.

13.1.66 The Council stressed the importance of NMSs' active participation in national delegations to governing and subsidiary bodies of relevant environmental conventions. It noted the value of NMSs' participation in GCOS and other climate-related programmes.

13.1.67 The Council recognized that it was not always easy to identify other relevant international organizations such as those that represented the private sector segment of interest to WMO and NMHSs. Nonetheless, the possibility of strengthening cooperation with the international representatives of the private sector, including those representing Meteorological Societies, should be pursued.

DEFINITION OF COMMONLY USED TERMS

13.1.68 The Council noted that the Advisory Group had studied a large number of definitions assembled for its consideration. On that basis, the Group had prepared an initial draft of "working definitions" for a selected set of terms that would help in facilitating discussion on the role and operation of NMSs.

13.1.69 The Council agreed that that set of "working definitions" should be treated as work in progress for use in the particular context of the role and operation of NMSs. Those working definitions should be refined and expanded on an ongoing basis in the process of preparation of the Guidelines.

ROLE AND OPERATION OF NHSS

13.1.70 The Council expressed its appreciation to CHy for the preparation of a comprehensive document on the role and operation of NHSS. The Council noted that the Group had identified issues which should be addressed in the future revision of that paper: groundwater; international river basins and aquifers; combined

Meteorological and Hydrological Services; and how NMSs and NHSS could best work together. It was further suggested that the value of data sharing should be more strongly reflected in the future. In addition, changes in certain NHSS would need to be taken into account if further use was to be made of the case studies presented. It was also important to distinguish between the situations where NHSS were distinct from NMSs at the national setting, and where the provision of meteorological and hydrological services were undertaken by one Service.

13.1.71 The Council agreed that, as work proceeded on preparation of the consolidated set of guidelines on the role and operation of NMSs, complementary work should continue, and accelerated where appropriate, in respect of NHSS. Most of the elements identified in the WMO Statement and in the Guidelines on NMSs could be considered as an initial basis for similar documents for NHSS. In that connection, the Council was pleased to note that the Expert Meeting on the Management of National Hydrological Services (Centurion, 20–24 August 2002) was being organized by WMO, in cooperation with the South African Weather Service. That meeting was part of the activities linked with WSSD.

FUTURE WORK OF THE GROUP

13.1.72 It was recalled that the fifty-second session of the Executive Council had agreed that the work undertaken by the Advisory Group should lead to:

- (a) A WMO policy statement on the role and operation of NMSs which either confirmed, updated and/or refined the Executive Council April 1999 Statement on the National Meteorological Service and alternative service delivery and which elaborated the Geneva Declaration of the Thirteenth World Meteorological Congress;
- (b) A consolidated set of guidelines on the role and operation of NMSs, making use, when possible, of relevant WMO material already available;
- (c) A comprehensive Executive Council report to Fourteenth Congress on action taken in response to Resolution 26 (Cg-XIII) — Role and operation of National Meteorological Services, possibly including proposals for modification of the WMO Convention and Regulations to represent more clearly the essential role and primary responsibilities of NMSs in carrying out the purposes of WMO.

13.1.73 The Council also recalled that its fifty-second session had agreed that the Group should aim, with the assistance of CHy, to carry out similar tasks in respect of the role and operation of NHSS.

13.1.74 In view of the fact that that was its final session before Fourteenth Congress, the Council therefore requested the chairperson, in consultation with, and on behalf of, the members of the Advisory Group, to further progress the Group's work in line with the general policy framework endorsed by the Council. It also requested the President of WMO to approve, on the Council's behalf, a comprehensive report to Fourteenth Congress on action taken in response to Resolution 26 (Cg-XIII).

13.2 INTERNATIONAL EXCHANGE OF DATA AND PRODUCTS (agenda item 13.2)

GENERAL CONSIDERATIONS ON RESOLUTION 40 (Cg-XII) — WMO POLICY AND PRACTICE FOR THE EXCHANGE OF METEOROLOGICAL AND RELATED DATA AND PRODUCTS INCLUDING GUIDELINES ON RELATIONSHIPS IN COMMERCIAL METEOROLOGICAL ACTIVITIES

13.2.1 The Executive Council recalled that the experience with Resolution 40 (Cg-XII) had been largely positive and that there was generally a strong commitment to make it work. It further recalled that the policy and practice on the free and unrestricted exchange of meteorological and related data and products as contained in Resolution 40 (Cg-XII) had continued to be applied in a generally satisfactory manner, despite some difficulties encountered. The Council confirmed that a suitable approach for now would be to leave Resolution 40 (Cg-XII) in force and to address relevant concerns in some other way, e.g. separate Congress resolutions, declarations and guidelines.

13.2.2 Regarding the possibility of putting the principle of free and unrestricted exchange of meteorological and related data and products on a firmer legal basis, such as by incorporating it in the WMO Convention, the Council noted that the chairperson of the Executive Council Advisory Group on the International Exchange of Data and Products had been requested to keep that topic under review and that that was also being considered in the context of the review of the WMO Convention being facilitated by the Executive Council Task Team to Explore and Assess the Possible Changes to the WMO Convention.

OPERATIONAL IMPLEMENTATION

13.2.3 As regarded the exchange of WWW data and products, the Council noted that during the last 12 months, three Members had submitted revised lists of their additional data and products while maintaining their earlier stipulated generic conditions. Another Member submitted a revised list of additional data and published, for the first time, its generic conditions. The Council welcomed the recent decision of JMA as regarded the category of the gridpoint global data output of its numerical weather prediction model, which was declared "essential data" under Resolution 40 (Cg-XII) for free exchange.

13.2.4 In connection with its repeated appeals to Members to make more or new data and products available, the Council was pleased that the ECMWF had increased its product range disseminated on the GTS by adding global wind and relative humidity fields and vorticity and divergence fields for the tropics. The new ECMWF products were in a 2.5×2.5 degree resolution in GRIB format and categorized as additional products in the sense of Resolution 40 (Cg-XII). The Council was also informed that in the near future, the ECMWF would also make available selected EPS products. The Council expressed its appreciation to ECMWF for placing those products on the GTS and, therefore, for expanding its

support to WMO in its capacity as RSMC for global medium-range weather forecasting.

13.2.5 The Council recalled that it had requested CBS to develop a methodology for assessing an increase in the availability of data exchanged on the GTS following the implementation of Resolution 40 (Cg-XII). It was pleased to note that CBS had embarked on the development and testing of a proposed methodology that was expected to monitor all observational data types (except radar and satellites) and to facilitate the assessment and changes of the volume of data exchanged on the GTS, including an evaluation of the impact of Resolution 40 (Cg-XII). In view of the magnitude of the resources needed at RTHs and NMCs to implement and operate the new monitoring methodology, CBS agreed to conduct an initial trial among volunteering centres. It was hoped that the results of the trial could be reported to CBS-Ext.(02) in December 2002.

IMPLEMENTATION OF RESOLUTION 25 (Cg-XIII) — EXCHANGE OF HYDROLOGICAL DATA AND PRODUCTS, AND RELATIVE ISSUES

13.2.6 The Council was informed of the action being taken as a follow-up to the adoption of Resolution 25 (Cg-XIII).

13.2.7 A brochure entitled *Exchanging Hydrological Data and Information: WMO Policy and Practice* (WMO-No. 925) had been published in six languages. It described the context in which the Resolution had been drafted and in which it would be implemented.

13.2.8 The Council noted that CHy had drafted a technical report on the exchange of hydrological data in which information was given on the types of data being exchanged.

13.2.9 It was noted that the above brochure was to be circulated to all Members and distributed at all relevant international and regional meetings. It also noted that the sampling of data transfer at the national, regional and international levels would then commence.

EXCHANGE OF CLIMATE DATA

13.2.10 The Council noted that CCI-XIII had reaffirmed the necessity for Members to exchange data for climate purposes in the wider interests of community welfare and safety of lives. The Commission had stressed the importance of cooperative linkages among the scientific research, operational meteorology and user communities in stating the need for adequate climate data and in addressing the necessary steps to ensure its availability.

13.2.11 The Council endorsed the CCI's statement "that the accessibility and use of climate data was at least as important as its collection and archiving, and that WMO and NMHS policy and activity should reflect that comparable importance" (general summary paragraph 5.4.3 of the *Abridged Final Report with Resolutions and Recommendations of the Thirteenth Session of the Commission for Climatology* (WMO-No. 938)). The Council noted with concern that instances of difficulties

being encountered in accessing climate data for public good activities in research and education had been noted by CCI-XIII, often exacerbated by insufficient resources within developing countries' meteorological services, which took the form of inadequate responsiveness of those holding the data or the high cost of data provision. The Council agreed that such barriers resulted in a loss of benefits of new knowledge and new applications and, effectively, lower returns on the heavy public investments in past data gathering. The Council noted the wide range of policies and practices on data provision among Members and the pressures on many NMHSs to employ their data archives for revenue generation. It noted the CCI's observation that, in order to provide better guidance to Members, there was a need for WMO to develop a better fundamental understanding of the economics of the different policy options. It requested the president of CCI to liaise with the Executive Council Advisory Group on the International Exchange of Data and Products on ways to obtain and summarize quantitative information on Members' policies and practices with respect to data provision and their outcomes in terms of costs and benefits of the different options, and to report to the fifty-sixth session of the Executive Council.

13.2.12 The Council also recalled that at its fifty-third session, it had "requested CBS, CCI and GCOS to continue to monitor the availability and flow of climate data, especially for research and impacts studies and to recommend/establish, as necessary, further mechanisms, jointly, as appropriate, for that purpose" (general summary paragraph 12.2.36 of the *Abridged Final Report with Resolutions of the Fifty-third Session of the Executive Council* (WMO-No. 929)). The Council noted that CCI-XIII had strongly supported the need for the climate research community to have ready access to data at appropriate temporal and spatial resolutions required for answering specific questions, consistent with Annex 1 of Resolution 40 (Cg-XII). The Council endorsed the CCI's proposal that standard climate data sets should be identified as essential for exchange and requested the president of CCI to report to the fifty-sixth session of the Executive Council on the issue.

OCEANOGRAPHIC DATA EXCHANGE POLICY

13.2.13 The Council noted that work was continuing within IOC to try and define an IOC oceanographic data exchange policy, particularly through the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy. The Group considered a two-tier approach (as used in Resolution 40 (Cg-XII), distinguishing between 'essential' and 'additional' data) and the elements to be included in the revised policy statement.

13.2.14 The Council noted that the Group presented an interim statement to the IOC Assembly session in 2001. The Assembly:

- (a) Noted that a second session of the Working Group would be required to achieve its goals as defined in its terms of reference;

- (b) Stressed the importance of ensuring that a new IOC policy on the exchange of oceanographic data should not result in a reduction of data flow;
- (c) Requested the Working Group to consider the data requirements of the various IOC programmes in further deliberations towards a data policy statement and to continue taking into consideration Resolution 40 (Cg-XII);
- (d) Urged Member States intending to participate in the second session of the Working Group to develop a national position on oceanographic data exchange policy issues during the intersessional period and to grant national representatives serving on the Working Group the mandate to negotiate within that position. To avoid lengthy discussions on technical matters during the second session, the Assembly recommended that the Group should discuss the issues that were of special technical concern by correspondence.

13.2.15 The Council was informed that the IOC Group was holding its second meeting in Paris on 17–18 June 2002. Relevant results of that meeting, when available, would be transmitted to WMO, and in particular to the Executive Council Advisory Group on the International Exchange of Data Products.

EXCHANGE OF AERONAUTICAL DATA AND PRODUCTS

13.2.16 The Council noted that the question of using the Internet to access WAFS and OPMET information would be discussed as part of agenda item 4 dealing with institutional changes and trends in the provision of meteorological services to international air navigation at the planned conjoint CAeM/ICAO Meteorology Divisional meeting in September 2002. In that connection, the Council agreed that WMO should:

- (a) Continue to work closely with ICAO, particularly in preparation for the 2002 conjoint meeting where those issues would be threshed out jointly;
- (b) Gather more information on current and possible practices and technologies of providing "authorized access" to OPMET and other aeronautical meteorological information;
- (c) Continue to explain, as required, the nature of the international and institutional arrangements for aeronautical meteorological services;
- (d) Work on enhancing user (customer) satisfaction through the improvement of services.

13.2.17 The Council was informed that the number of AMDAR data exchanged over the GTS had reached an average of about 130 000 observations per day with a temporary noted decline in the second half of September 2001 because of a short disruption of international air traffic. To facilitate access to that large volume of AMDAR data by NMSs and as directed by the Council, the AMDAR Panel, in collaboration with the WMO Secretariat, developed a new set of regional AMDAR bulletins to enable NMSs to download the most appropriate bulletins suitable to their use. That new set of regional AMDAR bulletins was expected to be submitted for consideration by the CBS Expert Team on Data

Presentation and Codes for review and, subsequently, to the next CBS session for approval.

13.2.18 In addition, the Council noted that currently it was possible that during the downlinking stage from aircraft to the ground, AMDAR data transmitted in readily identifiable text format could be picked up by eavesdroppers, then placed on the Internet and maintained at a number of Web sites. That problem was discussed at the AMDAR Panel meeting held in Australia in September 2001. For different reasons, the airlines and WMO expressed concern regarding the overall security of downlinked sensitive aviation information that included AMDAR data. In collaboration with the Panel, the aviation industry was considering several proposals to develop encryption systems for downlinked aviation information, for adoption as an industry standard to prevent that eavesdropping. That aviation information encryption was expected to be in place in the near future.

13.3 COOPERATION WITH OTHER DISCIPLINES AND PROGRAMMES (agenda item 13.3)

13.3.1 The Executive Council noted the information provided in connection with the possible role of WMO regarding coordination in the field of seismology. The Council recalled that in order to provide an adequate factual database for its analysis, it had been necessary to proceed with a questionnaire. The questionnaire had covered a wide range of activities related to seismology, including matters such as legal status, organization, responsibility, monitoring systems, distribution of information, relationships with other organizations and the need for improvement in international cooperation.

13.3.2 The Council noted that the questionnaire was sent to Permanent Representatives through a circular letter from the Secretary-General dated 12 November 2001 and to seismological centres/institutions on 8 January 2002. Some results of the preliminary analysis were presented to the Council to assist discussion. The Council expressed its appreciation to Members for their cooperation in that connection.

13.3.3 The Council also noted the summary review paper prepared by the Secretariat based upon available information on the international activity in the field of seismology, including programmes and projects implemented under intergovernmental organizations (UNESCO and its IOC, and CTBTO) and non-governmental organizations, (ICSU, the Incorporated Research Institutions for Seismology, the International Seismological Centre and others).

13.3.4 The analysis presented indicated a near-consistency of all responses in that an improvement of international cooperation was needed, in particular for seismological monitoring (standardization and guidance on instrumentation, training, etc.), the exchange of operational data and products, and in areas of development and transfer of methodology. Some of the Council members supported the establishment of an intergovernmental mechanism and organizational structure, under WMO, to address the issue of global and regional

observations, data collection and exchange, analyses, predictions and warnings, and capacity building. Other Council members expressed their concerns with the possible role of WMO regarding coordination in the field of seismology, especially bearing in mind the possible budgetary implications.

13.3.5 It was also noted that for more than 40 Members of WMO, the NMSs/NHSs were also responsible, or were involved in seismological activity. Therefore, the Council considered the desirability of developing proposals for the possible role of WMO in international coordination in the field of seismology and in particular in the development of operational seismological services.

13.3.6 The Council agreed that a number of options should be prepared for consideration by Fourteenth Congress and requested the Secretary-General, in consultation with relevant Permanent Representatives, to prepare the necessary documentation. The possibility of developing a protocol on seismology to the WMO Convention, if the procedure for the adoption of protocols to the WMO Convention was adopted, was suggested. That could be one of the ways of reflecting that important area of activity in which WMO could play an important role.

13.3.7 The Council stressed the importance of ensuring appropriate consideration of that issue at Fourteenth Congress and requested the Secretary-General to communicate the proposals to the relevant governmental authorities on the possible role of WMO in international coordination in the field of seismology, well in advance of Fourteenth Congress.

14. LONG-TERM PLANNING (agenda item 14)

14.1 EVALUATION OF THE IMPLEMENTATION OF THE FIFTH WMO LONG-TERM PLAN (agenda item 14.1)

14.1.1 The Executive Council noted with appreciation the report of the chairperson of the Executive Council Working Group on Long-term Planning and the Task Team on WMO Structure, Mr P. D. Ewins, and commended the Group and the Task Team for their effective work on the development of the draft 6LTP, on the monitoring and evaluation of the implementation of the 5LTP, and on the review of the WMO structure. The Council also noted with appreciation the active involvement of the presidents of technical commissions and regional associations in the long-term planning process.

14.1.2 The Council recalled that at its fifty-second session, it had requested the Working Group to undertake an initial evaluation of the implementation of the 5LTP covering the first two years of the Plan (2000 and 2001) for consideration at its fifty-fourth session. The Council had considered at that time that an evaluation could be further updated and submitted to Fourteenth Congress in 2003 by the President of WMO on behalf of the Executive Council.

14.1.3 The Council also recalled that at its fifty-third session it had noted the discussions of the Working Group on the basis for the preparation of the monitoring and evaluation report, which resulted in the adoption of the

Guidelines for the monitoring and evaluation of the 5LTP by the Group. In that connection, the Council noted with appreciation that, using the Guidelines and in compliance with Resolution 12 (EC-LIII) — Guidelines on monitoring and evaluation of the implementation of the Fifth WMO Long-term Plan, the Group had prepared the monitoring and evaluation report covering the first two years (2000–2001) of the 5LTP on the basis of independent monitoring and evaluation reports submitted by the presidents of regional associations, the presidents of technical commissions and the Secretary-General.

14.1.4 The Council concurred with the Group that it was important to highlight the achievements and where progress had been made, as well as areas where there had not been progress, by identifying the relevant problems and by proposing corrective actions. In that regard, the Council particularly recalled the difficulties in the implementation of certain parts of some key Programmes, such as WWW and WCP. The Council also concurred with the Group that it was desirable to have an indication of the extent to which expected resources might not have been available and their impact on the implementation of the 5LTP.

14.1.5 The Council endorsed the Group's view that it was important to monitor and evaluate broader areas like capacity building, which cut across programme areas, and to ascertain the status with respect to the gap between the level of relevant services provided in developed and developing countries.

14.1.6 After consideration of the consolidated report prepared by the Working Group, the Council recorded its assessment in [Annex X](#) to this report and requested the Secretary-General to arrange for the circulation of that assessment to Members and for its submission to Fourteenth Congress. The Council further reiterated its request made in Resolution 12 (EC-LIII) to the Working Group to update further the report to cover the second two years of the 5LTP for subsequent submission to Congress.

14.2 PREPARATION OF THE SIXTH WMO LONG-TERM PLAN (agenda item 14.2)

14.2.1 The Council considered the draft 6LTP, which would now cover eight years (2004–2011) and which had been prepared by the Working Group on the basis of guidance given by the Executive Council.

14.2.2 The Council particularly noted the Group's recommendation that due consideration should be given by the Executive Council and eventually by Fourteenth Congress to the provision of adequate funds in the WMO regular budget for the implementation of the scientific and technical programmes of the Organization. The Council recorded its relevant decisions under agenda item 12.

14.2.3 As regarded the eventual monitoring of the 6LTP, the Council noted the Group's view that it was important to consider the way in which the needed elements, such as milestones, could be monitored and evaluated. The Council also noted the importance given by the Group to the monitoring and evaluation of the

resources, including extrabudgetary resources, associated with the planned activities. The Council requested that options and mechanism for such monitoring and evaluation should be explored.

14.2.4 The Council endorsed the draft in general prepared by the Group; it requested that the following elements be taken into account in further revising the 6LTP, prior to its submission to Fourteenth Congress:

- (a) Chapter 2 should include a concise description of the monitoring and evaluation process and the linkage to results-based planning;
- (b) Chapter 3 should include additional discussion on economic pressure and globalization of meteorological services and on commercialization and competition, with some emphasis on the positive aspect of those processes, to reflect better the opportunities offered by those trends. Furthermore, in the section on advances in the underpinning sciences, progress in atmospheric research and climate science should be referred to. Moreover, the role and involvement of the broader international meteorological and hydrological community should be emphasized;
- (c) Chapter 5 should be further developed to enhance the presentation of the linkage between the strategies/associated goals and the WMO Programmes, including the identification of key result areas. Those areas, associated with Strategy 4, should be strengthened to demonstrate the socio-economic benefits of meteorological and related information; also, in connection with Strategy 8, more emphasis should be placed on interaction with the media to enhance the profile of WMO, NMHSs and the international meteorological and hydrological community as a whole;
- (d) Chapter 6 should be carefully reviewed to ensure appropriate consideration of Chapter 4 in the presentation of the WMO Programmes. Attention should be given to the formulation of the new Natural Disaster Prevention and Mitigation Programme as a separate major, cross-cutting Programme to ensure linkage to the various programmes that would contribute to; in particular, the contributions of the GDPS and the Emergency Response Activities should be explicitly recognized;
- (e) The resulting priorities should be identified. That would facilitate the consideration of appropriate resources to meet those priorities. The role of Government with respect to basic infrastructure provision and the ways other funding sources could be better sought should also be reflected.

14.2.5 The Council requested the Secretary-General to finalize the preparation of the draft 6LTP in the light of the Council's deliberation on that matter, in close coordination with the chairperson of the Executive Council Working Group on Long-term Planning.

PREPARATION OF THE 7LTP

14.2.6 The Council noted that the Working Group had recommended that the WMO long-term planning

should continue and that the 7LTP should be prepared. The Council further noted a number of specific recommendations made by the Group with respect to the preparation of the 7LTP, including:

- (a) The period of coverage of the Plan should be eight years, aligned with the four-yearly Congress sessions, with the start corresponding to the beginning of a programme and budget cycle (i.e. the financial period);
- (b) The Plan should be a clear detailed plan for the first four years, with the second four years being less detailed but giving guidance, focus and direction, and describing prospects for the future;
- (c) The programme and budget should be guided by, and closely linked with, the first four years of the Plan, recognizing that the Plan had a scope broader than that covered by the programme and budget;
- (d) The Plan should be updated or reviewed every Congress, such that each Congress would agree on Plans for eight years ahead and a programme and budget for four years ahead;
- (e) When preparing a new detailed first four-year Plan, the second four years of the previous Plan should be used as the basis, while also taking into account any new developments.

14.2.7 The Council recognized that those recommendations were based on current practices and expressed its endorsement of such arrangements. The Council also confirmed that a number of points related to the content and format of the 6LTP, as agreed upon by the Council, were also pertinent to the preparation of the 7LTP.

14.2.8 The Council also considered that the regional associations should be invited to provide regional analyses and assessments as well as regional priorities. Technical commissions should also provide analyses and assessments and establish priorities regarding their areas of activities.

14.2.9 The Council agreed that the planning process should have enhanced consideration of the financial aspects and cost-effectiveness particularly in relation to the realization of the objectives of the Long-term Plan.

14.2.10 The Council further agreed that consideration should also be given as to how best to incorporate WMO support programmes, address cross-cutting issues, such as the role and operation of NMHSS, and move forward strategic initiatives, particularly integrated global observation and data management strategies.

14.2.11 The Council agreed to recommend to Fourteenth Congress the preparation of the 7LTP.

14.3 REPORT ON THE REVIEW OF THE WMO STRUCTURE (agenda item 14.3)

14.3.1 The Council noted with appreciation that the Task Team on WMO Structure had reviewed a wide range of related issues and had made a number of recommendations, particularly in response to requests by the fifty-third session of the Executive Council. The issues discussed by the Task Team included the basic structure

of the WMO bodies — the Executive Council and its subsidiary bodies, technical commissions, regional associations — as well as the means of operating those bodies and the relationships among them. Other issues related to the assignment of lead responsibilities for the implementation of the programmes in the WMO Long-term Plan and to the enhanced use of information technology for better managing the activities of the Organization were also discussed.

14.3.2 The Council concurred with the Task Team that the basic structure of the WMO constituent bodies, involving the Executive Council, technical commissions and regional associations, should be supported and, in general, maintained at the present time. It was emphasized that the structure should adequately support the implementation of strategies identified in the 6LTP and that joint activities of various bodies to deal with cross-cutting issues should be further encouraged. The Council also noted that, given limited resources, the Organization should work in a more efficient way and avoid overlapping and duplication of effort.

EXECUTIVE COUNCIL

14.3.3 As regarded its own role, the Council agreed with the recommendations of the Task Team that the Executive Council should function in a more streamlined and strategic way. It should assume responsibility for “corporate governance” of the Organization. The Council should manage performance proactively by introducing measures of performance, by optimizing available resources and by giving guidance on significant adjustments of the activities to ensure delivery of the results expected in the Long-term Plan. The Council considered that the agenda of its sessions and the allocation of the time available should concentrate on emerging major issues and deal with them through real and thorough discussions, as appropriate. The collective wisdom of the Council should be better used than just for modifying summaries of discussions prepared in advance. The resulting time plan for Executive Council sessions needed to be more strictly followed to ensure the most effective use of its time for discussion of major issues and the participation of experts invited.

14.3.4 The Council further agreed that it should make better use of the technical commissions by delegating to them certain tasks for the implementation and monitoring of the WMO scientific and technical programmes, rather than undertaking detailed review of their programmes at the Council’s sessions.

14.3.5 The Council recalled that it had agreed earlier with the recommendation that a further review of the Executive Council subsidiary bodies should be made with respect to their terms of reference, numbers, duration, membership and cost implications, and had requested its Task Team to undertake that review and to make the necessary recommendations. In that connection, the Council noted the relevant recommendations of the Task Team and agreed that rather than establishing the Executive Council Working Groups/Panels, consideration should be given to greater use of technical

commissions, i.e. the Working Group on Antarctic Meteorology could be considered for transfer to CBS, and that the Executive Council Panels/CAS Working Groups dealing with atmospheric pollution and with weather modification would be made just CAS Working Groups. The Executive Council subsidiary bodies should be addressing primarily cross-cutting issues.

14.3.6 The Council also recalled that it had requested the Task Team to study further the structural matters related to the Bureau in terms of its membership, role and responsibility. The Council noted the relevant recommendations of the Task Team and noted the view that a more open way of the Bureau's functioning should be recommended; the Bureau could revert to more of the original concept of being composed only of the Secretary-General, the President and Vice-presidents, with the purpose of planning the conduct and content of sessions of Executive Council and Congress, without pre-empting the discussions that would be more for the Executive Council to undertake. It could be made a formal working group of the Executive Council with clear terms of reference, chaired by the President, which should report and be accountable to the Executive Council.

14.3.7 The Council recognized that the Task Team responded to its request to consider a matter that related to the process of electing members of the Council. The Council recorded its relevant decisions under agenda item 18. In terms of the membership of the Council, the Council recognized the concern expressed regarding representation of various disciplines, including hydrology, in the Council. While it was agreed that every effort should be made to ensure an equitable representation of various WMO-related disciplines in the Council, it was considered that the present process of electing members of the Council, together with the practice of inviting to the Council's sessions experts in the related fields, including hydrological advisers, was sufficient to respond to the above concern.

TECHNICAL COMMISSIONS AND REGIONAL ASSOCIATIONS

14.3.8 The Council noted a number of recommendations of the Task Team concerning technical commissions and regional associations. The Council recognized that the structural changes adopted, following CBS and CCI, or planned by a number of commissions, enabled a more flexible way of operation and improved interactions among commissions. Interactions between commissions and regional associations could also be improved. The new structure made it easier to assign responsibilities for specific tasks and to manage them better. At the same time, the Council recognized that each technical commission should establish its structure in accordance with its concept of developing activities within the related field of competence and there was no need to recommend a single structural design.

14.3.9 With respect to lead responsibilities assigned to technical commissions, the Council recognized the need for technical commissions to have greater involvement relating to resources associated with their

programmes of responsibility. That would facilitate their making recommendations on necessary programme and/or resource allocation adjustments. The commissions should be able to report to the Executive Council on the achievement of objectives of the programmes under their responsibilities, including reporting on measures for assessing implementation.

14.3.10 The Council agreed that further consideration was needed regarding the merits of establishing an applications commission in view of greater emphasis on user interaction. That might lead to a reduction in the number of commissions. It was noted that such changes would need to take into consideration established linkages and cooperation of WMO with other organizations such as IOC of UNESCO and ICAO.

14.3.11 The Council agreed that the present arrangement of ensuring intercommission coordination through annual meetings of the presidents of technical commissions appeared suitable and should continue. Cooperation among constituent bodies should be encouraged and any possible impediments to cooperation should be addressed. The intercommission collaboration in natural disaster prevention and mitigation was of particular importance.

14.3.12 The Council reiterated the need for strengthening collaboration between technical commissions and regional associations and encouraged arrangements for the involvement of experts from Regions in the activities of the subsidiary bodies of technical commissions. The Council reconfirmed that the role of regional associations should be strengthened. In particular, adequate support should also be provided to ensure the associations' appropriate functioning during the intersessional periods.

14.3.13 The Council also noted the suggestion on the promotion of liaison between technical commissions and regional associations at the level of their working groups. It recognized that enhanced support would need to be provided to experts from regional associations to achieve their meaningful and viable involvement in the implementation of the WMO scientific and technical programmes.

14.3.14 The Council requested the Secretary-General, in close coordination with the chairperson of the Task Team on WMO Structure, to ensure that the necessary follow-up actions were taken, including preparations for the consideration by Fourteenth Congress of relevant proposals, as appropriate.

OTHER TOPICS

14.3.15 The Council noted the recommendation of the Task Team on the matter of replacing the term "Regional Association" by another suitable term. The Council recorded its views on that issue under agenda item 18.

14.3.16 The Council requested the president of CBS to consider a proposal to rename CBS to reflect more clearly the services aspect of the work of the Commission.

14.3.17 The Council supported the view of the Task Team that enhanced use of information technology was crucial for improving WMO's means of operating and

would enable managing better the activities of the Organization and communication with Members. The Council therefore stressed the need to accelerate introducing and using electronic means, including the Internet, for general communication, and the provision of documentation and information. It also urged the enhanced use of modern information technology for the dissemination of the WMO publications and other materials. The Council requested the Secretary-General to explore the possibility of adopting the procedure whereby electronic versions of WMO materials would be provided in the first instance (by default) while printed versions should be considered as optional, and would be provided upon request, bearing in mind the particular situation of developing countries.

14.3.18 The Council agreed that further continuing review of the WMO structure and operating mode was needed to identify ways to improve direct linkages between the structural elements and the WMO Programmes, to manage better the cross-cutting issues and evolving initiatives, as well as to enhance WMO's means of operating. The Council felt that in order to ensure an appropriate migration to a new structure, the remit and membership of a group that might be tasked to address that matter in the future should be carefully formulated. The Council agreed on the need to consider all points of view in defining the future WMO structure and agreed that consideration should be given, in the future, on the establishment of an Executive Council panel of experts, which would consist of a small number of experts representing all constituent bodies.

15. COOPERATION WITH THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS (agenda item 15)

15.1 UNITED NATIONS (agenda item 15.1)

WMO PROCEDURES OF FOLLOW-UP ON JIU REPORT

15.1.1 The Executive Council noted the reports of the JIU referred to WMO and, where appropriate, the comments of the Secretary-General.

15.1.2 The Council noted with satisfaction the WMO procedures of follow-up on JIU reports submitted by the Secretary-General, in consultation with JIU. The Council endorsed the WMO procedures of follow-up on JIU reports described as a pilot scheme in the "system of follow-up on reports of the Joint Inspection Unit" contained in Annex 1 of JIU annual report A/52/34 (1997). The procedures are given in the [Annex XI](#) to this report.

REPORTS OF THE JIU

15.1.3 The Council adopted [Resolution 11 \(EC-LIV\)](#) in connection with the reports of the JIU.

RESOLUTIONS ADDRESSED TO SPECIALIZED AGENCIES BY THE UNITED NATIONS

15.1.4 The Council took note of the following resolutions addressed to the specialized agencies, including

WMO, by the fifty-sixth session of the United Nations General Assembly:

12, 19, 37, 38, 39, 40, 41, 45, 47, 48, 49, 51, 64A, 76, 95, 103, 107, 109, 127, 132, 177, 180, 182, 183, 187, 188, 189, 190, 191, 192, 194, 195, 196, 197, 198, 199, 200, 201, 202, 205, 207, 209, 210, 211, 217, 218, 220A, 224, 226, 227, 235, 239, 243, 245, 258.

15.1.5 The Council noted with appreciation the circular letter of the Secretary-General on major outcomes of the fifty-sixth session of the United Nations General Assembly of direct relevance to WMO. The information was useful to Members and the Secretary-General was requested to continue to provide such information that might assist the NMHSs in promoting awareness of developments at the global and regional levels that had implications for the Services.

15.2 FOLLOW-UP TO THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT, INCLUDING THE ACTIVITIES OF THE UNITED NATIONS COMMISSION ON SUSTAINABLE DEVELOPMENT (agenda item 15.2)

15.2.1 The Executive Council noted that WMO had been actively involved in the preparatory process for WSSD, which would be held in Johannesburg from 26 August to 4 September 2002. That included participation in several regional and subregional preparatory meetings, as well as in sessions of the United Nations CSD acting as the Preparatory Committee for the WSSD. The Council noted with appreciation that, in accordance with the request made by its fifty-third session, the Permanent Representatives of Members with WMO had been kept informed on the activities of the United Nations system associated with the Summit and on developments that had implications for their Services. In particular, Permanent Representatives were invited to undertake possible follow-up actions at the national level. In that connection, the Council commended the establishment of a special page on WMO activities related to WSSD on the WMO Web site.

15.2.2 The Council further noted with satisfaction that the Secretary-General had used his attendance at the events related to the WSSD, particularly the sessions of the Preparatory Committee, to exchange views with a number of national delegations to highlight issues of importance for both WMO, including NMHSs, and sustainable development as a whole. The Council particularly appreciated the Secretary-General's emphasis on the need to adopt a "culture of prevention" of natural disasters of meteorological and hydrological origin, on the need to strengthen the unique global observational networks, coordinated by WMO, for monitoring the atmosphere, the oceans, rivers and lakes, and on the need to move, in transition to sustainability, to a new paradigm of sustainability science.

15.2.3 The Council recognized that, in the course of the preparatory process for the WSSD, protecting and managing the natural resource base of economic and social development had been thoroughly discussed as one of the pillars for sustainable development. The

proposed actions included a number of those constantly promoted by WMO, such as monitoring and assessing the quantity and quality of freshwater resources, prevention of marine pollution, promoting strategies to mitigate impacts of climate variability and change, developing of early warning mechanisms and networks, disseminating data and knowledge for effective disaster mitigation and risk reduction, and supporting climate research programmes and global climate observing systems. The Council, however, considered that some other essential actions should be more distinctly underscored, including accelerated development and provision of meteorological, hydrological and climatological applications and services, and the enhancement of the capacity of the NMHSs, particularly in developing countries. The Council considered that the WSSD should provide an opportunity to bring, once again, to the attention of Governments, international funding organizations and society at large the increased potential benefits that would result from strengthening the unique environmental monitoring networks, coordinated and/or co-sponsored by WMO, better supported contribution of meteorological, hydrological and related applications and services, and from enhanced capacity of relevant international, regional and national bodies, in particular NMHSs.

15.2.4 The Council noted that one of the issues to be considered by the WSSD was that of sustainable development governance at the international, regional and national levels. The Council recognized that, at the international level, environmental governance would constitute a component of sustainable development governance. In that connection, the Council recalled that international environmental governance had been discussed on several occasions, including at meetings within UNEP. The Council noted that the Permanent Representatives of Members with WMO had been promptly informed by the Secretary-General on that development. The Council further noted that the Secretary-General, through a circular letter, had invited the Permanent Representatives to contact their national representatives in the WSSD process, in order to apprise the national delegation on the unique role of WMO and the NMHSs in monitoring and assessing global environmental changes, especially through operating and/or coordinating major global observing and data management networks. The Permanent Representatives had also been invited to emphasize to national delegations to the WSSD process the outcome of the work of IPCC, which had already been very successful in establishing truly international cooperation in assessing climate change, a major component of an overall global environmental change. The Council endorsed actions taken by the Secretary-General and emphasized that, in view of the multifaceted activities of WMO in monitoring and assessing global environmental changes, any arrangement, which might be proposed in the WSSD process should take into full account the role and involvement of WMO as a key organization in the United Nations system engaged in environmental monitoring and assessment.

15.2.5 The Council emphasized that data obtained through global observational networks coordinated by WMO, together with other related information, were available to everyone, including the academic community, and were used in a wide range of applications and services. Those data and information formed the basis for the development and adoption of relevant legal instruments of significance to international environmental governance, including UNFCCC, the Vienna Convention for the Protection of the Ozone Layer and UNCCD. They also underpinned the United Nations Convention on Biodiversity.

15.2.6 The Council considered that, as regarded the assessment of the global environmental changes, the IPCC reports dealt with major aspects of such assessments, including changes in water resources, ocean state and natural ecosystems. The Council further considered that IPCC would also be capable, if mandated, of providing assessments of other components of the global environmental change. The Council, therefore, was of the opinion that the establishment of additional inter-governmental bodies for monitoring and assessing global environmental change was not justified and would likely lead to a duplication of efforts and dilution of resources.

15.2.7 The Council adopted [Resolution 12 \(EC-LIV\)](#) in order to help representatives of the meteorological and hydrological communities participate in the Summit.

15.3 SPECIALIZED AGENCIES AND OTHER INTERNATIONAL ORGANIZATIONS (agenda item 15.3)

WORKING ARRANGEMENT WITH CMO, CIPM AND NBA

15.3.1 The Executive Council took note of the request submitted by CMO, CIPM and NBA for the establishment of working arrangements with WMO.

15.3.2 The Council considered the objectives and functions of CMO, CIPM and NBA, and taking into account the practice followed by WMO in establishing working arrangements concerning its scientific and technical cooperation with other Organizations, the Council agreed that it would be of mutual benefit to WMO and to each of the three Organizations to establish such a close working relationship.

15.3.3 The Council, therefore, authorized the Secretary-General to finalize working arrangements with the Coordinating Director of CMO, the Director of BIPM, on behalf of CIPM, and the Executive Secretary of NBA on the basis of the texts contained in [Annexes XII, XIII and XIV](#) to this report.

CONSULTATIVE STATUS WITH THE ASSOCIATION OF HYDROMETEOROLOGICAL EQUIPMENT INDUSTRY

15.3.4 The Council took note of the request submitted by HMEI for the granting of consultative status with WMO.

15.3.5 The Council noted that Thirteenth Congress had underlined that collaboration of WMO with manufacturers and suppliers could lead to better and more

cost effective equipment and had concluded that WMO, especially through CIMO, should continue efforts to enhance that collaboration such as in the field of education and training.

15.3.6 The Council considered the objectives and main activities of HMEI, and taking into account the practice followed by WMO in establishing consultative status with other organizations, agreed that it would be of mutual benefit to both WMO and HMEI to establish such close working relationship.

15.3.7 The Council, therefore, authorized the Secretary-General to inform the Chairperson of HMEI of the present decision.

WORLD SUMMIT ON THE INFORMATION SOCIETY

15.3.8 The Council took note that the United Nations General Assembly endorsed the organization of the World Summit on the Information Society, which would be held in Geneva on 10–12 December 2003 and in Tunis in 2005. It noted with appreciation that the Secretary-General was a member of the High-level Summit Organizing Committee and that WMO was actively involved in the Summit preparatory process. Noting the global and regional events that were planned in that respect, the Council invited all Members to liaise with their respective relevant authorities in order to ensure that themes and activities of importance for NMHSs and WMO were adequately addressed and supported at the national, regional and global levels of the Summit preparatory process.

15.3.9 The Council was also pleased to note that the Secretariat provided preliminary input to the preparation process of the Summit, including themes of importance for NMHSs and WMO. The Council encouraged the Secretary-General to pursue the active involvement of WMO in the Summit preparatory process and noted that the use of popular terminology would strengthen the interest of the World Summit in WMO's activities and contributions to the information society relevant to global environmental issues.

THE INTEGRATED GLOBAL OBSERVING STRATEGY PARTNERSHIP

15.3.10 The Council was briefed on the current status of the IGOS partnership in its consideration of the future role of WMO-sponsored or co-sponsored observing systems and programmes in any future integrated global observing system. The Council noted that several global observing systems and programmes, which were either fully sponsored by WMO (WWW/GOS, GAW) or co-sponsored by WMO (e.g. GOOS, GTOS, WHYCOS), in addition to the jointly-sponsored, cross-cutting GCOS, were contributing to the implementation of an integrated global observing strategy through the arrangement of the IGOS partnership.

15.3.11 The Council agreed that WMO should play a major role in any future integrated global observing system. The role of WMO and its sponsored or co-sponsored observing systems and programmes in the

development of the current strategy should be through participation in the development of the themes and ultimately in the establishment of a coherent synthesis of those themes with existing programmes and activities. As the strategy matured, the emerging guidance should be taken into consideration by relevant WMO mechanisms. For example, the Expert Team on Observational Data Requirements and Redesign of the GOS of the CBS OPAG on Integrated Observing Systems should take into consideration IGOS strategic guidance as it related to the space-based component of the GOS.

15.3.12 The Council recalled that for many years, the Expert Team had utilized an approved process called the rolling review of requirements in order to develop guidance for WMO Members for both components, surface and space-based of the GOS. As had been the case in the past for the WWW, it was anticipated that WMO Members would voluntarily implement recommendations approved by CBS for the redesign of the GOS, based on suggestions from the Expert Team. In the context of current IGOS terminology, the long established WMO process could therefore be considered an "atmospheric theme" already in its implementation phase and therefore not requiring submission through any IGOS "approval" process. However, as the other observing systems did not yet have complete and rigorous development/review mechanisms in place such as that developed through CBS for the atmosphere (and in fact also for parts of the ocean and land surface domains), the IGOS process would serve as a most valuable tool. WMO must help formulate the guidance being prepared within the IGOS to ensure compatibility with its own activities. Conversely, the other IGOS Partners needed to remain sensitive to WMO activities in view of their critical importance in underpinning the entire Strategy.

16. INFORMATION AND PUBLIC AFFAIRS PROGRAMME (agenda item 16)

16.1 The Executive Council decided that the theme for the World Meteorological Day in 2004 would be "Weather, water and climate in the information age".

16.2 The Council expressed satisfaction with the initiatives undertaken by the WMO Secretariat and the NMHSs in the development of public information materials for the celebration of the World Meteorological Day 2001 "Volunteers for weather, climate and water". Members informed the Secretariat of the way they celebrated World Meteorological Day at the national level. The Council encouraged Members to strengthen further their activities to increase public awareness.

16.3 The Council noted with appreciation WMO's participation in the ISDR, the United Nations-umbrella initiative for disaster mitigation strategies, and in the global launch of the ISDR campaign on 17 October 2001 for the International Day for Disaster Reduction. That contributed also to the preparation for the celebration of World Meteorological Day 2002 with its theme "Reducing vulnerability to weather and climate extremes", the 2002 World Day for Water theme "Water

and development” and the preparations for the forthcoming WSSD (Johannesburg, 26 August–4 September 2002). The Council welcomed the inclusion of WMO media products in the global campaign of ISDR.

16.4 The Council noted with appreciation a number of public information events, including the participation of WMO in the United Nations Open Days in Geneva. The Swiss Meteorological Service and the Swiss national television collaborated with WMO in the presentation of the special “on-the-spot TV weather forecast show” especially for children and youngsters, which was rated the most interesting section by the 15 000 visitors of the two-day event.

16.5 On the occasion of the 2001 WMO annual Statement on the Status of the Global Climate, a press release was launched at the annual WMO press conference for that event at the United Nations Office in Geneva, which was attended by a number of journalists. The journalists were also briefed on the work and activities of the Organization. That event generated significant coverage by the international print media, radio and television, including interviews with WMO scientists supporting the enhancement of WMO’s visibility and good image.

16.6 The Council took note of the ongoing media outreach and IPA networking activities, such as group visits to the Headquarters from various institutions, high schools, universities and individual groups. There was increased media outreach with regular issuance of WMO press releases, occasionally released jointly with other bodies, on a variety of subjects launched at WMO press conferences at the United Nations Office in Geneva. In addition, WMO experts made the work of the Organization more visible by participating in thematic television and radio programmes and by making themselves available for specific interviews and background briefings. The Council requested the Secretary-General to pursue his efforts in keeping the media fully briefed on major issues involving WMO and the NMHSs.

16.7 The Council noted with satisfaction IPA’s continued media training efforts to reflect the current trends in climate change, climate variability and other phenomena such as *El Niño/La Niña*, ozone layer depletion and increased water scarcity. It encouraged the organization of training workshops for personnel involved in media activities, using extrabudgetary resources as far as possible. The Council invited the NMHSs to contribute to that effort.

16.8 The Council noted that the First International Broadcast Meteorology Conference was postponed to the fourteenth financial period. The Council endorsed the joint organization of the event by WMO, the American Meteorological Society, the International Association of Broadcast Meteorology and the International Weather Festival. It encouraged the participation of other partners to enhance WMO’s media alliance. The Council emphasized that strengthening WMO’s media alliance — including cooperation between NMHSs and the international media, the recognition of the role of NMHSs in socio-economic development and in particular in

reducing the risks and impacts of natural disasters — would contribute to the improvement of the image and visibility of WMO as well as the NMHSs.

16.9 The Council welcomed the initiative taken by the Secretary-General to develop a WMO Secretariat external communications strategy. The communication strategy included a comprehensive model plan for action and an outline of guidelines for NMHS’s in order to reach maximum synergy between the Secretariat and the Members in their external outreach. To that end, a questionnaire was sent to Members and 116 replies were received. The Council encouraged Members to develop their own communication strategy or plan in view of the importance of information and public affairs in promoting WMO and NMHSs.

16.10 The Council noted with satisfaction the initiatives undertaken as part of the Secretariat’s efforts towards the forthcoming WSSD. In accordance with a special WSSD communications strategy plan, WMO brochures and relevant information materials would be distributed and exhibitions were being planned to improve the image of WMO and the NMHSs. The Council further encouraged Members to be involved in national preparations for the Summit and to take necessary actions in support of the event. The Council expressed its appreciation to the Secretary-General for keeping the Members informed on arrangements for the Summit and their possible input in areas related to weather, water and climate to the Summit outcome. It also expressed its appreciation to South Africa in providing support to WMO to facilitate its participation in the Summit.

17. PROGRAMME SUPPORT SERVICES AND PUBLICATIONS (agenda item 17)

17.1 CONFERENCES (agenda item 17.1)

17.1.1 In accordance with General Regulations 170 and 186, the Executive Council approved the draft programme of sessions of WMO constituent bodies for the fourteenth financial period as given in Annex XV to this report.

17.1.2 The Council noted that the distribution of sessions of WMO constituent bodies during the thirteenth financial period was very uneven. That tended to put extreme pressure on the resources of the Secretariat at certain times, which could create a risk of delays in the provision of documentation and publishing services. Accordingly, the Council strongly urged constituent bodies to consider adjusting the timing of their sessions in the fourteenth financial period in order to achieve a more even distribution, as indicated in [Annex XV](#) to this report.

17.2 PUBLICATIONS (agenda item 17.2)

17.2.1 The Executive Council noted with appreciation the list of publications issued in 2001 (Annex IV to the *WMO Annual Report 2001*). That was in accordance with its Resolution 6 (EC-LII) — Publications Programme, and its discussion held at that session of the Executive

Council. It expressed satisfaction at the progress of the programme of mandatory publications in English, French, Russian and Spanish and was especially pleased to note that the long-standing backlog in operational publications and their supplements in Spanish and Russian had been eliminated. It appreciated the steps taken to develop the Arabic-language publications and to reduce the backlog of Arabic-language editions that had developed.

17.2.2 The Council expressed its appreciation for the work of CMA in preparing the publications in Chinese and thanked all those Members who had provided assistance to the Programme.

17.2.3 The Council appreciated that the Secretariat was in the process of refining its proposals for electronic publication and distribution and for the introduction of an e-commerce site, and understood that it was not yet possible to provide precise cost predictions. All publication files were now saved in a format ready to be distributed and the necessary mechanisms for allowing access to specified users were being put in place. The Council hoped that it would be possible to reduce the number of printed copies distributed by the Organization to a minimum by the end of the fourteenth financial period. The *Catalogue of Publications* had been re-organized on a more logical basis; it was accessible from the WMO Home page. The Council requested that the budgetary impact of developing electronic publishing and distribution be incorporated in the programme and budget for the fourteenth financial period and requested the Secretary-General to arrange for an on-line demonstration to be made available to Members during Fourteenth Congress.

17.2.4 At the request of Thirteenth Congress, the Secretary-General launched a study and restructured the publications, conference and language services to rationalize and improve the quality of those services. That restructuring resulted in a significant improvement in the cost-efficiency of text-processing in 2001 as compared to 2000 and the savings thus achieved helped cover expenses of the new language services requested by Thirteenth Congress. The Council expressed its satisfaction to the Secretary-General for the significant cost-efficiency improvements achieved in the language services and encouraged him to continue the process under way and to monitor progress achieved. It requested the Secretary-General to report to Fourteenth Congress on action taken to rationalize the arrangements for language services in WMO, as compared with those in other organizations.

17.3 OFFICE AUTOMATION AND INFORMATION TECHNOLOGY SUPPORT (agenda item 17.3)

17.3.1 The Executive Council noted with appreciation the advances made during the current period in the Secretariat's information technology development and support. In particular, the Council noted that the Secretariat had initiated a new strategy to deal with new projects and developments in the field of information

technology with a logical proactive concept. The approach of systems integration rather than isolated developments had been the backbone of that new strategy. In that connection, the Council was informed of the formation of a small team (a database administrator, a programmer and a part-time assistant) to deal with applications development within the Secretariat.

17.3.2 The Council was informed of the latest improvements in the administration of the centralized systems, particularly the use of new servers to modularize the services to avoid total breakdowns of the office automation system. In addition, the Council was informed about the implementation of guidelines to help the staff on the proper use of information technology services and equipment in the Secretariat.

17.3.3 The Council noted the additional measures implemented to control access and to increase security to protect WMO documents and the Web site. One of those measures was to put in operation a firewall server.

17.3.4 The Council was informed that the Intranet was operational and that the users were receiving training and support. In addition, departmental Web focal points had been trained on how to construct Intranet Web pages. The Intranet service would enhance the exchange of information within the Secretariat. At the same time, the Council was informed of the project to implement an Extranet for discussion and exchange of information between Members and the Secretariat. The Council also welcomed the efforts made by the Secretariat to maintain and improve access to the WMO Web site.

17.3.5 The Council noted with appreciation the work carried out by the Secretariat in order to provide electrical power outlets and Internet connectivity in each participant's desk in Meeting Rooms A and B.

18. GENERAL, LEGAL AND ADMINISTRATIVE MATTERS (agenda item 18)

18.1 FORTY-SEVENTH INTERNATIONAL METEOROLOGICAL ORGANIZATION PRIZE (agenda item 18.1)

18.1.1 The Executive Council awarded the forty-seventh IMO Prize to Dr Joanne Simpson.

18.1.2 Mr Qin Dahe was appointed to the Selection Committee to replace Mr R. R. Kelkar. The Committee now consisted of Messrs A. Diouri (chairperson), N. Al-Shalabi, R. Prasad and Qin Dahe.

18.2 CONSTITUTIONAL AND REGULATORY MATTERS (agenda item 18.2)

COMMON RULES AND PROCEDURES FOR JCOMM

18.2.1 The Executive Council recalled that at its fifty-third session it had requested the Secretary-General, in consultation with the Executive Secretary IOC, to prepare a draft Memorandum of Understanding between WMO and IOC to establish and implement a set of common rules and procedures for the conduct of JCOMM,

for review by the Executive Councils of both Organizations in 2002. The Council further recalled that its fifty-third session had recognized that Congress might wish to revise the application of Resolution 37 (Cg-XI) — Suspension of Members for failure to meet financial obligations, to JCOMM, in view of the anomalies which existed at present with regard to voting and other rights within JCOMM, between WMO Members and IOC Member States. It had agreed that that issue was linked to the planned Memorandum of Understanding on JCOMM rules and procedures, and had therefore requested the Secretary-General to bring that particular issue again to the attention of the Council, in conjunction with the draft Memorandum of Understanding.

18.2.2 In that context, the Council reviewed the draft Memorandum of Understanding between WMO and IOC regarding regulatory and procedural aspects of the conduct of JCOMM. It noted with appreciation that the draft Memorandum of Understanding now did not require any approach to Congress regarding a possible revision of the application of Resolution 37 (Cg-XI) to JCOMM. It further noted with appreciation that the IOC Executive Council had already reviewed the draft at its session just prior to the present session of the Executive Council and had expressed overall agreement with the concept and content of the draft. The IOC Executive Council had furthermore requested that any comments and/or proposed amendments should be submitted in writing to the IOC Secretariat by 31 July 2002, to be taken into account in the preparation of a new draft, for consideration and approval by the IOC Assembly in July 2003.

18.2.3 The Council approved the draft in principle and requested the Secretary-General, in consultation with the Executive Secretary IOC, to prepare a revised version of the Memorandum, incorporating any modifications suggested by the Executive Councils of WMO and IOC, for final approval by Congress and the IOC Assembly in 2003. The Council further requested the Secretary-General to monitor continuously the implementation of the agreements incorporated in the Memorandum, once it was in force, and to report on any difficulties encountered, as necessary, to future Council sessions.

REPORT OF THE TASK TEAM TO EXPLORE AND ASSESS THE POSSIBLE CHANGES TO THE WMO CONVENTION

18.2.4 Following the discussions at Thirteenth Congress and the fifty-second and fifty-third sessions of the Executive Council, the Task Team to Explore and Assess the Possible Changes to the WMO Convention continued its work by correspondence. The Council expressed its appreciation to the chairperson, the members of the Task Team, and to the Secretariat for the work accomplished so far on that issue.

18.2.5 The Council discussed the proposal of the Task Team, namely the draft amendment to the Preamble of the WMO Convention, based on the text of the Geneva Declaration adopted by Thirteenth Congress, and amendments to the Convention containing a provision

for an adoption of Protocols. As both proposals did not involve “new obligations for Members”, the insertion of the respective amendments could be adopted by Congress according to Article 28(c) “upon approval by two-thirds of the Members which are States”.

18.2.6 Some members of the Council noted that in view of the complexity of the issues contained in the amendments to the Convention proposed by the Task Team, there was little time left before Fourteenth Congress to undertake wider consultations among the Members.

18.2.7 The Council, therefore, agreed to request Fourteenth Congress to establish an advisory working group with a larger membership which could deal with the issue of amending the WMO Convention, which needed further consideration. The Council agreed that the proposals prepared by the Task Team should serve as a basis for the future work of the working group, if it was established by Fourteenth Congress.

REVIEW OF THE PERIOD REQUIRED FOR CONDUCTING AN ELECTION BY CORRESPONDENCE OF AN ACTING MEMBER OF THE EXECUTIVE COUNCIL

18.2.8 In accordance with General Regulation 144, when a vacancy occurred among the elected members of the Executive Council between sessions of Congress, an acting member should be designated by the Executive Council. The acting member should serve until the closure of the next ordinary session of Congress.

18.2.9 The procedure for the election of an acting member of the Executive Council in such a situation was governed by Rules 15 and 16 of the Rules of Procedure of the Executive Council. Rule 16(a) stipulated that such an election “may also be conducted by correspondence if the President of the Organization considers it necessary after consulting the members of the Executive Council and if the vacancy has occurred at least 120 days before the next session of the Executive Council”. The process of consultation was specified in Rule 24, which allotted a period of 30 days for an exchange of opinion between members of the Executive Council.

18.2.10 Twelfth Congress requested the Secretary-General to notify the Members concerned whose nationals or representatives would not be eligible to be nominated to fill the vacant office by correspondence. That notification should be sent by the most speedy facility to the Members concerned, at least 45 days before dispatching the letter requesting nominations.

18.2.11 In accordance with Rule 16(b), the list of candidates should be confined to those eligible candidates coming from the same Region as the outgoing member proposed by members of the Executive Council within 30 days of the announcement of the vacancy.

18.2.12 The Secretary-General had 30 days to verify that all persons whose names had been submitted in accordance with Rule 16(b) were willing to be considered as candidates. After that period of 30 days, the Secretary-General should establish, accordingly, the final list of candidates (Rule 16(c)).

18.2.13 If the list of candidates included several names, a secret ballot by correspondence should be organized, in which case Regulation 71(a) applied. In accordance with Regulation 71(a), no more than 90 days were allocated for the voting slips to be received by the Secretary-General after the dispatch of the request to vote.

18.2.14 It was noted that if all stages mentioned above were to be implemented for an election by correspondence of an acting member of the Executive Council, the period for conducting a full process would require at least 225 days and not 120 days as it was stated in Rule 16.

18.2.15 After a careful study of the issue, the Council agreed that the period for conducting an election by correspondence of an acting member of the Executive Council, as contained in Rule 16, should be changed from “at least 120 days” to “at least 225 days.” It therefore adopted [Resolution 13 \(EC-LIV\)](#).

CHANGING THE TERM “ASSOCIATION” FOR WMO REGIONAL BODIES

18.2.16 The Council examined in detail the issue of changing the term “Regional Association” to reflect better the status of an intergovernmental body as requested by the eleventh session of RA I. It noted the concern of RA I about the difficulties involved in the use of the term “Regional Association” which reflected neither the institutional level nor the statutory importance of a WMO regional association in relation to most Members’ governmental authorities, particularly of French-speaking countries.

18.2.17 The Council noted the views of the fiftieth session of the Executive Council that consideration should be given so that the term “Regional Association” could be better translated into French, in order to reflect more appropriately the status of the constituent body.

18.2.18 The Council noted that a circular letter had been forwarded to Members in order to solicit their views and that up until the end of April 2002, 77 Members had sent their replies to the Secretariat. Out of them, 24 had expressed the wish to use the term “WMO Regional Association”, 22 had expressed the wish to maintain the term “Regional Association”, 11 had opted for “WMO Regional Council”, four for “Permanent Regional Council”, four for “WMO Regional Commission”, three for “Assemblée Régionale de l’OMM Pour”; few others made other proposals or did not have any preferences.

18.2.19 The Council noted that the third session of the Executive Council Task Team on WMO Structure (Geneva, 25 February–1 March 2002) had discussed the matter of replacing the term “Regional Association” by another suitable term. The Task Team took into account the action taken by the Secretary-General to solicit the views of Members on the matter. Pending the replies by Members, the Task Team made suggestions, which would be helpful in further deliberations by the present session of the Executive Council and by Fourteenth Congress. Accordingly, the Task Team considered five terms: Regional Association, Regional Council, Regional Assembly, Regional Union and Regional Congress. It was agreed that a majority of those present supported the

term “Regional Council”, noting that it also appeared to be a suitable term in Arabic, French and Spanish.

18.2.20 The change of the name “Regional Association” would require amendments to the WMO Convention and to the General Regulations. The change of the name would not involve new obligations for Members and, therefore, should come into force upon approval by two-thirds of the Members at Congress.

18.2.21 After a careful study of the issue, the Council agreed to request to Fourteenth Congress that the name “Regional Association” be retained but translated into French as “Conseil Régional”.

18.2.22 The Council requested the Secretary-General to prepare a proposal for Fourteenth Congress and to distribute it to the Members at least nine months prior to the session of Congress. In that connection, the Council adopted [Resolution 14 \(EC-LIV\)](#).

PROPOSED REPLACEMENT OF THE NAME “USSR” BY THE NAMES OF COUNTRIES WHICH REPLACED THE FORMER USSR IN THE CASPIAN SEA AREA

18.2.23 The Council noted that in accordance with Article 8(f) of the WMO Convention, the First Congress of WMO, by its Resolution 32 (Cg-I), established the Regional Associations of the WMO and decided about their geographical limits by referring in several cases to the boundaries of some countries.

18.2.24 The Council further noted that in relation to the geographical limits of Region II —Asia (western limit) and of Region VI — Europe (eastern limit), reference was made to the USSR boundary.

18.2.25 The Council agreed that in view of the formation of a number of independent States from the territory of the former USSR, there was a need to amend Annex II of the General Regulations to reflect the references to the boundaries of Regions II and VI, without any change in the present delineation of the two Regions concerned.

18.2.26 The Council noted that in accordance with Article 18(a) of the WMO Convention “Regional associations shall be composed of the Members of the Organization, the networks of which lie in or extend into the Region”. Accordingly, after formation of a number of independent States on the former territory of the USSR, the newly independent countries in the Caspian region became Members of WMO and declared the associations of which they considered themselves to be Members (General Regulation 164), namely:

- (a) The Russian Federation by the Note Verbale No. 660 dated 26 December 1991 informed WMO of its continuation of WMO membership of the USSR and through it, its continuation as a Member of RAs II and;
- (b) Kazakhstan acceded to the WMO Convention on 4 June 1992 and exercised its right to belong to RAs II and VI;
- (c) Armenia acceded to the WMO Convention on 16 September 1992 and exercised its right to belong to RA VI;

- (d) Turkmenistan acceded to the WMO Convention on 3 January 1993 and exercised its right to belong to RA II;
- (e) Azerbaijan acceded to the WMO Convention on 26 January 1994 and exercised its right to belong to RA VI.

18.2.27 Taking the above into account, the Council agreed to the amendment to Annex II of the General Regulations and adopted [Resolution 15 \(EC-LIV\)](#) to that effect. It agreed that the amendment, namely in its operative paragraph, should be presented to Fourteenth Congress for decision.

REVIEW OF THE PROCESS OF ELECTING MEMBERS OF THE EXECUTIVE COUNCIL

18.2.28 The Council noted the review of the process of electing members of the Executive Council, which was based on consultations with Members through the relevant questionnaire and further actions envisaged by the Secretary-General. The Council also noted that the Executive Council Task Team on WMO Structure, at its third session, had addressed that issue and considered various options to address the issue of a more balanced representation for various WMO Regions.

18.2.29 The Council agreed to propose to Congress that the number of the elected members of the Executive Council should be increased by one seat in view of the increased Members of the Organization. In order to arrive at a better representation of the various Regions, the Council also agreed to propose that not less than four members of the Executive Council comprising the Presidents and Vice-Presidents of the Organization, the presidents of regional associations and the elected members should come from one Region.

18.2.30 The Council requested the Secretary-General to prepare a proposal for amending Article 13(c) of the Convention and the relevant General Regulations for Fourteenth Congress, and to distribute it to the Members at least nine months prior to Fourteenth Congress. In that connection, the Council adopted [Resolution 16 \(EC-LIV\)](#).

18.3 PREPARATIONS FOR FOURTEENTH CONGRESS (agenda item 18.3)

DATES AND ARRANGEMENTS

18.3.1 The Executive Council, recalling the decisions made by Thirteenth Congress concerning Fourteenth Congress, decided that Fourteenth Congress should be held at the Geneva International Conference Centre in (CICG) from 5 to 24 May 2003.

18.3.2 The Council noted that similar arrangements to those for Thirteenth Congress would be made. Concerning interpretation in non-official languages, the Council noted that only Salles I and II of CICG had two additional channels over and above the six channels required for the official languages of the Organization. Those facilities might be used provided that the cost of the interpretation services would be met by the

countries requesting them. Interested Members should notify the Secretary-General of their intention and wishes before 30 November 2002.

PROVISIONAL AGENDA

18.3.3 The Council approved the provisional agenda for Fourteenth Congress shown in [Annex XVI](#) to this report and requested that it be distributed with the notification of the session.

INVITATIONS TO NON-MEMBER COUNTRIES

18.3.4 The Council noted that, in accordance with General Regulation 19, invitations should be issued to the following non-Member countries because of their status as Members of, or as observers to, the United Nations:

Andorra
Bhutan
East Timor
Equatorial Guinea
Grenada
Holy See
Kiribati
Liechtenstein
Marshall Islands
Nauru
Palau
St. Kitts and Nevis
St. Vincent and the Grenadines
San Marino
Tuvalu

18.3.5 The Council noted that no other names of independent countries for which prior approval of the WMO Members was required, were brought to the attention of the Secretary-General.

INVITATIONS TO INTERNATIONAL ORGANIZATIONS

18.3.6 The Council agreed that invitations should be extended to the international organizations listed in [Annex XVII](#) to this report.

DOCUMENTATION

18.3.7 The Council noted that all documents, with the exception of those listed in general summary paragraphs 18.3.8 and 18.3.9 below, would be distributed as soon as possible, and preferably not later than 45 days before the opening of the session, in accordance with General Regulation 132(a).

18.3.8 It was also noted that the Secretary-General's programme and budget proposals for the fourteenth financial period and any proposals submitted by Member States for amendments of the Convention would be distributed at least six months before the opening of the session in accordance with relevant regulations (Article 3.5 of the Financial Regulations and Article 28(a) of the WMO Convention). The proposals for amendments of the Convention made by the Executive Council should

be communicated to Members at least nine months before Congress. Any proposals for amendments of the General Regulations submitted by Members or by constituent bodies should be communicated to all Members at least three months before Congress (General Regulation 2(g)).

18.3.9 Furthermore, the Council requested the Secretary-General to make arrangements to distribute at least four months before the opening of the session any documentation relating to amendments to the Financial Regulations and Staff Regulations, as well as documentation concerning the proportional contributions by Members.

WORKING COMMITTEES

18.3.10 The Council noted that arrangements similar to those adopted for Thirteenth Congress would be made to establish two Working Committees (A and B). The two Committees would work simultaneously and, as far as possible, the work would be equally distributed between them. In addition, a third team of interpreters would be available to assist the Subcommittee on Hydrology and any subcommittee or ad hoc committees set up by Committees A and B.

TENTH IMO LECTURE

18.3.11 The Council recalled that as decided at its fifty-third session, Professor I. A. Shiklomanov and H.E. Dr Mahmoud Abu-Zeid had been invited to deliver the tenth IMO lectures on "Water resources as a challenge of the twenty-first century" and to prepare a monograph on the same subject. The Secretary-General was requested to distribute the summary of the lecture prepared by H.E. Dr Abu-Zeid and Professor Shiklomanov prior to the opening of the session.

ARRANGEMENTS FOR SCIENTIFIC DISCUSSIONS

18.3.12 The Council decided that the scientific discussions during Fourteenth Congress should cover the following subjects:

- (a) Numerical weather prediction;
- (b) Climate change and climate prediction;
- (c) New observation technologies for monitoring Earth environmental systems and early disaster warnings.

18.3.13 The Secretary-General was authorized to make arrangements, in consultation with the President of WMO, for scientific lectures to be presented by outstanding experts on each of those subjects and for the summaries of the lectures to be distributed prior to the opening of the session.

SEATING OF DELEGATIONS

18.3.14 The Council agreed, after drawing lots, that delegations to Fourteenth Congress should be seated in alphabetical order of their countries as spelled in French, starting from the front of the hall and beginning with France.

18.4 STAFF MATTERS (agenda item 18.4)

AMENDMENTS TO THE STAFF RULES

18.4.1 The Executive Council noted the amendments to the Staff Rules, applicable to Secretariat staff and to technical assistance project personnel made by the Secretary-General since its fifty-third session.

SALARIES OF UNGRADED OFFICIALS

18.4.2 The Council noted that, in December 2001, the United Nations General Assembly adopted a new base salary scale for staff in the Professional and higher categories, which came into effect on 1 March 2002. It further noted that that scale reflected the consolidation, on a no-gain no-loss basis, of 3.87 multiplier points of post adjustment into the net base salaries.

18.4.3 The Council noted that in accordance with Staff Regulation 3.1, the revised salary scale showing the new net amounts had been implemented in the Secretariat in respect of staff members in grades P.1 to D.2.

18.4.4 The Council recalled that Thirteenth Congress had decided to authorize the Executive Council to carry out any adjustment of salary in respect of the Secretary-General, the Deputy Secretary-General and the Assistant Secretary-General, which might become necessary if an increase in the salaries of comparable United Nations staff occurred during the thirteenth financial period.

18.4.5 The Council noted that comparable United Nations agencies (ITU and UPU) were adjusting or had adjusted the salaries of their ungraded officials in accordance with the rates below.

18.4.6 Based on the decisions of the United Nations General Assembly, the Council decided to set the annual rates of net basic salary of WMO ungraded officials with retroactive effect from 1 March 2002 as followed:

	<i>Net with dependants</i>
Secretary-General	US\$ 133 384
Deputy Secretary-General	US\$ 122 434
Assistant Secretary-General	US\$ 112 480

18.4.7 The Council requested the Secretary-General to take appropriate action as required by the decisions thus taken.

ANNUAL REPORT OF THE ICSC

18.4.8 The Council took note of the twenty-seventh annual report of the ICSC, submitted in accordance with Article 17 of the Commission's Statute. It welcomed the standards of conduct as set out in Annex II to the report of the Commission.

DECISIONS TAKEN AS A RESULT OF THE RECOMMENDATIONS OF THE PROJECT TEAM ON HUMAN RESOURCES INCLUDING ELEMENTS OF REVIEW OF CURRENT POLICY IN RESPECT TO GRANTING PERMANENT CONTRACTS

18.4.9 The Council recalled that it had requested the Secretariat at its fifty-third session, to develop a human resources management strategy which was based on the

recommendations arising from the Secretariat Review Report as well as the specific recommendations that resulted from the staff Project Teams. That strategy included development of a mission statement and a set of core values for the Secretariat; definition of core competencies and skills inventory; an enhanced recruitment process; an induction/briefing programme for new staff; improvement of the internal communication mechanism; a succession plan for staff leaving the Secretariat; improved performance management; a staff development and training strategy; improving management coordination; encouraging delegation; enhancing responsibility together with accountability; and establishing a strategic planning capacity.

18.4.10 The Council welcomed the progress made by the Secretariat towards the achievement of those objectives including the definition of a mission statement for the Secretariat and the fostering of a sense of belonging among staff with the definition of a set of core values and their inclusion within the general management framework of the Secretariat, the establishment of the Staff Development, Training and Learning Strategy, the improvements in the selection process using screening criteria, and the new approaches introduced to disseminate the administrative information relevant to the day-to-day work of staff.

18.4.11 The Council, noting the statistics provided by the Secretary-General on gender distribution in senior positions within the Secretariat (see [Annex XVIII](#) to this report) encouraged the Secretary-General to identify women candidates meeting the professional requirements to promote a more equitable gender distribution within the Secretariat.

18.4.12 The Council requested that a summary report be presented to Fourteenth Congress indicating the progress made in the development of the integrated human resources strategy and the modalities of its implementation.

18.4.13 The Council further noted the active participation of the Organization in ongoing actions under the aegis of the ICSC within the context of the reform of the United Nations common system, and the statement by the Chief Executives Board for Coordination in which Executive Heads endorsed the review currently under way and welcomed that far-reaching human resource management reform undertaking.

18.4.14 The Council requested that the outcomes of the ICSC review of pay and benefits be integrated into the human resources management strategy under preparation in the Secretariat, including a review of the granting of permanent contracts, in view of the decision of the ICSC that future work on the subject of contractual arrangements in the United Nations system of organizations, should be integrated into the review of the pay and benefits system.

VIEWS OF STAFF ON CONDITIONS OF SERVICE

18.4.15 The Council took note of the concern of the staff on developments regarding the ongoing

restructuring process in the Secretariat. The Council heard that despite the progress being made, there were still some issues troubling the staff, particularly those in the former Conferences and Languages Services and the Publication and Distribution Services Departments. The Council expressed the hope that appropriate and timely actions would be taken to address the problems identified during and after the recent review of those two Departments, so as to enhance the effectiveness, working conditions and morale of the staff affected. The Council expressed the wish to be informed of the outcome of that restructuring at its next session.

18.4.16 The Council noted that the staff was satisfied with, and appreciated, the measures that were taken in the last year to address the difficult problem of temporary staff, particularly those having served five years or more. There remained a few instances of temporary staff whose situations were not yet resolved. The staff would continue to work with the Administration to find satisfactory solutions for those individuals. The Council requested the Secretariat to continue its efforts to ensure that temporary staff was given every consideration, within the existing possibilities, regarding their employment conditions.

18.4.17 The Council noted that the staff had warmly welcomed and strongly supported the long-awaited, recently-approved, policy and strategy on staff development, training and learning in WMO. Given the ambitious scope of the project, the staff expressed the hope that the Executive Council would continue to ensure that the associated resources would be approved and made available beyond those allocated for the first two-year plan (2002–2003).

18.4.18 The Council noted that staff representatives were participating in the review of the pay and benefits conducted by the ICSC and that they had expressed concern at elements of the envisaged reform.

18.4.19 The Council noted that the staff was actively participating in the ICSC local salary survey for staff in the General Service category currently under way in Geneva. However, the staff was concerned that elements of the salary survey methodology, as revised in 1997, were making it very difficult to identify an appropriate number of employers meeting the survey criteria.

18.4.20 The Council noted that the staff attached great importance to the fifty-first session of the United Nations Joint Staff Pension Board that was scheduled to be held at the FAO Headquarters in Rome from 10 to 19 July 2002. The Council further noted that the WMO Staff Pension Committee would be represented at the session by the Committee's Secretary and by one of the three Committee's members appointed by the Secretary-General.

REPORT ON APPOINTMENTS, PROMOTIONS, NOMINATIONS AND TRANSFERS OF STAFF IN THE PROFESSIONAL CATEGORY AND ABOVE

18.4.21 In accordance with Article 21(b) of the Convention, the Council examined and approved the

appointments made by the Secretary-General since its fifty-third session, as followed:

<i>Name and nationality</i>	<i>Title, grade and organizational unit</i>	<i>Effective date</i>
Mr LOVE G. B. (Australia)	Secretary (D.2), Intergovernmental Panel on Climate Change	9 May 2002
Mr K. D. DAVIDSON (United States)	Director (D.1), World Climate Programme Department	28 Oct. 2001
Mr K. KONARÉ (Mali)	Regional Director (D.1), Regional Office for Africa	26 April 2002
Mr L. A. BARRIE (Canada)	Chief (P.5), Environment Division, Atmospheric Research and Environment Programme Department	26 June 2002
Mr B. S. NYENZI (United Republic of Tanzania)	Chief (P.5), CLIPS Project Office, World Climate Programme Department	30 Oct. 2001
Mr M. ONDRAS (Slovakia)	Senior Scientific Officer (P.5), Observing System Division, World Weather Watch, Basic Systems Department	1 June 2002
Mr V. RYABININ (Russian Federation)	Senior Scientific Officer (P.5), World Climate Research Programme Department	18 Nov. 2001
Mr G. SOMMERIA-KLEIN (France)	Senior Scientific Officer (P.5), World Climate Research Programme Department	2 Dec. 2001
Mr C. WANG (China)	External Relations Officer (P.4), External Relations Office, Secretary-General's Office	1 Oct. 2001
Mr Y. ONO (Japan)	Junior Professional Officer (P.2), Public Weather Services Division, World Weather Watch, Applications Department	30 Jan. 2001

18.4.22 The Council noted the nominations and/or promotions made by the Secretary-General since its last session as a result of competition after issuance of vacancy notices, as followed:

<i>Name and nationality</i>	<i>Title, grade and organizational unit</i>	<i>Effective date</i>
Ms K. M. CHESTOPALOV (France)	Senior Human Resources Officer (P.5), Human Resources Management Division, Resource Management Department	1 July 2001

Mr M. W. TANGA
(Democratic Republic
of the Congo)

Analyst/Programmer
(P.3), Information Systems
Division, Resource
Management Department

1 June 2001

18.4.23 The Council also noted the transfers initiated by the Secretary-General since its last session, as followed:

<i>Name and nationality</i>	<i>Title, grade and organizational unit</i>	<i>Effective date</i>
Mr P. D. LLANSÓ (United States)	From the position of Chief (P.5), World Climate Applications Division, World Climate Programme Department, to that of Chief, World Climate Data and Monitoring Programme Division in the same Department	1 April 2002
Mr B. S. NYENZI (United Republic of Tanzania)	From the position of Chief (P.5), CLIPS Project Office, World Climate Programme Department, to that of Chief, World Climate Applications and CLIPS Division in the same Department	1 April 2002
Mr C. R. D. REYNOLDS (Ireland)	Chief (P.5), Publications Production Division, from the Publication and Distribution Services Department to the Language Services and Publications Department	26 Feb. 2002
Mrs E. DAR-ZIV (Switzerland)	Chief (P.4), Conferences Unit, from the Conferences and Language Services Department to the Conferences, Printing and Distribution Department	26 Feb. 2002
Mr C. U. GWAM (Nigeria)	Fellowship Officer (P.4) in the Fellowships Division, Education and Training Department to Training Officer in the Training Activities Division in the same Department	1 June 2001
Mrs S. BÉLIVEAU (Canada)	Editor (P.3), Publications Production Division, from the Publication and Distribution Services Department to the Language Services and Publications Department	26 Feb. 2002
Mrs M. L. BURNS (United Kingdom)	Chief (P.3), Documents Production Section, Languages, Publications and Conferences Department to that of Chief, Printing and Electronic Publications Section, Publication and Distribution Services Department	22 Dec. 2000

Mr A. A. KORETSKI (Russian Federation)	Editor (P.3), Publications 26 Feb. 2002 Production Division, from the Publication and Distribution Services Department to the Language Services and Publications Department
Ms J. LEYSSENS (Belgium)	Editor (P.3), Publications 26 Feb. 2002 Production Division, from the Publication and Distribution Services Department to the Language Services and Publications Department
Mr A. ORIAS BLEICHNER (Switzerland)	Editor (P.3), Publications 26 Feb. 2002 Production Division, from the Publication and Distribution Services Department to the Language Services and Publications Department
Mr A. UGOLINI (Italy)	Editor (P.3), Publications 26 Feb. 2002 Production Division, from the Publication and Distribution Services Department to the Language Services and Publications Department

18.5 FINANCIAL MATTERS (INCLUDING THE REPORT OF THE EXTERNAL AUDITOR) (agenda item 18.5)

CONSIDERATION OF THE ACCOUNTS FOR THE BIENNIUM 2000–2001

18.5.1 The Executive Council noted that the certificate of the External Auditor on the accounts did not contain any qualification. The Council also considered and noted with some concern the detailed report of the External Auditor. It further took note of the replies of the Secretary-General on the matters raised. Noting the difficulties encountered in the implementation and adaptation of the new financial system during the biennium and recognizing that it was the first time that the accounts for the biennium were prepared from that new system, the Council requested the Secretary-General to take appropriate follow-up action on the issues raised by the External Auditor.

18.5.2 Taking into account the recommendations of the Financial Advisory Committee, the Council established an Ad Hoc Group consisting of Messrs J-P. Beysson, A. J. Dania, M. D. Everell, P. D. Ewins, J. J. Kelly Jr., M. S. Mhita and K. Nagasaka to evaluate the implications of the issues raised in the audit report on the accounts for the biennium 2000–2001 and follow-up with the WMO Secretariat on the implementation of the recommendations, and to review the proposed revisions to Financial Regulation 9.1. The Ad Hoc Group should report to the Financial Advisory Committee in May 2003 with a status of the recommendations of the External Auditor and the replies of the Secretary-General and

corrective measures put in place as well as a timetable of schedule of compliance. In cases where the WMO Secretariat disagreed with the External Auditor's recommendations, the report should set out their reasons for doing so, including the views of the External Auditor and the Ad Hoc Group on areas of disagreement.

18.5.3 The Council considered and approved the audited financial accounts of the General Fund, the Working Capital Fund and the other special and Trust Funds for the biennium 2000–2001.

18.5.4 The Council noted with concern the substantial amounts of outstanding assessed contributions of certain Members and urged the Members to clear their dues at an early date. It decided to keep the matter under review and requested the Secretary-General and the Financial Advisory Committee to report any new developments to its fifty-fifth session.

18.5.5 The Council adopted [Resolution 17 \(EC-LIV\)](#).

CONSIDERATION OF THE ACCOUNTS FOR 2000–2001 FOR WMO PROJECTS FINANCED FROM UNDP

18.5.6 The Council considered and approved the audited financial statements for the periods ended 31 December 2000 and 31 December 2001 in respect of those UNDP projects and Trust Funds being administered by WMO. In that respect, [Resolution 18 \(EC-LIV\)](#) was adopted.

INTERIM REPORT OF THE SECRETARY-GENERAL ON THE FINANCIAL AND BUDGETARY SITUATION OF THE ORGANIZATION FOR THE BIENNIUM 2002–2003

18.5.7 The Council considered the report of the Secretary-General on the financial and budgetary situation of the Organization for the biennium 2002–2003.

18.5.8 The Council once again expressed its concern at the financial position of the Organization and urged the Members to pay their dues at an early date.

18.5.9 The Council reviewed the various ways to provide information on an annual basis on the status of the budget and expenditure, as practiced by WMO, the United Nations, UNESCO, ILO and UNDP. The Council considered that the current WMO interim report provided necessary and sufficient information on the budgetary and financial situation of the Organization, in line with the practice of the above organizations of the United Nations system. After discussion, the Council decided that the interim report should also contain programmatic performance information matching with budgetary information, including information on achievement of results, as required under results-based budgeting.

REVISION OF THE FINANCIAL REGULATIONS

18.5.10 The Council recognized that new high priority or emergency programme requirements could arise

during a financial period and that such activities might not have been included or funded in the programme and budget approved by Congress for that financial period. Considering that cash surplus at the end of the previous financial period could be used to finance such requirements without any additional assessment on Member States, the Council recommended to Fourteenth Congress that the text of Financial Regulation 9.1 be amended to give authority to the Council to dispose of any cash surplus, as presented in [Annex XIX](#) to this report. The Council noted that some members expressed their reservations on the proposed revisions to Financial Regulation 9.1, as that issue would need further consideration.

18.5.11 Noting that Thirteenth Congress had agreed that the increased cost of financing, operating and maintaining the new WMO Headquarters building would be offset to the extent possible by rental of excess space so that it did not become an economic burden to the Organization, the Council recommended to Fourteenth Congress that the text of Financial Regulation 10.1 be amended to reflect that practice, as presented in [Annex XIX](#) to this report.

18.5.12 The Council recalled the recommendation of the External Auditor in his report on the accounts for the twelfth financial period, to reconsider the usefulness of preparing special accounts for the financial periods, taking into consideration that the certifications were issued for financial statements of the two bienniums which fell within them. Recognizing that the implementation of the recommendation would no longer require resources for preparing the special accounts for the financial period and that adjustments to the expenditure for the financial period would be reflected in the accounts of the first biennium of the following financial period, the Council recommended to Fourteenth Congress that the texts of Financial Regulations 14.5, 15.9 and 15.11 be amended to reflect those changes, as presented in [Annex XIX](#) to this report.

18.5.13 The Council noted that the Secretary-General had reviewed the Financial Regulations to check their compatibility with results-based budgeting. It was satisfied with the compatibility of the present Financial Regulations with results-based budgeting.

ANNUAL REPORT OF THE INTERNAL AUDITOR

18.5.14 The Council noted with appreciation the annual report of the Internal Auditor submitted by the Secretary-General and also noted that actions were being taken to fill the post of the Chief, Internal Audit and Investigation Service, in line with Article 13.9 of the Financial Regulations.

18.6 DESIGNATION OF ACTING MEMBER(S) OF THE EXECUTIVE COUNCIL (agenda item 18.6)

The Executive Council designated Mr Mamadou Lamine Bah (Guinea) as acting member of the Executive Council in replacement of Mr Kaliba Konaré.

18.7 REVIEW OF PANELS AND OTHER BODIES OF THE EXECUTIVE COUNCIL (agenda item 18.7)

Following changes in the membership of the Executive Council, the Council decided on the following replacements and changes in the composition of its panels and other bodies:

- (a) **Executive Council Working Group on Long-term Planning**
Mr Woon Shih Lai to replace Mr R. Sri Diharto (also a member of the Task Team on WMO Structure)
- (b) **Task Team on WMO Structure**
Mr Woon Shih Lai to replace Mr R. Sri Diharto (also a member of the Executive Council Working Group on Long-term Planning)
- (c) **Executive Council Advisory Group of Experts on Technical Cooperation**
Mr M. L. Bah to replace Mr K. Konaré
- (d) **Executive Council Advisory Group on Role and Operation of NMHSs**
Mr D. Nadison to replace Mr G. C. Schulze
- (e) **Executive Council Advisory Group on Climate and Environment**
Mr C. C. Fuller to replace Mr A. Jaime
Mr D. Nadison to replace Mr G. C. Schulze
- (f) **Selection Committee for the Norbert Gerbier-MUMM International Award**
Mr F. Quintas Ribeiro to replace Mr I. Mersich
- (g) **Selection Committee for the IMO Prize**
Mr R. Prasad to replace Mr R. Sri Diharto
- (h) **WMO Staff Pension Committee**
Mr T. Sutherland to replace Mr A. Jaime

19. SCIENTIFIC LECTURES AND DISCUSSIONS (agenda item 19)

19.1 The Executive Council, at its last session, selected the following two specific lecture themes to be delivered during the present session:

- (a) Societal impacts of weather extremes: implications for research and policy;
- (b) Flood forecasting and warning services.

19.2 The President introduced the two distinguished experts who had been invited to deliver the following lectures:

Topic (a) — Mr James Baker (United States), former Administrator of NOAA;

Topic (b) — Professor Carlos Tucci (Brazil).

19.3 Following lively discussion, the Council expressed its appreciation to Messrs Baker and Tucci for their excellent lectures. The Council requested the Secretary-General to arrange for the appropriate publication of the lectures.

20. REVIEW OF PREVIOUS RESOLUTIONS OF THE EXECUTIVE COUNCIL (agenda item 20)

In accordance with Rule 27 of its Rules of Procedure, the Executive Council reviewed those of its previous resolutions which were still in force at the time

of the fifty-fourth session and adopted [Resolution 19 \(EC-LIV\)](#).

21. DATE AND PLACE OF THE FIFTY-FIFTH AND FIFTY-SIXTH SESSIONS OF THE EXECUTIVE COUNCIL (agenda item 21)

21.1 The Executive Council agreed that its fifty-fifth session would be held at the WMO Headquarters in Geneva from 26 to 28 May 2003.

21.2 The Council also agreed that its fifty-sixth session would be held at the WMO Headquarters in Geneva from 8 to 18 June 2004.

22. CLOSURE OF THE SESSION (agenda item 22)
The fifty-fourth session of the Executive Council closed at 5.25 p.m. on 21 June 2002.

RESOLUTIONS ADOPTED BY THE SESSION

RESOLUTION 1 (EC-LIV)

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

THE EXECUTIVE COUNCIL,

NOTING Resolution 6 (Cg-XIII) — Intergovernmental Panel on Climate Change,

COMMENDS the work of Mr Robert T. Watson, the past Chairperson of the Intergovernmental Panel on Climate Change (IPCC), in guiding the efforts of the world's climate-change scientists to produce the Third Assessment Report and other Special Reports and Technical Papers to uniformly high standards;

RECORDS its appreciation to the Working Group co-chairpersons, to the other members of the IPCC Bureau and especially to all the scientists and other experts who served as Coordinating Lead Authors, Lead Authors and reviewers for the preparation of the Third Assessment Report;

EXPRESSES its support to Mr R. Pachauri, the new Chairperson of the IPCC, as he leads the IPCC in its efforts to inform the community and decision makers of the results of the Third Assessment Report and as he commences the planning for the Fourth Assessment Report;

FURTHER EXPRESSES its appreciation to Governments and institutions which have, and continue to, contribute generously to the joint WMO/United Nations Environment Programme Trust Fund that enables the IPCC to carry forward its work;

REQUESTS the Secretary-General to arrange, as in the past and as appropriate, for the dissemination of the IPCC reports to the National Meteorological and Hydrological Services.

RESOLUTION 2 (EC-LIV)

REPORT OF THE THIRTEENTH SESSION OF THE COMMISSION FOR CLIMATOLOGY

THE EXECUTIVE COUNCIL,

HAVING CONSIDERED the *Abridged Final Report with Resolutions and Recommendations of the Thirteenth Session of the Commission for Climatology* (WMO-No. 938),

DECIDES:

- (1) To note the report;
- (2) To note Resolutions 1 to 4 (CCI-XIII);
- (3) To take action on the recommendation as follows:
Recommendation 1 (CCI-XIII) — Review of resolutions of the Executive Council based on

previous recommendations of the Commission for Climatology

(Action on this recommendation was taken under agenda item 20);

REQUESTS the Secretary-General to bring the above decision to the attention of all concerned.

NOTE: This resolution replaces Resolution 5 (EC-L), which is no longer in force.

RESOLUTION 3 (EC-LIV)

REPORT OF THE THIRTEENTH SESSION OF THE COMMISSION FOR ATMOSPHERIC SCIENCES

THE EXECUTIVE COUNCIL,

HAVING CONSIDERED the *Abridged Final Report with Resolutions and Recommendations of the Thirteenth Session of the Commission for Atmospheric Sciences* (WMO-No. 941),

NOTING Resolutions 1 to 4 (CAS-XIII),

DECIDES:

- (1) Not to re-establish the joint Executive Council Panel of Experts/CAS Working Group as contained in Recommendation 1 (CAS-XIII);
- (2) Not to re-establish the joint Executive Council Panel of Experts/CAS Working Group as contained in Recommendation 2 (CAS-XIII);

- (3) To take into account Recommendation 3 (CAS-XIII) — Review of the resolutions of the Executive Council relevant to the fields of responsibility of the Commission for Atmospheric Sciences, when reviewing its past resolutions at its next session;

AUTHORIZES the president of CAS to establish a CAS Working Group on Environmental Pollution and Atmospheric Chemistry and a CAS Working Group on

Physics and Chemistry of Clouds and Weather Modification Research;

REQUESTS the Secretary-General to bring the above decisions to the attention of all concerned.

NOTE: This resolution replaces Resolution 6 (EC-L), which is no longer in force.

RESOLUTION 4 (EC-LIV)

REPORT OF THE TWELFTH SESSION OF THE COMMISSION FOR AGRICULTURAL METEOROLOGY

THE EXECUTIVE COUNCIL,

HAVING CONSIDERED the *Abridged Final Report with Resolutions and Recommendations of the Twelfth Session of the Commission for Agricultural Meteorology* (WMO-No. 900),

HAVING BEEN INFORMED that the final decision was taken on the report by correspondence,

NOTES:

- (1) The report;
- (2) Resolutions 1 to 19 (CAgM-XII);

DECIDES to take the following actions on the recommendations:

Recommendation 1 (CAgM-XII) — National reports on progress made in agricultural meteorology

- (a) Approves this recommendation, except for **RECOMMENDS 2(c)**;
- (b) Requests the Secretary-General:
 - (i) To bring the recommendation to the attention of Members;
 - (ii) To take appropriate action for the preparation of national reports on progress

made in agricultural meteorology by Members and for the publication of the summaries when received;

Recommendation 2 (CAgM-XII) — Review of resolutions of the Executive Council based on previous recommendation of the Commission for Agricultural Meteorology

- (a) Replaces Resolution 5 (EC-XLVII) — Report of the eleventh session of the Commission for Agricultural Meteorology,
- (b) Replaces Resolution 5 (EC-XLIV) by Resolution 5 (EC-LIV);
- (c) Replaces Resolution 8 (EC-XLV) by Resolution 6 (EC-LIV).

(Action on this recommendation to be taken by the Executive Council when reviewing its previous resolutions.)

NOTE: This resolution replaces Resolution 5 (EC-XLVII), which is no longer in force.

RESOLUTION 5 (EC-LIV)

DROUGHT AND DESERTIFICATION

THE EXECUTIVE COUNCIL,

NOTING:

- (1) The United Nations Conference on Environment and Development (UNCED), Rio Declaration and relevant parts of Agenda 21,
- (2) United Nations General Assembly Resolution 49/234 — Elaboration of an international convention to combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa,
- (3) Ratification of the United Nations Convention to Combat Desertification (UNCCD) in December 1996,

- (4) The *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902), general summary paragraph 9.2.7,

- (5) United Nations General Assembly Resolution 54/223 — Implementation of the United Nations Convention to Combat Desertification in those countries experiencing serious drought and/or desertification, particularly in Africa,

CONSIDERING:

- (1) The role played by climate and climatic factors in desertification processes and the importance of meteorology and hydrology in many aspects of the combat against desertification,

- (2) That drought and desertification have continued to affect many countries,
- (3) That drought and desertification have serious implications for socio-economic development and the environment in many countries, especially in arid, semi-arid and dry sub-humid areas,
- (4) That WMO has, for many years, contributed to the combat against the adverse effects of drought and desertification at the national, regional and international levels,
- (5) Articles 10 and 16 to 19 of UNCCD,
- (6) That WMO has participated effectively in the sessions of COP-1, COP-2, COP-3, COP-4 and COP-5 of UNCCD, and will continue to do so in future Conferences of the Parties,

RECOGNIZING that the subject of drought and desertification has been considered in detail by UNCED,

URGES Members of WMO:

- (1) To continue to strengthen national and regional meteorological and hydrological networks and monitoring systems to ensure adequate gathering and dissemination of basic data and information nationally, regionally and internationally;
- (2) To support, as appropriate, national, regional and global programmes for integrated data collection and to carry out assessment and research related to land degradation and desertification and mitigation of drought problems;
- (3) To continue to review, study and undertake research on the interactions between climate, drought and desertification, and their socio-economic impacts;

- (4) To draw the attention of appropriate authorities and experts to the use and applications of meteorological and hydrological information in National Action Programmes for the implementation of UNCCD;
- (5) To stimulate education and training on the meteorological and hydrological aspects of the multidisciplinary fields in the combat against desertification;
- (6) To support the Secretary-General in the further implementation of the recommendations of UNCED;

REQUESTS the Secretary-General:

- (1) To bring the relevant recommendations on the follow-up to UNCED to the attention of all Members;
- (2) To continue to circulate to Members for information and appropriate action any relevant decisions of the COPs of UNCCD which may have implications for Members of WMO;
- (3) To continue to take steps towards the implementation of actions recommended by UNCED which are of direct relevance to WMO;
- (4) To cooperate, as appropriate, within the budgetary resources, with other relevant international and regional organizations in the implementation of UNCCD;
- (5) To ensure that WMO continues to participate effectively, as appropriate, in the implementation activities in support of UNCCD.

NOTE: This resolution replaces Resolution 5 (EC-XLIV), which is no longer in force.

RESOLUTION 6 (EC-LIV)

TRAINING AND EDUCATION IN AGRICULTURAL METEOROLOGY

THE EXECUTIVE COUNCIL,

NOTING:

- (1) The *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902), general summary paragraphs 3.4.2.13 and 3.4.2.14,
- (2) The *Abridged Final Report with Resolutions of the Fifty-second Session of the Executive Council* (WMO-No. 915), general summary paragraph 6.2.7,

CONSIDERING:

- (1) That there are inadequate trained personnel, particularly agricultural meteorologists (formerly Class I) in some countries to serve effectively the agricultural community in general in these countries,
- (2) That an improvement of the training standards is a prerequisite for the provision of comprehensive agrometeorological services to agriculture,
- (3) That training manuals have been developed for a number of priority areas such as crop modelling,

agroclimatic data management, geographical information systems, etc., by the Agricultural Meteorology Programme of WMO,

REQUESTS Members:

- (1) To encourage training in agricultural meteorology as a matter of great importance and to expand their training programmes, as appropriate, to provide training at the graduate level (formerly Class I), seeking assistance where required, e.g. through Voluntary Cooperation Programme funds;
- (2) To train an adequate number of qualified mid- and senior level (formerly Classes II and III) personnel in agricultural meteorology, nationally or regionally, to provide basic services required by agriculture;
- (3) To promote the use of modern technology such as computer-aided learning and visual aids in the teaching methods in agrometeorology;
- (4) To participate actively in the training events in agricultural meteorology organized under the Agricultural Meteorology Programme of WMO;

- (5) To promote the inclusion of graduate and postgraduate level education in agricultural meteorology in the curriculum of universities, colleges and agricultural and forestry institutes;

- (6) To provide training in the use of remote sensing for agrometeorological applications.

NOTE: This resolution replaces Resolution 8 (EC-XLV), which is no longer in force.

RESOLUTION 7 (EC-LIV)

REPORT OF THE FIRST SESSION OF THE JOINT WMO/IOC TECHNICAL COMMISSION FOR OCEANOGRAPHY AND MARINE METEOROLOGY

THE EXECUTIVE COUNCIL,

HAVING CONSIDERING the *Abridged Final Report with Resolutions and Recommendations of the First Session of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology* (WMO-No. 931),

NOTES:

- (1) The report;
(2) Resolutions 1 to 6 (JCOMM-I);

DECIDES to take the following action on the recommendations:

Recommendation 1 (JCOMM-I) — Ocean data acquisition system (ODAS) metadata format

- (a) Approves the recommendation;
(b) Urges Members to consider hosting the metadata base and to assemble data from their ODAS in this format and to submit these data to this metadata base.

Recommendation 2 (JCOMM-I) — Resources for ship-based observations

- (a) Approves the recommendation;
(b) Urges Members to take actions regarding ship-based observations as detailed in the recommendation;
(c) Requests the Secretary-General, in coordination with the Executive Secretary of the Intergovernmental Oceanographic Commission (IOC) and the co-presidents of JCOMM, to consult with and assist Members, as appropriate, in the implementation of the recommendation.

Recommendation 3 (JCOMM-I) — International SeaKeepers Society

- (a) Approves the recommendation;
(b) Requests the Secretary-General, in coordination with the Executive Secretary IOC:
(i) To ensure that relevant SeaKeepers vessels formally recorded as voluntary observing ships, and that the Society participates fully in the work of the Ship Observations Team;
(ii) To bring the work of the Society to the attention of Members.

Recommendation 4 (JCOMM-I) — Vandalism of ocean data buoys

- (a) Expresses its concern at the ongoing problem of vandalism of ocean data buoys;
(b) Approves the recommendation;

- (c) Urges Members to take actions as detailed in the recommendation, including a possible reissue of the International Hydrographic Organization “hydrogram” on vandalism; the development of tamper-proof design for buoys; and the design of a warning system for intentional buoy damage.

Recommendation 5 (JCOMM-I) — The global sea-level observing system (GLOSS)

- (a) Approves the recommendation;
(b) Urges Members to take actions as detailed in the recommendation;
(c) Requests the Secretary-General to ensure that the products of GLOSS-related sea-level centres are made known to Members through appropriate WMO information services.

Recommendation 6 (JCOMM-I) — Establishment of a JCOMM In Situ Observing Platform Support Centre

- (a) Approves the recommendation;
(b) Agrees on the value of such a technical support centre for in situ observing systems;
(c) Urges Members to provide the resources necessary to operate the Centre.

Recommendation 7 (JCOMM-I) — Amendments to the WMO GMDSS marine broadcast system

- (a) Approves the recommendation;
(b) Requests the Secretary-General to arrange for the inclusion of the amendments in the *Manual on Marine Meteorological Service* (WMO-No. 558).

Recommendation 8 (JCOMM-I) — Modifications to the International Maritime Meteorological Tape (IMMT) format

- (a) Approves the recommendation;
(b) Requests the Secretary-General to arrange for the inclusion of the amendments in the *Manual on Marine Meteorological Services* (WMO-No. 558) and the *Guide to Marine Meteorological Services* (WMO-No. 471).

Recommendation 9 (JCOMM-I) — Further amendments to the *Manual on Marine Meteorological Services* (WMO-No. 558)

- (a) Approves the recommendation;
(b) Requests the Secretary-General to arrange for the inclusion of the amendments in the *Manual on Marine Meteorological Services*

(WMO-No. 558) and the *Guide to Marine Meteorological Services* (WMO-No 471), as appropriate.

Recommendation 10 (JCOMM-I) — Amendments to the Guide to Marine Meteorological Services (WMO-No. 471)

- (a) Approves the recommendation;
- (b) Requests the Secretary-General to arrange for the inclusion of the amendments in the *Guide to Marine Meteorological Services* (WMO-No. 471).

Recommendation 11 (JCOMM-I) — Dynamic part of the Guide to the Applications of Marine Climatology (WMO-No. 781)

- (a) Approves the recommendation;
- (b) Requests the Secretary-General to arrange for the publication of the dynamic part of the *Guide* in electronic form on the WMO Web site and also in printed form in the JCOMM Technical Report series.

Recommendation 12 (JCOMM-I) — Working arrangements between WMO and the International Mobile Satellite Organization (IMSO)

- (a) Approves the recommendation;
- (b) Requests the Secretary-General, in consultation with the Secretary-General of IMSO, to prepare draft working arrangements for the consideration of the WMO Executive Council and the IMSO Assembly.

Recommendation 13 (JCOMM-I) — Revision of resolutions of the WMO and IOC governing bodies based on previous recommendations of the Commission for Marine Meteorology and of the Joint IOC/WMO Committee for IGOSS

(Action on this recommendation was taken by the Executive Council when reviewing its previous resolutions.)

NOTE: This resolution replaces Resolutions 2 (EC-XLVIII) and 8 (EC-XLIX), which are no longer in force.

RESOLUTION 8 (EC-LIV)

REPORT OF THE THIRTEENTH SESSION OF REGIONAL ASSOCIATION III (SOUTH AMERICA)

THE EXECUTIVE COUNCIL,
HAVING CONSIDERED the report of the thirteenth session of RA III,

DECIDES:

- (1) To take note of the report;
- (2) To note Resolutions 1 to 15 (XIII-RA III);

TO REQUEST the Secretary-General to bring this decision to the attention of all those concerned.

NOTE: This resolution replaces Resolution 1 (EC-L), which is no longer in force.

RESOLUTION 9 (EC-LIV)

REPORT OF THE THIRTEENTH SESSION OF REGIONAL ASSOCIATION V (SOUTH-WEST PACIFIC)

THE EXECUTIVE COUNCIL,
HAVING CONSIDERED the report of the thirteenth session of RA V,

DECIDES:

- (1) To note the report;
- (2) To note Resolutions 1 to 18 (XIII-RA V);

REQUESTS the Secretary-General to bring the above decision to the attention of all those concerned.

NOTE: This resolution replaces Resolution 7 (EC-LI), which is no longer in force.

RESOLUTION 10 (EC-LIV)

REPORT OF THE THIRTEENTH SESSION OF REGIONAL ASSOCIATION VI (EUROPE)

THE EXECUTIVE COUNCIL,
HAVING CONSIDERED the report of the thirteenth session of RA VI (Europe),

DECIDES:

- (1) To take note of the report;
- (2) To note Resolutions 1 to 21 (XIII-RA VI);

REQUESTS the Secretary-General to bring this decision to the attention of all those concerned.

NOTE: This resolution replaces Resolution 2 (EC-L), which is no longer in force.

RESOLUTION 11 (EC-LIV)

REPORTS OF THE JOINT INSPECTION UNIT

THE EXECUTIVE COUNCIL,

RECALLING United Nations General Assembly Resolution 54/16 — Joint Inspection Unit, regarding a more effective system of follow-up on reports of the Joint Inspection Unit (JIU),

NOTING that the following reports of JIU have been formally transmitted to WMO:

- (1) Management of buildings: practices of selected United Nations system organizations relevant to the renovation of the United Nations Headquarters (JIU/REP/2001/1);
- (2) United Nations system support for science and technology in Latin America and the Caribbean (JIU/REP/2001/2);
- (3) Review of management and administration in the International Telecommunication Union (ITU) (JIU/REP/2001/3);
- (4) Enhancing governance oversight role: structure, working methods and practices on handling oversight reports (JIU/REP/2001/4);

- (5) Review of management and administration in the World Health Organization (WHO) (JIU/REP/2001/5);

- (6) Reforming the Field Service Category of personnel in United Nations Peace Operations (JIU/REP/2001/6);

NOTING FURTHER the annual report on the activities of JIU for the period 1 January to 31 December 2000,

EXPRESSES its appreciation to the Inspectors for the recommendations they have submitted in their reports;

REQUESTS the Secretary-General:

- (1) To give careful consideration to the implementation, as appropriate, of the recommendations included in the reports mentioned under **NOTING** which are pertinent to WMO and to report to the Executive Council under the relevant agenda items;
- (2) To transmit this resolution to the Secretary-General of the United Nations for transmission to the Economic and Social Council in accordance with established procedures.

RESOLUTION 12 (EC-LIV)

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

THE EXECUTIVE COUNCIL,

NOTING:

- (1) The outcome of the preparatory process for the World Summit on Sustainable Development (WSSD), in particular the outcome of sessions of the United Nations Commission on Sustainable Development acting as the preparatory committee for the WSSD,
- (2) The involvement of WMO at various stages of the preparatory process,

RECALLING:

- (1) That it had supported the proposals of the Secretary-General to use opportunities associated with the planning for WSSD to highlight the critical importance of WMO Programmes in achieving sustainable development across a broad range of human endeavours,
- (2) That it had urged Members to become engaged in the WSSD process, which would provide several opportunities to demonstrate the vital role of National Meteorological and Hydrological Services (NMHSs) in achieving sustainable development,

EXPRESSES APPRECIATION:

- (1) To the Secretary-General for his efforts in bringing to the attention of WSSD the views and concerns of WMO regarding the fundamental importance of

meteorology, hydrology and related disciplines, as well as the contribution of NMHSs to sustainable development;

- (2) To those Members who actively promoted, through their national delegations, the need to highlight in the WSSD documents those actions required to exploit fully the knowledge, information and services related to weather, climate and water in the attainment of sustainable development;
- (3) To those Members which assisted the South African Weather Service in the preparation of WSSD;

AGREES that, in further deliberating on recommendations of WSSD, ways and means should continue to be explored, particularly through communications with national delegations, to include:

- (1) Recognition of WMO's leading role in ensuring the provision of information and services, including early warnings of natural and technological disasters, in order to safeguard life and property, support sustainable socio-economic development and protect the environment;
- (2) Recognition of the contribution of applications and services related to weather, climate and water to achieving sustainable development;
- (3) Explicit call for strengthening the unique global networks for monitoring the atmosphere, the

oceans, rivers and lakes, coordinated by WMO, particularly bearing in mind the value of these networks for natural disaster reduction;

- (4) Recommendations on enhancing the capacity of national, regional and international bodies, including the NMHSs in the areas of observations, communications and warning services;

URGES all Members to ensure that national delegations to WSSD are suitably briefed on the critical role of weather, climate and hydrological services in sustainable development;

ENCOURAGES Members to enable representatives of their NMHSs to serve in national delegations to WSSD;

REQUESTS the Secretary-General:

- (1) To maintain active participation in the developments concerning the International Environmental Governance (IEG), with a view to ensuring that existing IEG-related activities in key agencies, including WMO, are taken into full consideration;
- (2) To continue assisting Members, as appropriate, in their preparatory activities for WSSD and in follow-up actions which would be required by it.

RESOLUTION 13 (EC-LIV)

AMENDMENTS TO THE RULES OF PROCEDURE OF THE EXECUTIVE COUNCIL

THE EXECUTIVE COUNCIL,

NOTING:

- (1) General summary paragraphs 16.2.1 to 16.2.3 of the *Abridged Final Report with Resolutions of the Forty-fifth Session of the Executive Council* (WMO-No. 794),
- (2) Resolution 37 (Cg-XI) — Suspension of Members for failure to meet financial obligations,
- (3) General summary paragraphs 11.3.1 to 11.3.4 of the *Abridged Final Report with Resolutions of the Twelfth World Meteorological Congress* (WMO-No. 827),
- (4) Resolution 38 (Cg-XII) — Revisions to the General Regulations,
- (5) Regulations 4, 90(a, b), 91, 74(b), 144, 167(a) and 184,
- (6) Rules 16 and 17 of the Rules of Procedure of the Executive Council,

CONSIDERING:

- (1) Rule 16 of the Rules of Procedure of the Executive Council which provides “at least” 120 days as a period for conducting an election by correspondence,
- (2) The fact that the full process of conducting an election by correspondence of an acting member of the Executive Council may, in the light of the WMO Regulations and of the Rules of Procedure of the Executive Council, take at least 225 days,

DECIDES:

- (1) To amend Rule 16(a) of the Rules of Procedure of the Executive Council by replacing the words “at least 120 days” by “at least 225 days”;
- (2) That this amendment shall become effective immediately after the closure of this session.

RESOLUTION 14 (EC-LIV)

AMENDMENTS TO THE CONVENTION AND THE GENERAL REGULATIONS — CHANGING THE TERM “REGIONAL ASSOCIATION”

THE EXECUTIVE COUNCIL,

NOTING:

- (1) General summary paragraphs 15.1.3.1 to 15.1.3.3 of the *Abridged Final Report with Resolutions and Recommendations of the Eleventh Session of Regional Association I (Africa)* (WMO-No. 820),
- (2) General summary paragraph 3.7.0.13 of the *Abridged Final Report with Resolutions of the Twelfth World Meteorological Congress* (WMO-No. 827),
- (3) General summary paragraphs 17.2.1 to 17.2.3 of the *Abridged Final Report with Resolutions the Fiftieth Session of the Executive Council* (WMO-No. 827),
- (4) General summary paragraph 10.14 of the *Abridged Final Report with Resolution of the Fifty-third Session of the Executive Council* (WMO-No. 929),

CONSIDERING:

- (1) The difficulties involved in the use of the term “regional association” which reflects neither the institutional level nor the statutory importance of a WMO regional body in relation to some Members’ governmental authorities, particularly of the French-speaking countries,
- (2) The view expressed by the Executive Council at its fiftieth session that consideration should be given so that the term “regional association” could be better translated into French, in order to reflect more appropriately the status of the constituent body,
- (3) That the selection of a new term for “regional association” should be appropriate to the Members

of all Regions and should reflect the functioning of the constituent body as a permanent body which works through its session as well as between sessions through its president and subsidiary bodies and is entitled to adopt decisions by correspondence,

DECIDES:

- (1) To propose to Congress that the name "Regional Association" be retained but translated into French as "Conseil Régional";
- (2) That an appropriate proposal be prepared by the Secretariat and be circulated among the Members at least nine months prior to Fourteenth Congress in 2003.

RESOLUTION 15 (EC-LIV)

AMENDMENTS TO ANNEX II OF THE GENERAL REGULATIONS

THE EXECUTIVE COUNCIL,

NOTING:

- (1) Resolution 32 (Cg-I) — Establishment of Regional Associations,
- (2) WMO General Regulations 161, 164 and Annex II of the General Regulations,

CONSIDERING:

- (1) That Annex II of the WMO General Regulations, in particular its paragraphs on Region II — Asia, and on Region VI — Europe, contain in these paragraphs references to the term "USSR boundary",
- (2) In view of the formation of a number of independent States from the territory of the former USSR, there is a need to amend Annex II of the WMO General Regulations to reflect appropriately the references to the boundaries of Regions II and VI, without any physical change in the present delimitation of the two Regions concerned,

PROPOSES:

- (1) To amend Annex II of the WMO General Regulations to reflect appropriately the situation related to the formation of the new States and consequent establishment of the new frontiers of Region II — Asia (western limit) and of Region VI — Europe (eastern limit);
- (2) As a result of the above, the following amendments are made:

Region II — Asia

Western limit

From Akaba northwards following the eastern boundaries of Jordan and Syria to the Turkish boundary, thence eastwards along the boundary between Turkey and Iraq to the Iranian boundary, thence northwards along the Iranian boundary, then eastwards along the Iranian boundary, to the Caspian Sea, thence along longitude 50°E northwards to the island of Kolguev, thence to the point 80°N, 40°E and thence northwards;

Region VI — Europe

Eastern limit

From Akaba northwards following the eastern boundaries of Jordan and Syria to the Turkish boundary, thence eastwards along the boundary between Turkey and Iraq to the Iranian boundary, thence northwards along the Iranian boundary and continue eastwards, still along the Iranian boundary to the Caspian Sea; thence along longitude 50°E northwards to the island of Kolguev, thence to the point 80°N, 40°E, and thence northwards;

REQUESTS the Secretary-General to submit the proposed amendment under **PROPOSES** (1) and (2) to Fourteenth Congress for decision.

RESOLUTION 16 (EC-LIV)

AMENDMENTS TO ARTICLE 13 OF THE WMO CONVENTION AND TO THE GENERAL REGULATIONS

THE EXECUTIVE COUNCIL,

NOTING:

- (1) General summary paragraph 6.4.11 of the *Abridged Final Report with Resolutions of the Thirteenth World Meteorological Congress* (WMO-No. 902),
- (2) General summary paragraph 13.1.52 of the *Abridged Final Report with Resolutions of the Fifty-third Session of the Executive Council* (WMO-No. 929),

CONSIDERING the request of Thirteenth Congress to review the process of electing members of the Executive Council to ensure an equitable representation among and inside Regions,

PROPOSES to Fourteenth Congress to amend Article 13(c) of the Convention and the General Regulations to allow an increase of the number of elected members of the Executive Council by one seat

(namely from 26 to 27 Directors of National Meteorological or Hydrometeorological Services) in view of the increased number of Members of the Organization and to propose that not less than four members of the

Executive Council comprising the President and Vice-Presidents of the Organization, the presidents of regional associations and the elected members shall come from one Region.

RESOLUTION 17 (EC-LIV)

CONSIDERATION OF THE ACCOUNTS OF THE WORLD METEOROLOGICAL ORGANIZATION FOR THE BIENNIUM 2000–2001

THE EXECUTIVE COUNCIL,

NOTING Article 15 of the Financial Regulations,
CONSIDERING the financial report of the Secretary-General on the accounts of the Organization for the biennium ended 31 December 2001 and the report of the External Auditor to the Executive Council,
GIVES FORMAL APPROVAL to the audited financial accounts of WMO for the biennium 2000–2001;

REQUESTS the Secretary-General to transmit the financial statements of the accounts together with his report and the report of the External Auditor thereon to all Members of WMO;

NOTING WITH CONCERN the financial difficulties arising from delayed and non-payment of assessed contributions,

URGES the Members still in arrears to clear their dues at an early date.

RESOLUTION 18 (EC-LIV)

CONSIDERATION OF THE ACCOUNTS FOR 2000–2001 — WMO PROJECTS AND TRUST FUNDS FINANCED FROM THE UNITED NATIONS DEVELOPMENT PROGRAMME

THE EXECUTIVE COUNCIL,

NOTING Article XV of the United Nations Development Programme Financial Regulations and Rules,
CONSIDERING the financial reports of the External Auditor to the Executive Council on the statements showing the status of funds of the World Meteorological Organization, as at 31 December 2000 and 31 December 2001, under the United Nations Development Programme,

GIVES FORMAL APPROVAL to the audited financial accounts in respect of those projects and trust funds administered by the World Meteorological Organization and financed by the United Nations Development Programme during the years ended 31 December 2000 and 31 December 2001;

REQUESTS the Secretary-General to transmit certified copies of the financial statements of the accounts, together with the report of the External Auditor thereon, to the United Nations Board of Auditors.

RESOLUTION 19 (EC-LIV)

REVIEW OF PREVIOUS RESOLUTIONS OF THE EXECUTIVE COUNCIL

THE EXECUTIVE COUNCIL,

NOTING:

- (1) General Regulation 155(9), concerning the review of the Executive Council resolutions,
- (2) Rule 27 of Rules of Procedure of the Executive Council on the same subject,

HAVING EXAMINED its previous resolutions still in force,

DECIDES:

- (1) To keep in force the following resolutions:

EC-X	2
EC-XII	6, 30

EC-XIX	9
EC-XXI	15
EC-XXV	8, 12
EC-XXIX	11
EC-XXXIV	13, 18
EC-XXXV	18, 21
EC-XXXVI	1, 2, 6
EC-XXXVII	13
EC-XXXVIII	9
EC-XXXIX	7, 17, 24
EC-XL	2, 4

EC-XLI	6
EC-XLII	4, 5, 19
EC-XLIV	1, 14 (except paragraphs under DECIDES), 15, 20
EC-XLV	3, 7, 13, 16
EC-XLVI	11, 12, 19
EC-XLVII	5
EC-XLVIII	1, 3, 4, 12
EC-XLIX	3

EC-L	3, 4, 10, 12
EC-LI	1, 2, 3, 4, 5, 6, 9, 10, 13, 14
EC-LII	1, 3, 4, 6
EC-LIII	1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 15
(2)	Not to keep in force the other resolutions adopted before its fifty-fourth session.

NOTE: This resolution replaces Resolution 16 (EC-LIII), which is no longer in force.

ANNEXES

ANNEX I

Annex to agenda item 2.4 of the general summary

RECOMMENDATIONS OF THE FINANCIAL ADVISORY COMMITTEE

(a) *Programme and budget for the fourteenth final period (2004–2007)*

(i) **Consideration of the Secretary-General's programme and budget proposals for the fourteenth financial period (2004–2007)**

Recommendation 1:

That the Executive Council should invite the Secretary-General to propose: (i) an optimized programme based on assessed contributions of SFR 248.8 million; and (ii) a number of incremental additions to that programme, on the basis of the priorities stated by the fifty-third session of the Executive Council which should total a maximum amount of SFR 20 million.

(ii) **Key performance indicators for the fourteenth financial period (2004–2007)**

Recommendation 2:

That the Executive Council adopt the key performance indicators proposed by the chairperson of the Executive Council Task Force on Key Performance Indicators in document EC-LIV/Doc. 12(2).

(b) *Financial matters (including the report of the External Auditor) — Consideration of the accounts for the biennium 2000–2001*

(i) **General Fund and other funds**

Recommendation 3:

That the Executive Council:

- 3.1 Establish an ad hoc group to work with the Secretariat on the issues raised in the report of the External Auditor and the replies of the Secretary-General.
- 3.2 Consider the report of the External Auditor carefully and request the Secretary-General to take urgent action on the issues raised.

(ii) **WMO projects financed from the United Nations Development Programme**

Recommendation 4:

That the Executive Council:

- 4.1 Approve the audited accounts for WMO projects financed from the United Nations Development Programme for the biennium 2000–2001.
- 4.2 Adopt the draft text for inclusion in the general summary of its report, as contained in document EC-LIV/Doc. 18.5(2), Appendix A.
- 4.3 Adopt draft resolution 18.5/2 (EC-LIV), submitted by the Secretary-General, as contained in document EC-LIV/Doc. 18.5(2), Appendix B.

(c) *Interim financial report of the Secretary-General*

Recommendation 5:

That the Executive Council urge Members in arrears of contributions to settle their dues as early as possible so that the approved Programmes of WMO may be implemented in the time frame and at the level foreseen in the Plans.

(d) *Financial and related matters to be presented to Fourteenth Congress (2003)*

Proposed revisions to the Financial Regulations

Recommendation 6:

That the Executive Council:

- 6.1 Request that the proposed revisions to Financial Regulation 9.1 be reviewed by the ad hoc group set up under Recommendation 3.1.
- 6.2 Recommend the appropriate revisions to the WMO Financial Regulations to Fourteenth Congress for approval.

ANNEX II

Annex to paragraph 2.5.12 of the general summary

NATURAL DISASTER REDUCTION IN COASTAL LOWLANDS (Draft project proposal)

Introduction

The world's coastal lowlands are the most densely populated areas with extremely high vulnerability to the effects of meteorological and hydrological hazards. The land characteristics and proximity to the ocean place residents at the mercy of river flooding and storm surges. Saltwater intrusion and eventual salinization and leaching of fertile soils cause degradation of vegetation and agricultural productivity which, in turn, have negative national social and economic impacts. The world's coastal lowlands regularly test the forecasting and warning capabilities of NMHSs, the ability of disaster management to evacuate populations in high risk areas and resettle them after flooding events, and the readiness of Governments to boost the resilience of communities in the aftermath of natural disasters. Evidently, natural disaster reduction in the coastal lowlands of the world, by virtue of their demographic and geographic characteristics, vulnerability to natural meteorological and hydrological hazards and importance to national economies should be addressed in a coordinated fashion by relevant WMO Programmes and by cross-cutting activity of WMO technical commissions.

Purpose of the project

The purpose, of the project is to consolidate activities within WMO's scientific and technical programmes that relate to responding to natural disasters in coastal lowlands and to demonstrating the advantages of coordinated work of the technical commissions involved.

Objectives:

- (1) To develop new and improve existing forecasting techniques for prediction of landfall of tropical cyclones, storm surges and floods in coastal lowlands;
- (2) To assist in adapting the overall warning process, from the actual preparation of warnings to their dissemination, and public awareness campaign to specific needs and features of coastal lowlands;
- (3) To develop measures for the prevention and mitigation of the combined effects of tropical cyclones, storm surges and floods in various areas of the economy.

Implementation plans for 2004–2007

- I. Development and improvement of forecasting techniques:
 - (a) At the global level:
 - (i) Preparation of WMO guidance on storm surge prediction. This task should be accomplished by the JCOMM Expert Team on Wind Waves and Storm Surges;

- (ii) Validation of existing forecast models and evaluation of the new forecasting techniques. This should be the outcome of the planned Technical Conference on Tropical Cyclones and Storm Surges in Coastal Lowlands;
- (b) At the regional level:
 - (i) Conducting workshops on improvement of marine forecasting; in the planning period, forecasts of coastal storm surges in countries surrounding the South China Sea should be addressed;
 - (ii) Conducting regional technical conferences on hydrological forecasting with focus on disaster prevention (regions to be further defined).
- II. Improvement of warning process and public awareness:
 - (a) At the global level:
 - (i) Preparation of special coastal lowland part of guidelines on disaster reduction and mitigation related to delivery of public weather services; an expert meeting will be required for this purpose;
 - (ii) Development, by a group of experts, of an approach to an integrated early warning and monitoring system for natural disasters, such as droughts, floods, extreme temperatures, tropical cyclones, and forest fires;
 - (iii) Further development of hydrological risk awareness and response mechanism of communities. This task will require an international symposium and associated expert meetings on specific issues;
 - (b) At the regional level:
(To be defined)
- III. Measures for the prevention and mitigation of combined effects of various natural disasters:
 - (a) At global level:
 - (i) Formulation of a subproject on combined effect of storm surges and river floods in low-lying areas. An expert meeting will be required for this purpose;
 - (ii) Development of recommendations on measures for the prevention and mitigation of the effects of droughts, floods and other extreme events in agriculture and forestry; a meeting of a dedicated expert team should be envisaged;
 - (iii) Preparation of recommendations on strengthening the hydrological component in disaster management for hurricanes, tropical cyclones and typhoons. This task should be undertaken by an expert meeting;

- (b) At the regional level:
- (i) Hydrological emergency assistance missions to countries affected by natural disasters;
 - (ii) Provision of advisory services on natural disaster reduction in coastal lowlands;
 - (iii) Organization of a workshop on storm surge disaster reduction in the northern part of the Indian Ocean.

Expected results:

1. Improved forecasts for tropical cyclones, storm surges and floods in coastal lowlands through exchange of experience, validation of existing models and creation of new ones.
2. Enhanced channels of warning dissemination and improved access of the public in coastal lowlands to early warning and other information during severe meteorological and hydrological events in these areas.
3. Enhanced provision of necessary information to Governments, communities and individuals enabling them to better cope with combined effects of various natural disasters in coastal lowlands.

WMO Programmes involved

Part I: Marine Meteorology and Associated Oceanographic Activities Programme, Tropical

Cyclone Programme, and Hydrology and Water Resources Programme.

Part II: Public Weather Services Programme, Agricultural Meteorology Programme, Tropical Cyclone Programme, Marine Meteorology and Associated Oceanographic Activities Programme, and Hydrology and Water Resources Programme.

Part III: Marine Meteorology and Associated Oceanographic Activities Programme, Hydrology and Water Resources Programme, Agricultural Meteorology Programme, and Tropical Cyclone Programme.

Technical commissions and other bodies involved

Part I: Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, Commission for Hydrology, technical commissions and regional bodies.

Part II: Commission for Basic Systems, Commission for Hydrology, Commission for Agricultural Meteorology, Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, technical commissions and regional bodies.

Part III: Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology, Commission for Hydrology, Commission for Agricultural Meteorology, technical commissions and regional bodies.

ANNEX III

Annex to paragraph 4.3.5 of the general summary

GCOS CLIMATE MONITORING PRINCIPLES

Effective monitoring systems for climate should adhere to the following principles:*

1. The impact of new systems or changes to existing systems should be assessed prior to implementation.
2. A suitable period of overlap for new and old observing systems is required.
3. The details and history of local conditions, instruments, operating procedures, data-processing algorithms and other factors pertinent to interpreting data (i.e. metadata) should be documented and treated with the same care as the data themselves.
4. The quality and homogeneity of data should be regularly assessed as a part of routine operations.
5. Consideration of the needs for environmental and climate-monitoring products and assessments, such as IPCC assessments, should be integrated into national, regional and global observing priorities.
6. Operation of historically-uninterrupted stations and observing systems should be maintained.

7. High priority for additional observations should be focused on data-poor regions, poorly-observed parameters, regions sensitive to change and key measurements with inadequate temporal resolution.
8. Long-term requirements should be specified to network designers, operators and instrument engineers at the outset of system design and implementation.
9. The conversion of research observing systems to long-term operations in a carefully-planned manner should be promoted.
10. Data management systems that facilitate access, use and interpretation of data and products should be included as essential elements of climate monitoring systems.

Furthermore, satellite systems for monitoring climate should adhere to the following specific principles:

11. Rigorous station-keeping should be maintained to minimize orbital drift.
12. Overlapping observations should be ensured for a period sufficient to determine inter-satellite biases.
13. Satellites should be replaced within projected operational lifetime (rather than on failure) to ensure

* The 10 basic principles were adopted (in paraphrased form) by the Conference of the Parties to the UNFCCC through Decision 5/CP.5 of COP-5 at Bonn in November 1999.

- | | |
|---|---|
| <p>continuity (or in-orbit replacements should be maintained).</p> <p>14. Rigorous pre-launch instrument characterization and calibration should be ensured.</p> <p>15. Adequate on-board calibration and means to monitor instrument characteristics in space should be ensured.</p> <p>16. Development and operational production of priority climate products should be ensured.</p> <p>17. Systems needed to facilitate user access to climate products, metadata and raw data, including key</p> | <p>data for delayed-mode analysis, should be established and maintained.</p> <p>18. Continuing use of still-functioning baseline instruments on otherwise de-commissioned satellites should be considered.</p> <p>19. The need for complementary in situ baseline observations for satellite measurements should be appropriately recognized.</p> <p>20. Network performance monitoring systems to identify both random errors and time-dependent biases in satellite observations should be established.</p> |
|---|---|
-

ANNEX IV

Annex to paragraph 5.1.2 of the general summary

REVISED TERMS OF REFERENCE OF THE COMMISSION FOR ATMOSPHERIC SCIENCES PROPOSED BY CAS-XIII

The Commission shall be responsible for matters relating to:

- | | |
|--|--|
| <p>(a) Research in atmospheric and related sciences to advance the understanding of atmospheric processes with emphasis on the following:</p> <p>(i) Weather prediction for timescales from very-short to long range and space scales from local to global, with emphasis on forecasting high impact events associated with serious consequences for populations and economies;</p> <p>(ii) Atmospheric composition and air pollution: including studies of transport, transformation and deposition of air pollutants and related monitoring;</p> <p>(iii) Physics and chemistry of clouds: particularly in support of weather prediction and atmospheric chemistry and for weather modification with emphasis on the underlying processes and the development of rigorous evaluation procedures;</p> <p>(iv) Tropical meteorology: studies of processes and phenomena of particular relevance to low latitudes and their influence beyond;</p> <p>(v) Climate studies: noting the central role of the World Climate Research Programme for improved understanding of the climate, the Commission will contribute expertise, especially in the above research areas, including the application of relevant research advances;</p> | <p>(b) Coordination of the operation and further development of the Global Atmosphere Watch, including the setting of relevant network standards and procedures, the monitoring of performance and maintaining liaison with other international programmes engaged in environmental monitoring, especially the Global Climate Observing System;</p> <p>(c) The formulation of requirements for observations and for the storage, retrieval and exchange of raw and/or processed data for research purposes;</p> <p>(d) Scientific assessment of technical meteorological procedures including verification techniques;</p> <p>(e) The coordination of the international aspects of the Commission's activities with relevant scientific bodies and those concerned with disaster mitigation;</p> <p>(f) Standardization of functions, constants, terminology and bibliographic practices applicable to atmospheric sciences;</p> <p>(g) Support to international environmental and climate conventions through regular scientific analysis and assessments relevant to its activity;</p> <p>(h) Determination of the requirements of WMO Members and the transfer of knowledge, technologies and advice to them concerning atmospheric science issues;</p> <p>(i) Support for research on the policy, social and economic impacts of advances in understanding atmospheric sciences.</p> |
|--|--|
-

ANNEX V

Annex to paragraph 5.1.8 of the general summary

WMO STATEMENT ON THE SCIENTIFIC BASIS FOR, AND LIMITATIONS OF, WEATHER AND CLIMATE FORECASTING**1. Introduction**

1.1 Every day around the world, the NMSs and the private sector meteorological service providers of the Member States and Territories of WMO provide hundreds of thousands of forecasts and warnings of weather and climate conditions and events. These forecasts and warnings provide information for the benefit of the community at large and for a wide range of specialized user sectors, on a broad spectrum of atmospheric phenomena ranging from those with timescales of seconds to minutes and space scales of metres to kilometres, such as severe storms, through to those, such as *El Niño*-related drought, with multi-year and global impact. The forecast information provided is used to inform and improve decision making in virtually every social and economic sector and the globally aggregated economic benefits of meteorological services are reckoned to be of the order of hundreds of billions of United States dollars.

1.2 The capacity to provide these socially- and economically-beneficial services to the citizens of the 185 Members of WMO results from the operation of the unique international system of cooperation of the WMO World Weather Watch Programme which is based on:

- (a) The collection and international exchange of the global observational data that are essential to describe the current (initial) state of the atmosphere (and the underlying land and ocean) at any point in time;
- (b) The fact that the physical and dynamical processes governing the behaviour of the atmosphere and ocean can be represented in numerical models which are capable of providing forecasts of daily weather conditions with significant skill out to several days from the 'initial' state as well as useful indications, in certain circumstances, of general trends of climate for months and seasons ahead;
- (c) The existence of a coordinated international meteorological system of global, regional and national data-processing and modelling centres producing real-time products from which skilled professional forecasters are able to prepare forecasts and warnings in forms that are relevant and useful to the user community;
- (d) The ability to monitor extreme events in real-time and to issue warnings by combining classical meteorological observations, model output and information from remote-sensing systems such as satellites and radar.

1.3 The scientific understanding and technological capabilities underlying this globally cooperative system of weather and climate forecasting have made enormous progress over the past 25 years as a result, in particular, of such cooperative international research programmes as the WMO/ICSU Global Atmospheric Research

Programme, the WMO World Weather Research Programme and the WMO/ICSU/IOC World Climate Research Programme. The skill levels and utility of the resulting forecasts and warnings have steadily increased. Indeed three-day forecasts of surface atmospheric pressure are now as accurate as one-day forecasts 20 years ago. But the observational database necessary to describe the 'initial' state of the atmosphere will always be limited by considerations of scale and measurement accuracy, the processes governing the behaviour of the atmosphere are non-linear and the phenomenon known as chaos imposes fundamental limits on predictability. While new techniques are emerging which help potential users of weather and climate forecasts to understand better, and make allowance for, the inherent uncertainties in the forecasts, the WMO Executive Council believes it is important that all those who make use of such forecasts in decision making should be made better aware of both their scientific foundation and their scientific and practical limitations. It therefore requested that CAS prepare a statement on the current status of weather and climate forecasting.

1.4 This statement has been prepared by CAS with input from other WMO and external scientific organizations and programmes including the World Climate Research Programme. It was approved by the thirteenth session of CAS in Oslo in February 2002 and endorsed by the Executive Council at its fifty-fourth session in June 2002. It is provided for the information of all those with an interest in the scientific foundations and limitations of weather and climate forecasting on timescales from minutes and hours through to decades and centuries.

2. The science of weather forecasting

Dynamical and physical processes within the atmosphere, and interactions with the surroundings (e.g. land, ocean, and ice surfaces), determine the evolution of the atmosphere and, hence, the weather. Scientifically-based weather forecasts are possible if the processes are well enough understood and if the current state of the atmosphere is well known enough, for predictions to be made of future states. Weather forecasts are prepared using a largely systematic approach, involving observation and data assimilation, process understanding, prediction and dissemination. Each of these components has, and will continue, to benefit from advances in science and technology.

2.1 Observations and data assimilation

2.1.1 Over the past few decades, substantial advances in science have resulted in improved and more efficient methods for making and collecting timely observations, from a wide variety of sources including radar and satellites. Using these observations in scientifically-based

methods has caused the quality of weather forecasts to increase dramatically, so that people around the world have come to rely on weather forecasts as a valued input to many decision-making processes.

2.1.2 Computer-generated predictions are initialized from a description of the atmospheric state built from past and current observations in a process called data assimilation, which uses the NWP model (see paragraph 2.3.2) to summarize and carry forward in time information from past observations. Data assimilation is very effective at using the incomplete coverage of observations from various sources to build a coherent estimate of the atmospheric state. But, like the forecast, it relies on the NWP model and cannot easily use observations of scales and processes not represented by the model.

2.1.3 The international scientific community is emphasizing the still very poorly observed areas as being a limiting factor in the quality of some forecasts. As a consequence, there is a continued need for improved observation systems and methods to assimilate these into NWP models.

2.2 Understanding of the atmosphere: inherent limitations to predictability

2.2.1 The scientific understanding of physical processes has made considerable progress through a variety of research activities, including field experiments, theoretical work and numerical simulation. However, atmospheric processes are inherently non-linear and not all physical processes can be understood or represented in NWP models. For instance, the wide variety of possible cloud water and ice particles must be highly simplified, as are small cumulus clouds that can lead to rain showers. Continued research effort using expected improvements in computer technology and physical measurements will enable these approximations to be improved. Even then, it will still not be possible to represent all atmospheric motions and processes.

2.2.2 There is a wide spectrum of patterns of atmospheric motion, from the planetary scale down to local turbulence. Some are unstable and are arranged so that flow is amplified using, for example, energy from heating and condensation of moisture. This property of the atmosphere means that small uncertainties about the state of the atmosphere will also grow, so that eventually the unstable patterns cannot be precisely forecast. How quickly this happens depends on the type and size of the motion. For convective motions such as thunderstorms, the limit is of the order of hours, while for large scales of motion it is of the order of two weeks.

2.3 Weather prediction

2.3.1 *Nowcasting*: Forecasts extending from 0 out to 6 to 12 hours are based upon a more observations-intensive approach and are referred to as nowcasts. Traditionally, nowcasting has focused on the analysis and extrapolation of observed meteorological fields, with a special emphasis on mesoscale fields of clouds and precipitation derived from satellite and radar. Nowcast products are especially

valuable in the case of small-scale hazardous weather phenomena associated with severe convection and intense cyclones. In the case of tropical cyclones, nowcasting is an important detection and subsequent short-term prediction approach that provides forecast value beyond 24 hours in some cases. However, the time rate of change of phenomena such as severe convection is such that the simple extrapolation of significant features leads to a product that deteriorates rapidly with time — even on timescales of the order of one hour. Thus, methods are being developed that combine extrapolation techniques with NWP, both through a blending of the two products and through the improved assimilation of detailed mesoscale observations. These are inherently difficult tasks and, although accuracy and specificity will improve over coming years, these products will always involve uncertainty regarding the specific location, timing and severity of weather events such as thunder and hail storms, tornadoes and downbursts.

2.3.2 *Numerical weather prediction*: Forecasts for lead times in excess of several hours are essentially based almost entirely on NWP. In fact, much of the improvement in the skill of weather forecasts over the past 20 years can be attributed to NWP computer models, which are constructed using the equations governing the dynamical and physical evolution of the atmosphere. NWP models represent the atmosphere on a three-dimensional grid, while typical operational systems in 2001 use a horizontal spacing of 50–100 km for large-scale forecasting and five to 40 km for limited area forecasting at the mesoscale. This will improve as more powerful computers become available.

Only weather systems with a size several times the grid spacing can be accurately predicted, so phenomena on smaller scales must be represented in an approximate way using statistical and other techniques. These limitations in NWP models particularly affect detailed forecasts of local weather elements, such as cloud and fog and extremes such as intense precipitation and peak gusts. They also contribute to the uncertainties that can grow chaotically, ultimately limiting predictability.

2.3.3 *Ensemble prediction*: Uncertainty always exists — even in our knowledge of the current state of the atmosphere. It grows chaotically in time, with much of the new information introduced at the beginning no longer adding value, until only climatological information remains. The rate of growth of this uncertainty is difficult to estimate since it depends upon the three-dimensional structure of the atmospheric flow. The solution is to execute a group of forecasts — an ensemble — from a range of modestly different initial conditions and/or a collection of NWP models with different, but equally plausible, approximations. If the ensemble is well designed, its forecasts will span the range of likely outcomes, providing a range of patterns where uncertainties may grow. From this set of forecasts, information on probabilities can be derived automatically, tailored to users' needs.

Forecast ensembles are subject to the limitations of NWP discussed earlier. Additionally, since the group

of forecasts are being computed simultaneously, less computer power is available for each forecast. This requires grid spacings to be increased, making it more difficult to represent some severe weather events of smaller horizontal scale. Together with the limited number of forecasts in an ensemble, this makes it harder to estimate probabilities of very extreme and rare events directly from the ensemble. Moreover it is not possible to modify the NWP models used to sample properly modelling errors, so sometimes all models will make similar errors.

2.3.4 Operational meteorologist: There remains a critical role for the human forecaster in interpreting the output and in reconciling sometimes seemingly conflicting information from different sources. This role is especially important in situations of locally severe weather. Although vigorous efforts are being made to provide forecasters with good quality systems such as interactive workstations for displaying and manipulating the basic information, they still have to cope with vast amounts of information and make judgements within severe time constraints. Furthermore, forecasters are challenged to keep up to date with the latest scientific advances.

3. Prediction at seasonal to interannual timescales

3.1 Beyond two weeks, weekly average predictions of detailed weather have very low skill, but forecasts of one-month averages, using NWP with predicted sea-surface temperature anomalies, still have significant skill for some regions and seasons to a range of a few months.

3.2 At the seasonal timescale, detailed forecasts of weather events or sequences of weather patterns are not possible. As mentioned above, the chaotic nature of the atmosphere sets a fundamental limit of the order of two weeks for such deterministic predictions, associated with the rapid growth of initial condition errors arising from imperfect and incomplete observations. None the less, in a limited sense, some predictability of temperature and precipitation anomalies has been shown to exist at longer lead times out to a few seasons. This comes about because of interactions between the atmosphere, the oceans, and the land surface, which become important at seasonal timescales.

3.3 The intrinsic timescales of variability for both the land surface and the oceans are long compared to that of the atmosphere, due in part to relatively large thermal inertia. Ocean waves and currents are slow in comparison to their atmospheric counterparts, due to the large differences in density structure. To the extent that the atmosphere is connected to the ocean and land surface conditions, then, a degree of predictability may be imparted to the atmosphere at seasonal timescales. Such coupling is known to exist particularly in the tropics, where patterns of atmospheric convection ultimately important to global scale weather patterns are quite closely tied to variations in ocean surface temperature. The most important example of this coupling is found in the ENSO phenomenon, which produces large swings in global climate at intervals ranging from two to seven years.

3.4 The nature of the predictability at seasonal timescales must be understood in probabilistic terms. It is not the exact sequence of weather that has predictability at long lead times (a season or more), but rather some aspects of the statistics of the weather — for example, the mean or variance of temperature/precipitation over a season — that has potential predictability. Though the weather on any given day is entirely uncertain at long lead times, the persistent influence of the slowly evolving surface conditions may change the odds for a particular type of weather occurring on that day. In rough analogy to the process of throwing dice, the subtle but systematic influence of the boundary forcing can be likened to throwing dice that are “loaded”. On any given throw, we cannot foretell the outcome, yet after many throws the biased dice will favour a particular outcome over others. This is the sort of limited predictability that characterizes seasonal prediction.

3.5 Currently, seasonal predictions are made using both statistical schemes and dynamical models. The statistical approach seeks to find recurring patterns in climate associated with a predictor field such as sea-surface temperature. Such models have demonstrated skill in forecasting *El Niño* and some of its global climate impacts. The basic tools for dynamical prediction are coupled models — models that include both the atmosphere and the other media of importance, particularly the oceans. Such models are initialized using available observations and integrated forward in time to produce a seasonal prediction. The issue of uncertainty is handled using an ensemble approach, where the climate model is run many times with slightly different initial conditions (within the range of observation errors or sampling errors). From this, a distribution of results is obtained, whereupon statistics of the climate can be estimated. Recently, encouraging results have been obtained from ensemble outputs of more than one model being combined.

3.6 There are several limitations attending current predictions. Most coupled models (and to a lesser extent uncoupled models) exhibit some serious systematic errors that inevitably reduce forecast skill. Data availability is a limitation for both statistical models and for dynamical models. In the latter case, very limited information is available for much of the global oceans and for the land surface conditions. Also, current initialization methods do not account properly for systematic model errors, further limiting forecast performance. A final set of limitations arises for practical reasons. Due to resource requirements, most seasonal predictions cannot be done at resolutions comparable to weather prediction. Furthermore, rather small ensemble sizes (of the order of 10) are used for some models, certainly less than is optimal for generating robust probabilistic forecasts. Current research is addressing the potential for regional “downscaling” of climate forecasts by various means and the possibilities for more detailed probabilistic climate information from expanded ensembles of one or more models.

3.7 Possible use of seasonal forecasts is currently being explored in various contexts. In each case,

effective use will require careful attention to the issue of uncertainty inherent in seasonal forecasts. Future advancements can be expected to improve the estimates of uncertainty associated with forecasts, thus allowing better use of forecast products.

4. Projection of future climate

4.1 As explained above, based on the current observed state of the atmosphere, weather prediction can provide detailed location and time-specific weather information on timescales of the order of two weeks. Some predictability of temperature and precipitation anomalies has been shown to exist at longer lead times out to a few seasons. This comes about because of interactions between the atmosphere, the oceans, and the land surface, which become important at seasonal timescales. At longer timescales, the current observed state of the atmosphere and even those large-scale anomalies which provide predictive skill at seasonal to interannual timescales are no longer able to do so due to the fundamental chaotic nature of the Earth-atmosphere system. However, long-term changes in the Earth-atmosphere system at climate timescales (decades to centuries) are dependent on factors which change the balance of incoming and outgoing energy in the Earth-atmosphere system. These factors can be natural (e.g. changes in solar output or volcanoes) or human induced (e.g. increased greenhouse gases). Because simulations of possible future climate states are dependent on prescribed scenarios of these factors they are more accurately referred to as "projections" not "predictions" or "forecasts".

4.2 In order to perform climate projections, physically-based climate models are required in order to represent the delicate feedbacks which are crucial on climate timescales. Physical processes and feedbacks that are not important at NWP or even at the timescales of seasonal prediction become crucial when attempting to simulate climate over long periods, e.g. cloud-radiation interaction and feedback, water vapour feedback (and correctly modelling long-term trends in water vapour), ocean dynamics and processes (in particular an accurate representation of the thermohaline circulation). The treatments of these key features are adequate to reproduce many aspects of climate realistically though there remain many uncertainties associated with clouds and aerosols and their radiative effects, and many ocean processes. Nevertheless, there is reasonable confidence that state-of-the-art climate models do provide useful projections of future climate change. This confidence is based on the demonstrated performance of models on a range of space timescales.

4.3 Notably, the understanding of key climate processes and their representation in models (such as the inclusion of sea-ice dynamics and more realistic ocean heat transport) has improved in the past few years. Many models now give satisfactory simulations of climate without the need for non-physical adjustments of heat and water fluxes at the ocean-atmosphere

interface used in earlier models. Moreover, simulations that include estimates of natural and anthropogenic forcing are well able to reproduce observed large-scale changes in surface temperature over the twentieth century. This large-scale consistency between models and observations lends confidence in the estimates of warming rates projected over the next century. The simulations of observed natural variability (e.g. ENSO, monsoon circulations, the North Atlantic Oscillation) have also improved.

4.4 On the other hand, systematic errors are still all too apparent, e.g. in simulated temperature distributions in different regions of the world or in different parts of the atmosphere, in precipitation fields, clouds (in particular marine stratus). One of the factors that limits confidence in climate projections is the uncertainties in external forcing (e.g. in predicting future atmospheric concentrations of carbon dioxide and other greenhouse gases, and aerosol loadings).

4.5 As with NWP and seasonal forecasts, ensembles of climate projections are also extremely important. Ensembles enable the magnitude and effects of natural climate variability to be gauged and affect its impact on future projections, and thereby permit any significant climate change signal to be picked out more clearly statistically (the magnitude of natural climate variability will be comparable with that of climate change for the next few decades).

5. Dissemination to end-users

5.1 The weather forecasts have to be communicated to a vast array of users such as emergency managers, air traffic controllers, flood forecasters, public event managers, etc. in a timely and user-applicable form. This in itself poses another major challenge that is increasingly benefiting from advances in information technology. Predictions at seasonal to interannual timescales and climate projections are also being used by an increasingly wide range of users.

5.2 The value of forecasts to decision makers is greatly enhanced if the inherent uncertainty can be quantified. This is particularly true of severe weather, which can cause such damage to property and loss of life that precautions may be well advised even if the event is unlikely, but possible. Probabilities are a natural way of expressing uncertainty. A range of possible outcomes can be described with associated probabilities and users can then make informed decisions allowing for their particular costs and risks.

5.3 Forecasts expressed as probabilities, or ensembles, contain much more information than deterministic forecasts, and it is difficult to convey it all to users. Broadcast forecasts can only give a broad picture of the most likely outcome, with perhaps some idea of important risks. Each user's decision may be based on the probabilities of a few specific occurrences. What these are, and the probability thresholds for acting on the forecasts, will differ. So for important user decisions it is necessary to apply their particular criteria to the detailed forecast information.

6. Conclusions

6.1 The skill in weather forecasting has advanced substantially since the middle of the twentieth century, largely supported by the advancement of computing, observation and telecommunications systems, along with the development of NWP models and the associated data-assimilation techniques. This has been greatly facilitated because of the vast experience of both forecasters and decision makers in producing and in using forecast products. Nevertheless, each component within the science and technology of weather forecasting and climate projection has its own uncertainties. Some of these are associated with a lack of a complete understanding of, or an inherent limitation of, the predictability of highly complex processes. Others are linked still to the need for further advances

in observing or computing technology, or to an inadequate transfer between research and operations. Finally, one cannot underestimate the importance of properly communicated weather forecasts to well-educated users.

6.2 Without a doubt, significant benefits will result from continued attention to scientific research and the transfer of knowledge gained from this work into the practice of forecasting. Furthermore, a recognition of the limitations of weather forecasts and climate projections, and when possible, an estimate of the degree of uncertainty, will result in the improved use of forecasts and other weather information by decision makers. Ultimately the objective is for the scientific and user communities to work better together, realizing even greater benefits.

ANNEX VI

Annex to paragraph 7.1.15 of the general summary

A CONCEPT FOR AN INTERGOVERNMENTAL REVIEW AND ACTION MECHANISM ON FRESH WATER

Background

1. Water is the most important resource on Earth. It is also a finite resource and there is clear and convincing evidence that the current patterns of water use cannot be sustained in many regions of the world. Increasing pressure on finite supplies of fresh water and degradation of these supplies are weakening one of the essential resource bases on which human society is built, and human lives and investment are at increasing risk from droughts and floods. Action toward reversing the current trend is a matter of the highest priority.

2. At present, formal intergovernmental consideration of these matters is divided on a sectoral basis between the many United Nations agencies and programmes concerned, each focusing on its own specific field of interest. The full picture is only presented to Member States at occasional ministerial sessions attached to international gatherings. There is no consistency in format or national representation at these meetings, neither is there consistency in the form and level of advice they receive from the United Nations system. In short, while the agencies and programmes of the United Nations system have long ago established an inter-secretariat coordination mechanism, this has no counterpart at the intergovernmental level.

3. There is urgent need, therefore, for an intergovernmental mechanism which would review the situation concerning the freshwater resources of the world and bring it to the attention of Member States within the broader context of international action on poverty alleviation and sustainable development. It would draw on consistent and broadly based advice as to the facts, the current situation, the future trends and the likely

options for action. Non-governmental bodies, including the recently established World Water Council and Global Water Partnership, could seek some form of association with such a mechanism.

4. It is relevant to note that a review process conducted within WMO in 1999 sought for key areas where WMO's coordinating and catalyzing roles might best be used. Two of the recommendations were that WMO increase cooperation with other institutions and groups whose programmes and activities are relevant to, and interact with, those of the Organization, and that WMO explore the establishment of a body which would provide relevant scientific assessment and advise on impacts and policy/response strategies in the field of hydrology and water resources.

5. Providing an ongoing intergovernmental focus for freshwater concerns would help Member States clarify their positions on the many inter-disciplinary matters involved and would greatly facilitate inter-agency coordination. In so doing, it would help individual United Nations agencies, such as WMO, play a more productive role in this important area, including clarifying the corresponding role of each agency's national counterparts. In the case of WMO, these are the National Meteorological and Hydrological Services.

Objective

6. The sustained use of water for human and environmental security calls for the establishment of appropriate mechanisms to ensure a continuing and reliable evaluation of the situation, leading to the protection and sound management of the world's freshwater resources. The objective is therefore to promote

the development of a viable, inter-governmental review and action mechanism on fresh water at the highest decision-making level.

Expected outcome

7. At the most general level, the outcome of this process is expected to contribute to ensuring the equitable and sustainable use of fresh water and protection from the threat of floods through the rational management of water resources, including both demand and supply. Specific results of this process would be:

- (a) The generation of in-depth global knowledge through the detailed scientific exploration of the nature and extent of the world's freshwater resources, their response to climate change and factors such as population growth, pollution and requirements of the environment;
- (b) The provision of a continuing focus for intergovernmental review and the development of international cooperative agreements within the field of fresh water, available at any time to feed into intergovernmental conferences or ministerial meetings that might be convened on the subject;
- (c) The provision of a support mechanism which would integrate existing water initiatives and conventions and clarify and extend the system of shared responsibilities of organizations, including

the identification of useful linkages in joint initiatives;

- (d) The provision of the scientific results and guidance, such as those based on seasonal to interannual climate forecasts, for the formulation of a policy framework which can be used by countries to review or develop further national policies for the equitable and sustainable use of freshwater resources.

Role of WMO

8. The forty-ninth session of the Executive Council recognized the unique role that WMO is called upon to play within the United Nations system in response to the growing concern over the water crisis facing the world. It felt that WMO should be recognized as a natural focus for international activities, not only in meteorology and climatology, but also in those areas of hydrology and water resources which fell within its Convention.

9. In view of WMO's experience in convening the Dublin Conference and in setting up the Intergovernmental Panel on Climate Change, it is suggested that WMO take the lead among the United Nations agencies in moving this process into the intergovernmental arena by seeking the endorsement of Fourteenth Congress. WMO should not take unilateral action in this, however, and the endorsement and support of other United Nations agencies should be sought at each stage.

*

*

*

ANNEX VII

Annex to paragraph 9.25 of the general summary

PROVISIONAL VCP(F) STATUS AND PROPOSED ALLOCATION FOR 2002
(in US\$)

<i>Currently active projects and new proposed projects</i>	<i>Allocations approved by EC 1968–1999</i>	<i>Expenditure in previous years 1968–1999</i>	<i>Balance (01/01/00)</i>	<i>Allocations approved by EC-LII in 2 000</i>	<i>Allocations approved by EC-LIII in 2001</i>	<i>Expenditure* and obligations 2000–2001 (excluding admin. costs)</i>	<i>Balance (31/12/01)</i>	<i>Proposed allocations and adjustment for 2002</i>	<i>Balance after expected new allocations</i>
1 VCP spares/shipping of equipment in good working condition	563 750	513 219	50 531	10 000	10 000	31 164	39 367	10 000	49 367
2 Expert services	1 289 300	1 255 686	33 614	30 000	20 000	31 143	52 471	10 000	62 471
3 Short-term fellowships	2 192 200	2 194 954	- 2 754	100 000	105 000	226 536	- 24 290	120 000	95 710
3.1 Group training activities***					20 000	14 845	5 155	10 000	15 155
4 TCDC activities	393 285	371 132	22 153	30 000	30 000	73 762	8 391	20 000	28 391
5 Improvement of GTS	82 841	19 080	63 761		- 10 000	1 689	52 072	- 10 000	42 072
5.1 Improvement of GTS Caribbean	139 020	89 961	49 059				49 059	- 20 000	29 059
5.2 Improvement of GTS Asia/Pacific	169 900	91 583	78 317			17 707	60 610	- 10 000	50 610
5.3 Improvement of GTS Africa	579 995	543 928	36 067	20 000	20 000	61 414	14 653	10 000	24 653
5.4 Improvement of GTS South America	357 900	336 158	21 742	10 000		2 633	29 109	- 10 000	19 109
5.5 Improvement of GTS South-East RA VI	196 750	171 781	24 969				24 969	- 10 000	14 969
5.6 Improvement of GTS central and eastern Europe/Newly Independent States (NIS)	61 213	29 019	32 194			2 975	29 219		29 219
6 Improvement of observing subsystem of GOS and GCOS	404 729	297 348	107 381	10 000	20 000	124 824	12 557	40 000	52 557
6.1 Upper-air stations in central and eastern Europe/Newly Independent States (NIS)	372 000	306 953	65 047	10 000		70 629	4 418	10 000	14 418
7 Improvement of GDPS	100 000	82 710	17 290	10 000	10 000	31 413	5 877	10 000	15 877
8 Agricultural meteorology activities	55 000	45 965	9 035		10 000	8 098	10 937		10 937
9 Support to CLICOM and climatological activities	133 500	82 605	50 895		10 000	34 640	26 255	10 000	36 255
10 Mitigation of natural disasters	80 000	45 608	34 392			3 436	30 956	10 000	40 956
10.1 Emergency disaster assistance	40 000	22 436	17 564	30 000	10 000	15 288	42 276		42 276
11 ASMC	111 000	67 569	43 431		- 10 000		33 431	- 10 000	23 431
12 ACMAD	150 000	149 703	297	20 000	10 000	18 431	11 866	10 000	21 866
13 EAMAC	40 000	27 624	12 376	10 000	10 000	32 139	237	10 000	10 237
14 Operational hydrology activities	115 000	86 292	28 708	10 000	20 000	50 446	8 262	20 000	28 262
15 Improvement of satellite reception	10 000	732	9 268			949	8 319		8 319
16 Internet capabilities**	40 000	7 808	32 192	10 000	10 000	11 353	40 839		40 839
17 Year 2000 problem**	30 000	12 190	17 810	10 000		22 249	5 561	- 5 561	0
18 Reserve	15 332	4 764	10 568		- 5 000		5 568	- 4 439	1 129
TOTAL	7 722 715	6 856 808	865 907	320 000	290 000	887 763	588 144	220 000	808 144

* Provisional, interim figures which will be audited with the 2000–2001 biennium accounts.

** New project lines approved by the fifty-first session of the Executive Council.

*** New project line approved by the fifty-third session of the Executive Council.

ANNEX VIII

Annex to paragraph 12.10 of the general summary

REPORT OF THE EXECUTIVE COUNCIL ON THE SECRETARY-GENERAL'S PROPOSED PROGRAMME AND BUDGET FOR THE FOURTEENTH FINANCIAL PERIOD**Overall budget level**

1. The Executive Council considered the needs and constraints with respect to programme delivery and affordability for the programme and budget for the fourteenth financial period. After extensive discussions, the Council recommended for consideration by Fourteenth Congress the following two options to be funded from the assessed contributions: (i) SFR 253 800 000; and (ii) SFR 258 800 000. Consistent with results-based budgeting, the proposed programmes under option (ii) should clearly identify the additional outputs and benefits.

Proportional budget allocation to programmes

2. The two options mentioned in paragraph 1 above are likely to result in the following relative proportions for the individual scientific and technical programmes:

<i>Major Programme</i>	<i>SFR 253.8 million option</i>	<i>SFR 258.8 million option</i>
3.0 Overall coordination	3.5%	3.8%
3.1 WWW	10.0%*	10.4%
3.2 WCP	10.2%*	10.0%
3.3 AREP	5.7%	5.6%
3.4 AMP	6.7%*	6.6%
3.5 HWRP	4.8%	4.7%
3.6 ETR	6.0%	6.0%
3.7 TCP	2.2%	2.3%
3.8 Regional Programme	6.8%	7.0%

3. The Executive Council indicated that the four key programme areas agreed upon by its fifty-third session

should receive special attention in resource allocation, namely: (i) contribution to the protection of life and property; (ii) climate change and its impact; (iii) development of NMHSs and provision of services for the socio-economic benefits of people; and (iv) hydrology and water resources.

4. The Executive Council members unanimously recognized that the WWW Programme is the basic programme of the Organization and is the first priority of the WMO Programmes. For this reason, the highest proportion of the budget should be allocated to this programme.

5. The Executive Council indicated its continuing support for the ETR, TCO and Regional Programmes as priorities to assist developing countries to address technological and other issues such as disaster prevention and mitigation.

6. Recognizing the importance of support to the scientific and technical programmes from budget Part 4 — Linguistic, Publication and Conference Services, and Part 5 — Resource Management, and in order to ensure appropriate support to Members, the Executive Council agreed that resources allocated to those budget Parts should not be further reduced.

* The calculation reflects the transfer of funds for Institutional Support to the Applications of Meteorology Programme (WWW-A) from Major Programme 3.1 (WWW) to Major Programme 3.4 (AMP) as approved by the fifty-third session of the Executive Council for the 2002–2003 biennium. When these funds are added to WWW, as was the case for the thirteenth financial period, the proportion for WWW is higher (11.0 per cent) than that for WCP.

ANNEX IX

Annex to paragraph 12.12 of the general summary

KEY PERFORMANCE INDICATORS FOR THE FOURTEENTH FINANCIAL PERIOD (2004–2007) PRESENTED IN RELATION TO THE NINE STRATEGIES OF THE 6LTP**6LTP STRATEGY 1**

To enable the delivery of increasingly accurate and reliable warnings of severe events related to weather, water, climate and the related natural environment throughout the world, and ensure that they are able to reach their target audience (individuals, emergency services, decision makers) in a timely and useful manner.

KEY PERFORMANCE INDICATOR 1

Involvement of WMO in the establishment and effective operation of regional/subregional centres and their

activities in the issuance of early warnings for disaster preparedness: measured by the number of new centres established and the degree of effective operation of all centres issuing early warnings before severe weather, water, climate and related natural environment events.

6LTP STRATEGY 2

To enable the provision of increasingly beneficial weather, water, climate and related environmental services to the public, Governments and other users/customers throughout the world.

KEY PERFORMANCE INDICATOR 2

Sets of guidelines for use by WMO Members in assisting them in facilitating cooperation between users and providers: measured by WMO Members' responses as to the usefulness of the guidelines.

6LTP STRATEGY 3

To enhance WMO's role as the United Nations system's authoritative voice on the state and behaviour of the Earth's atmosphere, its interaction with the oceans, the climate it produces and the resulting distribution of water resources; including ensuring that it contributes to relevant international conventions, protocols and other legal instruments, and that relevant agreements are scientifically based.

KEY PERFORMANCE INDICATOR 3

The production of manuals, guides and technical documents dealing with the establishment and maintenance of operational activities associated with meteorology including climatology, hydrology and oceanography: measured by the number of internationally recognized WMO manuals, guides and technical reports and their distribution as well as users responses to these documents.

6LTP STRATEGY 4

To inform and educate the public, Governments and other interested parties about the socio-economic benefits of understanding the weather, water, climate and related environment.

KEY PERFORMANCE INDICATOR 4

Degree of satisfaction of Members and other external users accessing the WMO Web site: measured by statistics of WMO Web site visited in terms of hits by external users and comments received on the usefulness of the Web site.

6LTP STRATEGY 5

To understand and improve the modelling of the processes which affect the current and future state of the atmosphere, the weather, water resources, the physical state of the oceans, climate change and related environmental states such as air quality and pollution levels.

KEY PERFORMANCE INDICATOR 5

The progress of skill of relevant atmospheric and ocean modelling in their contribution to weather forecasting, water resources management, climate prediction, climate scenario projections and environmental issues, such as air quality and pollution levels: measured by a survey among WMO Members to assess the benefits of the WMO contribution to the progress.

6LTP STRATEGY 6

To observe, record and report on the weather, water resources, climate and the related natural environment,

to use these data for the preparation of operational forecast and warning services and related information, and to maintain and enhance systems to exchange these data, products and information.

KEY PERFORMANCE INDICATOR 6

Production of statistical and other reporting information on the level of implementation and effective functioning of observing systems, communications systems and data-processing systems supporting the delivery of operational services on weather, water, climate, and the related natural environment: measured by an improved level of reporting on the effectiveness of operational systems supporting the delivery of services.

6LTP STRATEGY 7

To enhance the NMHSs capabilities to deliver services and improve cooperation and collaboration between them.

KEY PERFORMANCE INDICATOR 7

The degree of satisfaction of Members and participants in training events and fellowship awards, and the degree to which these have contributed to the human resources development in Members' NMHSs: measured by assessment of the degree of satisfaction of NMHSs and participants on training received and by the degree of contribution to human resources development of training events and fellowships awarded.

6LTP STRATEGY 8

To work more effectively with international partners, other relevant organizations, academia, the media and the private sector.

KEY PERFORMANCE INDICATOR 8

Cooperative arrangements with other agencies and bodies of the United Nations system and with other intergovernmental organizations in programme areas of common interest: measured by the number of new and actively ongoing cooperative agreements and joint activities and by the number of associated projects in planning or under way.

6LTP STRATEGY 9

To improve the effectiveness, efficiency and flexibility of the structure and working mechanisms and practices of WMO, to enable it to respond more rapidly to the changing needs of society and to the new opportunities provided by technological advances.

KEY PERFORMANCE INDICATOR 9

The extent to which the Secretariat operates, on the basis of modernized integrated results-based management system, including results-based performance measurement and reporting system: measured by the degree of satisfaction by the Financial Advisory Committee and the Executive Council as expressed during their respective sessions and other feedback received from Members.

ANNEX X

Annex to paragraph 14.1.6 of the general summary

EVALUATION OF THE IMPLEMENTATION OF THE 5LTP: OVERALL ASSESSMENT OF WMO PROGRAMMES (2000–2001)

The implementation of the WMO Programmes for the period 2000–2001 has been assessed using as a guide the programme objectives as given in the 5LTP. The implementation has been generally successful and has contributed to the realization of the WMO strategic goals as well as to assisting Members, particularly their NMHSs, in providing the services required.

Progress has been achieved, in particular in the following areas:

- (a) Assistance to Members in their efforts to improve the NMHSs to enable them to deliver better services to society;
- (b) Improvement of warnings of severe weather, hydrological and other relevant environmental events;
- (c) Improvement of WWW telecommunication systems over many areas of the globe;
- (d) Understanding climate and its variability and provision of further scientific basis to detect climate change; and
- (e) Enhanced support to national sustainable development efforts and to related international initiatives, such as UNFCCC and UNCCD.

In the development of the WWW, there has been tangible improvement in the GTS, particularly in having digital MTN circuits and implementation of TCP/IP procedures. The receipt of satellite data through direct read-out by Members has steadily increased. Adequate planning will be required to ensure further progress with the move to data transmission in the X-band with the next generation of meteorological satellites which will raise substantially the cost of reception facilities.

The erosion of the GOS that marked the second half of the 1990s was largely arrested and the number of available upper-air reports, averaged over all Regions, showed in 2001 an upward trend. The level of implementation of the surface component of the RBSNs remained generally stable. The high cost of consumables, particularly radiosondes, was the major obstacle in the sustainability of the networks, especially for developing countries, which continued to have serious difficulties in running their RBSN stations without international assistance. Many NMHSs increased the level of automation of their observing networks. New automated stations were set up in some countries, often by commercial service providers. The numerical models experienced a noteworthy quality improvement in many centres and several of them have introduced the ensemble forecasts.

With respect to the performance of the Instruments and Methods of Observation Programme, it successfully addressed quality, reliability and standards for meteorological and related environmental instruments, thus providing an important service to the WMO community and beyond to the equipment industry. Quality and

reliability of instruments have been improved through calibrations and intercomparisons. The establishment of the Association of the Hydrometeorological Equipment Industry was successfully promoted in order to enhance the collaboration between WMO and the commercial instrument sector. The further development relating to RICs is still a matter of concern.

Climate assessments and summaries provided by the WCP for use by Members and by the IPCC process received much attention within the WMO community and elsewhere as well as extensive media coverage.

Considerable progress was achieved in enhancing interaction with, and obtaining the cooperation of, academia, end-users and the private sector in the application of climate information.

There has been success with the CLICOM project with the distribution of the final version of the single-site software and the intensified preparation of countries for the new Climate Database Management Systems. This marked the beginning of the new stage of climate data management at the national level which enhances the possibility of integration of national systems for a wide variety of programmes into unified national data management systems in the future. Despite the number of large-area gaps in the global networks, which inhibit detailed regional analyses in the data-sparse areas, there was an increased level of confidence in the results of analyses of global trends in temperature and precipitation. These analyses underpinned the increasingly forthright conclusions drawn by the IPCC. Nonetheless, data rescue efforts need to be further pursued.

The availability of climate products and services was improved through the CLIPS Project. Central in this development has been the Climate Forum Process, which began functioning in various forms in several WMO Regions. Partnerships with groups interested in sectoral applications, for example food security, water resources and health, have been built and will need to be further pursued.

Within AREP, the measurement programme of the GAW continued to provide invaluable data. Efforts continued to ensure the operation of the vast international infrastructure. Tangible progress has been achieved in the WWRP and the TMRP, which include projects on predictability of cyclones and monsoons, on data assimilation and on observational strategies. The data interpretation part of GAW and activities in tropical drought can be further improved.

Good progress has been achieved in the implementation of components of the Applications of Meteorology Programme. In the PWS Programme, an important development is on the trial city forecast and warning Web sites. In the area of agricultural meteorology, improving the quality of data in agricultural areas

and the provision of meaningful relevant agricultural meteorology products using information technology were successfully addressed. Expert meetings have been successfully used to develop methodologies and building capacity. In the area of aeronautical meteorology the major achievements were obtained through the successful development of WAFS and AMDAR, which resulted in the improvement of accuracy and increased amounts of upper-air data. In addition, the situation whereby aviation contributes through cost recovery to funding of core systems was retained. In the Marine Meteorology and Associated Oceanographic Activities Programme, the major achievements included the enhancement of the marine broadcast system, the implementation of new ASAP lines and the continued expansion of data buoy networks.

Major achievements in the implementation of the HWRP included successful development and implementation of WHYCOS, the promotion of the use of the methodology contained in the WMO/UNESCO *Water Resources Assessment: Handbook for Review of National Capabilities* and the updating of the *HOMS Reference Manual*. Also, Members have been assisted particularly in the areas of flood forecasting and management, water resources assessment and organizational development of NHTs. Partnerships have been established to meet the needs associated with new international initiatives.

Throughout all WMO scientific and technical programmes, numerous activities have been carried out aimed at assisting Members in developing their NMHTs and at building capacity in terms of human resources and technical facilities, in close coordination with the implementation of the ETR, TCO and Regional Programmes. However, there is still scope for improving response time to user demands. Certainly, resource constraints have also affected the level of implementation of certain activities.

Satisfactory steps have been made in transferring technology to developing countries, particularly through technical cooperation, education and training, and regional activities. Nonetheless, significantly more progress was required in bridging the gap between the national Services of the developing and developed countries, a gap which appears to widen in some areas; there remained much work to be done in improving the sharing in research, technology and training. WMO will have to maintain and enhance its activities aimed at bridging this gap through its own programmes and by stimulating relevant international technical cooperation.

WMO continued to place emphasis on addressing major issues of interest to its Members such as the international exchange of meteorological and related data and products, the role and operation of NMHTs, alternative approaches to meteorological services delivery, the role of WMO and its relationship with the United Nations system in the future. Considerations of these issues assist WMO in defining its vision, desired outcomes and strategic goals, taking into account major global trends and developments affecting WMO scientific and technical programmes.

While progress has been achieved, WMO and its Members, particularly the NMHTs, have been facing increasing changes and challenges. Continuing financial difficulties were encountered in most Programmes, together with curtailment of Members' activities in support of WMO objectives. Several serious problems continued with many NMHTs suffering budgetary-induced cutbacks in core operations, leading to restrictions in data availability and curtailment or degradation of services.

WORLD WEATHER WATCH PROGRAMME

Overall objectives

The overall objectives of the WWW Programme are:

- (a) To maintain an effective worldwide integrated system for the collection, processing and rapid exchange of meteorological and related environmental data, analyses, forecasts, and warnings;
- (b) To make available, in real-time and non-real time, as appropriate, observational data, analyses, forecasts, warnings and other products to meet the needs of all Members, of other WMO Programmes and of relevant programmes of other international organizations;
- (c) To arrange for the introduction of standard methods and technology which enable Members to participate more fully in, and benefit from, the WWW system and ensure an adequate level of services, as well as the compatibility of systems for cooperation with agencies outside WMO;
- (d) To provide the basic infrastructure for obtaining observational data by relevant international programmes which address global environmental problems.

Overall programme assessment

The WWW Programme has continued to be implemented in accordance with the SLTP and has made significant achievements which are consistent with the agreed objectives. The GDPS experienced a noteworthy improvement of NWP quality, and additional new types of products were made available by the Lead Centres. The GTS was modernized and strengthened to various degrees in all Regions. The Internet has further increased its role as a viable operational service complementary to the GTS. Improvements were achieved in operational WWW capabilities in several developing countries through telecommunication and data-processing projects. A comprehensive project on new generation satellite-receiving stations for African countries and the repair and maintenance of specific systems was initiated.

The erosion of the GOS that marked the second half of the 1990s was largely arrested and the global availability of the upper-air reports, for example, now shows an upward trend. It was possible to maintain the critical services of the environmental satellites, although technical problems and delays have had to be managed by some satellite operators. Members are now better

prepared for the new generation of satellites and continue to receive essential technical advice through the WWW.

Several implementation activities mainly related to modern technology and new procedures have been supported through additional training and other capacity building measures. Activities in this area have been, however, affected by financial constraints and limited staff resources.

The WWW Programme was led and coordinated by CBS, which worked with increased efficiency due to its new working structure and was able to respond effectively to the priority requests of the Executive Council and Thirteenth Congress. The regional associations, in particular their Regional Working Groups on Planning and Implementation of the WWW, played a very important role as regards the implementation of the WWW in the Member countries. The reinforced collaboration between CBS and the regional associations manifested in cross-cutting memberships of experts, in representation of the regional associations in sessions of CBS, conferences, and other events, has proved to be an essential component and strongly underpinned implementation activities in the Member countries. CBS also pursued the active collaboration of the other technical commissions for the development of plans and technical solutions that can meet the needs of all WMO Programmes.

Global Observing System

On a global scale, the output of the GOS has become more reliable and sustainable, but the availability of climatological observations has not increased significantly. GOS plans and network operations were coordinated with other observing programmes such as COSNA, EUMETNET, NAOS, GOOS and IGOS, to ensure programme complementarity and overall global standardization. There has been an increasing amount of satellite-based observations, including those from research satellites. There is, however, a clear need to accelerate progress, in particular in the redesign of GOS, to achieve the objective set out by SLTP.

The alarming degradation of the radiosonde network of the second half of the last decade has been stopped and the level of station implementation and report numbers showed a slight upward trend. The negative impact of the cessation of the OMEGA radionavigational system has been fully overcome.

The overall level of implementation of the RBSN in 2000–2001 has increased slightly (by around three per cent), as compared to 1999. A number of supplementary stations, largely hourly reporting automatic weather stations, have been added to the network in several countries, primarily through private sector providers. The upper-air network increased since 1999 by about five per cent. The cost of consumables, particularly radiosondes, continued to be a major problem in the sustainability of the networks.

The receipt of satellite data, through direct read-out by Members has steadily increased. Over the period

2000–2001, the number of receivers has increased from 1 363 by about seven per cent, with a majority of Members in all WMO Regions now having direct read-out. However, the move to data transmission in X-band with the next generation of meteorological satellites will raise substantially the cost of reception facilities and simultaneously make much of the existing infrastructure obsolete; this will be an issue of major concern for WMO which should be properly addressed.

Global Telecommunication System

Increased efficiency, cost-effectiveness and operational reliability of the GTS have been achieved. Technical improvements to GTS connections have been installed in some NMCs, which improved the overall functionality of the GTS and resulted in critical improvements to the NMCs concerned. Steady improvement occurred; 14 of the 23 MTN circuits becoming digital (speeds 32 to 128 kbit s⁻¹). Most RTHs and a large number of NMCs have introduced, or have firm plans to implement, TCP/IP procedures. Satellite-based telecommunication systems cover all WMO Regions.

The RMDCN in RA VI evolved as planned. The RMDCN projects in RA II and RA III progressed more slowly because some Members required more time than planned to manage their national financial commitments and legal issues.

The confirmation of all radio-frequency allocations required for meteorological activities have been very important for all Members. This work was extremely demanding due to the very long and frequent meetings organized by ITU.

Capacity building efforts, in particular training in modern telecommunication functions and practices, could have been more effective if more resources were provided.

Global Data-processing System

The output of RSMCs has increased in terms of quality and through the introduction of new products. Members received training in the use of NWP products, including the EUMETSAT Polar System, although more would need to be, and could be, done if financial means were available.

The development of standardized model output validation procedures has been essential for objective model comparisons and has facilitated collaboration between GDPS centres. The NWP severe weather forecasts have provided an important contribution to early warning and natural disaster mitigation.

A very important development had been making long-range forecast products available from Web sites of more than 10 major GDPS Centres and other institutions, with more than 50 per cent of Members having direct access to at least one of these centres.

The improvement of numerical models operated in GDPS Centres resulted in decreasing of 500hPa rms errors of 24-hour forecasts to about 15 metres in some advanced Centres. Many Centres are moving towards ensemble forecasts.

WWW data management

Members were enabled to improve their data exchange capabilities through the guidance provided on the coordinated use of the Internet as a supplementary means to the GTS. The new integrated monitoring procedures are expected to facilitate the monitoring of data and product availability in the context of Resolution 40 (Cg-XII) — WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities. Information on promising new information system technologies was exchanged, with a particular goal being to inform experts from developing countries.

A strategy to migrate all WMO users from conventional character codes to table-driven codes, which has been started, should eventually contribute to an increase in the availability of data and products and remove the costly effort of updating character codes.

More resources in terms of funding and personnel/experts are urgently needed to prepare NMHSs, in particular in developing countries, for the new technology applications, the future WMO information system, the use of binary codes and other new developments.

WWW system support activities, including the operational information service

The WWW system support activities has provided valuable assistance to Members in achieving, particularly in developing countries, a reliable and cost-effective operation of WWW-related systems, functions and infrastructure. The development of a WWW rehabilitation plan and a comprehensive telecommunication strategy for RA I has been a major milestone for a coordinated programme of rebuilding the WWW infrastructure in Africa.

The operational information service continued to improve the services and reduced the staff required. However, improvement of services through increased use of the Internet and electronic publishing methods might have been introduced more effectively.

Instruments and Methods of Observation Programme

There has been definite progress in improving the quality and reliability of instruments through calibrations and intercomparisons, specifically with respect to GPS-based radiosondes, raingauges and pyrhelimeters. The development of functional definitions and standards for automated weather stations assisted in the production and application of these systems. The provision of technical assistance to developing countries, technical publications of the Instruments and Methods of Observation Programme, including new or revised chapters to the *Guide to Meteorological Instruments and Methods of Observation* (WMO-No. 8), as well as technical conferences, improved the installation, applications and maintenance of instruments. Collaboration with international organizations such as BIPM, ISO and ITU was important for addressing interdisciplinary issues, for instance radio-frequency matters. Close collaboration with the

instrument industry, inter alia, resulting in the establishment of the Association of the Hydrometeorological Equipment Industry, strengthened the position of the Members' NMHSs vis-à-vis that community and furthered mutual understanding of needs and opportunities.

The advancement of the RICs in developing countries and the linkage between the needs of NMHSs and the potential services of the RICs progressed slower than planned. The low availability of instrument experts from NMHSs and of financial resources was the reason for some delays or postponements in certain programme activities, including training events.

WMO satellite activities

The WMO Satellite Activities Programme has been successfully implemented. The adoption of the expansion of the space-based GOS to include appropriate research and development satellite missions has been a noteworthy achievement that will have a great impact on the NMHSs of WMO Members. The establishment of the new Virtual Laboratory for Education and Training in Satellite Meteorology and its Focus Group has been a major step towards the improvement of the already very effective training programme as well as the provision of a basis for education and training for the new research and development missions.

The Virtual Laboratory, issuance of the important technical publications and use of the Internet for distribution of current material have greatly enhanced WMO Members' knowledge and ability to exploit satellite data, products and services.

The new WMO co-sponsored International Precipitation Working Group will provide algorithms for quantitative precipitation estimates based on remotely-sensed data, which will greatly enhance the NMHSs' capabilities and contribute to capacity building by WMO Members.

Tropical Cyclone Programme

Substantial progress has been achieved by the Programme, particularly in the implementation of coordinated technical plans, as formulated and monitored by the tropical cyclone regional bodies, for the development of comprehensive services for tropical cyclone disaster mitigation.

The Programme, through training activities for forecasters and the provision of guidance materials, has effectively contributed to further upgrading the capabilities of Members to provide better tropical cyclone, flood and storm surge forecasts and warnings, especially as regards improved timeliness, effectiveness, accuracy and reliability. It provided valuable assistance in the development and implementation of technical plans, which had upgraded tropical cyclone, storm surge and flood warning facilities and services at the regional level with emphasis on disaster mitigation activities. The programme has been also instrumental in establishing increased collaboration and coordination, as related to disaster mitigation activities, between Members of the tropical cyclone regional bodies and RSMCs.

Emergency response activities

The objectives of the programme have been met and related operational arrangements have been verified through periodic international exercises. The programme enjoyed the full support of the eight designated RSMCs and the active participation in the programme grew to over 130 NMHSs. The programme gives enhanced visibility to the NMHSs through their close cooperation with national disaster management agencies to which the NMHSs provide unique and vital input during emergencies or related exercises. The emergency response activities with respect to non-nuclear environmental emergencies (e.g., land fires and chemical incidents) require more support for further development.

Antarctic activities

The WMO Antarctic activities played an important role in maintaining meteorological operations in the Antarctic. Continuing review of monitoring results and active coordination with the Antarctic Treaty countries through meetings of experts helped to achieve a sustained and coordinated level of implementation of the WWW in this region.

WORLD CLIMATE PROGRAMME

Overall objectives

The overall objectives of the WCP are:

- (a) To facilitate the effective collection and management of climate data and the monitoring of the global climate system, including the detection and assessment of climate variability and changes;
- (b) To foster the effective application of climate knowledge and information for the benefit of society and the provision of climate services, including the prediction of significant climate variations both natural and as a result of human activity;
- (c) To assess the impacts of climate variability and changes that could markedly affect economic or social activities and advise Governments thereon, and contribute to the development of a range of socio-economic response strategies that could be used by Governments and the community;
- (d) To improve the understanding of climate processes for determining the predictability of climate, including its variability and change, for identifying the extent of human influence on climate and for developing the capability for climate prediction.

Overall programme assessment

Significant progress was made in bringing concerns with respect to observing systems for climate to the fore. The effort was especially effective within the context of UNFCCC, with the adoption of decisions at several sessions of the COP emphasizing the need to maintain and improve climate-observing systems. This raised visibility, coupled with significant results emanating from climate research programmes, has seen a number of projects bear fruit in terms of institutionalizing existing research observing systems in the ocean (TAO/Triton

Array) and initiating new systems (PIRATA, ARGO). However, the return of data of a quality and quantity to satisfy climate purposes from many operational atmospheric observing systems remains rather low. A systematic process of monitoring RBCNs is under way, with the goal to improve the overall return rate and level of quality. This process is being complemented by targeted data rescue projects to ensure the integrity and accessibility of historical data already in hand. A significant push to improve the integration of satellite and in situ data has been initiated through the development of a multi-stakeholder IGOS. Despite the number of large-area gaps in the global networks, which inhibit detailed regional analyses in the data-sparse areas, there was an increased level of confidence in the results of analyses of global trends in temperature and precipitation. These analyses underpinned the increasingly forthright conclusions drawn by IPCC.

The principal programmatic vehicle for improving availability of climate products and services is the CLIPS project. By building up several partnerships with national and international groups with common interests, it has been possible to derive strong leverage to accelerate the development of CLIPS. Central to this cooperation has been the Climate Forum Process, which is now functioning in various forms in several WMO Regions on an almost routine basis. Notwithstanding this progress, the Forum process still has to become an assured and enduring operational mechanism for providing climate information, including predictions, on seasonal to interannual timescales. CLIPS has been spearheading a review process to ascertain the long-term viability of the Forum process and how it might continue to complement in a structural sense the establishment of RCCs. Efforts have also been directed at building partnerships with groups interested in sectoral applications, for example food security, water resources and health. These activities require cross-programme coordination and interactions between technical commissions, both of which have shown steady improvements in recent years. While there has been a steady enhancement in inter-agency coordination in the area of climate and human health, the development of a more extensive programme of activities in this area and others, e.g. renewable energy, requires more resources. As regards assessments of the impacts of climate variability and change, WMO, UNEP and other partners have prepared a coherent scientific, social and economic assessment of the 1997/98 *El Niño* event. This endeavour has been especially successful and stands as a model for future collaborative activities and projects.

The core projects of the WCRP, such as CLIVAR, GEWEX, SPARC and a consolidated modelling agenda all made steady progress during the evaluation period. The period was also noteworthy for the progress towards near completion of WOCE. Also of significance is the growing level of cooperation between WCRP and its partner global change programmes, IGBP and IHDP. Together these programmes provided the bulk of the supporting science for the IPCC Third Assessment Report.

Coordination activities within the Climate Agenda

While some success was achieved in maintaining the Climate Agenda as a focusing mechanism for the overall coordination of the WCP within the broader context of Agenda 21, its profile remained somewhat low.

Notwithstanding the overall structural problems associated with the Climate Agenda coordination activity, there were several cases of successful collaboration. Notable among these were the scientific and socio-economic assessments of the 1997/98 *El Niño* event, which brought together several other partners with WMO to achieve widely acclaimed outcomes. The language of the initial decision by the UNFCCC COP, which drew attention to the serious problems in maintaining adequate observing systems for climate also highlighted the Climate Agenda as the suitable inter-agency mechanism, with which GCOS should work. Inter-agency coordination might be better achieved through more pragmatic and focused mechanisms.

The guidance from the Executive Council Advisory Group on Climate and Environment, established by the fifty-first session of the Executive Council, has been important in developing a long-term WMO strategy in climate and environmental matters. The necessary coordination and guidance, particularly as regards WCDMP and WCASP, has been provided by CCI. The successful Scientific Conference on Climate Services for the Twenty-first Century identified the changing role of climate services and the need for NMHSs to adjust to this changing role. Another activity, in which coordination and guidance have been provided by CCI, was the development, review and completion of the third edition of Part 1 of the *Guide to Climatological Practices* (WMO-No. 100).

Support to climate change related activities, including IPCC and the Conventions on Climate Change and on Desertification

Tangible support through the co-sponsorship of meetings and training events and through direct support to the Secretariats of the UNFCCC and the UNCCD continued during the evaluation period. Members were also kept apprised through circular letters of outcomes of the COP to these Conventions on matters that were of relevance to WMO Programmes and projects. There was also concentrated effort through GCOS on the matter of global observing systems for climate through the subsidiary bodies of the UNFCCC.

WMO continued to provide strong support to IPCC in the form of hosting its Secretariat. The provision by WMO of a resource base for the conduct of the heavy schedule of meetings during the preparation of the IPCC Third Assessment Report is especially worthy of mention as an additional contribution to the successful outcomes of this programme.

Global Climate Observing System

GCOS is widely recognized as the prime and crucial system for producing climate observations needed for a range of climate observing requirements, including climate change detection, impacts and adaptation.

Through work with its sponsors and the UNFCCC, GCOS had impact on the actions of countries with respect to climate observing systems through the process of national reporting to COP.

GCOS networks, such as GUAN, are the global backbones for a variety of applications, such as a long-term baseline for reanalysis and for satellite calibration as well as a standard for climate observations regionally.

GCOS worked effectively with, and obtained the support of, UNFCCC to improve systematic observations. The GCOS Regional Workshop Programme, funded over 50 per cent by the Global Environment Facility, is assisting in developing regional priorities for climate observing systems in developing countries.

Progress in making real improvements in observing systems was slow and complex for a variety of reasons, including funding and complexity of the intergovernmental process. For example, an intergovernmental process for implementing a multiple domain observing system for climate does not exist, thus reliance had to be placed on existing processes organized for other purposes. Furthermore, GCOS Secretariat staffing and many of its activities are crucially dependent on external funding from nations and other international or regional organizations.

World Climate Data and Monitoring Programme

The main achievements of this programme were:

- (a) The preparation and dissemination of the annual WMO statements on the status of the global climate in 1999 and 2000, and of reports on climate change detection;
- (b) Considerable success in data management capabilities through completion of the development of the last version of the CLICOM software (CLICOM 3.1) and of the preparations for its replacement by client-server Climate Database Management Systems;
- (c) The provision of expert assessments, technical reports, liaison with other bodies and other advice to ensure the coordinated maintenance and development of climate networks, climate observation systems, and climate databases, including those of GCOS;
- (d) Coordination and development of the means for the dissemination and exchange of climate data and products, including climate system monitoring information, and the means for communicating between NMHSs, other climate groups and within the Secretariat;
- (e) Identification of new objectives for integrated DARE and its ARCHISS activities in light of the development of the technology (scanners, digital cameras) and of the new concept of data rescue involving both current and historical data.

World Climate Applications and Services Programme

The WCASP, including the CLIPS project, was developed in accordance with the 5LTP despite certain organizational and staff problems. The principal vehicle for improving the availability of climate products and services was the CLIPS project. By building up several

partnerships with national and international groups with common interests, it has been possible to derive strong leverage to accelerate the development of CLIPS. Central to this cooperation has been the Climate Forum Process, which has begun functioning in various forms in several WMO Regions on an almost routine basis. Through these Forums, the capacity and capability of NMHSs in the provision of climate prediction have been enhanced. Training of the user community of climate predictions and information in understanding and in the better interpretation of the products have been undertaken. Generally, successful efforts have also been directed at building partnerships with groups interested in sectoral applications, for example food security, water resources and health. While there has been a steady enhancement in inter-agency coordination in the area of climate and human health, the development of a more extensive programme of activities in this area and in others, e.g. renewable energy, would require additional resources. In addition to these efforts, the process of nominating national CLIPS Focal Points has started for NMHSs in Regional Associations I and V; this is expected to continue for the remaining regions. These Focal Points undergo special training to equip them with a better understanding of CLIPS issues.

Considerable efforts have been devoted to foster the concept of building in harmony with the climate. Bearing in mind the Tropical Urban Climate Experiment, WMO joined in partnership with international organizations such as UN-HABITAT to enable the world community to realize the importance of "healthy" buildings. Efforts have been deployed also to collaborate with other scientific organizations, such as the International Biometeorological Congress, to create the necessary forum in support of this area, for example, the International Conference on Urban and Building Climatology.

World Climate Research Programme

The main achievements within the WCRP contributed directly and significantly to the main long-term objectives for the WCRP stated in the 5LTP. In particular, new research results, data collection and analyses, and model developments achieved throughout the WCRP core projects and related activities contributed directly to improved understanding of climate variability and predictability at all climate temporal and spatial scales. This, in turn, led directly to improved experimental and operational seasonal to interannual climate predictions and to the understanding of anthropogenic influences on climate and resulting climate change. The programme provided significant direct input into the IPCC Third Assessment Report.

In the CLIVAR study, a number of specific activities with well-developed hypotheses and plans have been initiated; this will underpin the implementation of CLIVAR as a whole.

The scope of WCRP's study of the global cryosphere and climate has been greatly enhanced by the establishment of the new CliC project.

A greater participation of scientists from developing countries in the WCRP was achieved through the further development and implementation of regional studies (especially in GEWEX and CLIVAR), by organizing specific workshops of local relevance, and by continuing active sponsorship of, and participation in, the joint WCRP/IGBP/IHDP Global Change System for Analysis, Research and Training.

Increased effort was committed to collaboration and coordination across the core projects and other activities within the WCRP, and also between WCRP and other international global change programmes.

ATMOSPHERIC RESEARCH AND ENVIRONMENT PROGRAMME

Overall objectives

The overall objectives of AREP are:

- (a) To develop further a functional system of GAW including real-time or quasi real-time measurement for some of the parameters of the atmospheric composition enabling the prediction of future states of the Earth system and, thus, providing an early warning of its changes;
- (b) To develop WWRP to contribute to improved and cost-effective techniques for forecasting high-impact weather (which affects the quality of life and is economically disruptive) and to promote their application among Members;
- (c) To study processes and phenomena of particular relevance to low latitudes and their influence beyond;
- (d) To improve understanding of atmospheric processes including the physics and chemistry of clouds;
- (e) To promote applied research in atmospheric sciences and related education and training;
- (f) To produce and maintain definitions and standards to be used in atmospheric sciences;
- (g) To ensure the dissemination of relevant advances in meteorology.

Overall programme assessment

As requested by WMO constituent bodies and in support of the execution of the 5LTP, AREP has maintained the highest priority on the GAW. This involved much needed consolidating, on the one hand, the AREP component dealing with global monitoring of atmospheric composition and, on the other hand, the development under GURME of new regional and local environment activities focusing on technology transfer and support to NMHSs in urban environment activities and air quality issues.

In parallel, AREP continued to develop effectively the high priority WWRP to improve cost-effective forecasting techniques with emphasis on high impact weather and with strong socio-economic considerations. Several projects have been initiated in the WWRP to demonstrate and promote advance techniques among WMO Members. CAS annually distributes a report to all WMO Members on national numerical weather prediction activities and the progress in these activities.

Proceedings or abstract volumes are issued in connection with conferences and workshops within AREP. The thirteenth session of CAS in February 2002 developed a WMO Statement on the scientific basis for, and limitations of, weather forecasting and climate projections, to be submitted to the Executive Council for approval.

In the Tropical Meteorology Research Programme, projects were redefined to emphasize stronger collaboration with the scientific community and to ensure systematic training workshops for the transfer of expertise to developing countries.

In the Physics and Chemistry of Clouds and Weather Modification Research Programme, effort has increased to link further the scientific developments in cloud physics and chemistry and weather modification experiments. The Programme usefully pursued its advisory role to all WMO Members in this important activity. The Executive Council Panel of Experts/CAS Working Group on Physics and Chemistry of Clouds and Weather Modification Research has reviewed and updated the WMO Statement on the status of weather modification. This Statement was subsequently adjusted and approved by the Executive Council.

Generally, communication of advances in meteorology can be difficult, for example when predictability is improved but still remains variable and limited. However, the work in this area can still be improved.

Support to ozone and other environment-oriented conventions

The programme, in collaboration with Members, relevant United Nations partners and other national and international organizations, provides high quality atmospheric composition information to Parties to a number of international environment conventions. These include the UNFCCC, the Vienna Convention for the Protection of the Ozone Layer and the Convention on Long-range Transboundary Air Pollution. In addition, through a working relationship within the GESAMP framework, atmospheric information on heavy metals and persistent organic pollutants was provided to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution.

The targeted outputs and associated planned activities were produced and carried out as planned. A good example of the output of the programme being vital for the Vienna Convention is that the ozone instrument intercomparisons have ensured continued high quality ozone data for use in the 2002 Ozone Assessment. In particular, the ozonesonde intercomparison should lead to directly comparable vertical profiles of ozone derived from the various ozonesonde systems.

Global Atmosphere Watch Programme

Much progress has been made in the GAW programme over the period 2000–2001, with targeted outputs and planned activities having been fully accomplished. The complex infrastructure of GAW monitoring stations (22 global and about 300 regional stations), World, Regional and National Calibration Centres, six World Data

Centres, a number of Quality Assurance/Science Activity Centres and GAW training programmes have been functioning well.

GAW in its present form is essentially a monitoring network for the chemical composition of the atmosphere, including greenhouse gases and other important constituents of direct or indirect anthropogenic origin. GAW produces a wealth of data well distributed over the globe. The data are subject to systematic quality assurance and control routines, and are therefore of known reliable quality. GAW depends on a substantial international technical infrastructure to operate the network and ensure the necessary data quality. This infrastructure is maintained to a large extent through dedicated voluntary support from WMO Members and competent individuals. To achieve this quite satisfactory situation has required hard work over many years of all parties involved.

At present, the predictive capabilities within GAW itself are limited to extrapolation of measured data. Prediction of future chemical states of the atmosphere by means of global atmospheric chemistry models is not carried out as a part of GAW but is taking place in communities in contact with GAW.

The real-time or quasi real-time component of GAW remains weak. Many of the measurements are not really suitable for real-time operation; for example, those involving laboratory analyses of samples. This part of the objective for GAW should be revisited. However, in any case, it is important to make the measurements available to users in a fast and efficient manner.

The GURME project has been set up to enhance the capabilities of NMHSs in meteorological and related aspects of urban pollution. GURME is active but is still struggling to find a clear direction. This is connected with the fact that NMHSs in different countries have rather different roles in the management of urban pollution and, thus, different support needs.

World Weather Research Programme

The WWRP had been successfully implemented; the outputs have met expectations as regards a number of weather events on a number of timescales from now-casting to long-range weather prediction. The programme promoted the development and application of improved cost-effective weather forecasting techniques, emphasizing high impact events. The WWRP applied research results in Forecast Demonstration Projects, which showed the benefits of modern forecasting applications to Members. Up to now, 10 projects have been organized encompassing research into the predictability of cyclones originating in data-sparse areas, data assimilation technique development, observational strategies and observing system simulations, mesoscale cyclogenesis in complex terrain, practical application of advanced forecasting systems and transfer of technology and competence. A well-functioning and very important cooperation has been established with the Working Group on Numerical Experimentation, thus strengthening the basic theoretical platform for

WWRP. Unfortunately, the approved Research and Development Project on tropical cyclones making land-fall has made insufficient progress due to difficulties in assembling international resources.

Tropical Meteorology Research Programme

The programme successfully implemented planned activities and promoted the coordination of research activities by Members in high priority areas of tropical meteorology. Together with activities relating to weather system scale, emphasis was also given to the variability and prediction of monsoons, droughts and other seasonal events at the regional level. In addition, most of the activities within the programme were aimed at capacity building in developing countries affected by tropical weather systems. The work in TMRP clearly shows that better predictions of tropical cyclones depend on numerical models with fine resolution and advanced representation of the physical processes. Naturally, accurate information on the initial state is also very important for a good prediction. In this regard, the work in TMRP has led to the development of autonomous aerosondes (or small unmanned aircraft) that represent an interesting possibility of improving the observing system. In general, TMRP in its work with tropical cyclones and monsoons, has been able to establish good contact between forecasters and scientists through a number of international workshops. The work on tropical droughts and related rain-producing systems under TMRP, however, has had a low activity level.

Physics and Chemistry of Clouds and Weather Modification Research

All planned activities and outputs were successfully delivered during the period with Members being kept informed on the latest developments in clouds physics and weather modification. The programme stimulated Members' collaboration and participation in basic research in the physics and chemistry of clouds and encouraged the application of this research to weather prediction, weather modification and atmospheric composition and pollution-related activities. It seems clear that cloud and precipitation-forming processes are not fully understood, and thus hygroscopic seeding of clouds produces results that are partly unforeseen by theory. One may further note that the Executive Council Panel of Experts/CAS Working Group on Physics and Chemistry of Clouds and Weather Modification Research is quite skeptical to claim that hail suppression techniques actually work. Progress in this field relies on advancements in the basic understanding of cloud processes.

APPLICATIONS OF METEOROLOGY PROGRAMME

Overall objectives

The overall objectives of the Programme are:

- (a) To promote and assist the provision of meteorological services in pursuit of national economic, social and cultural goals and sustainable development; and

- (b) To facilitate and coordinate the provision of pertinent meteorological services which are either required or recommended.

Overall programme assessment

The four components of this Programme were implemented in accordance with the outputs and targets set in the 5LTP, with the emphasis on the preparation of guidance materials, and training and capacity building in Member countries through the organization of roving seminars and regional workshops. Budgetary constraints, however, limited assistance to Members in some cases, in particular with respect to training activities.

A number of technical documents and guidelines, which had been developed and published, had responded to major needs of the NMHSs, particularly those in developing countries, for the development of modern public weather services and for improving services to agriculture, aviation and marine activities.

Public Weather Services Programme

The implementation of the PWS Programme followed closely the targets adopted in the 5LTP. The Programme was especially helpful in strengthening the capabilities of Members in the provision of effective and relevant public weather services in support of safety of life and the protection of property as part of preparedness for, and combating the disastrous effects of, severe weather events and for sustainable national development. A very important development was the establishment of the trial city forecast and warning Web sites, which will bring considerable benefits to the global community. In view of the success of the cooperation with CAS during the 2000 Olympics, discussions are under way to have further joint Public Weather Services/WWRP demonstration projects at the 2004 Olympics.

Agricultural Meteorology Programme

Activities of the Agricultural Meteorology Programme continued to focus on the theme "to promote agrometeorology and agrometeorological applications for efficient, sustainable agriculture, silviculture and aquaculture for an increasing world population in rapidly changing environments" agreed by CAgM.

Efforts towards strengthening Member's indigenous capabilities were carried out through numerous international and regional workshops and expert meetings held on a wide range of topics. More than 20 publications brought out by the programme also effectively contributed to addressing the objectives of the programme. Nine training seminars were held. The improved capabilities of the Members in the provision of operational agrometeorological information contribute to sustainable agricultural development.

Active participation of the programme in the meetings relating UNCCD and CBD during the period under consideration resulted in the provision of appropriate guidelines to the Members for the implementation of the two Conventions.

Several expert groups were convened to address specific issues, including automated weather station technology for agriculture, drought management/mitigation, improving national agrometeorological bulletins and software for agroclimatic data management. These meetings were highly successful, not only in the deliberations but also with the quality, content and efficiency of the published reports. The advantages of convening expert groups to focus attention on specific issues were clearly demonstrated during this period. First, experts from various Regions were designated by presidents of regional associations, allowing cooperative input between the technical commission and the Regional Associations. Second, well-defined issues that are timely and relevant topics of scientific and technological discussion were delegated for assignment. Preparatory materials were expected at these meetings for deliberation and discussion. Third, a focused agenda concentrated on analysis and decisions. A draft report, complete with conclusions and recommendations was prepared for review at the close of the meeting. Finally, published technical reports were completed within six months to a year of the meeting.

Aeronautical Meteorology Programme

Overall, in spite of insufficient funding, the objectives of the programme have been achieved using support provided by some Members and efforts by the Secretariat to fund some of the programme activities from alternative sources. Major milestones were reached in implementing WAFS through the full transfer of responsibilities for aviation forecasts from all RAFCs to the WAFCs with essential support from the WWW Programme. The Programme made significant progress towards reaching the goal for 90 per cent of Members to have access to WAFS products and WAFCs capable of automating a larger portion of production of SIGWX (84 per cent of Members have VSAT receivers for the WAFS satellite broadcasts). Progress was also reached in improving wind and temperature forecasts. Against the target for improvement of en-route upper-winds forecast accuracy of 5 per cent by 2003, information from WAFS London shows that the improvement has been in the range of 11–28 per cent for 24-hour 250 hPa wind forecasts.

Very positive results have been achieved in fostering contacts with users, thus encouraging the implementation of cost recovery, updating regulatory and guidance material as well as contributing to the increased availability of timely global high-quality aircraft reports. Better provision of meteorological service to aviation resulted from the use of new and updated technical documents and improved skills through successfully conducted training events.

The AMDAR project has proved to be a very cost effective data source that responded to the needs of WMO Programmes and brought benefits to end-users. At present, there are more than 110 000 daily-automated aircraft observations. Latest impact studies conducted by the ECMWF highlight the important contribution of

these data to forecast accuracy; they add 0.4 days of forecast skill at Day 8.

Against a target of 16 training events over the four-year period of the 5LTP, there have already been seven events on subjects ranging from cost recovery to use of WAFS products to volcanic ash.

Good progress has been made in the establishment of globally consistent means of user-oriented verification of TAFs, with pilot projects established in Australia and France. There should be an increasing focus in this area to ensure that aviation, particularly air traffic management, benefits from improvements in terminal forecasting.

At an ICAO meeting in Montreal in June 2000, WMO and Members succeeded in retaining the existing position of aviation contributing through cost recovery to funding of core systems. Draft guidance material was prepared for Members faced with proposed changes to their national service arrangements.

Marine Meteorology and Associated Oceanographic Activities Programme

The marine programme encompassed all operational marine monitoring, data exchange and data management activities of WMO, as well as the provision of marine meteorological and oceanographic services for marine users. With the establishment of JCOMM, the programme is now being implemented in full cooperation with IOC. Substantial progress has been made in addressing the major long-term programme objectives. The major achievements were the enhancement of the marine broadcast system for the GMDSS, with measurable high user satisfaction; the implementation of new ASAP lines, particularly in the southern hemisphere, as well as the continued expansion of data buoy networks; the implementation of the VOSclim Project, to provide a high quality reference set of VOS data for climate; finalization of the SEACAMP and WIOMAP Projects; and development of a JCOMM Capacity Building Strategy. Other substantial achievements included measurable improvements in the quality of marine data on the GTS and the establishment of a JCOMM in situ Observing Platform Support Centre. Financial restrictions have resulted in reducing the number of expert meetings and training events and delays in the publication of technical reports. On the other hand, extrabudgetary funding for JCOMMOPS has enhanced the technical support provided to Members both operating marine observing platforms and using the data generated by these platforms.

HYDROLOGY AND WATER RESOURCES PROGRAMME

Overall objective

The overall objective of the HWRP is:

To apply hydrology to meet the needs for sustainable development and use of water and related resources; to the mitigation of water-related disasters; and to effective environmental management at the national and international levels.

Overall programme assessment

Requests for assistance by Members of WMO in the field of hydrology and water resources have seen a steady increase in recent years, with the main focus being in flood forecasting and management, water resources assessment and organizational development of NHSs. This growing interest in the field of water, as demonstrated also by the many new initiatives being launched at the international level, while undoubtedly welcome, has put some strain on the HWRP, occasionally extending it beyond what was envisaged in the 5LTP and the current programme and budget. The establishment of partnerships with other United Nations agencies, international organizations and financial institutions has thus become essential in ensuring the successful implementation of the Programme, including the relevant activities of WMO's constituent bodies as well as technical cooperation and other multilateral projects.

The three working groups established by CHy-XI and the Working Groups on Hydrology of the Regional Associations have developed detailed work plans for their future activities, which are now project-oriented, rather than the traditional report-oriented. The success of this work is highly significant for Members, as the projects are geared to providing solutions to problems encountered by NHSs in their day-to-day operations. Relevant achievements are detailed under each individual component programme below.

Programme on Basic Systems in Hydrology

The programmes of work of the CHy working groups on this subject are being implemented, including the organization of a number of expert meetings. Distribution of the CD-ROM of the *Guide to Hydrological Practices* (WMO-No. 168) is being explored while the establishment of a clear policy on the distribution and pricing of CD-ROMs is being developed.

Emphasis has been placed on supporting water resources assessment in developing countries including the data rescue pilot projects, training workshops, the revitalization of HOMS, the promotion of the use of the methodology contained in the WMO/UNESCO *Water Resources Assessment: Handbook for Review of National Capabilities* and various technical assistance activities. All of these contribute to strengthening the human and institutional capacity of NHSs of the participating countries.

WHYCOS continues to expand. The rate at which WHYCOS was developed and implemented was slower than might have been wished, with limiting factors being WMO staff resources and the need to secure extra-budgetary funding for both the development and implementation of the HYCOS projects.

Programme on Forecasting and Applications in Hydrology

The CHy working groups on this subject have been very productive, the future emphasis being on providing improved forecasting tools and methods, including those of use for disaster preparedness and prevention activities.

The activities under the this Programme in the hydrological aspect of disasters have expanded considerably, in view of the great interest demonstrated in recent years by Members. Although the success of efforts to secure funding from external sources has been considerable, it is not yet sufficient to satisfy the demand of Members to undertake flood forecasting and flood management projects.

As regards hydrology in the context of global environmental issues, it is worth noting that the increased collaboration of the Programme, both with external agencies and with other WMO Programmes, such as WWW and WCP, is beginning to bear good fruits.

Programme on Sustainable Development of Water Resources

This is one of the two new component programmes, which would require more funds for effective implementation. Nevertheless, useful documents have been prepared, which should assist small island developing States and developing countries in arid and semi-arid regions in their water management activities.

Programme on Capacity Building in Hydrology and Water Resources

The programme is intended to assist Members in the organization and development of Hydrological Services, in particular as regards product delivery and raising public awareness in hydrology and water resources. Guidance and advice had been provided to NHSs, including through a number of missions. However, this is the other new component of HWR which would require more funds to provide the substantial support needed by many NHSs to meet the organizational and technical standards required for the efficient interaction with users and their prompt provision of services.

Programme on Water-related Issues

The programme has been instrumental in highlighting the WMO water-related activities within the United Nations system and in ensuring cooperation with relevant intergovernmental and non-governmental organizations. WMO had a good presence at the Second World Water Forum (The Hague, March 2000). The compiled reports of the Forum contain support for hydrological data collection and forecasting. Similarly, WMO was involved in the preparations for, and conduct of, the International Conference on Groundwater (Bonn, December 2002). Links with the World Water Council have been maintained. Those with the Global Water Partnership have now borne some fruit in the form of support for a project on global coordination of flood management and plans for a companion project on droughts. Having said this, it is important to note the continuous effort that needs to be put into maintaining contact with the rapidly changing international world regarding fresh water. It is demanding in staff time and other resources, in order to participate at the same level in many of the new non-governmental initiatives.

EDUCATION AND TRAINING PROGRAMME

Overall objectives

The overall objectives of the ETR Programme are:

- (a) To ensure the availability of adequately trained staff to meet Members' responsibilities for providing meteorological, hydrological and related information and services;
- (b) To promote capacity building by assisting NMHSs in the attainment of an appropriate level of self-sufficiency in meeting their training needs and in developing their human resources;
- (c) To promote and strengthen the exchange of training knowledge, resources and expertise between Members making particular use of relevant new and emerging technologies and techniques;
- (d) To promote high-quality continuing education in meteorology, climatology, hydrology and related disciplines so as to keep the knowledge and skill of Members' relevant staff up-to-date with the latest scientific advances and technological innovations, and to provide the competence and skills needed in additional fields, such as communication with users.

Overall programme assessment

The development of capable, well-educated and fully trained human resources is fundamental to NMHSs to make the best use of the latest scientific advances and technological innovations aiming at providing efficient and reliable services to their societies. The Programme's implementation has been successful in meeting this need despite limited available funds, the considerable expansion of the RMTC network and high costs in producing training publications. With about 40 training events organized or co-sponsored every year, training of a great number of NMHSs' staff has been ensured.

A tangible success has also been registered in awarding fellowships, with about 500 short-term fellowships and about 80 long-term fellowships awarded.

The WMO Training Library continued to serve Members effectively by providing them with training publications, audiovisuals and training software. An important achievement has been the strengthening of the Virtual Training Library by updating and complementing information, existing links and downloadable material available through this Web-based learning portal.

Human resources development

The simpler and more flexible new WMO classification of meteorological personnel scheme puts more emphasis on job competency requirements, treats meteorological disciplines and sub-disciplines and emphasizes the concepts of continuing professional development, lifelong learning culture and learning organization.

The full implementation of this new WMO classification and curricula in RMTCs and other training centres will facilitate better and more homogeneous human resource development activities in the concerned NMHSs. The preparation of the 2002 Survey on

Members' Training Needs has been a very important step in the implementation of the entire ETR Programme.

Training activities

The implementation of training events and the production of training publications have been successful. The degree of satisfaction of participants to the events was usually high. The degree of satisfaction of Members regarding the above-mentioned activities will be ascertained also through a general survey of training needs to be launched in 2002.

In the resulting assessment reports (reviewed by the Executive Council Panel of Experts on Education and Training) the RMTCs were encouraged, in particular, to update their training programmes and adjust their deliveries to regional needs.

Members and, in particular, training institutions, had access to training material and, through the Virtual Training Library, to modern and updated documentation and products in major meteorological and hydrological disciplines making particular use of new and emerging technologies and techniques.

Education and training fellowships

The programme provided useful assistance to many NMHSs through required training of specialists and other staff, who then applied their improved knowledge in relevant activities. In particular, the training in management helped those involved to plan or promote adequate reforms or measures to improve the management of their own Service.

The present level of funding allows for implementation of about half of the received requests for short-term fellowships and less than 10 per cent of those for long-term fellowships. Therefore, the maximum use has been made of the limited available funds through the promotion of cost-sharing arrangements and the use, as far as possible and when available, of extrabudgetary funds for the fellowship programme to complement the traditional fellowship financial resources.

Support to training events under other WMO major Programmes

The training of staff in subjects related to the major WMO technical and scientific programmes touched practically all disciplines and subjects in meteorology and operational hydrology of interest to NMHSs. The programme effectively helped the involved staff of NMHSs to update and expand their knowledge and competencies in specific meteorological disciplines and in fields of interest to operational and scientific activities. The potential of this programme would have been fully realized if adequate funding could have been provided.

TECHNICAL COOPERATION PROGRAMME

Overall objectives

The overall objectives of the Programme are, in close collaboration with the Regional Programme and other WMO scientific and technical programmes, to:

- (a) Assist Members in identifying their requirements for the development and enhancement of their NMHSs and the external support necessary to meet those requirements;
- (b) Assist Members in formulating appropriate project/programme proposals to meet the requirements of NMHSs;
- (c) Act as a focal point for the exchange of information on the needs of potential recipient Members and on the possibilities offered by potential Member and institutional donors, as well as to mobilize the required resources through contact with relevant funding institutions, and assist Members in the implementation of projects/programmes as required;
- (d) Provide Members with the necessary support of technical cooperation and ensure that all the relevant scientific and technical aspects of projects are in line with established standards and programmes;
- (e) Assist Members in building-up the capacities of their NMHSs and relevant national and regional institutions so that they can participate efficiently in national development activities and meet their international obligations;
- (f) Assist Members in developing and implementing regional projects and programmes in the areas of meteorology, hydrology, the environment and other related issues, in particular through appropriate political and economic support from Members;
- (g) Ensure, through the establishment of dynamic and synergistic partnership with funding institutions and regional international organizations such as those within the United Nations system, that the relevant meteorological, hydrological and environmental aspects of proposed projects and programmes are developed and implemented according to recognized standards and guidelines.

Overall programme assessment

During the period covering the first two years of the SLTP, several new initiatives were taken to ensure that adequate responses were given to Members on their requests for assistance, including through the development of national and regional projects, the mobilization of resources with partners — the Banks in particular — and enhanced contributions through the WMO VCP to maintain in operation some of the crucial meteorological facilities in a number of countries.

During the period, the total delivery of technical cooperation activities carried out through the Programme and funded from several sources has been increasing. Several major new projects were approved with funding from UNDP and Government cost sharing in the Libyan Arab Jamahiriya and the United Arab Emirates and under Trust Fund schemes with funding from Finland, France, Italy and Switzerland. Major new projects were also developed with Brazil.

The cooperation with the World Bank and regional development banks was enhanced especially through the conclusion of Memoranda of Understanding with the World Bank and IDB. Negotiations have been

initiated with the African and Asian Development Banks in order to strengthen collaboration in the areas of natural disaster preparedness and mitigation, water resources management, agricultural production and the protection of the environment.

Several Members received assistance in the development of new projects and in the mobilization of resources in support of national and regional meteorological and hydrological projects. Missions were organized, especially from the WMO Subregional Offices, to identify requirements of Members and to assist in resource mobilization efforts.

Within the framework of the WMO VCP, priority projects in support of the WWW systems were funded to ensure the continued operations of facilities in several Member countries.

Furthermore, capacity-building activities continued to be carried out in several regions.

Voluntary Cooperation Programme

It should be noted that the level of support to Members through the VCP has remained the same and has represented a good percentage of the delivery of the TCO Programme. Members continue to keep a high interest in the VCP activities. There is, however, a need to mobilize more resources to meet the increasing needs of Members.

Regular budget cooperation activities

The level of support from the regular budget to technical cooperation activities has not been sufficient to carry out the core activities of the Programme. There will be a need to strengthen this component in the future.

Other components of the Programme

Taking into account the present trends for development assistance, it is encouraging to note that several Members and donors continue to channel their assistance through the WMO Secretariat. The enhancement of the collaboration with the World Bank the regional Development Banks and the European Commission will need to be continued and the promotion of WMO's technical cooperation activities pursued. The establishment of strategic partnerships with NMHSs and national funding institutions in the countries should be encouraged.

REGIONAL PROGRAMME

Overall objectives

The overall objectives of the Regional Programme are:

- (a) To provide support to global WMO Programmes and contribute to the planning, implementation, monitoring and evaluation of the WMO Programmes in the Regions, taking into account regional interests and concerns;
- (b) To assist and/or support in building the meteorological capabilities of Member countries, either individually or as groups of countries, in cooperation with regional and subregional economic groupings and institutions, to implement effectively

- WMO Programmes in the respective Regions and to enable NMHSs' to play their full role in sustainable socio-economic development of their countries;
- (c) To facilitate the provision of advice and guidance to Members in the Regions on cross-cutting issues, such as the role and operation of NMHSs, data and product exchange, commercialization and alternative service delivery;
 - (d) In coordination with the other Programmes, to ensure that Members in the Regions are kept informed of developments in the science of meteorology, hydrology, other related fields and evolving environmental issues and to disseminate information on matters affecting Members in the various Regions.

Overall programme assessment

The implementation of the Regional Programme activities in various Regions and cooperative efforts of the working groups and rapporteurs of regional associations and the WMO Secretariat, including the Regional and Subregional Offices, were carried out. As a result, improvement in the availability of data and products in a number of national and regional centres was recorded, as shown by the periodic monitoring results and mission reports, to the benefit of Members. This achievement has contributed also to the WWW Programme.

Substantial contribution has been made by the Programme to the formulation and implementation of several projects, some in collaboration with regional economic groupings, in support of the development of NMHSs.

A very important part of the Programme has been the provision of technical and expert advice to NMHSs and the human resources development activities, particularly within the framework of assistance to NMHSs affected by natural disasters. These activities have led to increased visibility of NMHSs and to mobilization of additional resources to rehabilitate meteorological and hydrological facilities destroyed by natural disasters.

The Programme has been instrumental in the provision to NMHSs of information on developments in the sciences of meteorology, hydrology and evolving environmental fields. Regional technical conferences and several regional seminars on topics such as modern management techniques, data and product exchange, commercialization and alternative service delivery, and new technology were successfully organized.

The results during 2000–2001 have been achieved under financial constraint. Adequate resources should be ensured, including support to regional rapporteurs and to enable the organization of regional working group sessions. Additional resources should be available to meet requests for support from Members. NMHSs faced difficulties to implement fully WMO Programmes

and activities due to reduced support from Governments. As a consequence, visible improvements were not as those required in the operation of the basic meteorological facilities during 2000–2001, particularly in developing countries.

In order to address these fundamental issues, regional associations have taken steps to develop strategies to strengthen the basic meteorological facilities nationally and regionally. A further challenge faced by NMHSs is the restructuring of their Services to create autonomous or semi-autonomous agencies with the aim of increasing effectiveness and generating income through cost-recovery schemes. There is now growing demands by WMO Members to provide expertise/advice in the area of alternative service delivery. In addition, due to the effect of globalization and evolving new technologies, NMHSs have to adapt to new management styles to remain competitive and relevant. Here again, WMO is frequently called upon to assist Directors and senior staff of NMHSs to acquire knowledge on modern management as well as to help in the capacity building efforts of Members through technology transfer.

Institutional support to the Regional Programme

The twelfth session of RA II and the thirteenth sessions of RA III and RA IV were successfully completed. During these sessions, regional strategic plans were developed and some have started being implemented for those Regions which are behind in the implementation of their basic meteorological and hydrological facilities. Members have indicated their satisfaction in the work of their respective regional associations.

The PUMA and DMCs Projects in Africa, the Ibero-American Climate Project, the radar network for the Caribbean and the haze project in Asia have been particularly noteworthy. The impacts of these projects on NMHSs will be evolving as the projects are being further implemented. These will contribute to the long-term objective to build the capability of Members.

Assistance provided to countries affected by natural disasters, including Hurricanes *Mitch* and *Keith* in Central America, Tropical Cyclones *Iline* and *Gloria* in southern Africa and the forest fire in South-East Asia, helped achieve the improved situation of NMHSs and improved delivery of services, to the satisfaction of users.

Regional activities

Through various events organized in the Regions, Members have been assisted in improving the structure, status and visibility of their NMHSs and in building their capacities to provide services. Questionnaires and mission reports have indicated that the implementation of the conclusions and recommendations of these events and of technology transfer have improved the services of NMHSs to the satisfaction of users.

ANNEX XI

Annex to paragraph 15.1.2 of the general summary

**WMO PROCEDURES OF FOLLOW-UP ON JIU REPORTS
(PILOT SCHEME)**

1. The provisions of the JIU statute (in particular, Chapter IV) and the follow-up system contained in Annex I of JIU annual report A/52/34 (1997) constitute the basic framework for the handling of JIU reports.
2. Upon receipt of the draft of a JIU report for comments, the Secretary-General will include in his comments an indication whether the report is, in his opinion, relevant to WMO, and, if not, provide reasons why not.
3. The basic criteria used to determine the relevance of reports to WMO will be whether the report in question and the recommendations therein satisfy any one of the following factors: (a) fits within the mandate and purposes of the Organization; (b) has a bearing on the efficiency of the services and proper use of funds; (c) is aimed at improving management and methods and at achieving greater coordination between organizations; (d) is aimed at assisting the Executive Council in carrying out the responsibility for external evaluation of programmes and activities; and (e) is aimed at advising the Organization on the methods for internal evaluation, or periodically assessing these methods, or making ad hoc evaluations of programmes and activities.
4. JIU will give full consideration to the comments called for in paragraph 2 above in deciding whether or not to submit the final version of the report to the Secretary-General, in accordance with Article 11, paragraph 4(a) of the JIU statute, for consideration by the Executive Council.
5. JIU reports of relevance thus received will be made available by the WMO Secretariat to members of the Executive Council, with or without the comments of the Secretary-General. These reports, as available, will be posted on WMO Web site with reference to the JIU Web site.
6. As called for by the United Nations General

Assembly in paragraph 4 of its Resolution 50/233 — Joint Inspection Unit, the Secretary-General will take the necessary measures to ensure that “the thematic reports of the Unit are listed under the appropriate substantive agenda”.

7. The format, content and nature of documents submitted to the Executive Council by the WMO Secretariat concerning JIU reports will be modified so as to be more action-oriented on each of the relevant recommendations. They will contain the comments which the Secretary-General may wish to submit on the recommendations contained in the reports as well as: (a) an indication of which of those addressed to him are acceptable to him; and (b) inviting the Executive Council to take specific decisions with regard to those recommendations requiring legislative action. It is understood that consideration by the Executive Council will focus mainly on the recommendations addressed to it for action. This will not, however, preclude that the recommendations addressed to the Secretary-General and his comments thereon may also be reviewed by the Executive Council, should it so wish.

8. On the basis of the status of the Unit as a subsidiary organ of the legislative bodies of WMO in accordance with Article 1, paragraph 2 of the JIU statute, the Unit will be entitled, when it deems necessary, to introduce its reports to the Executive Council, and have due visibility during its attendance at the sessions.

9. The Secretary-General will regularly submit to the Executive Council status reports concerning the measures taken on the implementation of approved recommendations (including recommendations addressed to, and accepted by, the Secretary-General) of the Unit. This would be done, as appropriate, by way of a matrix providing an overview of current status.

ANNEX XII

Annex to paragraph 15.3.3 of the general summary

**DRAFT WORKING ARRANGEMENTS BETWEEN
WMO AND THE CARIBBEAN METEOROLOGICAL ORGANIZATION**

1. The Secretary-General of the World Meteorological Organization (WMO) and the Coordinating Director of the Caribbean Meteorological Organization (CMO), with the aim of effectively attaining the objectives set forth in their respective constituent instruments, will act in close cooperation with each other and will consult each other regularly in regard to matters of common interest.

2. WMO and CMO agree to set up such cooperation and consultation for the purpose of effective coordination of activities of both Organizations, to ensure optimum benefits for meteorological and hydrological operations and research, and to maximize the benefits to Members concerned from the application of these activities to sustainable development, especially in areas such

as natural disaster reduction, climate, agriculture, water resources management, shipping, aviation, tourism, industry and environmental protection.

3. Both Organizations agree to keep each other informed on current and planned activities in which there may be mutual interest. They also agree to collaborate in the implementation of the Programmes of WMO in areas of common interest.

4. WMO and CMO agree to exchange publications concerning these and related fields.

5. Suitable arrangement will be made for the participation of each Party to the Working Arrangement as an observer in those sessions and meetings of the other Party at which matters of common interest are discussed.

ANNEX XIII

[Annex x to paragraph 15.3.3 of the general summary](#)

DRAFT WORKING ARRANGEMENTS BETWEEN WMO AND THE INTERNATIONAL COMMITTEE FOR WEIGHTS AND MEASURES

1. The Secretary-General of the World Meteorological Organization (WMO) and the Director of the International Bureau of Weights and Measures (BIPM), acting on behalf of the International Committee for Weights and Measures (CIPM), with the aim of effectively attaining the objectives set forth in their respective constituent instruments, will act in close cooperation with each other and will consult each other regularly in regard to matters of common interest.

2. WMO and CIPM agree to consult together to ensure that data, related in particular to atmospheric composition and water resources and coming from the Programmes of WMO, are properly based on units traceable to the International System (SI) through the procedures of the

Mutual Recognition Arrangement for National Measurement Standards drawn up by the Committee and those of the Technical Regulations of WMO.

3. Both Organizations agree to keep each other informed on current and planned activities in which there may be mutual interest. They also agree to collaborate in the implementation of the Programmes of WMO in areas of common interest.

4. WMO and CIPM agree to exchange publications concerning these and related fields.

5. Suitable arrangement will be made for the participation of each Party to the Working Arrangement as an observer in those sessions and meetings of the other Party at which matters of common interest are discussed.

ANNEX XIV

[Annex to paragraph 15.3.3 of the general summary](#)

DRAFT WORKING ARRANGEMENTS BETWEEN WMO AND THE NIGER BASIN AUTHORITY

1. The Secretary-General of the World Meteorological Organization (WMO) and the Executive Secretary of the Niger Basin Authority (NBA), with the aim of effectively attaining the objectives set forth in their respective constituent instruments, will act in close cooperation with each other and will consult each other regularly in regard to matters of common interest.

2. WMO and NBA agree to set up such cooperation and consultation for the purpose of effective coordination of activities of both Organizations, to ensure optimum benefits from operational hydrology activities, water resources management and relevant research, and to maximize the benefits to Members concerned from the application of these activities to sustainable development, especially in areas such as natural disaster

reduction, flood forecasting and warning, optimizing the application of weather and climate information in agriculture, desertification, hydroelectric energy and environmental protection.

3. Both Organizations agree to keep each other informed on current and planned activities in which there may be mutual interest. They also agree to collaborate in the implementation of the Programmes of WMO in areas of common interest.

4. WMO and NBA agree to exchange publications concerning these and related fields.

5. Suitable arrangement will be made for the participation of each Party to the Working Arrangement as an observer in those sessions and meetings of the other Party at which matters of common interest are discussed.

ANNEX XV

Annex to paragraph 17.1.1 of the general summary

DRAFT PROGRAMME OF SESSIONS OF CONSTITUENT BODIES DURING THE FOURTEENTH FINANCIAL PERIOD (2004–2007)

2004	2006
EC-LVI	EC-LVIII
XIII-RA II	XIV-RA V
CBS-XIII	CBS-Ext.
CHy-XII	CAGM-XIV
JCOMM-II	CAeM-XIII
	XIV-RA I
2005	2007
EC-LVII	CIMO-XIV
XIV-RA III	Cg-XV
XIV-RA IV	EC-LIX
CCI-XIV	
XIV-RA VI	
CAS-XIV	

ANNEX XVI

Annex to paragraph 18.3.3 of the general summary

DRAFT PROVISIONAL AGENDA FOR FOURTEENTH CONGRESS

- | | |
|--|--|
| <p>1. ORGANIZATION OF THE SESSION</p> <p>1.1 Opening of the session</p> <p>1.2 Establishment of a Credentials Committee</p> <p>1.3 Approval of the agenda</p> <p>1.4 Establishment of committees</p> <p>1.5 Report of the Credentials Committee</p> <p>1.6 Approval of the minutes</p> <p>2. REPORTS</p> <p>2.1 Report by the President of the Organization</p> <p>2.2 Report by the Secretary-General</p> <p>2.3 Report by the chairperson of the Financial Advisory Committee</p> <p>2.4 Consolidated report on amendments to the Technical Regulations</p> <p>3. SCIENTIFIC AND TECHNICAL PROGRAMMES</p> <p>3.1 World Weather Watch Programme</p> <p>3.1.0 WWW basic systems and support functions; the report of the president of CBS</p> <p>3.1.1 Global Observing System</p> <p>3.1.2 WWW information system and services, including the Global Telecommunication System and data management</p> <p>3.1.3 Global Data-processing System, including emergency response activities</p> <p>3.1.4 WWW system support activities, including the operational information service</p> <p>3.1.5 Instruments and Methods of Observation Programme; the report of the president of CIMO</p> | <p>3.1.6 WMO satellite activities</p> <p>3.1.7 Tropical Cyclone Programme</p> <p>3.1.8 WMO Antarctic activities</p> <p>3.2 World Climate Programme</p> <p>3.2.0 World Climate Programme; the report of the president of CCI</p> <p>3.2.1 Coordination activities within the Climate Agenda</p> <p>3.2.2 Support to climate change-related activities, including IPCC and the Conventions on Climate Change, on Biodiversity and on Desertification</p> <p>3.2.3 Global Climate Observing System</p> <p>3.2.4 World Climate Data and Monitoring Programme</p> <p>3.2.5 World Climate Applications and Services Programme, including CLIPS</p> <p>3.2.6 World Climate Impact Assessment and Response Strategies Programme</p> <p>3.2.7 World Climate Research Programme</p> <p>3.3 Atmospheric Research and Environment Programme</p> <p>3.3.0 Atmospheric Research and Environment Programme; the report of the president of CAS</p> <p>3.3.1 Support to ozone and other environment-oriented conventions</p> <p>3.3.2 Global Atmosphere Watch</p> <p>3.3.3 World Weather Research Programme</p> <p>3.3.4 Tropical Meteorology Research Programme</p> <p>3.3.5 Programme on Physics and Chemistry of Clouds and Weather Modification Research</p> |
|--|--|

- 3.4 Applications of Meteorology Programme
 - 3.4.1 Public Weather Services Programme
 - 3.4.2 Agricultural Meteorology Programme; the report of the president of CAgM
 - 3.4.3 Aeronautical Meteorology Programme; the report of the president of CAeM
 - 3.4.4 Marine Meteorology and Associated Oceanographic Activities Programme; the report of the co-president of JCOMM
 - 3.5 Hydrology and Water Resources Programme
 - 3.5.0 Hydrology and Water Resources Programme; the report of the president of CHy
 - 3.5.1 Programme on Basic Systems in Hydrology
 - 3.5.2 Programme on Forecasting and Applications in Hydrology
 - 3.5.3 Programme on Sustainable Development of Water Resources
 - 3.5.4 Programme on Capacity Building in Hydrology and Water Resources
 - 3.5.5 Programme on Water-related Issues
 - 3.6 Education and Training Programme
 - 3.6.1 Human resources development
 - 3.6.2 Training activities
 - 3.6.3 Education and training fellowships
 - 3.6.4 Support to training events under other WMO major Programmes
 - 3.7 Technical Cooperation Programme
 - 3.7.1 General review of the Technical Cooperation Programme
 - 3.7.2 Organization and funding of the Technical Cooperation Programme
 - 3.8 Regional Programme
 - 3.8.0 Reports of the presidents of regional associations
 - 3.8.1 Regional activities
- 4. PROGRAMME SUPPORT SERVICES AND PUBLICATIONS**
- 4.1 Conferences
 - 4.2 Languages
 - 4.3 Publications
 - 4.4 Office Automation and Information Technology Support
- 5. INFORMATION AND PUBLIC AFFAIRS PROGRAMME**
- 6. LONG-TERM PLANNING**
- 6.1 Report on the monitoring of the implementation of the Fifth WMO Long-term Plan
 - 6.2 Sixth WMO Long-term Plan (2004–2011)
 - 6.3 Preparation of the Seventh WMO Long-term Plan
 - 6.4 WMO structure
- 7. SPECIFIC CHALLENGES FACING WMO**
- 7.1 International exchange of data and products
 - 7.2 Role and operation of National Meteorological and Hydrological Services
 - 7.3 Cooperation with other disciplines and programmes
 - 7.4 Disaster reduction activities
- 8. CONSOLIDATED PROGRAMME AND BUDGET 2004–2007**
- 9. COOPERATION WITH THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS**
- 9.1 Cooperation with the United Nations and other organizations
 - 9.2 World Summit on Sustainable Development
- 10. ADMINISTRATIVE AND FINANCIAL QUESTIONS**
- 10.1 Financial matters
 - 10.2 Proportional contributions of Members
 - 10.3 Staff matters
 - 10.4 Secretary-General's contract
- 11. GENERAL AND LEGAL QUESTIONS**
- 11.1 IMO and WMO Prizes
 - 11.2 Questions concerning the Convention
 - 11.3 Revision of the General Regulations
 - 11.4 Review of previous resolutions of Congress
 - 11.5 Requests for membership of the Organization
- 12. ELECTIONS AND APPOINTMENTS**
- 12.1 Election of the President and Vice-Presidents of the Organization
 - 12.2 Election of members of the Executive Council
 - 12.3 Appointment of the Secretary-General
- 13. SCIENTIFIC LECTURES AND DISCUSSIONS**
- 14. DATE AND PLACE OF FIFTEENTH CONGRESS**
- 15. CLOSURE OF THE SESSION**
-

ANNEX XVII

Annex to paragraph 18.3.6 of the general summary

**LIST OF INTERNATIONAL ORGANIZATIONS TO BE INVITED TO
FOURTEENTH CONGRESS****Organizations within the United Nations system¹**

United Nations*
 Economic Commission for Europe
 Economic and Social Commission for Asia and the Pacific
 Economic Commission for Latin America and the Caribbean
 Economic Commission for Africa
 Economic and Social Commission for Western Asia
 World Food Council
 United Nations International Strategy for Disaster Reduction
 United Nations Conference on Trade and Development
 United Nations Industrial Development Organization
 United Nations Environment Programme
 United Nations Human Settlements Programme
 United Nations Development Programme
 United Nations Framework Convention on Climate Change
 United Nations Convention to Combat Desertification
 World Food Programme
 Office of the United Nations High Commissioner for Refugees
 Office for the Coordination of Humanitarian Affairs
 Office of the High Commissioner for Human Rights
 United Nations Institute for Training and Research
 International Labour Organization
 Food and Agriculture Organization of the United Nations*
 United Nations Educational, Scientific and Cultural Organization*
 International Civil Aviation Organization*
 World Health Organization*
 World Bank
 International Monetary Fund
 Universal Postal Union
 International Telecommunication Union*
 International Maritime Organization*
 World Intellectual Property Organization
 International Fund for Agricultural Development*
 International Atomic Energy Agency*
 World Trade Organization
 Intergovernmental Oceanographic Commission

Organizations with an agreement or working arrangements with WMO providing for representation

Danube Commission
 International Council for Science
 International Union of Geodesy and Geophysics
 International Council for the Exploration of the Sea
 European Space Agency
 League of Arab States
 Organization of African Unity
 European Centre for Medium-range Weather Forecasts

International Institute for Applied Systems Analysis
 Permanent Joint Technical Commission for Nile Waters
 International Seismological Centre
 Agency for Air Safety in Africa and Madagascar
 Arab Center for the Studies of Arid Zones and Dry Lands
 International Council for Research and Innovation in Building and Construction
 Arab League Educational, Cultural and Scientific Organization
 Baltic Marine Environment Protection Commission (Helsinki Commission)
 Permanent South Pacific Commission
 European Organisation for the Exploitation of Meteorological Satellites
 Economic Community of West African States
 Interstate Council on Hydrometeorology of the Countries of the Commonwealth of Independent States
 South Pacific Regional Environment Programme
 Arab Organization for Agricultural Development
 Islamic Educational, Scientific and Cultural Organization
 Lake Chad Basin Commission
 World Tourism Organization
 International Committee for Weights and Measures
 Niger Basin Authority
 Caribbean Meteorological Organization

Organizations with consultative status²

International Society of Soil Science
 International Organization for Standardization
 International Radio Maritime Committee
 International Federation for Agricultural Producers
 International Union of Radio Science
 International Federation of Air Line Pilots' Associations
 World Federation of United Nations Associations
 International Federation for Documentation
 World Energy Conference
 International Astronomical Union
 International Commission on Irrigation and Drainage
 International Society of Biometeorology
 International Astronautical Federation
 International Union for the Conservation of Nature and Natural Resources
 Oil Industry International Exploration and Production Forum
 International Association of Broadcast Meteorology
 Association of Hydrometeorological Equipment Industry

Other organizations

Council of Europe
 International Air Transport Association
 International Federation of Red Cross and Red Crescent Societies
 Inter-American Development Bank

African Development Bank	International Federation of Air Traffic Controllers' Associations
European Cooperation in the Field of Scientific and Technical Research	International Ocean Institute
Organization of American States	South Pacific Applied Geoscience Commission
World Aerospace Education Organization	International Research Institute for Climate Prediction
Permanent Interstate Committee for Drought Control in the Sahel	Organisation of Islamic Conferences
Association of South-East Asian Nations	Intergovernmental Authority on Development
Asian Development Bank	East African Community
International Chamber of Shipping	International Organisation of the Francophonie
Regional Committee for Water Resources	Inter-Parliamentary Union
Latin American Energy Organization	
International Commission for the Hydrology of the Rhine Basin	Invitations governed by Resolution 39 (Cg-VII) — Invitation of the United Nations Council for Namibia and the national liberation movements to WMO meetings
European and Mediterranean Plant Protection Organization	Palestine ³
International Crop Research Institute for the Semi-arid Tropics	
African Centre of Meteorological Applications for Development	1 General Regulation 130(a) requires that an invitation be sent to the United Nations. The organizations within the United Nations system marked with an asterisk have an agreement or a working arrangement with WMO which provide for reciprocal representation. They should, therefore, normally be invited to Congress.
International Rice Research Institute	2 The consultative status (Resolution 2 (EC-IV) — Consultative status of non-governmental organizations) accords to an international non-governmental organization entitlement to be represented by an observer without voting rights at sessions of constituent bodies in conformity with Article 26(b) and Resolution 2 (EC-IV).
European Commission	3 The designation "Palestine" is used following the decision of the forty-first session of the Executive Council (general summary paragraph 13.3 of the <i>Abridged Final Report with Resolutions of the Forty-first Session of the Executive Council</i> (WMO-No. 723)).
International Council of Aircraft Owner and Pilot Associations	
Inter-American Institute for Cooperation on Agriculture	
European Bank for Reconstruction and Development	
World Water Council	
Global Water Partnership	
Common Market for Eastern and Southern Africa	
South African Development Community	
Agency for Climate and Other Environmental Issues for Portuguese-Speaking Countries	

ANNEX XVIII

Annex to paragraph 18.4.11 of the general summary

SITUATION OF WOMEN IN THE WMO SECRETARIAT
(January 1995–June 2002)

Global analysis of all categories of Staff

	1995	1996	1997	1998	1999	2000	2001	2002
D-2					1	1	1	1
D-1								
P-5	4	4	4	3	3	5	6	7
P-4	9	10	9	9	7	8	8	9
P-3	7	8	10	9	7	10	10	8
P-2*	1	2	3	3	2	2	2	1
P-1								
G-7	9	9	9	9	8	7	7	6
G-6	28	26	23	22	23	24	26	28
G-5	47	44	43	48	54	58	69	58
G-4	31	31	27	22	25	22	11	18
G-3				1	1	1	1	3
G-2	3	3	2	1	2	2	2	0
G-1	1	1	1					0
TOTAL	140	138	131	127	133	140	143	139

* Correspond to Junior Professional Officers.

Total number of Staff (not counting supernumeraries)	269	264	258	249	266	264	266	260
Percentage of women	52%	52%	51%	51%	50%	53%	54%	53%

Recruitment of Professional Staff

	1995	1996	1997	1998	1999	2000	2001	2002
D-2					1			
D-1								
P-5					1	2	1	1
P-4		1			1	1		
P-3	2	1	1		1	3		
P-2		1	1		1			
P-1								
TOTAL	2	3	2	0	5	6	1	1

Global analysis

	1995			1996			1997			1998		
	Scient. staff	Admin. staff	Transl./ Editors	Scient. staff	Admin. staff	Transl./ Editors	Scient. staff	Admin. staff	Transl./ Editors	Scient. staff	Admin. staff	Transl./ Editors
D-2												
D-1												
P-5	2	2		2	2		2	2		2	1	
P-4		3	6	1	3	6	1	3	5	1	3	5
P-3	1	4	2	1	5	2	1	7	2		7	2
P-2*		1		1	1		2	1		2	1	
P-1												
TOTAL	3	10	8	5	11	8	6	13	7	5	12	7

* Correspond to Junior Professional Officers.

Total number of Professional Staff (not counting supernumeraries)	1995			1996			1997			1998		
	3%	9%	7%	5%	11%	8%	6%	13%	7%	5%	12%	7%
	112			101			104			102		
Percentage of women	3%	9%	7%	5%	11%	8%	6%	13%	7%	5%	12%	7%

	1999			2000			2001			2002		
	Scient. staff	Admin. staff	Transl./ Editors	Scient. staff	Admin. staff	Transl./ Editors	Scient. staff	Admin. staff	Transl./ Editors	Scient. staff	Admin. staff	Transl./ Editors
D-2		1			1			1			1	
D-1												
P-5	2	1		2	3	1	2	4	1	2	5	1
P-4	1	3	3	2	3	3	2	3	3	3	3	3
P-3		5	2		8	2		8	2		6	2
P-2*	1	1		1	1		1	1			1	
P-1												
TOTAL	4	11	5	5	16	6	5	17	6	5	16	6

* Correspond to Junior Professional Officers.

Total number of Professional Staff (not counting supernumeraries)	1999			2000			2001			2002		
	4%	11%	5%	5%	15%	6%	5%	16%	6%	4%	14%	5%
	104			108			109			118		
Percentage of women	4%	11%	5%	5%	15%	6%	5%	16%	6%	4%	14%	5%

ANNEX XIX

Annex to paragraphs 18.5.10 to 18.5.12 of the general summary

PROPOSED REVISIONS TO THE FINANCIAL REGULATIONS*

- 9.1 (revised) There shall be established a General Fund for the purpose of accounting for expenditures authorized under Regulations 7.1, 7.2 and 7.3. The General Fund will be credited with contributions paid by Member States under Regulations 8.1, 8.10, 8.11 and miscellaneous income as defined under Regulation 10.1. Unless otherwise decided by the Executive Council, any cash surpluses on the General Fund as adjusted in accordance with Regulations 7.3 and 7.4 and except that part of such surplus which represents income from interest received on funds other than the Working Capital Fund shall be credited on the basis of the scale of assessments to the Members of the Organization as follows:
- (a) For Members who have paid in full their previous contributions, by deduction from the next assessment;
- (b) For Members who have paid in full their contribution in respect of all previous financial periods, but who have not paid in full their contributions in respect of the period which relates to the surplus to be distributed, by reduction of their arrears, and thereafter by deduction from the next assessment;
- (c) For Members who are in arrears for more than the financial period concerning the one which relates to the surplus to be distributed, their share of the surplus will be retained by the World Meteorological Organization in a special account and will be paid when the provisions of Regulation 9.1(a) or (b) are met.
- 10.1 (revised) All other income, except:
- (a) Contributions to the budget;
- (b) Direct refunds of expenditures made during the biennium;
- (c) Advances or deposits to funds and accounts;
- (d) Interest earned on the Working Capital Fund to the extent that it is required to augment the level of the Working Capital Fund;
- (e) Revenue from rental of excess space, conference rooms and cafeteria facilities; shall be classed as miscellaneous income, for credit to the General Fund, unless otherwise specified in accordance with Regulation 9.9.
- 14.5 (revised) [Not later than thirteen months after the ending of a financial period,] the Secretary-General shall submit [to the External Auditor] in the accounts of the first biennium [an account] a statement of the total expenditures made in respect of [that] the previous financial period.
- 15.9 (revised) The External Auditor shall issue reports on the audit of the financial statements and relevant schedules reflecting the position of the final accounts for each biennium [and for the financial period], which shall include such information as he deems necessary in regard to matters referred to in Regulation 15.4 and in the Additional Terms of Reference.
- 15.11 (revised) The financial statement for the biennium [and the accounts for the financial period,] together with the External Auditor's certificates, shall be transmitted to the Members of the Organization by the Secretary-General.

* The underlined words are proposed additions to the text. The words in square brackets are proposed to be deleted.

APPENDIX A

LIST OF PERSONS ATTENDING THE SESSION

1. MEMBERS OF THE EXECUTIVE COUNCIL

J. W. Zillman	President
J.-P. Beysson	First Vice-President
A.-M. Noorian	Second Vice-President
Y. Salahu	Third Vice-President
M. S. Mhita	President RA I
A. Majeed H. Isa	Acting president RA II
N. Salazar D.	President RA III
A. J. Dania	President RA IV
Woon Shih Lai	President RA V
F. Quintas Ribeiro	President RA VI

Z. Alperson	}	Elected members
N. Al-Shalabi		
A. C. Athayde		
M. L. Bah		
A. I. Bedritsky		
A. Diouri		
M. D. Everell		
P. D. Ewins		
U. Gärtner		
R. R. Kelkar		
J. J. Kelly, Jr		
H. M. Bongmum		
J. R. Mukabana		
D. Nadison		
A. Ndiaye		
H. H. Oliva		
L. P. Prahm		
R. Prasad		
Qin Dahe		
G. K. Ramothwa (Ms)		
T. W. Sutherland		
K. Yamamoto		
J. Zielinski		

A. Bejjani		Adviser to N. Al-Shalabi
L.-M. Michaud		Adviser to N. Al-Shalabi
C. Carvalho Gomes	(part-time)	Adviser to A. C. Athayde
A. M. Dall'Antonia	(part-time)	Adviser to A. C. Athayde
J. M. Rezende	(part-time)	Adviser to A. C. Athayde
M. Vasconcelos de Freitas	(part-time)	Adviser to A. C. Athayde
O. Vieira	(part-time)	Adviser to A. C. Athayde
A. V. Frolov		Alternate to A. I. Bedritsky
L. I. Anisimova (Ms)	(part-time)	Adviser to A. I. Bedritsky
V. Asmus	(part-time)	Adviser to A. I. Bedritsky
V. Bakoumov		Adviser to A. I. Bedritsky
P. Chernikov	(part-time)	Adviser to A. I. Bedritsky
V. Kovalenko	(part-time)	Adviser to A. I. Bedritsky
A. E. Sherbakova (Ms)	(part-time)	Adviser to A. I. Bedritsky
N. Sikachev	(part-time)	Adviser to A. I. Bedritsky
M. L. Selassi		Alternate to A. Diouri
B. Angle	(14-21/6)	Alternate to M. D. Everell
B. Angle	(part-time)	Adviser to M. D. Everell
	(11-13/6)	
A. Simard (Ms)	(part-time)	Adviser to M. D. Everell
G. Ryall (Ms)		Alternate to P. D. Ewins
J. Bradley	(part-time)	Adviser to P. D. Ewins
M. Gray	(part-time)	Adviser to P. D. Ewins
C. Richards	(part-time)	Adviser to P. D. Ewins
C. Smith (Ms)	(part-time)	Adviser to P. D. Ewins
D. Frömning		Alternate to U. Gärtner
G.-R. Hoffmann	(part-time)	Adviser to U. Gärtner
K. Hofius	(part-time)	Adviser to U. Gärtner
D. K. Keuerleber	(part-time)	Adviser to U. Gärtner
P. Päßgen	(part-time)	Adviser to U. Gärtner
M. M. Wesseler (Ms)	(part-time)	Adviser to U. Gärtner
M. Yerg	(11-19/6)	Alternate to J. J. Kelly, Jr
W. Bolhofer	(20-21/6)	Alternate to J. J. Kelly, Jr
W. Bolhofer	(part-time)	Adviser to J. J. Kelly, Jr
	(11-19/6)	
H. L. April	(part-time)	Adviser to J. J. Kelly, Jr
J. Block	(part-time)	Adviser to J. J. Kelly, Jr
R. Hopkins	(part-time)	Adviser to J. J. Kelly, Jr
D. Koran	(part-time)	Adviser to J. J. Kelly, Jr
C. C. Lautenbacher	(part-time)	Adviser to J. J. Kelly, Jr
R. Masters	(part-time)	Adviser to J. J. Kelly, Jr
S. Rayder	(part-time)	Adviser to J. J. Kelly, Jr
D. Rogers	(part-time)	Adviser to J. J. Kelly, Jr
R. Rosen	(part-time)	Adviser to J. J. Kelly, Jr
D. Stone (Ms)	(part-time)	Adviser to J. J. Kelly, Jr
C. Stonecipher	(part-time)	Adviser to J. J. Kelly, Jr
J. Stuart	(part-time)	Adviser to J. J. Kelly, Jr
Whung Pai-Yei (Ms)	(part-time)	Adviser to J. J. Kelly, Jr
G. W. Withee	(part-time)	Adviser to J. J. Kelly, Jr

2. ALTERNATES AND ADVISERS

V. K. Tsui		Alternate to J. W. Zillman
L. Brodrick	(part-time)	Adviser to J. W. Zillman
B. Stewart	(part-time)	Adviser to J. W. Zillman
R. Webb	(part-time)	Adviser to J. W. Zillman
M. Williams	(part-time)	Adviser to J. W. Zillman
D. E. Woods (Ms)	(part-time)	Adviser to J. W. Zillman
F. Duvernet		Alternate to J.-P. Beysson
T. Berthelot		Adviser to J.-P. Beysson
A. H. Delju		Alternate to A.-M. Noorian
Z. Bankoo (Ms)		Adviser to A.-M. Noorian
P. F. Tibaijuka		Adviser to M. S. Mhita
H. Alaali		Adviser to A. Majeed H. Isa
H. K. Lam		Adviser to A. Majeed H. Isa
J. R. Lumsden		Adviser to Woon Shih Lai
A. Ngari	(part-time)	Adviser to Woon Shih Lai

W. M. Chebukaka		Alternate to J. R. Mukabana
D. Amos (Ms)	(part-time)	Adviser to D. Nadison
H. Kajee (Ms)	(part-time)	Adviser to D. Nadison
V. P. Maluleke	(part-time)	Adviser to D. Nadison
P. Maqubela (Ms)	(part-time)	Adviser to D. Nadison
E. Poolman	(part-time)	Adviser to D. Nadison
S. M. Rensburg (Ms)	(part-time)	Adviser to D. Nadison
R. B. Scharneck (Ms)	(part-time)	Adviser to D. Nadison
A. Ngari	(20–21/6)	Alternate to R. Prasad
Zheng Guoguang		Alternate to Qin Dahe
Han Li (Ms)	(part-time)	Adviser to Qin Dahe
Chen Zhenlin	(part-time)	Adviser to Qin Dahe
Shen Xiaonong	(part-time)	Adviser to Qin Dahe
Shi Peiliang	(part-time)	Adviser to Qin Dahe
Xu Tang	(part-time)	Adviser to Qin Dahe
Zhang Guocai	(part-time)	Adviser to Qin Dahe
F. Sambula		Alternate to T. W. Sutherland
S. Bukhari		Alternate to N. I. Tawfiq
J. A. Bantan		Adviser to N. I. Tawfiq
K. Nagasaka		Alternate to K. Yamamoto
S. Nakagawa	(part-time)	Adviser to K. Yamamoto
H. Nanao	(part-time)	Adviser to K. Yamamoto
R. Nomura	(part-time)	Adviser to K. Yamamoto
I. Takahashi	(part-time)	Adviser to K. Yamamoto

3. PRESIDENTS OF TECHNICAL COMMISSIONS

N. D. Gordon		Commission for Aeronautical Meteorology
R. Motha		Commission for Agricultural Meteorology
A. Eliassen		Commission for Atmospheric Sciences
A. I. Gusev (acting president)		Commission for Basic Systems
Y. Boodhoo		Commission for Climatology
D. G. Rutashobya		Commission for Hydrology
S. K. Srivastav		Commission for Instruments and Methods of Observation
J. Guddal		Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (co-chairperson)

4. HYDROLOGICAL ADVISERS

J. Wellens-Mensah	Regional Association I
Z. Kopaliani	Regional Association II
R. Coimbra	Regional Association III
E. Planos Gutierrez	Regional Association IV
(to replace C. Barrett)	
R. Raj	Regional Association V

5. INVITED EXPERTS

D. Bonin
M. C. Dumesnil (Ms)
P. Mason
R. Pachauri
D. Terroir (Ms)

6. LECTURERS

J. Baker
C. Tucci

7. REPRESENTATIVES OF INTERNATIONAL ORGANIZATIONS

H. Wuester	Economic Commission for Europe (ECE)
E. Bonev	United Nations Development Programme (UNDP)
F. Schlingemann	United Nations Environment Programme (UNEP)
A. Cissoko	United Nations Convention to Combat Desertification (UNCCD)
H. L. Hernandez	} Joint Inspection Unit (JIU)
E. Kudryavtsev	
A. Nour	
L. Mandalia	United Nations Educational, Scientific and Cultural Organization (UNESCO)
P. Bernal	} Intergovernmental Oceanographic Commission (IOC)
C. Summerhayes	
A. Majeed	International Strategy for Disaster Reduction (ISDR)
C. Corvalan	World Health Organization (WHO)
J. Neale	World Intellectual Property Organization (WIPO)
I. Also	African Centre of Meteorological Applications for Development (ACMAD)
L. Finke-Fictime	} Agency for Air Navigation Safety in Africa and Madagascar (ASECNA)
M. Sissako	
T. Mohr	Committee on Earth Observation Satellites (CEOS)
P. Counet	} European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)
T. Mohr	
G. Fleming	} International Association of Broadcast Meteorology (IABM)
T. Molina	
I. Niedek (Ms)	
J. Teather	
R. List	International Union of Geodesy and Geophysics (IUGG)
M. El-Sayed	League of Arab States (LAS)
M. Mbenga	Permanent Inter-State Committee on Drought Control in the Sahel (CILSS)
A. A. Diallo	Regional Training Centre for Agrometeorology and Operational Hydrology and their Applications (AGRHYMET)
K. Nitschke	South Pacific Regional Environment Programme (SPREP)

APPENDIX B

AGENDA

<i>Agenda item</i>	<i>Document No.</i>	<i>PINK No. and person submitting</i>	<i>Resolutions adopted</i>
1. ORGANIZATION OF THE SESSION		1, President of WMO	
1.1 Opening of the session			
1.2 Approval of the agenda	1.2(1); 1.2(2)		
1.3 Establishment of committees			
1.4 Programme of work of the session			
1.5 Approval of the minutes			
2. REPORTS			
2.1 Report by the President of the Organization	2.1	2.1, President of WMO	
2.2 Report by the Secretary-General	2.2	2.2, President of WMO	
2.3 Reports by the presidents of regional associations		2.3, President of WMO	
Report by the president of RA I	2.3(1)		
Report by the president of RA II	2.3(2)		
Report by the president of RA III	2.3(3)		
Report by the president of RA IV	2.3(4); 2.3(4), CORR. 1		
Report by the president of RA V	2.3(5)		
Report by the president of RA VI	2.3(6)		
2.4 Report of the Financial Advisory Committee	2.4	2.4, President of WMO	
2.5 Reports on the 2001 and 2002 Meetings of the Presidents of Technical Commissions		2.5, President of WMO	
Report on the 2001 Meeting of Presidents of Technical Commissions	2.5(1)		
Report on the 2002 Meeting of Presidents of Technical Commissions	2.5(2)		
2.6 Report of the Chairperson of the Intergovernmental Panel on Climate Change	2.6	2.6, President of WMO	1
3. WORLD WEATHER WATCH PROGRAMME			
3.1 WWW basic systems and support functions; the report of the president of CBS	3.1	3.1, chairperson, Committee A	
3.2 Instruments and Methods of Observation Programme; the in-depth report of the president of CIMO	3.2	3.2, chairperson, Committee A	
3.3 WMO satellite activities	3.3	3.3, chairperson, Committee A	
WMO Space Programme	3.3(2)	3.3(2), chairperson, Committee A	
3.4 Tropical Cyclone Programme	3.4	3.4, vice-chairperson, Committee A	
4. WORLD CLIMATE PROGRAMME			
4.1 World Climate Programme and its coordination	4.1(1); 4.1(1), REV. 1		
4.1.1 Report of the Executive Council Advisory Group on Climate and Environment	4.1(1)	4.1(1), chairperson, Committee B	
4.1.2 Report of the president of CCI; and the report of the thirteenth session of CCI	4.1(2); 4.1(2), ADD. 2	4.1(2), chairperson, Committee B	2
4.1.3 World Climate Data and Monitoring Programme	4.1(2)	4.1(2), chairperson, Committee B	

<i>Agenda item</i>	<i>Document No.</i>	<i>PINK No. and person submitting</i>	<i>Resolutions adopted</i>
4.1.4 World Climate Applications and Services Programme, including CLIPS and climate as a resource	4.1(2); 4.1(2), ADD. 1	4.1(2), chairperson, Committee B	
4.2 Coordination activities within the Climate Agenda			
United Nations Framework Convention on Climate Change	4.2(1)	4.2(1), chairperson, Committee B	
United Nations Convention to Combat Desertification	4.2(2)	4.2(2), chairperson, Committee B	
Convention on Biological Diversity	4.2(3)	4.2(3), chairperson, Committee B	
4.3 Global Climate Observing System	4.3	4.3, chairperson, Committee B	
4.4 World Climate Impact Assessment and Response Strategies Programme	4.4	4.4, chairperson, Committee B	
4.5 World Climate Research Programme	4.5	4.5, chairperson, Committee B	
Nomination of new members of the Joint Scientific Committee		4.5(2), President of WMO	
5. ATMOSPHERIC RESEARCH AND ENVIRONMENT PROGRAMME	5(1); 5(2)	5(1); 5(2), chairperson, Committee B	
5.1 Atmospheric Research and Environment Programme; the report of the president of CAS; and the report of the thirteenth session of CAS			3
5.2 Support to ozone and other environment-oriented conventions			
5.3 Global Atmosphere Watch			
5.4 World Weather Research Programme			
5.5 Tropical Meteorology Research Programme			
5.6 Programme on Physics and Chemistry of Clouds and Weather Modification Research			
6. APPLICATIONS OF METEOROLOGY PROGRAMME			
6.1 Public Weather Services Programme	6.1; 6.1, ADD. 1	6.1, vice-chairperson, Committee C	
6.2 Agricultural Meteorology Programme; the in-depth report of the president of CAgM	6.2; 6.2, ADD. 1	6.2, chairperson, Committee B	4; 5; 6
6.3 Aeronautical Meteorology Programme; the in-depth report of the president of CAeM	6.3	6.3, chairperson, Committee C	
Implementing a cost recovery framework for aeronautical meteorological services			
6.4 Marine Meteorology and Associated Oceanographic Activities Programme; the report of the co-president of JCOMM; and the report of the first session of JCOMM	6.4	6.4, chairperson, Committee C	7
7. HYDROLOGY AND WATER RESOURCES PROGRAMME	7(1); 7(2)	7, chairperson, Committee C	
7.1 Hydrology and Water Resources Programme; the report of the president of CHy			
7.2 Programme on Basic Systems in Hydrology			
7.3 Programme on Forecasting and Applications in Hydrology			

<i>Agenda item</i>	<i>Document No.</i>	<i>PINK No. and person submitting</i>	<i>Resolutions adopted</i>
7.4 Programmes on Sustainable Development of Water Resources and on Capacity Building in Hydrology and Water Resources			
7.5 Programme on Water-related Issues			
8. EDUCATION AND TRAINING PROGRAMME	8; 8, ADD. 1	8, chairperson, Committee C	
9. TECHNICAL COOPERATION PROGRAMME	9(1)	9, vice-chairperson, Committee C	
Report of the Executive Council Advisory Group of Experts on Technical Cooperation	9(2)		
10. REGIONAL PROGRAMME, INCLUDING THE REPORTS OF THE THIRTEENTH SESSIONS OF RA III (SOUTH AMERICA), RA V (SOUTH-WEST PACIFIC) AND RA VI (EUROPE)	10(1); 10(2); 10(3); 10(4)	10, chairperson, Committee C 10, vice-chairperson, Committee C	8; 9; 10
11. DISASTER REDUCTION ACTIVITIES	11	11, Secretary-General	
12. PROGRAMME AND BUDGET FOR THE FOURTEENTH FINANCIAL PERIOD (2004–2007)	12(1); 12(1), ADD. 1	12, President of WMO	
Key performance indicators for the fourteenth financial period (2004–2007)	12(2)		
13. MAJOR ISSUES FACING WMO			
13.1 Role and operation of NMHSs	13.1	13.1, President of WMO	
13.2 International exchange of data and products	13.2	13.2, President of WMO	
13.3 Cooperation with other disciplines and programmes	13.3	13.3, President of WMO	
14. LONG-TERM PLANNING			
14.1 Evaluation of the implementation of the Fifth WMO Long-term Plan	14(1); 14(2)	14, President of WMO	
14.2 Preparation of the Sixth WMO Long-term Plan	14(1); 14(3); 14(3), ADD. 1		
14.3 Report on the review of the WMO structure	14(1)		
15. COOPERATION WITH THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS			
15.1 United Nations		15.1, vice-chairperson, Committee B	11
Reports of the Joint Inspection Unit	15.1(1)		
Resolutions addressed to specialized agencies of the United Nations	15.1(2)		
15.2 Follow-up to the United Nations Conference on Environment and Development, including the activities of the United Nations Commission on Sustainable Development	15.2	15.2, vice-chairperson, Committee B	12
15.3 Specialized agencies and other international organizations	15.3(3)		
Draft working arrangements with the Caribbean Meteorological Organization and the International Committee for Weights and Measures	15.3	15.3, vice-chairperson, Committee B	

<i>Agenda item</i>	<i>Document No.</i>	<i>PINK No. and person submitting</i>	<i>Resolutions adopted</i>
Consultative status for the Association of Hydrometeorological Equipment Industry	15.3, ADD. 1		
Draft working arrangements with the Niger Basin Authority	15.3, ADD. 2	15.3, vice-chairperson, Committee B	
World Summit on Information Society	15.3(2)	15.3(2), vice-chairperson, Committee B	
Integrated Global Observing Strategy Partnership		15.3(3), vice-chairperson, Committee B	
16. INFORMATION AND PUBLIC AFFAIRS PROGRAMME	16	16, vice-chairperson, Committee B	
17. PROGRAMME SUPPORT SERVICES AND PUBLICATIONS			
17.1 Conferences	17.1	17.1, vice-chairperson, Committee B	
17.2 Publications	17.2	17.2, vice-chairperson, Committee B	
Languages	17.2(2)	17.2(2), vice-chairperson, Committee B	
17.3 Office automation and information technology support	17.3	17.3, vice-chairperson, Committee B	
18. GENERAL, LEGAL AND ADMINISTRATIVE MATTERS			
18.1 Forty-seventh International Meteorological Organization Prize	18.1	18.1, President of WMO	
18.2 Constitutional and regulatory matters			13; 14; 15; 16
Draft Memorandum of Understanding relating to common rules and procedures for JCOMM	18.2(1)	18.2(1), chairperson, Committee A	
Report of the Task Team to Explore and Assess the Possible Changes to the WMO Convention	18.2(2)	18.2(2), chairperson, Committee A	
Revision of the Rules of Procedure of the Executive Council	18.2(3)	18.2(3), chairperson, Committee A	
Changing the term "Association" for WMO regional bodies	18.2(4)	18.2(4), chairperson, Committee A	
Revision of Annex II to the General Regulations: Proposed replacement of the name "USSR"	18.2(5)	18.2(5), chairperson, Committee A	
Questions concerning the WMO Convention	18.2(6)	18.2(6), chairperson, Committee A	
18.3 Preparations for Fourteenth Congress	18.3	18.3, President of WMO	
18.4 Staff matters		18.4(1); 18.4(2); 18.4(3); chairperson, Committee A	
Report on staff appointments, nominations and transfers of staff in the Professional category and above		18.4(4), President of WMO	
Amendments to Staff Rules	18.4(1); 18.4(1), ADD. 1		
Decisions taken as a result of the recommendations of the Project Team on Human Resources including elements of review of current policy in respect to permanent contracts	18.4(2)		
Salaries of Ungraded Officials	18.4(3)		
Annual report of the International Civil Service Commission for the year 2001	18.4(4)		
Views of staff on their conditions of service	18.4(5)		

<i>Agenda item</i>	<i>Document No.</i>	<i>PINK No. and person submitting</i>	<i>Resolutions adopted</i>
18.5 Financial matters (including the report of the External Auditor)			17; 18
Consideration of the accounts for 2000–2002	18.5(1); 18.5(1), ADD. 1	18.5(1), chairperson, Committee A	
Consideration of the accounts for 2000–2001 for WMO projects financed from the United Nations Development Programme	18.5(2); 18.5(2), CORR. 1 18.5(2), ADD. 1	18.5(2), chairperson, Committee A	
Interim report of the Secretary-General on the financial and budgetary situation of the Organization for the biennium 2002–2003	18.5(3)	18.5(3), chairperson, Committee A	
Revision of the Financial Regulations	18.5(4)	18.5(4), chairperson, Committee A	
Annual report of the Internal Auditor	18.5(5)	18.5(5), chairperson, Committee A	
18.6 Designation of acting member(s) of the Executive Council	18.6	18.6, President of WMO	
18.7 Review of panels and other bodies of the Executive Council		18.7, President of WMO	
19. SCIENTIFIC LECTURES AND DISCUSSIONS	19	19, President of WMO	19
20. REVIEW OF PREVIOUS RESOLUTIONS OF THE EXECUTIVE COUNCIL	20	20, Rapporteur to Review Previous Resolutions of the Executive Council	
21. DATE AND PLACE OF THE FIFTY-FIFTH AND FIFTY-SIXTH SESSIONS OF THE EXECUTIVE COUNCIL		21, President of WMO	
22. CLOSURE OF THE SESSION		22, President of WMO	

APPENDIX C

LIST OF ABBREVIATIONS

ACC	Administrative Committee on Coordination
ACMAD	African Centre of Meteorological Applications for Development
ACSYS	Arctic Climate System Study
ADM	Alternative Dissemination Method
ADPC	Asian Disaster Preparedness Centre
AGRHYMET	Regional Training Centre for Agrometeorology and Operational Hydrology and their Applications
AMDAR	Aircraft Meteorological Data Relay
AMOSSG	Aerodrome Meteorological Observing Systems Study Group
AMP	Applications of Meteorology Programme
ANEEL	Brazilian Electricity Regulatory Agency
AOC-HYCOS	West and Central Africa Hydrological Cycle Observing System
AOPC	Atmospheric Observation Panel for Climate
ARCHISS	Archival Climatic History Survey Project
AREP	Atmospheric Research and Environment Programme
ARGO	Array for Real-time Geostrophic Oceanography
ASAP	Automated Shipboard Aerological Programme
ASEAN	Association of South-East Asian Nations
ASECNA	Agency for Air Navigation Safety in Africa and Madagascar
ASMC	ASEAN Specialized Meteorological Centre
AWS	Automatic Weather Station
BIPM	International Bureau of Weights and Measures
BMTC	Bureau of Meteorology Training Centre
CAeM	Commission for Aeronautical Meteorology
CAGM	Commission for Agricultural Meteorology
CARIB-HYCOS	Caribbean Hydrological Cycle Observing System
CAS	Commission for Atmospheric Sciences
CASPAS	Integrated Programme on Hydrometeorology and Monitoring Environment in the Caspian Sea Region
CASPCOM	Coordination Committee on Hydrometeorology and Pollution Monitoring of the Caspian Sea
CBD	Convention on Biological Diversity
CBS	Commission for Basic Systems
CCI	Commission for Climatology
CEB	United Nations System's Chief Executives Board for Coordination
CEMAC	Economic and Monetary Community of Central Africa
CEOS	Committee on Earth Observation Satellites
CGMS	Coordination Group for Meteorological Satellites
CHy	Commission for Hydrology
CICG	Geneva International Conference Centre
CIDA	Canadian International Development Agency
CILSS	Permanent Inter-State Committee on Drought Control in the Sahel
CIMO	Commission for Instruments and Methods of Observation
CIPM	International Committee for Weights and Measures
CliC	Climate and Cryosphere
CLICOM	Climate Computing
CLIPS	Climate Information and Prediction Services
CLIVAR	Climate Variability and Predictability
CMA	China Meteorological Administration
CMM	Commission for Marine Meteorology
CMO	Caribbean Meteorological Organization
COMET	Cooperative Programme for Operational Meteorology Education and Training
COP	Conference of the Parties
COSNA	Composite Observing System for the North Atlantic

CSD	Commission on Sustainable Development
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
DARE	Data Rescue
DBCP	Data Buoy Cooperation Panel
DIVERSITAS	International Programme of Biodiversity Science
DMC	Drought Monitoring Centre
EAMAC	African School of Meteorology and Civil Aviation
EART	Emergency Assistance Response Team
EC	Executive Council
ECE	Economic Commission for Europe
ECOSOC	Economic and Social Council
ECMWF	European Centre for Medium-range Weather Forecasts
EDRG	Emergency and Disaster Response Group
ENSO	<i>El Niño</i> /Southern Oscillation
EPS	Ensemble Prediction System
ESA	European Space Agency
ESCAP	Economic and Social Commission for Asia and the Pacific
ETR	Education and Training
EUMETNET	European Meteorological Network
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EUROCONTROL	European Organization for the Safety of Air Navigation
5LTP	Fifth WMO Long-term Plan
FAO	Food and Agriculture Organization of the United Nations
FRIEND	Flow Regimes from International Experimental and Network Data Set
GAW	Global Atmosphere Watch
GAWSIS	GAW Station Information System
GAWTECH	GAW Training and Education Centre
GCOS	Global Climate Observing System
GDPS	Global Data-processing System
GDSIDB	Global Digital Sea-Ice Data Bank
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GEWEX	Global Energy and Water Cycle Experiment
GLOSS	Global Sea-level Observing System
GMDSS	Global Maritime Distress and Safety System
GODAE	Global Ocean Data Assimilation Experiment
GOOS	Global Ocean Observing System
GOS	Global Observing System
GPCC	Global Precipitation Climatology Centre
GPS	Global Positioning System
GRDC	Global Runoff Data Centre
GSN	GCOS Surface Network
GTOS	Global Terrestrial Observing System
GTS	Global Telecommunication System
GTSP	Global Temperature and Salinity Profile Programme
GUAN	GCOS Upper-air Network
GURME	GAW Urban Research Meteorological Environment
HKH-HYCOS	Hindu Kush Himalayan Hydrological Cycle Observing System
HMEI	Association of Hydrometeorological Equipment Industry
HOMS	Hydrological Operational Multipurpose System
HRIT	High Rate Information Transmission
HWR	Hydrology and Water Resources
HWRP	Hydrology and Water Resources Programme
HYCOS	Hydrological Cycle Observing System
IABM	International Association of Broadcast Meteorology
IAEA	International Atomic Energy Agency

IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICSC	International Civil Service Commission
ICSU	International Council for Science
IDB	Inter-American Development Bank
IEG	International Environmental Governance
IFRC	International Federation of Red Cross and Red Crescent Societies
IGAD	Intergovernmental Authority on Development
IGBP	International Geosphere-Biosphere Programme
IGOS	Integrated Global Observing Strategy
IGOSS	Integrated Global Ocean Services System
IGRAC	International Groundwater Resources Assessment Centre
IHDP	International Human Dimensions Programme
IHO	International Hydrographic Organization
IHP	International Hydrological Programme
ILO	International Labour Organization
IMD	Indian Meteorological Department
IMMT	International Maritime Meteorological Tape
IMO	International Meteorological Organization
IMSO	International Mobile Satellite Organization
INFOHYDRO	Hydrological Information Referral Service
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
IPA	Information and Public Affairs
IPCC	Intergovernmental Panel on Climate Change
IPM & IS	Integrated Project for a Monitoring and Information System (CASPAS)
ISDR	International Strategy for Disaster Reduction
ISO	International Organization for Standardization
ITU	International Telecommunication Union
ITU-R	ITU Radiocommunication Sector
IUGG	International Union of Geodesy and Geophysics
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
JCOMMOPS	JCOMM In Situ Observing Platform Support Centre
JIU	Joint Inspection Unit
JMA	Japan Meteorological Agency
LAS	League of Arab States
LDC	Least Developed Country
LRIT	Low Rate Information Transmission
MCSS	Marine Climatological Summaries Scheme
MEDEX	Mediterranean Experiment
MED-HYCOS	Mediterranean Hydrological Cycle Observing System
MERCOSUR	Southern Cone Common Market
MONEX	Monsoon Experiment
MPERSS	Marine Pollution Emergency Response Support System
MTN	Main Telecommunication Network
NAOS	North Atlantic Ocean Stations
NASA	National Aeronautics and Space Administration
NBA	Niger Basin Authority
NCDC	National Climatic Data Center
NEPAD	New Partnership for Africa's Development
NESDIS	National Environmental Satellite, Data and Information Service
NHS	National Hydrological Service
NMC	National Meteorological Centre
NMHS	National Meteorological and Hydrological Service
NMS	National Meteorological or Hydrometeorological Service

NOAA	National Oceanic and Atmospheric Administration
NWP	Numerical Weather Prediction
OOPC	Ocean Observations Panel for Climate
OPAG	Open Programme Area Group
PAHO	Pan-American Health Organization
PROMET	Provision of Meteorological Information Required by Civil Aviation
PUMA	Preparation for the Use of Meteosat Second Generation in Africa
PWS	Public Weather Services
R&D	Research and Development
RA	Regional Association
RAFC	Regional Area Forecast Centre
RBCN	Regional Basic Climatological Network
RBSN	Regional Basic Synoptic Network
RCC	Regional Climate Centre
REDSO	Regional Economic Development Services Office
RIC	Regional Instrument Centre
RMDCN	Regional Meteorological Data Communication Network
RMTC	Regional Meteorological Training Centre
RMTN	Regional Meteorological Telecommunication Network
ROSHYDROMET	Russian Federal Service for Hydrometeorology and Environmental Monitoring
RSMC	Regional Specialized Meteorological Centre
RTH	Regional Telecommunication Hub
7LTP	Seventh WMO Long-term Plan
6LTP	Sixth WMO Long-term Plan
SADC-HYCOS	South African Development Community-Hydrological Cycle Observing System
SATCC	Southern African Transport and Communications Commission
SBSTA	Subsidiary Body for Scientific and Technological Advice
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
SCHOTI	Standing Conference of Heads of Training Institutions of National Meteorological Services
SEACAMP	South-East Asian Centre for Atmospheric and Marine Prediction
SI	International System
SIGWX	Significant Weather
SMC	Satellite Meteorological Centre
SOOP	Ship-of-opportunity Programme
SPARC	Stratospheric Processes and their Role in Climate
SPREP	South Pacific Regional Environment Programme
TCDC	Technical Cooperation among Developing Countries
TCO	Technical Cooperation
TCP	Tropical Cyclone Programme
TCP/IP	Transmission Control Protocol/Internet Protocol
THORPEX	The Observing System Research and Predictability Experiment
TMRP	Tropical Meteorology Research Programme
TOPC	Terrestrial Observation Panel for Climate
TRACECA	Transport Corridor Europe-Caucasus-Asia
TREND	Working Group on Training, the Environment and New Developments in Aeronautical Meteorology
UCAR	University Cooperation for Atmospheric Research
UNCCD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCSD	United Nations Commission on Sustainable Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change

UN-HABITAT	United Nations Human Settlements Programme
UN/OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UPU	Universal Postal Union
USAID	United States Agency for International Development
VAMOS	Variability of the American Monsoon System
VCP	Voluntary Cooperation Programme
VCP(F)	Voluntary Cooperation Fund
VOS	Voluntary Observing Ship
VOSClm	Voluntary Observing Ship Climate
VSAT	Very Small Aperture Terminal
WAFC	World Area Forecast Centre
WAFS	World Area Forecast System
WCASP	World Climate Applications and Services Programme
WCDMP	World Climate Data and Monitoring Programme
WCIRP	World Climate Impact Assessment and Response Strategies Programme
WCP	World Climate Programme
WCRP	World Climate Research Programme
WHO	World Health Organization
WHYCOS	World Hydrological Cycle Observing System
WIOMAP	Western Indian Ocean Marine Applications Project
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment
WRC	World Radiocommunication Conference
WSSD	World Summit on Sustainable Development
WWRP	World Weather Research Programme
WWW	World Weather Watch
