WORLD METEOROLOGICAL ORGANIZATION

FORTY-FOURTH
SESSION OF THE EXECUTIVE COUNCIL

GENEVA, 22 JUNE – 4 JULY 1992

ABRIDGED REPORT WITH RESOLUTIONS

Secretariat of the World Meteorological Organization - Geneva - Switzerland
1993
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GENERAL SUMMARY OF THE WORK OF THE SESSION

The Executive Council of the World Meteorological Organization held its forty-fourth session at the Geneva International Conference Centre from 22 June to 4 July 1992, under the chairmanship of Mr Zou Jingmeng, Administrator of the State Meteorological Administration of China and President of the Organization.

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 opened the session at 2:30 p.m. on 22 June 1992.

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

1.1.3 He extended a special welcome to the new acting member, Prof. J. Hunt, and to the new ex officio member, Ing. Jorge Ivan Valencia Franco. (Six additional acting members were later designated by the Council.)

1.1.4 The President paid tribute to the outgoing members of the Council, Dr F. Fantauzzo, Coronel C. A. Grezzi, Sir John Houghton, Prof. Yu. A. Izrael, Dr S. M. Kulshrestha, Dr H. Reiser, Mr J. Rugirangoga and Dr R. Tatehira, and thanked them for their contributions to the Council and to the Organization.

1.1.5 The President also noted that the session of the Executive Council was meeting almost immediately after the closure of the United Nations Conference on Environment and Development. He stressed the importance of full involvement of WMO in the follow-up to the Conference, particularly as regards the further development of the Convention on Climate Change. The views of the Executive Council in these respects would be sought. Council also had other important matters before it, including the Fourth Long-term Plan, the question of commercialization of meteorological and hydrological services and the problem of bridging the gap between developed and developing countries as well as the need to ease the financial constraints on the Organization. He was confident that Council would deal with those matters in its traditional co-operative and competent manner.

1.2 Approval of the Agenda (agenda item 1.2)

1.2.1 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 two working committees: Committee A to deal with administrative and legal matters (co-chaired by the Second Vice-President, Mr S. Alaimo, Ms E. Dowdeswell and Mr

E. Mukolwe); and Committee B to deal with programme and budgetary matters (co-chaired by the First and Third Vice-Presidents, Messrs J. W. Zillman and A. Lebeau respectively, and Dr A. Algain).

1.3.2 The Council also decided to establish sub-committees to consider specific items: a sub-committee for the report of the Joint ninth session of CAeM and the ICAO COM/MET/OPS Divisional Meeting, to be chaired by the president of CAeM, and a sub-committee for the selection of members of the Joint Scientific Committee for the WCRP, to be chaired by Dr R. L. Kintanar.

1.3.3 The Council also appointed Mr A. J. Dania as rapporteur to consider past resolutions of the Executive Council.

1.4 Programme of Work of the Session (agenda item 1.4)

1.4.1 The necessary arrangements concerning the working hours and the allocation of agenda items to plenary meetings, meetings of the Committee of the Whole and to the working committees were agreed.

1.5 Approval of the Minutes (agenda item 1.5)

1.5.1 The Executive Council decided to approve by correspondence those minutes of plenary meetings which could not be approved during the session.

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.

2.1.2 The Council was also pleased to note that the newly created Russian Federation had assumed all the rights and obligations of the former USSR vis-à-vis the Organization.

2.1.3 The Council confirmed the action taken by the President on its behalf under General Regulation 9 (7) on the following items:

- Approval of transfers between parts of the budget of the Organization for the biennium 1990–1991;
- Approval of a second supplementary estimate for Secretariat support to the Technical Co-operation Programme for the biennium 1990–1991;
- Postponement of implementation of Table D, level designator ii, in the annex to Recommendation 7 (CBS-Ext.(90)) – Amendments to the Manual on the GTS, Volume I, Global Aspects, Part II – Operational Procedures for the Global Telecommunication System;
- Authorizing the WMO Radiosonde Intercomparison in Japan in October 1992 and the corresponding necessary sessions of the International Organizing Committee.
2.2 REPORT BY THE SECRETARY-GENERAL (agenda item 2.2)

2.2.1 The Executive Council took note of the report by the Secretary-General and expressed satisfaction at its quality and comprehensiveness.

2.2.2 The Council noted the many positive achievements throughout the year, including the preparations for the United Nations Conference on Environment and Development (UNCED), support to the Intergovernmental Negotiating Committee on the Framework Convention on Climate Change and the eventual signing of the Convention at UNCED, as well as the development of the Global Climate Observing System (GCOS). It expressed serious concern, however, over the need to cut back on the scientific and technical programmes of the Organization because of the financial situation. The Council requested the Secretary-General to investigate how funds being generated internationally as a result of UNCED could be made available for WMO-related activities, principally in the areas of climate change.

2.2.3 The questions in the report requiring action or decisions are dealt with under the relevant agenda items.

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

2.3.1 The Council welcomed Latvia, Lithuania and Namibia as new Members of WMO and invited the Secretary-General to provide them with support, as appropriate, for the development of their national Meteorological and Hydrological Services.

2.3.2 The Council expressed its appreciation of the initiatives of the presidents of the regional associations who, as officers of the Organization, had undertaken visits to various Members to assist them in the strengthening of their meteorological and hydrological capabilities and in enhancing the visibility and image of the national Meteorological and Hydrological Services vis-à-vis the national authorities.

2.3.3 The Council welcomed the support provided so far under the WMO Natural Disaster Assistance Fund. In addition, it invited the Secretary-General to provide support, as appropriate, to the Meteorological and Hydrological Services of Cambodia, Ethiopia, Liberia and Somalia, which required urgent rehabilitation.

2.3.4 The Council noted with appreciation the further development of the regional specialized centres. In particular, it noted that the Drought Monitoring Centres based in Nairobi (Kenya) and Harare (Zimbabwe) for eastern and southern Africa had provided adequate advance warning of the current disastrous drought in those regions. It further noted that although the products were highly valued by the national authorities of the 21 participating countries as well as the wider international community interested in the region, the UNDP resources for the funding of the Centres had dwindled considerably. In this regard, the Council appealed to the donor community (in particular FINNIDA, which funded the first two phases of a development project in this region) and the Secretary-General to pursue their efforts to assist the national Meteorological Services of the Region so that they might provide the necessary information that could help mitigate the deleterious effects of the current droughts.

2.3.5 In view of the potential impacts of the El Niño-Southern Oscillation (ENSO) events of 1991-1992 in various regions, the Council invited Members to strengthen their activities related to research in tropical meteorology. The Council considered that improved understanding of this phenomenon was essential for the mitigation of the adverse effects of ENSO, such as droughts and floods.

2.3.6 The Council expressed concern that, in spite of much improvement made in the implementation of the various components of the WWW, on which all other WMO programmes depend, the network of observations, telecommunication and data-processing facilities still required improvements to support fully the overall WMO system. The high cost of consumables and spare parts had also made it difficult for some Members to implement and benefit fully from the WMO Programmes, resulting in a widening of the technology gap in meteorology between advanced and developing countries. In this regard, the Council requested the Secretary-General to reinforce his continuing efforts to assist Members, particularly developing countries, to overcome these impediments.

2.3.7 The Council noted that in some areas, such as the South Pacific and the Caribbean, there were many small island States in vast ocean expanses whose meteorological observations were of great importance to the overall observational network of WMO. The Council also noted with concern that those island States, especially those which were not Members of WMO, were facing difficulties in maintaining their observational programmes because of their economic situation. In order to ensure that the small island States continue to contribute significantly to the observational programme of WMO and to benefit from the availability of weather forecasts and, in particular, of tropical cyclone warnings, the Council requested the Secretary-General to take urgent steps to provide every possible assistance to arrest the further deterioration of their observational programmes. Furthermore, it agreed that ways should be explored to find an appropriate basis for those non-Member States to participate more actively in the activities of WMO.

2.3.8 The Council noted with concern the deterioration of Services in the southern part of Region IV. It recognized the adverse effects of such deterioration on the successful implementation of the WMO Programmes. However, it was pleased to note that the activities of the RA IV Hurricane Committee had contributed effectively to the improvement of warning services in the Region.

2.3.9 The Council noted with satisfaction that a number of Directors of national Meteorological and Hydrological Services had participated in UNCED, indicating the growing recognition by national authorities
of the role of their Services in matters related to environment and development. The outcome of UNCED relevant to the activities of WMO, particularly the Framework Convention on Climate Change and Agenda 21, would necessitate greater resolve of Members to enhance efforts in strengthening the basic infrastructure of the national Meteorological and Hydrological Services. There was an urgent need to build scientific capacity in climate monitoring and research to address climate change and other related environmental issues. The Council therefore urged Members to take every possible step towards achieving these goals. It expressed appreciation to the Secretary-General for keeping the Members fully informed on the UNCED process and requested him to pursue his efforts, particularly in matters related to follow-up action, especially resource availability, and accordingly provide every assistance possible to Members in their endeavours.

2.4 Report of the Financial Advisory Committee (agenda item 2.4)

2.4.1 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. The Council took account of these recommendations in making its decisions under the various related agenda items.

2.4.2 When considering Recommendation 1, the Executive Council was informed that the figures reflecting the decisions of Congress were provided to the plenary meeting of the Congress session just before the adoption of the resolution on maximum expenditure for the financial period. In approving Recommendation 1, the Council decided that paragraph 1.1 of the recommendation could best be implemented by inserting those figures appropriately in the later edition of the Long-term Plan.

2.4.3 The Council requested the Secretary-General to study the issues raised in Recommendations 2 and 3. The Financial Advisory Committee would review the results of the study and provide its recommendations on those matters to the forty-fifth session of the Executive Council for its decision.

2.5 Report on the 1991 meeting of presidents of technical commissions (agenda item 2.5)

2.5.1 The report on the 1991 meeting of presidents of technical commissions (Geneva/Evian-les-Bains, 21-23 November 1991) was presented by Dr J. W. Zillman, First Vice-President, who had chaired the session. The Council noted that the Informal discussions at Evian-les-Bains on the use of existing WMO observing systems in the programmes (including the Global Climate Observing System (GCOS)) and on the role of the technical commissions in the long-term planning process had resulted in a full exchange of information and views, and would assist in ensuring co-ordination between the technical programmes of the Organization.

The Use of Existing WMO Observing Systems in the Programmes of WMO (Including GCOS)

2.5.2 The Council noted the discussion of the recent developments towards the creation of a Global Climate Observing System (GCOS) and agreed that the relationship between the technical commissions and the WMO components of GCOS would need to be elaborated in the planning and development of the system. It endorsed the need for arrangements to be made to ensure a close relationship between the Joint Scientific and Technical Committee of GCOS (JSTC) and the technical commissions as well as between the JSTC, the Joint Scientific Committee (of WCRP) and the Scientific Advisory Committee (of the WCRP) and the technical commissions. Noting that the president of CBS was a member of the JSTC, the Council requested that he provide regular briefing to the presidents of technical commissions. This aspect was further discussed under agenda item 4.6.

Long-term Planning

2.5.3 The Council noted with satisfaction the wide-ranging discussion on both policy issues and developments in science and technology which might be taken into account in the preparation of the Fourth Long-term Plan. The presidents had reached several important conclusions among which were some calling for:

• Greater flexibility in the use of WMO technical and scientific structures;
• Strengthening of certain areas critical for providing support to issues of global importance;
• Regular review of WMO co-operation with intergovernmental groups in other geophysical sciences;
• Regular reviews of new trends in science and technology.

The Council further noted that the views of the presidents had already been taken into account by the EC Working Group on Long-term Planning.

Commercialization of Meteorological and Hydrological Services

2.5.4 The Executive Council heard with interest the views and concerns of the presidents regarding the trend towards the commercialization of meteorological and hydrological services. These mainly concerned the need to continue the existing provisions for the free exchange of basic data and the prospect of diminishing expertise in national Services available for international work. The Council requested the EC Working Group on the Commercialization of Meteorological and Hydrological Services to consider carefully the relevant section of the report of the presidents' meeting.

Education and Training Activities

2.5.5 The Council was pleased to note that the presidents had discussed their role with regard to the education and training activities of WMO. They endorsed the suggestion that the formal links between each of the technical commissions and the EC Panel of Experts on Education and Training should be strengthened.

International Decade for Natural Disaster Reduction (IDNDR)

2.5.6 The Council noted with interest the suggestions made by the presidents concerning further action which might be taken by WMO for the mutual benefit of the
IDNDR programme and the scientific and technical programmes of the Organization.

CO-ORDINATION OF THE WCP

2.5.7 The Council noted the interest of the presidents in the activities of the Advisory Committee on Climate Applications and Data (ACCAD), which provides the coordination mechanism between the World Climate Applications and Services Programme (WCASP) and the World Climate Data and Monitoring Programme (WCDMP). The Council endorsed their proposal that all eight presidents should be invited to participate in future meetings of ACCAD on the understanding that the sessions would be so organized as to minimize additional travel costs incurred through the increased participation.

COMMON ACCURACY REQUIREMENTS

2.5.8 The Council noted with appreciation the work being carried out to prepare an “across-the-commissions” statement on common accuracy requirements. It noted that this was a good example of the improvement in co-ordination between the commissions, which had improved markedly in recent years.

RECOGNITION OF OUTSTANDING SERVICE

2.5.9 The Council endorsed the suggestion to recognize formally outstanding and/or exceptionally long service by individuals to the activities of a technical commission and requested the presidents of the technical commissions to make the appropriate arrangements in consultation with the Secretary-General.

WIDER PARTICIPATION IN THE ACTIVITIES OF TECHNICAL COMMISSIONS

2.5.10 Finally the Council concurred with the view that there was a need to ensure a wider participation of Members (particularly developing country Members) in the activities of the technical commissions, and requested the Secretary-General to write to Ministers for Foreign Affairs drawing the attention of the competent authorities to the wide range of activities covered by the WMO technical commission system and the national co-ordinating role played by WMO Permanent Representatives, and encouraging greater national involvement in commission activities. The Council further requested the Secretary-General to emphasize the statutory aspects of Members’ participation in the work of the technical commissions and also to review the machinery for co-ordination between technical commissions and the regional associations with a view to rendering it more effective. The role of the regional offices in this regard was emphasized.

INTER-COMMISSION CO-ORDINATION

2.5.11 In conclusion, the Council emphasized the importance of the annual meetings of the presidents of technical commissions. There was increasing interaction between commissions and between programmes which called for frequent inter-commission dialogue and co-ordination so that they might continue to make their very great contribution to the work of the Organization, and even enhance their role in such areas as technology transfer, for which they were uniquely equipped.

GENERAL SUMMARY

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

2.6.1 The Executive Council expressed its appreciation of the report of the chairman of the IPCC. It applauded the Panel for completing the 1992 IPCC Supplement in time for presentation at the session of the Intergovernmental Negotiating Committee for the Framework Convention on Climate Change (INC) in February 1992.

2.6.2 The Council endorsed the view that the Panel should focus as an intergovernmental body on scientific-technical assessments of the various subject areas of the issue of climate change. The information base for the assessments would come from the monitoring, data analyses and research results of the World Climate Programme and other relevant scientific and technical programmes of the World Meteorological Organization and of other organizations such as ICSU, IOC, UNEP and OECD: duplication of efforts in these matters should be avoided.

2.6.3 The Council expressed the hope that the relationship between the IPCC and the Subsidiary Body on Scientific and Technical Advice under the United Nations Framework Convention on Climate Change (FCCC) would become clearer in the course of the next few months. The Council felt it to be absolutely necessary that the terms of reference of both the IPCC and the Subsidiary Body of the FCCC be established with clear interfaces to facilitate the work of both bodies. In the interim, the Directors of Meteorological and Hydrological Services, as appropriate, should endeavour to ensure the participation of appropriately qualified scientists in the working groups/sub-groups/task forces/ad hoc groups of the Panel. The Council requested the IPCC to adopt appropriate measures to ensure that the competent scientific and technical bodies of the WMO Members play a prominent role in the IPCC.

2.6.4 The Council was encouraged by the current efforts of the Panel to reorganize its structure in order best to accomplish its work with more balanced geographical representation. It cautioned that the scientific-technical integrity of the Panel should be preserved and enhanced in this context, and it stressed the importance of encouraging further participation of scientists/technical experts from the developing countries.

2.6.5 The Council took note of the relationship between the Interim FCCC Secretariat and the IPCC as expressed in paragraph 2, article 21, “Interim arrangements”, of the Framework Convention. It agreed that the Panel should endeavour to respond as promptly and comprehensively as possible to the need for objective scientific and technical advice envisaged therein.

2.6.6 The Council recognized that many of the IOC activities, such as CO2 studies and sea-level and marine pollution, closely relate to the interests of the IPCC and appreciated the expression of the readiness of IOC to consider a more formal involvement in the IPCC.
requested that the Secretary-General, in consultation with the Executive Director of UNEP, initiate relevant discussions with the Secretary of IOC.

2.6.7 The Council adopted Resolution I (EC-XLV) - Intergovernmental Panel on Climate Change.

3. World Weather Watch Programme (agenda item 3)

3.1 WWW Basic Systems and Support Functions; The In-Depth Report of the President of CBS (agenda item 3.1)

In-Depth Report of the President of CBS

3.1.1 The Executive Council noted with appreciation the in-depth report of the president of the Commission for Basic Systems and the progress made in the activities of the Commission. It noted in particular the action taken by the president to establish a CBS Working Group on Satellites, with the same composition and terms of reference as the EC Panel of Experts on Satellites, and an ad hoc Working Group on Radio Frequency Co-ordination, with representation of all other bodies concerned, and to appoint a Rapporteur on Public Weather Services. The Council also noted with appreciation the decision to organize a short technical conference during CBS-X in November 1992 on "Provision of weather services: Understanding user requirements".

3.1.2 The Executive Council fully recognized the very heavy and challenging responsibilities of CBS in planning, developing and integrating the basic systems, which would always be at the heart of all meteorological services and programmes, as well as the inadequacy of regular budget allocations for the Commission to carry out these activities effectively. The ever increasing complexity and sophistication of modern technology was such that far greater resources, in terms of expertise and funds, than were currently available to the Commission would be needed to ensure its full integration and application in the WWW system. While agreeing on the necessity of annual sessions of the CBS Advisory Working Group, the Executive Council requested the Commission to ensure that maximum use was made of existing resources, by seeking out imaginative and more efficient ways of conducting business and of planning and implementing the World Weather Watch. The Council also urged Members individually and collectively to consider new ways and means of providing extra-budgetary support to achieve the Commission's goals through, for instance, the provision of funds for specific projects, the secondment of experts and the establishment of consortia, as had been done for such activities as the GISE-North Atlantic and the development of ASDAR and ASAP. Some members considered it unfortunate that resort had to be made to extra-budgetary resources to finance basic activities of the Organization.

3.1.3 The Council stressed the increasingly important role of the WWW basic systems in underpinning GCOS and a range of other new environmental monitoring programmes in the follow-up of UNCED, and emphasized the resultant increased responsibility of Members to implement and maintain their contribution to WWW. At the same time the Council recognized the opportunity provided by the world-wide concern with climate and global change issues to harness additional resources for the implementation of WWW and other basic systems. It requested the Commission to review at its forthcoming session the concept of WWW basic systems in support of other WMO and non-WMO programmes. The Commission should recommend any desired changes in its terms of reference or in the organization and presentation of WWW basic system programmes in the post-UNCED era.

3.1.4 In this connection, the Council further recognized the need for the integration of data from various monitoring systems covering the atmospheric, oceanic and inland-water compartments of the environment and stressed the benefits to be gained by applying WWW standards and using WWW operational structures in the implementation of new observing systems.

Status of Implementation of the WWW

3.1.5 The Executive Council noted with appreciation that steady progress had been made in the implementation of the World Weather Watch, particularly in those parts of the system involving automation of other types of advanced technology. With regard to the Global Observing System, it was noted that automated observing systems on ships and aircraft were playing a greater role. However, concern was expressed at the apparent decrease in the implementation of conventional observing networks in some Regions. The Executive Council expressed its satisfaction that the regional associations were reviewing their respective regional basic synoptic networks to ensure that they represented true regional requirements with regard to density and homogeneity.

3.1.6 As regards the Global Data-Processing System, the Executive Council noted the considerable advances that had been made in its infrastructure and in the operational analysis and forecast systems of major centres. A total of ten centres now possessed, or had access to, supercomputers and a greater variety of more sophisticated models were in operational use. The Council was also pleased to note the efforts being made to develop the role of GDPS centres to include, firstly, the preparation and exchange of non-real-time products, especially those related to climate monitoring, and secondly, the monitoring of observational data quality. The Executive Council endorsed action being taken to develop specifications of minimum requirements for data-processing facilities at National Meteorological Centres.

3.1.7 The Executive Council was pleased to note that progress was being made in the implementation of the Global Telecommunication System (GTS) through the upgrading of GTS circuits and the automation of centres (Regional Telecommunication Hubs and National Meteorological Centres). Steady progress had been made in the introduction of X25 communication procedures enabling more efficient and flexible exchange of information. The capacity of the Main Telecommunication Network (MTN) had further increased, although three MTN circuits were still operating at low speed.

3.1.8 The efficiency and reliability of Regional Meteorological Telecommunication Networks (RMTNs)
had also improved through the use of satellite/cable leased circuits and with the growing introduction of satellite-based data collection and distribution systems as a complement to point-to-point circuits. The Executive Council noted, however, that a large number of circuits were still operating at low speed and that serious deficiencies still existed in some parts of the GTS, particularly in Regions I, III and IV. It noted with appreciation that a fundamental revision of the GTS structure in Region IV had been made, and that good progress was being made in the plan for the new RMTN based on two-way multipoint telecommunication services via satellite. The Council encouraged the development of enhanced GTS plans for Regions I and III and for other Regions, as appropriate, with a view to overcoming deficiencies in the present RMTN implementation, taking full advantage of the introduction of new techniques, particularly telecommunication services via satellite. The Council also encouraged Members to seek special arrangements with their telecommunication administrations to facilitate the implementation and leasing of national and international telecommunication links for meteorological activities.

3.1.9 The Executive Council was informed of progress made in the further development of the Data Management concept and in the gradual implementation of data management functions. The Council was particularly gratified to learn that Individual Members were becoming more actively involved in those activities. It encouraged the organization of implementation co-ordination meetings and training seminars as had been done in 1991.

3.1.10 The Council reviewed the results of the 1991 annual global monitoring of the operation of the WWW. It noted that the overall availability of SYNOP and TEMP reports was similar to that of previous years (about 65 per cent of expected reports). There was concern, however, that the availability of reports not only remained low but continued to decrease in some areas of Regions I and III.

3.1.11 The Council noted with satisfaction that the WMO Secretariat had successfully tested the processing of statistics of the 1991 global monitoring received from some monitoring centres on electronic media. Considering the potential benefit of this method, already demonstrated by the provision of more thorough analyses of monitoring results, the Council agreed to encourage its further development.

3.2 WWW SUPPORT FOR AND CO-ORDINATION WITH OTHER PROGRAMMES (agenda item 3.2)

ENVIROMENTAL EMERGENCY RESPONSE

3.2.1 WWW support for this activity was considered in the context of the report of the chairman of the EC Working Group on Environmental Emergency Response established by EC-XLI111 and which had met briefly during EC-XLIV. The Council noted with appreciation the report of the chairman, Prof. Yu. Izrael, which included a summary of the relevant activities of CBS, CHy, CAS, CMM and the Secretariat.

3.2.2 The Executive Council noted that a limited test of the joint WMO/IAEA response system to nuclear accidents had been successfully carried out in January 1992, and recommended that full tests be carried out regularly. The Council was gratified to learn that, in its evaluation of the system, IAEA had found that “the relationship between the Agency (IAEA) and the WMO supporting centre, METEO FRANCE, continues to be strong and important”. The Council was also informed that plans were being made for a regional European Tracer Experiment (ETEX) to be held in 1992/1994, which would focus on the validation and improvement of atmospheric transport models. The experiment would involve the planned release of an inert tracer to be sampled at over 200 synoptic stations.

3.2.3 As part of the assessment of the impact of the Kuwait oil fires, an expert meeting had also evaluated the efficiency of the International Community to react to the event, and made several proposals aimed at improving the response to similar disasters in the future. The Council noted the emphasis on WMO’s co-ordinating role, which had greatly facilitated the implementation of observing programmes, rapid communications and the availability of atmospheric model products and had provided the first assessment of the potential impact of the plume at the beginning of the event.

3.2.4 Noting the conclusions of the expert meeting, which had been endorsed by the EC working group, that a predefined mechanism was felt to be necessary in order to ensure a more rapid response, the Council agreed that this might be based on:

- The availability of an emergency response special fund,
- A list of experts, designated by Member States and covering a wide range of expertise, ready to react rapidly;
- Agreed criteria to trigger an international response;
- An a priori strategy for communications and data management;
- The identification of equipment and facilities available for future responses;
- The consideration of the transfer of technology as part of future responses;
- The appropriate liaison with other international organizations.

The Council therefore requested the technical commissions concerned to study the report and recommendations of the expert meeting and suggest appropriate action and activities that WMO might undertake in this regard. The importance of linking the above “mechanism” with the embryo UN Centre for Urgent Environmental Assistance was stressed and the Secretary-General was requested to take these proposals into account in his participation in the planning of the UN Centre.

3.2.5 In response to the request of the presidents of technical commissions, the Council agreed with the view of the EC working group that priority in WMO’s emergency response activities should be given to man-made disasters of a short-term nature. It also suggested that unless there were any urgent matters to consider, the working group need not meet until immediately before EC-XLVI (in 1994).
3.2.6 Finally, noting that Prof. Izrael was no longer serving as a member of the Executive Council and that that was the last occasion on which he would present a report of the EC Working Group on Environmental Emergency Response, the Council unanimously expressed its deep gratitude to him not only for his chairmanship of the working group, but for the outstanding contribution he had made over many years to the work of the Council and the Organization as a whole, which he had served in many capacities, including that of First Vice-President.

WORLD CLIMATE PROGRAMME

3.2.7 The Executive Council was pleased to note that apart from the long-standing arrangements for the preparation and transmission of CLIMAT and CLIMAT TEMP reports and for the organization of climatological station networks within the Global Observing System, new efforts were being made to increase the support and co-ordination of the WWW with the WCP. This was the case particularly in the area of data management, with rapporteurs from each of the relevant CCI and CBS working groups being fully involved in the work of the other, and in the application of GDPs products to climate monitoring in the Working Groups on the GDS and GTS considering the feasibility and means of disseminating global analysis fields.

3.2.8 Following the endorsement by Eleventh Congress of the concept of the Global Climate Observing System (GCOS) to be based partly on improved WWW systems, the Executive Council noted the positive view of the CBS Advisory Working Group that WWW was a tried and tested system which was continuing to develop and had the flexibility to meet the new challenges which GCOS might pose. As soon as the formal requirements for WWW support to GCOS were established CBS was ready to examine how best to meet them.

THE MARINE PROGRAMME

3.2.9 The Executive Council recognized that there were several areas of common concern to the CBS/WWW and the Programme for Marine Meteorology and Associated Oceanographic Activities. While co-ordination between WWW and the Integrated Global Ocean Services System (IGOSS) as regards observing and telecommunication facilities had been in place for many years, the Council noted with satisfaction that fresh initiatives were being taken to ensure adequate co-ordination and avoid duplication in the area of data management. WWW support was also ensured for the planned Global Ocean Observing System to be undertaken by IOC in collaboration with WMO, which would be composed, in part, of voluntary observing ships and drifting buoys and which would require the use of the GTS for operational data and information exchange.

GLOBAL ATMOSPHERE WATCH (GAW)

3.2.10 The Council noted with satisfaction the support of the WWW/GTS for the dissemination in quasi-real time of the evaluation of the state of the stratospheric ozone over Antarctica during the austral spring of 1991. Furthermore, the Council noted that the CBS Advisory Working Group had agreed that WWW would provide support to the extent possible as and when the requirements became known.

EXCHANGE OF SEISMIC DATA OVER THE GTS

3.2.11 The Executive Council noted that studies were continuing within CBS, and in co-ordination with the ad hoc Group of Experts of the Conference on Disarmament, on the exchange and processing of seismic data, especially Level II data, over the GTS. It was noted, in particular, that earlier concern about the impact of such potentially large volumes of data on some GTS circuits and RTHs had abated somewhat with the decision of several seismic centres to use alternative means of data exchange, e.g. public data networks.

RADIO FREQUENCIES FOR METEOROLOGICAL SERVICES

3.2.12 The Executive Council was informed that action had been taken by the president of CBS, as authorized by EC-XXXIII, to establish the ad hoc Working Group on Radio Frequency Co-ordination, comprising representatives of CBS, CAeM, CIMO, CMM, CAS, and CGMS, to consider and co-ordinate radio-frequency matters pertaining to a wide variety of meteorological activities. In this connection, the Executive Council noted with concern the strenuous efforts being made to allocate new public radiocommunication services to frequency bands presently allocated to meteorological services, as was clear from the decisions of the ITU World Administrative Radio Conference in 1992. The Council stressed that the allocation of adequate radio frequencies to meteorological activities was crucial for WMO Programmes, and agreed that greater efforts should be devoted to radio-frequency matters in order to safeguard the interest of the meteorological community. The Council recognized that the issues to be dealt with were of a long-term nature and requested CBS to consider at its forthcoming tenth session how best to deal with these matters in the future.

REGIONAL PROGRAMMES

3.2.13 The Executive Council was pleased with the growing collaboration between CBS and the regional associations through their Working Groups on WWW Planning and Implementation. One of the main activities being undertaken by the Members of Regional Association I and CBS was the Operational WWW Systems Evaluation for Africa (OWSE-AF), the purpose of which was to examine the possibilities for using the capabilities of EUMETSAT to improve meteorological communications in Africa. Phase I, which began in 1990 and was completed in March 1992, had focused on the collection of observational data through the use of data collection platforms (DCPs) and data retransmission systems (DRSs).

3.2.14 It was noted that Phase I of the evaluation had demonstrated that: (a) the use of DCPs and DRSs could substantially improve the availability of observational data from and within Region I; and (b) substantial effort was still required to ensure the long-term continuation of certain facilities necessary for the implementation phase. Such facilities would constitute a centralized
3.2.15 It was further noted that Phase II of OWSE-AF, which was due for completion at the end of 1992, focused on the METEOSAT meteorological data distribution (MDD) mission for the distribution of meteorological data and products. A preliminary evaluation had demonstrated the availability in Africa of processed information from Regional Specialized Meteorological Centres and Regional Area Forecast Centres. This had facilitated the provision of improved services to users.

3.2.16 The Executive Council felt that following the excellent results of Phase I, full-scale implementation of DCPS and DRSs in Region I should start immediately. The implementation of the MDD should begin as soon as possible after the completion of Phase II. The Council therefore urged Members of RA I and donor Members to begin planning for a fully operational system to be implemented in the Region. The plans should include arrangements for centralized management and technical maintenance facilities. Arrangements should also be made to ensure the co-ordination of equipment installation. All Members, especially donor countries, were encouraged to support the implementation of the operational system, which would be for the benefit of all.

3.2.17 Finally, the Executive Council noted the continuing activities of the Co-ordination Group for the Composite Observing System for the North Atlantic (CGC) and recognized the need to ensure co-ordination of these activities with those of relevant CBS working groups. The Council commended the Members participating in the CGC for undertaking this programme as a follow-up to the completed OWSE-North Atlantic, which would certainly contribute to the improvement of observing networks in all Regions, and urged other Members to consider joining the Group.

3.3 INSTRUMENTS AND METHODS OF OBSERVATION PROGRAMME; THE REPORT OF THE PRESIDENT OF CIMO (agenda item 3.3)

3.3.1 The Executive Council noted with satisfaction the report of the president of the Commission for Instruments and Methods of Observation (CIMO) summarizing the activities of CIMO since EC-XLIII.

3.3.2 The Council expressed its satisfaction with the progress of the Instruments and Methods of Observation Programme (IMOP), noted with appreciation the support given by several WMO Members and individuals to this programme and encouraged them to continue this active work.

3.3.3 The instrument comparisons carried out by CIMO continue to be important for documentation and world-wide standardization of instruments and methods of measurement. They are an important source of data for Members and instrument manufacturers for identifying required improvements in performance of instruments. They also contribute substantially to the production of homogeneous data sets. The Executive Council felt that the direct involvement of designers and producers of meteorological and geophysical instru-
assist in the work of both. In this particular case, the representation by Regional Association I on the Advisory Working Group is expected to facilitate the transfer of technology and ensure that the critical issues of developing countries are suitably represented in CIMO.

3.3.9 The Council recognized the great value of arranging technical conferences of CIMO as forums for the exchange of experience, for the presentation of new and cost-effective methods of measurements and for technology transfer. The Council expressed its appreciation to the Meteorological Service of Austria for organizing TECO-92 and the parallel exhibition of meteorological instruments METEOREX-92. TECO-92, held in Vienna from 11 to 15 May 1992, had been attended by 220 participants and 91 papers were presented orally or in poster sessions. All papers presented at TECO-92 were published prior to the conference in the Instruments and Methods of Observation Report series, which was distributed to all CIMO members.

3.3.10 The Council thanked the UK for opening its courses for training of instrument specialists to personnel from developing countries and urged that other Members with similar programmes and facilities make them available for the training of candidates from developing countries.

PROFESSOR DR VILJO VAISALA AWARD

3.3.11 The Council, at its thirty-seventh session, had agreed to establish a trust fund and approved guidelines to be used for the conferment of the Professor Dr Vilho Vaisala Award for the best scientific paper on meteorological instruments and methods of observation. Six papers were received for the seventh award in 1992. The Selection Committee of the Council, composed of Messrs Yu. Zubov (Russian Federation), E. Friday (USA), and the president of CIMO, recommended that Messrs D. I. Griggs, D. W. Jones, M. Ouldridge and W. R. Sparks (United Kingdom) should receive the seventh Professor Dr Vilho Vaisala Award for the paper "The First WMO Intercomparison of Visibility Measurements" published in the Instruments and Observing Methods Report No. 41, WMO/TD-No. 401. The proposal of the Selection Committee was approved by the Council.

3.3.12 The Council noted with appreciation the offer of Vaisala Oy (Finland) to transfer an additional US $50 000 to WMO to supplement the Vaisala Award Trust Fund. This should provide the opportunity for better recognition of the performance of scientists in the field of instrumentation and methods of observation.

3.3.13 The Council decided that the additional capital entrusted to WMO should also be invested by the Secretary-General in first-class securities. It had decided that the monetary prize financed by the Vaisala award Trust Fund should be increased to US $5 000 for the winner(s) starting in 1992. In addition a medal would be presented to the winner(s). The amended "Guidelines to be used for the granting of the Professor Dr Vilho Vaisala Award", originally established by EC-XXXVII, are attached as Annex II to this report.

3.4 WMO SATELLITE ACTIVITIES (agenda item 3.4)

EC PANEL OF EXPERTS/CBS WORKING GROUP ON SATELLITES

3.4.1 The Executive Council noted with appreciation the report of the chairman of the EC Panel of Experts/ CBS Working Group on Satellites which had met in Geneva, 16–20 March 1992. It noted that the panel/WG had focused on six topics: development of a short-list of satellite data requirements, contingency planning, a consolidated report from the panel/WG, education and training with regard to the use of satellite data in all WMO Programmes, reports from rapporteurs and the transition from an EC panel to a CBS working group.

3.4.2 The Executive Council was pleased to learn that the tenth session of the panel/WG had prepared a short-list of WMO satellite data requirements based on input from the technical commissions and that the list was being reviewed by the commissions prior to its submission to EC-XLV for approval. The Council welcomed the development of the short list, which would provide useful guidance to satellite operators. It asked that the list be kept under review in the light of new developments including other observational techniques and taking due account of the costs involved. The Council also endorsed a list of satellite service requirements as follows and requested CBS to review the list with a view to its inclusion in the Guide and Manual on the GOS:

**Polar orbit:**
- Full-resolution Imagery – HRPT
- Low-resolution Imagery – LRPT
- Direct Sounding Broadcast – DSB
- Data Collection System – DCS

**Geostationary orbit:**
- Full-resolution imagery – S-VISSR
- Low-resolution imagery – LRIT
- Direct Sounding Broadcast – DSB
- Telecommunications – MDD (for example)
- Data Collection System – DCS

3.4.3 The Executive Council reviewed a draft statement of WMO requirements for continuity of the space-based portion of the GOS and stressed the importance of continuity of satellite data for all WMO Members. It noted that the satellite operators would develop detailed specifications for contingency planning and that it was thus appropriate for WMO to articulate its requirement for continuity of the space-based portion of the GOS. The Council felt it important that contingency plans, including long-term (ten years), should be developed by the satellite operators. The Executive Council endorsed the statement of requirements which is given in the Annex III to this report.

3.4.4 Procedures and guidance enabling any Member to perform cost/benefit analyses of new satellite sensors and their impacts would be valuable. The Executive Council suggested that CBS might wish to add such a task to the terms of reference of the Working Group on Satellites.

3.4.5 The Executive Council, in noting the importance of education and training for better utilization of satellite technology and ensure that the critical issues of developing countries are suitably represented in CIMO.
data, agreed with the proposed strategy for improving the education and training in satellite applications for WMO Programmes through training of instructors at the RMTCs in order to provide “on-the-spot training”. The panel was further invited to consider training mechanisms for hydrological personnel. The Executive Council noted that the panel would be submitting a report for implementing the proposed strategy to EC-XLV. The Council supported the concept and looked forward to the report.

3.4.6 The Executive Council noted and endorsed the conclusions that:

(a) Direct readout services from meteorological satellites are essential, and satellite operators were urged to continue these services;
(b) The recent joint NOAA/EUMETSAT/WMO Workshop on Wind Extraction from Operational Meteorological Satellite Data had been effective in providing a forum to help improve wind quality and assist wind users in their effective application. Further activity of this form was encouraged.
(c) The continued free access of satellite data was vitally important to all WMO Members;
(d) Increased utilization of satellite data in developing countries could be achieved by the procurement of PC-based ground receiving and workstations, possibly with funds from the Voluntary Co-operation Programme. (The Executive Council noted that a database of vendors who manufacture and sell satellite ground receiving equipment was available in the Secretariat to all WMO Members);
(e) There should be more frequent meetings of the EC Panel of Experts/CBS Working Group on Satellites, at least once a biennium. The next meeting should be held in the second biennium, subject to the availability of funds.

3.4.7 The Executive Council decided that CEOS and CGMS should be invited, as observers, to future sessions of the Executive Council and Congress.

3.4.8 The Executive Council noted with satisfaction the progress towards the transfer of responsibilities from an EC Panel of Experts on Satellites to a CBS Working Group on Satellites. It agreed that it should await the outcome of the deliberations of CBS-X on this matter.

3.5 TROPICAL CYCLONE PROGRAMME (agenda item 3.5)

3.5.1 The Executive Council noted with satisfaction the intensification of activities related to tropical cyclone disaster reduction being carried out by the Tropical Cyclone Programme (TCP) in association with the International Decade for Natural Disaster Reduction (IDNDR).

3.5.2 The Council recalled that a special meteorological project entitled "Tropical Cyclone Warning System for the South-West Indian Ocean Region" set out in the WMO Plan of Action for the IDNDR had been adopted by Eleventh Congress. The objective of the project is to upgrade the tropical cyclone warning system substantially in the south-west Indian Ocean region through the application of meteorological satellite and microcomputer technology and the transfer of scientific knowledge. The Council was pleased to learn that an RA I Roving Training Seminar on Tropical Cyclone Forecasting had been organized by WMO in Maputo (Mozambique) from 28 October to 1 November 1991 for English-speaking countries and in St. Denis (Réunion) from 4 to 8 November 1991 for French-speaking countries respectively, within the framework of the above TCP project for the IDNDR. Noting the achievement of the seminars' objectives of human resources development and providing support to transfer of technology, the Council felt, however, that further training of tropical cyclone forecasters was critical for effective tropical cyclone warning services in the South-West Indian Ocean region. It accordingly invited the Secretary-General to take steps, within the limits of available budgetary resources, towards implementation of the following recommendations:

(a) Roving lecture services on specific subjects, e.g. Dvorak technique, tropical cyclone structure, motion tracking and intensity, storm surge, Australian Tropical Cyclone Workstation (ATCW), radar data analysis, etc., to be organized by WMO for the island countries of the South-West Indian Ocean during the off-cyclone season;
(b) Attachments or study tours to be arranged for tropical cyclone forecasters from the region to the cyclone warning centres in RÉunion, Madagascar and Mauritius and to advanced centres outside the region such as the RSMC Miami - Hurricane Center, the Australian Tropical Cyclone Warning Centres and ACMAD;
(c) A ten-day duration regional training workshop on tropical cyclone forecasting with interpretation services in English and French to be organized by WMO at a centre within the region during the current financial period.

It also requested the Secretary-General to initiate investigations in relation to the seminar's recommendation on the possibility of a training course for senior tropical cyclone forecasters of the southern hemisphere during their off-cyclone season, i.e. May to October.

3.5.3 Recognizing the importance of the two-week duration RA IV Workshops on Hurricane Forecasting and Warning at the RSMC Miami - Hurricane Center, the Council noted the intent to provide partial support for a workshop in 1993 from the current budget and requested Members to provide the additional support required. It also noted the crucial global importance of the ten-week Training Courses on Tropical Meteorology and Tropical Cyclone Forecasting at the RSMC Miami - Hurricane Center and the University of Miami. The Council requested the Secretary-General to make every effort to seek extra-budgetary resources for continuation of this course.

3.5.4 The Council noted with appreciation the work carried out by the RA V Tropical Cyclone Committee, in accordance with its terms of reference as set out in Resolution 11 (X-RA V), for accelerating action to reduce the loss of human life and damage caused each year by tropical cyclones and associated phenomena in the South Pacific and South-East Indian Ocean. It recognized the involvement in the work of the committee and
the consequential benefits obtained by seven non-Members of WMO (Cook Islands, Kiribati, Niue, Tokelau, Tonga, Tuvalu and Western Samoa) which are all small island States or territories with small populations and economies. The Council felt that, to promote the mutually beneficial regional co-operation and for humanitarian reasons, continuation of such involvement should be encouraged. It therefore supported participation of experts designated by these non-Members in biennial sessions of the committee. The Council was pleased to learn that the Overseas Development Administration (ODA) of the UK was considering providing some support for their participation in the session.

3.5.5 The Council recalled the request of Eleventh Congress that further steps be taken to strengthen co-ordination among the regional tropical cyclone bodies, e.g. through meetings organized in a cost-effective way, which would also facilitate exchange of experience, consideration of items of mutual concern and inter-regional co-operation. It thanked the Government of Thailand for hosting the first joint session of two regional bodies, the Panel on Tropical Cyclones and the Typhoon Committee (Pattaya, Thailand, 18–27 February 1992). The Council expressed its appreciation to Japan for offering to host a Technical Co-ordination Meeting on Operational Tropical Cyclone Forecasting and Dissemination of Results by RSMCs (Tokyo, Japan, 16–21 December 1992).

3.5.6 The Council noted the thrust of the TCP in the WMO Plan of Action for the IDNDR on development of public information, education and awareness regarding tropical cyclones and warning systems and on promoting human response to warnings, as well as on promoting regional and international co-operation and co-ordination to strengthen the warning systems and to mitigate cyclone disasters. It accordingly agreed that WMO should cooperate with the World Tourism Organization (WTO) in a project on the preparation of a handbook on natural disaster reduction in tourist areas. The Council noted that the aims of the publication were to offer practical advice on the protection of tourist development and resorts, especially in developing countries, from the consequences of natural climatic disasters. It agreed that the TCP should take the leading role within WMO in the implementation of the project, in co-operation with the Hydrology and Water Resources (HWR) and the World Climate Applications and Services (WCAS) Programmes.

3.5.7 The Council appealed to VCP donor Members and other potential donors to increase the support provided to cyclone-prone Members, as needed, within the framework of TCP activities and in association with IDNDR.

4. WORLD CLIMATE PROGRAMME (agenda item 4)

4.1 WORLD CLIMATE PROGRAMME AND ITS CO-ORDINATION; THE IN-DEPTH REPORT OF THE PRESIDENT OF CCI (agenda item 4.1)

COMMISSION FOR CLIMATOLOGY

4.1.1 The Executive Council noted with appreciation the in-depth report of the president of CCI, including his report as the chairman of the Advisory Committee on Climate Applications and Data (ACCAD). It noted the recommendations given by the first session of ACCAD (19–20 November 1991), especially those concerning the relationship between the World Climate Applications and Services Programme (WCASP) and the World Climate Impact Assessment and Response Strategies Programme (WCIRP), calling due attention to the applications of knowledge of current climate as a prerequisite for climate-change impact assessments, and stressing the need to promote the involvement of national Meteorological Services in national climate-related sectorial networks. In this connection, the Council emphasized the need for further development of adequate systematic training, in particular in data processing, climate monitoring and impact assessment.

4.1.2 The Council agreed with the view of ACCAD and the subsequent meeting of the presidents of technical commissions that sessions of ACCAD should be attended by presidents of all technical commissions and that presidents of at least some regional associations should be invited, as appropriate, to attend the ACCAD sessions. It also agreed that participation of representatives of such international organizations as UNEP, UNESCO and its IOC, ICSU and FAO was essential to ensure an interdisciplinary approach to the implementation of the World Climate Data and Monitoring Programme (WCDMP) and the World Climate Applications and Services Programme (WCASP).

4.1.3 The Council confirmed the role of the Commission for Climatology as the parent body of ACCAD and at the same time wished to confirm its request in Resolution 6 (EC-XLI) that the president of CCI submit, as chairman of ACCAD, a report to each session of the Executive Council.

4.1.4 The decisions of the Council on specific matters concerning the WCIRP and the WCASP discussed in the report of the president of CCI were recorded under agenda items 4.2 and 4.3 respectively.

WORLD CLIMATE PROGRAMME AND ITS CO-ORDINATION

4.1.5 The Executive Council noted with satisfaction that appropriate arrangements continued to be made by the Secretary-General for meetings and consultations of the Executive Heads of agencies involved in climate-related issues. It also appreciated the increased involvement of funding and developmental agencies and of those dealing with energy matters in those meetings and consultations.

4.1.6 The Council noted that, according to the decision taken by Eleventh Congress, the first session of the Coordinating Committee on the World Climate Programme (CCWCP) had been convened on 4 and 5 May 1992 by the Secretary-General. It also noted and endorsed specific recommendations by the committee regarding co-ordination between advisory/scientific bodies for the WCP components and between components themselves. It encouraged further enhancement and strengthening of linkages of WCP with other related activities and bodies, such as IPCC, IGBP and activities related to the Framework Convention on Climate Change.

4.1.7 With respect to the terms of reference of the CCWCP, the Council agreed that education and training...
aspects and those of participation of developing countries in the WCP should be included. It noted with appreciation that the CCWCP devoted attention to these issues and stressed that they should receive an even more significant place in the committee's deliberations since the credibility and success of the WCP as a whole depend to a great extent on how these issues are treated. The Council further considered that every effort should be made to ensure participation, as appropriate, of experts from developing countries in the work of the CCWCP.

4.1.8 The Council noted with appreciation that, as decided by Eleventh Congress, the Secretary-General had initiated, in consultation with Executive Heads of other agencies, preparations for the intergovernmental meeting (IGM), to review means for co-ordination of the WCP and to consider appropriate means for the provision of adequate resources for the WCP and associated activities such as GCOS. It considered recommendations made by the CCWCP on the preparation and programme of the intergovernmental meeting for the WCP and requested that they be taken into full account in further preparatory work. In particular, the Council endorsed the view of the CCWCP on the presentation of the WCP and National Climate Programmes at the IGM. It was agreed that the programme for the meeting should include an overview of the WCP and its role in the socio-economic development issues and concise presentations of achievements within the WCP components, current plans for further implementation, their expected socio-economic benefits and estimates for the resources necessary to carry them out. Sufficient time in the programme might well be devoted to a representative sampling of national climate-related activities and/or National Climate Programmes (NCP).

4.1.9 The Council reaffirmed the objectives of the IGM as established by Congress "to review the means of co-ordination of the WCP and to consider appropriate means for the provision of adequate resources for the WCP and associated activities such as GCOS" and proposed that in the light of the conclusion of the Framework Convention on Climate Change and UNCED the meeting should be organized in such a manner as to indicate also to governments how the WCP could address the questions to which governments needed answers in the further development of their response to the issue of climate change.

4.1.10 The Council reaffirmed the vital importance of the IGM and considered that the meeting should be viewed as a vehicle for achieving even more explicit recognition by governments of the vital role of the World Climate Programme as a basic scientific and technical programme in support of the implementation of the Framework Convention on Climate Change and of the relevant parts of Agenda 21. The Council recognized that the projects within the WCP components, especially those within the WCRP and WCDMP, together with the development of the Global Climate Observing System, would serve to reduce uncertainties in projecting future climatic regimes on the global and regional scales by enhancing knowledge of climate and of its variability and changes. Further, the World Climate Impact Assessment and Response Strategies and the World Climate Applications and Services Programmes will provide the basis for evaluation of the impact of climate and climate change and for the identification of appropriate response strategies of nations, in particular through indigenous capacity building, and by the international community.

4.1.11 The Council took note of action taken by the Secretary-General, in co-operation with the Executive Heads of UN, UNEP, UNESCO and its IOC, and FAO on the preparations for the IGM. In this respect, the Council wished once again to underscore the need to make available whatever is necessary, on an inter-agency basis, to achieve the best possible outcome of this crucial event. The Council requested the Secretary-General to mobilize, for this purpose, available resources of the WMO Secretariat and to continue negotiating for potential support by other agencies and by the Members.

4.1.12 The Council further requested the Secretary-General, in consultation with the Executive Heads of agencies involved in climate, to establish an organizing committee, including government representatives, a chairman and a full-time secretariat to prepare for the meeting. It was of the view that the organizing committee should develop, as early as possible, a draft agenda taking into account appropriate representation of all components of WCP and seek the views of governments on the actual structure of the meeting. The Council recommended that the Secretary-General seek the support of Members in the form of resources — both people and money — for the organization of this essential meeting.

4.1.13 With respect to the timing of the IGM, the Council recalled that its members had been consulted by the Secretary-General on this matter. It considered that, taking into account the view of the Executive Heads, it would be advisable to hold the IGM in the first half of 1993. It also considered that the meeting should be held early enough in 1993 to allow adequate lead time for appropriate action by the forty-fifth session of the Executive Council. The Council noted with appreciation the action taken by the Secretary-General to inform Members of the dates of the IGM (14–16 April 1993).

4.1.14 Resolution 2 (EC-XLIV) — Intergovernmental Meeting on the World Climate Programme — was adopted.

4.1.15 The Council considered that the entry into force of the Framework Convention on Climate Change and the adoption by UNCED of Agenda 21 would require the implementation of a number of additional activities within existing WMO Programmes, in particular the World Climate Programme, with the active participation of national Meteorological and Hydrological Services. Improvements would be needed in a number of areas, including functioning of observing systems, monitoring, the establishment and maintenance of archives and telecommunication networks, the development of climate models, and training of high-level scientific staff. Particular attention should be given to the full
and proper functioning of the Global Climate Observing System in all geographical areas of the world.

4.1.16 The Council further considered that in order to facilitate the task of collecting and processing all the data relating to the climate system as a whole and research on climate, it might be necessary for WMO, over and above the efforts of each country's NMS and NHS, and in consultation with the other competent intergovernmental organizations, to consider the development of a network of Regional Climate Centres. This network would be based, where possible, in existing centres. Establishment of new centres should be considered where these do not exist and where considered necessary. Centres included in the network should be suitably equipped for the storage of all the regional data and conducting research into climate changes and their possible implications, and should be linked with the National, Regional and World Meteorological Centres. The Council believed that the development of the network would strongly support the leading role of WMO and national Meteorological Services in the climate issues and would help to avoid duplication of efforts in data collection and research at the national level. It requested the Secretary-General to submit a report on the feasibility of the network to EC-XLIV.

4.1.17 The Executive Council requested that the relevant commissions (CBS, CCI, CHY and CAGM) should address this issue in order to achieve the objectives of the World Climate Programme in the light of the outcome of UNCED. Their consolidated recommendations should be presented to governments as quickly as possible before the Intergovernmental meeting called for April 1993 so that they can consider the resources needed to support the World Climate Programme and the Global Climate Observing System.

4.2 World Climate Data and Monitoring Programme (agenda item 4.2)

4.2.1 The Council noted the continued progress and expansion of the World Climate Data and Monitoring Programme. It expressed satisfaction that the president of CCI had established and convened a meeting of the Working Group on Climate Change Detection requested by EC-XLIII after endorsement by Eleventh Congress. The Council also noted the progress in the activities of the Working Group on Climate Data.

CLICOM/INFOCLIMA

4.2.2 With respect to the CLICOM project, the Council noted with satisfaction the continued expansion of CLICOM throughout the WMO Members' Services. It was noted that 104 WMO Members had a CLICOM system; 85 countries were regularly using CLICOM to create climatological data archives and more than one-half of these countries produced climatological products routinely. The Council strongly urged Members to continue to build long-term retrospective data sets and applications products using CLICOM and to contribute to the exchange and dissemination of these data and products.

4.2.3 The Council expressed its appreciation to the many donors which had made the further recent dissemination, installation and improvements to CLICOM possible, including Chile, Finland, France, Kenya, Malaysia, Mexico, the United Kingdom and the United States. The Council particularly noted the development of the new 3.0 version of CLICOM software in the USA. It strongly supported the dissemination of this software throughout the WMO user community. The Council recommended, however, that the dissemination and installation of version 3.0 should be carried out in such a manner as to avoid an interruption to current operational activities as far as possible.

4.2.4 The Council reaffirmed its endorsement, shared by ACCAD, of the concept of Area Support Centres for CLICOM and welcomed the first efforts to establish such a centre in Malaysia to support Regions II and V. It recommended that this activity should be spread into all WMO Regions, with the help of the regional associations. The Council considered that funds for this purpose should be sought from extra-budgetary sources such as aid agencies of some donor countries, UNDP and UNEP.

4.2.5 The Council noted the need for improvements to the hardware of the CLICOM system, especially in regard to efficient use of the CLICOM 3.0 software. It considered that many of the CLICOM systems initially installed had microcomputer systems far behind the state-of-the-art and urged donors to consider contributions through the VCP to improve this situation.

4.2.6 The Council noted the crucial role of the training component in realization of the CLICOM project for all countries, especially with respect to modern data-processing techniques for the management of climatic data. In this connection, the Council requested that the WMO Secretariat make every effort towards providing follow-up training to the countries which update their CLICOM software to version 3.0.

4.2.7 The Council noted with satisfaction the progress made in the INFOCLIMA project. The Council was pleased that an updated supplement of the INFOCLIMA catalogue of climate system data sets (WCDP-3, WMO/ND-293) had been published in 1992. The Council also agreed with the ACCAD recommendation that WMO should promote the standardization of database formats on the basis of its own existing standards.

DATA RESCUE (DARE)

4.2.8 The Council was pleased at the work done in the Data Rescue project and thanked the Belgian Government and UNEP for their contributions. It strongly endorsed the ACCAD recommendation that DARE activity be extended to other Regions and thanked Finland and Canada for their support in Region IV. It urged Members with CLICOM systems to use them effectively for the rescue of deteriorating manuscripts.

4.2.9 The Council noted the concern of some RA I Members that microfilmed data sent to the International Data Co-ordination Centre (IDCC) in Brussels might be distributed without their approval. The Council was informed that each country in which DARE had been implemented had signed an agreement with IDCC/WMO that microfilmed data which it chose to send to IDCC would be disseminated only with the direct approval of the country.
4.2.10 The Council stressed the importance of the digitization of microfiched DARE data and the storage of these data on optical media. The Council noted that optical storage devices were provided with most CLICOM systems and were envisaged to be used for this purpose.

Climate System Monitoring

4.2.11 The Council noted that the CSM monthly bulletin continued to be issued regularly and recognized contributions of the climate analysis centres. It also extended thanks to UNEP for its financial aid in the production and dissemination of this publication. The Council noted the need to review regularly the content of the bulletin as recommended by the CCI Working Group on Climate Data and to work towards improvement of its timeliness.

4.2.12 The Council noted that the Global Climate System Review had been prepared for the biennium 1989-1991 and expressed its thanks to UNEP, Canada, and Finland for financial and technical support.

4.2.13 The Council urged the more rapid global dissemination of climate information, as recommended by ACCAD, to distribute in consultation with CBS over the GTS tables and maps of principal temperature and precipitation anomalies. It also supported a pilot project, in co-operation with EUMETSAT, to demonstrate the feasibility, particularly from the scheduling viewpoint, of distributing the same information via the MMD facsimile-type service to two to three RA I Member countries and via the WEFAX satellite broadcast facility.

4.2.14 The Council urged that work continue on a monitoring demonstration for CLIMAT messages. It endorsed the co-ordination between the CCI Working Group on Climate Data and the CBS Working Group on Data Management concerning the plan for such a demonstration focusing on RA III.

4.2.15 The Council re-emphasized the importance of Members' assistance in the dissemination and publication of the World Weather Records (WWR) for the decade of the 1980s. It urged that all collection centres should acquire data as soon as possible and forward them to the publication centre. The Council noted the need for the annual collection of WWRs for the 1990s.

4.2.16 The Council reiterated its request that all Members, if possible, forward their WMO standard climatic normals for the period 1961-1990 to the WMO Secretariat and the WDC-A for Meteorology (National Climatic Data Center, USA) using digital media, if possible.

4.2.17 The Council noted with satisfaction the work done by CCI toward an adaptation of the CLIMAT code, which would improve the quality and quantity of monthly climate data exchanged via the Global Telecommunication System. It urged CBS to consider carefully the suggested changes for implementation.

Climate Change Detection Project

4.2.18 The Council commended the president of CCI for his work on the establishment and convening of the Working Group on Climate Change Detection. The Council noted the representation of developing countries on the working group and stressed the importance of the inclusion of regional and global data from all of the climate system components to support detection research and the ensuing need for co-ordination between modellers, researchers and data managers.

4.2.19 The Council noted the recommendations by the Working Group on Climate Change Detection and stressed the importance of issuing regular authoritative reports on the analysis and interpretation of data sets. It noted the working group's recommendations to establish advisory groups to prepare guidance material on the construction of metadata and record blending and to sponsor an expert meeting on data needs for the enhancement of statistical analysis of climate change detection.

4.2.20 The Council strongly supported the activities concerning the creation of the Global Baseline Data Sets also stressed by ACCAD. It acknowledged the work of the World Data Center-A for Meteorology (USA) for its accomplishments in this area. It also underscored the importance of the establishment of both a data-set certification process through peer-reviewed reports and a system for rating data sets taking into account the temporal changes in their quality. To conduct these activities the Council recommended continued consultation with ICUS and its Panel on World Data Centres to establish an agreement to archive approved data sets.

4.2.21 The Council was pleased by the collaboration with UNESCO, ICUS and the International Council of Archives on the Archival Survey of Climate History pilot project. The Council considered that this activity should be pursued further, but noted the importance of linkages with other complementary initiatives.

4.2.22 The Council supported the CCI recommendation to ensure that overlapping observations be taken at the sites of automatic meteorological stations before the automatic stations are established and the conventional observations stopped.

4.3 World Climate Applications and Services Programme (agenda item 4.3)

4.3.1 The Executive Council noted the progress in the implementation of the World Climate Applications Programme (WCAP), which from January 1992 had become the World Climate Applications and Services Programme (WCASP). The Council reiterated the decision by Eleventh Congress to place increased emphasis on the development of climate services as reflected in the change of name of the programme.

4.3.2 The Council also noted the progress made in developing the Tropical Urban Climate Experiment (TRUCE) and endorsed the timely plans for a major Technical Conference on Tropical Urban Climates, to be held in Dhaka, Bangladesh, in January 1993. In connection with TRUCE the close relation between the methods used in climate applications and those used in impact studies was emphasized as well as the relation of TRUCE to both climate change and the activities under IDNDR.

4.3.3 The Executive Council re-emphasized the importance of the further development of CLICOM-compatible...
special applications and reiterated its view that Members should be urged to contribute to this development. CLiCOM is a major vehicle for the development of climate applications and has been aided by close cooperation between the WCDMP and WCASP as well as other WMO programmes. Most CLiCOM installations have access to the INSTAT package which provides opportunities for implementing a wide range of applications based on statistical products. The Executive Council noted the progress made in the development of a rational routine for updating and disseminating CARS and emphasized the urgent need to update existing CARS in the areas of energy, food and desertification as well as the need to expand CARS into other areas. In this connection the close co-ordination of the WCP-Food component and the Agricultural Meteorology Programme was noted as well as the co-ordination of the WCP-Water component with activities under the Hydrology and Water Resources Programme.

4.3.4 The Council noted in particular the progress made in the development of systematic methods for applying climate information and know-how in the energy sector. The methods developed and tested under the UNDP European inter-country project Meteorological Information for Development of Renewable Energy should find general applicability in many Member countries. In particular the methods used for assessment of potential solar- and wind-energy resources and the systems used for implementing these as CLiCOM-compatible special application components were noted.

4.3.5 The Executive Council endorsed the emphasis on training and promotion of increased interaction between users and producers of climate information and products. It reiterated the need for close cooperation with the potential users of climate information in order to establish actual and specific requirements, which was emphasized by Eleventh Congress, but noted that this should in most cases be a national or regional priority as "requirements" might be dependent on both climatic and socio-economic conditions in a country or in a region.

4.3.6 The Executive Council noted a report on recent information collected from Members on the implementation of the recommendations of the WMO Technical Conference on Economic and Social Benefits of Meteorological and Hydrological Services (Geneva, 26–30 March 1990). Some progress in developing methods of assessing the benefits of services was noted. It was recognized that there were great uncertainties in cost/benefit studies, as they include subjective estimates which depend on political and socio-economic factors. The Executive Council emphasized, however, the importance of reducing these uncertainties and requested that the relevant technical commissions, and in particular CCI, keep this matter under careful consideration. The Council further noted the encouraging progress in the co-operation between Meteorological/Hydrological Services and users in defining and meeting user requirements as recommended by the Technical Conference.

4.4 World Climate Impact Assessment and Response Strategies Programme (agenda item 4.4)

4.4.1 The Executive Council noted with appreciation that, by its Decision GC 16/41, the Governing Council of UNEP had requested the Executive Director of UNEP to assume responsibility for the WCRP in collaboration with relevant organizations, in particular with the World Meteorological Organization, which should continue to provide the overall co-ordination in the implementation of the World Climate Programme.

4.4.2 The Council took note of the development, through the Scientific Advisory Committee (SAC) for WCRP, of the plans for programme implementation in the following years. It was also noted that to achieve the objectives recommended by the Second World Climate Conference, improved co-ordination with other WCP components at an appropriate secretariat level would be essential. In this connection, the Council once again wished to stress the importance of participation of a representative of UNEP in sessions of the ACCAD and that of a representative of WMO to attend sessions of SAC.

4.4.3 The Council welcomed the information provided on the current activities being implemented as part of the WCRP, in particular the carrying out of country studies concerning the development of national inventories of sources and sinks of greenhouse gases; national and regional climate impact and response strategy studies; and economic studies of greenhouse gas abatement. The Council noted UNEP's work on drought mitigation and the active public awareness programme, including the publication of climate-impact-related books targeted at a developing-country audience.

4.4.4 The Council appreciated UNEP's intention to provide material support to GCOS and its continuing commitment to the IPCC, particularly its wish to tailor the WCRP activities to respond to the research and information needs of the Panel.

4.4.5 The Council recommended that the WCRP broaden its interdisciplinary approach, particularly in the areas of climate change mitigation and adaptation; the analysis of climate variability and change characteristics as an input to climate impact assessment methodology; drought and desertification as an outcome of unbalanced socio-climate systems; continuation of monitoring under GEMS and intensified ocean surface-layer monitoring as an input to climate prediction.

4.5 World Climate Research Programme (agenda item 4.5)

4.5.1 The Council noted with appreciation the report of the chairman of the WMO/ICSU Joint Scientific Committee (ISC) for the WCRP and expressed confidence that further developments of the programme, as explained below, would meet the requirements of nations for science-based assessment and prediction of future climate change.

4.5.2 The Council was gratified that, since its inception twelve years previously at the initiative of WMO and ICSU, the WCRP had developed the basic knowledge underpinning the scientific assessments by the
Intergovernmental Panel on Climate Change and laid the scientific foundation for the United Nations Framework Convention on Climate Change.

**Co-operation with ICSU and the Intergovernmental Oceanographic Commission**

4.5.3 The representative of the International Council of Scientific Unions (ICSU) expressed the strong interest of ICSU members in global scientific issues such as those raised by climate change. In general, ICSU saw that responding to policy-makers’ need for independent international assessments of scientific issues of global significance was an important responsibility of the scientific community.

4.5.4 In the context of the preparation of the United Nations Conference on Environment and Development, ICSU had organized an International Conference on an Agenda for Science for Environment and Development into the 21st century (ASCEND-21) in Vienna in November 1991. The Conference had asserted the responsibility of the scientific community to provide independent assessments and explanations of its findings to individuals, organizations and governments.

4.5.5 ASCEND-21 emphasized that research was needed to discriminate between environmental changes due to natural fluctuations and those induced by anthropogenic forcing, as a prerequisite for early warning of change. The Conference reaffirmed that the global environmental research programmes, WCRP and the International Geosphere-Biosphere Programme (IGBP), provided a clear scientific strategy to achieve this goal and improve the understanding of the total Earth system. ASCEND-21 therefore recommended that these programmes be vigorously pursued.

4.5.6 The representative of ICSU recorded his satisfaction with the growing co-operation between the intergovernmental organizations and ICSU, representing the international scientific community. Especially, he drew attention to the understanding reached about the participation of the Intergovernmental Oceanographic Commission of UNESCO as a co-sponsor of the WCRP. ICSU acclaimed this step as a considerable achievement, confirming the fundamentally interdisciplinary nature of the programme and strengthening the coherence of its organizations.

4.5.7 The representative of ICSU also expressed satisfaction with the developing co-operation between WCRP and IGBP and especially supported the action taken by WCRP to substitute for IGBP in the study of global stratospheric processes and stratosphere-troposphere interactions, and with the positive steps taken by WCRP to mount a research programme on Stratospheric Processes and their Role in Climate (SPARC).

4.5.8 The Council expressed its satisfaction with the effective collaboration between WCRP and IGBP. The Council emphasized the importance of coupled dynamical, chemical and radiative processes in the stratosphere, not only for climate science but also for further improving atmospheric circulation models. It also noted that SPARC would effectively facilitate studies of the role of stratospheric aerosols and the radiative effects of ozone depletion. The Council therefore endorsed the action taken by ISC to organize the SPARC research programme in the framework of WCRP.

4.5.9 The Council stressed the importance of scientists from developing countries contributing to climate and global climate change research, and urged the ISC to participate fully in the development of the System for Analysis, Research and Training (START), launched by ICSU’s International Geosphere-Biosphere Programme to facilitate this process.

4.5.10 The Council expressed strong satisfaction that the Agreement by means of which the Intergovernmental Oceanographic Commission of UNESCO formally co-sponsors the WCRP together with WMO and ICSU had been signed by the three organizations. It acknowledged this development as a highly significant step towards interdisciplinary co-operation in global climate research.

**Climate Modelling**

4.5.11 The Council reaffirmed the central importance, in all aspects of climate science, of climate modelling studies developed by the WCRP and especially the advances made in the development of coupled atmosphere-ocean models. It recorded its satisfaction with the success of the Atmospheric Model Intercomparison Project (AMIP), in which 30 participating groups had agreed to run long integrations up to ten years with the same specified sea-surface temperature and ice fields, reproducing the observed conditions during the period January 1979 to December 1988.

4.5.12 The Council acknowledged the constructive role played by the CAS/ISC Working Group on Numerical Experimentation in promoting advances in climate modelling and numerical weather prediction. In particular, the Council highlighted the importance of the projects taken up by the European Centre for Medium-range Weather Forecasts and the USA National Meteorological Center to re-analyse past meteorological observations in order to constitute homogeneous records of global atmospheric fields and to ascertain the extent of recent climatic variations, free from errors caused by changes in analysis procedure.

**Global Energy and Water Cycle Experiment (GEWEX)**

4.5.13 The Council noted with appreciation the progress made toward launching a multi-year GEWEX Continental-scale International Project (GCIP) to study land-atmosphere interactions and macro-scale hydrological processes over a large river basin (Mississippi river) and encouraged the ISC to consider also other large river basins for combined studies of energy and water budgets. The Council further endorsed the decision of the JSC to balance the existing GEWEX focus on the hydrological cycle with matching activities in atmospheric radiation research and the study of coupled dynamical and micro-physical processes in various types of cloud systems.

**Tropical Ocean and Global Atmosphere (TOGA) Programme**

4.5.14 The Council noted with satisfaction the progress towards the implementation of the full TOGA observing
system in the Pacific Ocean and the development of similar systems in other ocean basins. It reaffirmed the importance of finding appropriate means of maintaining the continuity of TOGA observing systems that provide essential information for prediction of ENSO and other transient climate anomalies.

4.5.15 The Council welcomed the proposal made by several members of the Intergovernmental TOGA Board to undertake systematic TOGA data assimilations and real-time experimental predictions of transient climate anomalies, such as the El Niño/Southern Oscillation (ENSO), and to establish for this purpose a core prediction facility and a network of regional and national application centres for exploitation and dissemination of the products.

**World Ocean Circulation Experiment (WOCE)**

4.5.16 The Council expressed its interest in the early results achieved in the first two years of the implementation of WOCE observations at sea and the successful launching of the European Earth Resource Satellite (ERS-1). In particular, the Council emphasized the importance of developing effective means to monitor the upper-ocean temperature and salinity, and ensuring the continuity of satellite measurements of surface wind and mean sea-level, as provided by ERS-1.

**JSC Membership**

4.5.17 The Council decided on its final proposal for the list of candidates to serve on the JSC. That list would be discussed with ICSU and IOC, in order to select replacements of outgoing members or extend their terms of appointment, and incorporate additional members so as to achieve a balanced representation of oceanographic sciences.

**Global Climate Observing System (agenda item 4.6)**

4.6.1 The Executive Council noted with appreciation the action taken by the Secretary-General in the process of developing the Global Climate Observing System (GCOS) concept.

4.6.2 The Council was particularly pleased that a Memorandum of Understanding had been signed among the four co-sponsoring organizations, WMO, the IOC of UNESCO, ICSU and UNEP, and that each had agreed to support GCOS through the provision of funds and/or staff resources.

4.6.3 The Council was also pleased to learn that a Joint Planning Office (JPO) for GCOS had been established in the WMO Secretariat, and that a Director and an administrative assistant had been appointed.

4.6.4 The Council received a report of the first meeting of the Joint Scientific and Technical Committee (JSTC) and was informed of future plans in the development of GCOS. The Council noted that GCOS would build upon established systems and programmes such as the World Weather Watch (WWW), the Global Atmosphere Watch (GAW), and the Integrated Global Ocean Services System (IGOSS), extending them where necessary; upon ongoing research programmes of the WCRP such as the Tropical Ocean Global Atmosphere (TOGA), World Ocean Circulation Experiment (WOCE), and the Global Energy and Water Cycle Experiment (GEWEX) and elements of the International Geosphere-Biosphere Programme (IGBP). With respect to the Global Ocean Observing System (GOOS), the Council welcomed the activities of the Intergovernmental Oceanographic Commission (IOC) of UNESCO in planning GOOS as the ocean component of GCOS, and noted particularly the forthcoming meetings of the Intergovernmental GOOS Committee.

4.6.5 In view of UNCED, Agenda 21, and the Framework Convention on Climate Change, the Council expressed support for the continuing development of GCOS, as it assumed a significant role in the observation, understanding and prediction of the global climate.

4.6.6 The Council recommended that, in the development of GCOS, continuing co-ordination and cooperation should be ensured with relevant programmes, particularly the WWW and WCP. A formal relationship should be established by the JPO with the Working Group on Satellites and the Commission for Basic Systems to reflect the importance of satellite issues for GCOS.

4.6.7 The Council emphasized the need for close co-ordination of GCOS with the WMO technical commissions and regional associations. It requested that Members be fully informed of the plans and activities of GCOS.

4.6.8 The Council recognized that whenever possible GCOS should be based upon the existing infrastructures of national Meteorological and Hydrological Services. Therefore, it recommended that GCOS reflect national interests and capabilities when developing future programmes of observation, data exchange, and climate prediction. The Council noted with appreciation that the Secretary-General had called upon Members to establish national co-ordination committees for GCOS to respond to the needs for climate observations.

4.6.9 The Council considered that in establishing groups for planning and implementation of GCOS, adequate scientific, technical, operational and geographical representation should be ensured. In particular the benefits of a direct linkage to hydrological databases through an expert on hydrological network planning were noted.

4.6.10 The Council noted with appreciation the offers of financial support made by Canada and the USA, and also the funds for a secondment, via IOC, by France. It further noted the supportive comments made by representatives of the sponsoring organizations, and by other rapporteurs and speakers during the session.

5. **Atmospheric Research and Environment Programme (agenda item 5)**

5.1 **Atmospheric Research and Environment Programme; the report of the President of CAS (agenda item 5.1)**

5.1.1 The Executive Council expressed its appreciation to the President of CAS for the informative and comprehensive report which he submitted. In particular, the Council noted with satisfaction the action
taken since EC-XLIII to revise the draft text of WMO Technical Regulations, Volume I, Chapter B.2 - Global Atmosphere Watch (GAW). Acting on the authority given to it by Eleventh Congress, the Council considered and adopted the revised text incorporating the latest modifications proposed by Members, and accordingly adopted Resolution 3 (EC-XLIV) - Technical Regulations of the World Meteorological Organization. The relevant GAW Guide and Manual are under preparation. Other comments on CAS-related activities are recorded under the following paragraphs.

5.1.2 The Council was informed that for the 1992 WMO Research Award for Young Scientists, only three nominations had been received. Two had been rejected in the regional assessment process and the assessment of the third had not been completed in time. The Selection Committee therefore recommended that the latter paper be retained for consideration next year and decided not to confer the award in 1992.

5.2 Global Atmosphere Watch (agenda item 5.2)

5.2.1 The Executive Council expressed its support for the action taken concerning the ozone activities reported and its satisfaction at the highly favourable visibility which the Organization had received as a result. It was noted that in Agenda 21 expansion of GO2OS, particularly in the tropical belt and southern hemisphere, was explicitly recommended and the Council requested the Secretary-General to proceed with the means available, including additional voluntary contributions by Members, UNEP and other organizations, for its implementation. Furthermore, it was emphasized that WMO should continue its involvement in high-level scientific meetings leading to assessments for the Meetings of Parties to the Montreal Protocol and that this activity be given high priority.

5.2.2 The Council considered that the near-real-time ozone bulletins from the Antarctic during the austral spring issued over the GTS also contributed to enhance the image of the Organization and requested that these bulletins be continued. It also requested that, as an assurance of the quality of ozone data from the Antarctic as well as from throughout the GO2OS, the systematic re-evaluation of Dobson data should continue.

5.2.3 The Council expressed its gratitude to Canada and the USA for their work in maintaining the calibration of the respective Brewer and Dobson ozone spectrophotometers used in GO2OS and requested that they collaborate with the WMO Secretariat to establish a working schedule in which comparisons would be conducted every two to three years to ensure that the needs of Member countries and the accuracy of GO2OS data were satisfied. It also emphasized that quality assurance of ozone data was now more necessary than ever and should be further developed in order better to assist the timely flow of reliable ozone data. Members operating ozone stations and the WMO World Ozone Data Centre were requested to collaborate to achieve this.

5.2.4 The Council was informed of the added importance and the need for reliable data on the vertical ozone distribution for better understanding and prediction of ozone changes. It therefore encouraged continuation of balloon ozone soundings and requested the Secretary-General to appeal to Members to assure timely deposition of the data at the WO2DC. Furthermore, recognizing the unique information contained in almost 40 000 Umkehr profiles made during the past 35 years, the Council requested that their re-evaluation incorporating the new (Bass and Parr) ozone absorption coefficients and aerosol corrections be pursued as a priority. The Secretary-General was asked to convey this request to the WO2DC in Canada and also to seek the necessary assistance from the World Dobson Calibration Laboratory hosted by NOAA-Boulder.

5.2.5 Noting with satisfaction that the response to the request of EC-XL for a component-by-component review of BAPMoN had advanced to the point where an outline of the aerosol component of GAW had been completed, the Council asked that Members with suitable GAW-BAPMoN facilities begin implementation. Also noting that this, as well as other aspects of GAW development, was of direct priority related to climate and ozone change specified by the Global Environment Facility (GEF), the Council requested that the Secretary-General explore with interested Members and submit project proposals for further support for implementation of essential elements of GAW.

5.2.6 In this connection, the Council noted that Agenda 21 explicitly requested an enhancement of GAW. The Council appreciated the positive action taken by the Secretary-General in assuring observatory-type stations in a few developing countries. It was also pleased that WMO assisted in preparing a plan with UNDP for the enhancement of the GAW-GO2OS ozone and UV-B measurements in the southern cone of South America with active participation by Argentina, Brazil, Chile, Paraguay and Uruguay. In both cases, it was recognized that further provision of instrumentation, advice and expertise would be needed, and the Council appealed to Members with advanced capabilities to pursue actively twinning arrangements such as those for the first GAW continental baseline station on the Tibetan plateau in China. The initiative by Japan to establish a GAW observatory of global importance on Minamitorishima Island (24°N, 154°E) was considered a valuable contribution to the needed expansion of GAW.

5.2.7 Collaboration with other agencies and programmes with similar atmospheric environmental interests, such as EMEP and the IGAC Programme of IGBP, was considered commendable and therefore the Council recommended that these activities should continue. It also called for more Members with suitable scientific infrastructures to become actively involved with the integrated monitoring (IM) concept and to open their GAW-BAPMoN stations to this activity.

5.2.8 Considering the importance of proper education and training in atmospheric composition and physical characteristics monitoring, the Council requested that a concerted effort be made to expand programmes in WMO Member countries and at WMO regional training
centres to include the teaching of atmospheric chemistry and in general other matters related to the GAW. It requested that the EC Panel of Experts/CAS Working Group on Environmental Pollution and Atmospheric Chemistry and the EC Panel of Experts on Education and Training consider the elaboration of existing syllabi for training in this topic.

5.2.9 The description of the core monitoring programme at GAW regional stations as endorsed by the EC panel/CAS working group was appreciated. This will include, in addition to the standard meteorological parameters, tropospheric ozone, precipitation chemistry, solar radiation (direct, total, and diffuse), ultraviolet-B radiation, flask sampling of methane and carbon monoxide, aerosol composition, total ozone and aerosol black carbon. The Council urged Members to strive for its implementation according to regional needs.

5.2.10 The Executive Council expressed its satisfaction at the quick action taken by the Secretary-General concerning the atmospheric aspects of the Gulf oilfield fires. The Council noted the conclusions of the Meeting of Experts to Assess the Possible Atmospheric Impact of the Kuwait Oil Fires (Geneva, 25–29 May 1992) and endorsed the recommendations of the meeting concerning further research and monitoring activities in the affected region and the need for one more scientific assessment meeting at a later date when more results become available. It was gratifying to note that in the assessment of the atmospheric consequences of the fires (Geneva, May 1992) there was no global effect but it was unfortunate that there were some regional consequences. The Council welcomed the information that three new regional stations had been established at very short notice in the downwind areas from Kuwait where the core monitoring programme for GAW regional stations would be followed.

5.2.11 Concerning the study of long-range transport of pollutants, the Council strongly supported the follow-up study to the Atmospheric Transport Model Evaluation Study (ATMES), called the European Tracer Experiment (ETEX), initiated in collaboration with ECE and IAEA. The hope was expressed that all WMO Member countries would be kept informed of developments which might have application elsewhere in the event of major dispersion episodes.

5.2.12 On another aspect of GAW, the Council viewed with favour GESAMP activities, where WMO played a leading role in providing authoritative advice on the application of atmospheric transport and air-sea interaction science to problems of the marine environment. It was felt that these activities should be supported as fully as possible and therefore the Council requested the Secretary-General to seek extra-budgetary resources to assure WMO participation. Within MEDPOL, the programme on monitoring and modelling of pollution of the Mediterranean Sea through the atmosphere, executed in collaboration with UNEP, some results such as improved atmospheric composition monitoring and supporting case studies had been achieved. Members in the region were further encouraged to support and participate in it.

5.2.13 The Council, recalling previous concerns of data reliability and recognizing the importance of quality-assured data, fully supported the action taken by the Secretary-General and the EC panel/CAS working group to improve the quality- assurance (QA) and quality control (QC) of GAW data. It endorsed the structure proposed in which GAW stations would submit their data for quality control to a designated independent GAW QA/QC Science Activity Centre(s) that would be responsible for interacting with individual stations, for critical review and acceptance and/or for adding QA flags to data and for identifying and resolving quality performance differences among stations in their regions. They would also be responsible for the provision of reference material, the design of QA experiments and expert consultations to resolve problems, for training, instrument intercomparisons, and workshops. It was hoped that Members with suitable facilities would volunteer their services in establishing these GAW QA/QC Science Activity Centres and that all Members would strive to assist in whatever way they could. The Council requested that the Secretary-General proceed with this development.

5.2.14 The improved quality of GAW data was considered to be an essential prerequisite for the preparation of assessments for each of the GAW components in a manner similar to the ozone assessments. The Council noted with appreciation the recent initiative of the Executive Council Panel of Experts/CAS Working Group on Environmental Pollution and Atmospheric Chemistry to start, in co-operation with UNEP, a global assessment of acid deposition. The Council emphasized the need for similar assessments of CO₂, the oxidizing capacity of the atmosphere and other elements and requested the Secretary-General to investigate the possibility of Members and international organizations contributing to such assessments.

5.2.15 The Council was pleased to learn that, at the request of the Secretary-General, Canada had agreed to establish a central collection of UV-B data in conjunction with the existing WMO World Ozone Data Centre, thus creating a WMO World Ozone and Ultra-Violet Data Centre. This will add another central point for GAW data which, together with the greenhouse and radiation data centres, provide essential data in great demand for atmospheric environment and climate studies requested by the Rio Agenda 21. The Council emphasized that the successful provision of these data to the world community would depend on the timely submission of quality data from all stations. In this respect, it requested the Secretary-General to urge Members to comply with all established procedures.

5.2.16 Being informed that the first issue of the World Data Centre for Greenhouse Gases (WDCGG) Data Report would be published in 1992 and that the data collected were ready for distribution, the Council appreciated the smooth initiation of operation of the Centre by the host, Japan Meteorological Agency. It urged Members making greenhouse and other trace-gas observations to accelerate the submission of past and current data to the Centre.
5.2.17 Further activity stemming from the initiatives of CAS in the study of cloud physics and chemistry, which had applications to both GAW and weather modification, was the complex issue involving the oxidizing capacity of the atmosphere. The Executive Council requested that action concerning this issue be pursued and asked that the EC Panel/CAS Working Group on Environmental Pollution and Atmospheric Chemistry address this issue within the coming two years.

5.2.18 The Council endorsed the proposal of the EC panel/CAS working group to elaborate plans for the role of GAW within GCOS based on the outcome of the first ISTC session on GCOS and on considerations stemming from the United Nations Conference on Environment and Development, which explicitly asked for further development of GAW.

5.3 WEATHER PREDICTION RESEARCH (agenda item 5.3)

5.3.1 The Executive Council noted the close collaboration between the Weather Prediction Research Programme and the World Climate Research Programme. The progress made in the work of the CAS/ISC Working Group on Numerical Experimentation (WNE) benefits both programmes. It also noted with satisfaction that the comprehensive review of numerical weather prediction progress reports, requested by its forty-second session, had been completed and made available to WMO Members. It was considered that this action should stimulate the exchange and transfer of research results and operational experience to improve weather prediction skills further.

5.3.2 With regard to the Atmospheric Transport Model Evaluation Study (ATMES), which was intended to improve the ability to model long-range transport of pollutants, the Council took note, with interest, of the use of numerical modelling of mediterranean cyclones for a better understanding of the long-range transport of pollutants.

5.3.3 The Council noted the action taken by the CAS groups of rapporteurs on weather prediction research to organize an international symposium on data assimilation techniques late next year. It agreed in principle that a workshop on limited-area models and a conference on very short-range forecasting should be organized during the next biennium (1994–1995).

5.3.4 The preparation of a technical report on current trends and achievements in short-range numerical weather prediction research was endorsed. The report will meet basic research and teaching needs in this field.

5.3.5 In view of the importance of sea surface temperature (SST) to the improvement of medium- and long-range weather prediction, the Council endorsed the organization of a workshop on global SST analysis in the second half of 1993. It also agreed in principle to the organization, during the next biennium (1994–1995), of a workshop on imbalances of slowly varying components of predictable atmospheric motions, and a conference on predictability of dynamical models.

5.3.6 Recognizing the importance of forecasting extreme events for protecting populations and economic activities, the increasing role of medium- and long-range forecasting research was stressed in the context of the International Decade for Natural Disaster Reduction (IDNDR). In this connection, the Council noted the establishment of a regular publication of summaries of recent research work relevant to operational long-range forecasting which was not covered by the WGNE publications. Members were encouraged to contribute to it, when established.

5.4 TROPICAL METEOROLOGY RESEARCH (agenda item 5.4)

5.4.1 The Council stressed the important role of the research aspect in the WMO contribution to the IDNDR and encouraged co-ordination with the International Council of Science Unions (ICSU) concerning a demonstration project on Tropical Cyclone Disasters adopted by the Scientific and Technical Committee (STC) of IDNDR. It was pleased to note ongoing activities such as the organization of a symposium on tropical cyclone disasters to be held by ICSU with WMO’s co-sponsorship in Beijing, China, in October 1992; and the organization by WMO of the Third International Workshop on Tropical Cyclones (IWTC-III) co-sponsored by ICSU, to be held in Mexico in November/December 1993. The Council supported research activities on tropical cyclones based upon field experiments in the north-west Pacific in 1990 to contribute to IDNDR. It encouraged the investigation of an unmanned aircraft observing system by a subcommittee under the CAS Group of Rapporteurs on Tropical Meteorology Research, with ICSU’s collaboration, aimed at finding a new way to observe tropical cyclones.

5.4.2 The Council noted with satisfaction the continuing efforts of the Activity Centres for the CAS Long-term Project on Asian/African Monsoon Studies (Project M2) to assemble sets of data for studying the inter-annual variability of Asian/African monsoons and the issuing of annual reports on their activities. It requested Members in the monsoon-affected regions to co-operate further with these centres and stressed the importance of close co-ordination between these monsoon activities and TOGA. The Council emphasized the valuable role of the training aspect in the regional workshop on monsoons to be held in Kuala Lumpur (Malaysia) in October 1992. It welcomed the proposal of the International Association of Meteorology and Atmospheric Physics (IAMAP) for WMO co-sponsorship of a symposium on monsoons and tropical cyclones to be held in Yokohama, Japan, in July 1993.

5.4.3 The Council emphasized the importance of promoting research activities to apply limited-area modelling to tropical countries with limited computer capacity, and encouraged further efforts through the transfer of knowledge from advanced meteorological centres. It welcomed the joint organization, by the International Centre for Theoretical Physics and WMO, of the Second International Workshop on Tropical Limited-area Modelling, including training sessions, in 1993.

5.4.4 The Council was informed of the Tropical Rainfall Measuring Mission (TRMM), a joint USA/Japan project, with additional contributions of several coun-
tries, to launch a low-inclination-orbit satellite with microwave radar to measure tropical rainfall. Considering the present difficulties in obtaining accurate rainfall data over tropical oceans, the Council encouraged ongoing efforts and expressed its support of the project, which would be particularly beneficial to research activities in tropical meteorology such as those concerning rain-producing tropical disturbances.

5.4.5 The Council noted the successful results of a Workshop on Interaction between Tropical and Mid-Latitude Weather Systems held in Reading (United Kingdom) in December 1991 and encouraged further efforts in developing research activities in tropical regions affected by the interaction phenomena on various time and space scales. It also encouraged Members to promote research activities in meteorological aspects of tropical droughts in the semi-arid zones, especially through case studies involving numerical models, besides other existing methods.

5.5 PHYSICS AND CHEMISTRY OF CLOUDS AND WEATHER MODIFICATION RESEARCH (agenda item 5.5)

5.5.1 The Council reviewed the action taken to produce a revised WMO Statement on the Status of Weather Modification and subsequently approved the statement presented in Annex IV to this report.

5.5.2 Considering the continued interest in weather modification activities and the need to provide advice to Members, the Council approved the revised guidelines for advice and assistance related to the planning of weather modification activities (see Annex V to this report).

5.5.3 The Council also expressed satisfaction with the completion of a pioneering review and recommendations of the role of cloud physics and chemistry in atmospheric pollution transport, transfer, deposition and possible effect on changing atmospheric composition. The Secretary-General was urged to give emphasis to, and to assist Members in, the further development of this evolving field.

5.5.4 The Council noted the increased activities of Members in weather modification and the potential of new technology to help in demonstrating and understanding cloud-seeding effects on both rain enhancement and hail suppression and on dispersion of fog. It urged a more active role of the Executive Council Panel of Experts/CAS Working Group on the Physics and Chemistry of Clouds and Weather Modification Research, in collaboration with the Secretariat, in arranging for review of rapidly changing technology for application to weather modification problems and in encouraging the conduct of scientifically designed cloud-seeding experiments by interested Members. The Council supported WMO's continued efforts in surveying activities in this field, in assisting in the co-ordination of international activities and in initiating reports on critical issues and new developments prepared by interested Members. It also decided that the sixth WMO Scientific Conference on Weather Modification should be postponed until 1994.

6. APPLICATIONS OF METEOROLOGY PROGRAMME (agenda item 6)

6.1 PUBLIC WEATHER SERVICES (agenda item 6.1)

6.1.1 The Executive Council reviewed the progress made in the development of the Public Weather Services Programme. It noted that the president of the Commission for Basic Systems had appointed a rapporteur to deal with the planning for the PWS and that, with the assistance of a seconded expert, a study was under way developing documentation including a framework for the programme comprising a definition of requirements, programme design and elements and concepts for programme guidance and support.

6.1.2 The Council noted the information presented by the president of CBS regarding programme structure, budget allocations, and the proposed development process. It further noted that as the PWSP would be considered by CBS-X, the many suggestions made by the Council with regard to the programme framework, requirements, design and elements would be referred to CBS for its consideration.


6.2.1 The Executive Council congratulated Prof. C. J. Stigter (the Netherlands) on his election as president of the Commission for Agricultural Meteorology and wished him and the Commission every success during his tenure of office.

6.2.2 The Executive Council noted with appreciation the report of the tenth session of CAGM and recorded its decisions on the recommendations developed at the session in Resolution 4 (EC-XLIV).

6.2.3 The Council complimented the Commission for adopting “Agrometeorology for sustainable agricultural development” as the new theme upon which to focus activities during the inter-sessional period, in addition to the earlier emphasis on agrometeorology for operational use, which was considered to continue to be essential for efficient farming.

6.2.4 The Council in particular appreciated the decision of the Commission to undertake studies to define in quantitative terms agrometeorological requirements in food production, forestry production and livestock production. Such information would be most valuable for planning and decision-making in agriculture.

6.2.5 The Council supported the recommendation for the preparation of a publication entitled “Natural disasters and agricultural production”. It further agreed that such a publication should cover all climatic zones and should include information on the degree of seriousness of natural disasters, possibility of timely forecasting, methods used to combat disasters, production strategy adopted by agriculturalists, and requirements for international co-operation and assistance. The Council reiterated its support for the issue of publications in languages other than the original and expressed its appreciation for the help offered by Members to this end.
6.2.6 The Council shared the concern of the Commission about the decreased attendance by participants from developing countries at sessions of constituent bodies due to scarce financial resources. It noted that this matter had been addressed by the meeting of presidents of technical commissions. The views of the Council were recorded under agenda item 2.5.

6.2.7 The Council noted with appreciation the holding of a large number of training events in agrometeorology in various Regions and fully supported the continuation of such events within the allocated resources. It further noted that the Commission had entrusted its president with the responsibility of finding a solution to the increasing needs in respect of Class I and Class II trained personnel in agrometeorology, especially from French-speaking countries. The Council expressed its recognition of the support received from France and the United Kingdom for enhanced training in agrometeorology and appealed to the governing bodies of the Regional Meteorological Training Centres to consider inclusion of strengthening agrometeorological components in the training programme. It agreed that this matter should be given high priority.

6.2.8 The Council strongly supported a strengthening of the collaboration with relevant international organizations and considered that those organizations might be asked to acknowledge the support given to them by national Meteorological Services, so that these might continue to receive the support from their governments for the maintenance and operation of the observing networks.

6.2.9 The Council approved the increased collaboration between the Commission for Agricultural Meteorology and the regional associations, of which the recent Workshop on Meteorology and Plant Protection, held in Paraguay, was a good example. Such collaboration would promote the transfer of knowledge and techniques between all countries in a Region.

6.2.10 The Council strongly supported the programme of the Commission on the evaluation of the technical, economic, social and environmental benefits of operational application of agrometeorological information. It suggested that this programme could include the evaluation of bilateral efforts, including training activities.

6.2.11 The Council noted with approval that the president had proposed that the Advisory Working Group should meet in the second half of 1993 to review and strengthen the implementation of the activities of the working groups and rapporteurs of the Commission, especially as in relation to UNCED.

6.2.12 The Council recalled its Resolution 17 (EC-XXX) on meteorological and hydrological aspects of the combat against desertification adopted in response to recommendations of the UN Conference on Desertification held in 1977. In particular, it noted with satisfaction that in the implementation of decisions contained in the resolution, WMO had organized roving seminars on the use of meteorological data: (a) to assess land degradation by both water and wind erosion; (b) to assess primary production of natural pastures and hence the carrying capacity in order to avoid overgrazing; and (c) for effective planning and management of water for sustainable irrigated crop production and hence to minimize land degradation and desertification by waterlogging, salinization and alkalinization. The Council noted that the texts of the seminars and the proceedings had been published and distributed to Members. It also noted that a number of symposia had been organized to review the existing knowledge on the causes and methods of prediction of drought. The Council also recalled that a new strategy in support of the combat against drought and desertification had been approved by EC-XLI and was being implemented.

6.2.13 The Council recognized that drought and desertification had continued to have adverse effects on agricultural production and other socio-economic systems of many countries.

6.2.14 The Council noted that the problems of drought and desertification had been discussed extensively at the UN Conference on Environment and Development (UNCED) and that many of the major conclusions and recommendations of UNCED on these topics were of specific interest to WMO. In particular, it noted that in chapter 12 of Agenda 21, dealing with drought and desertification, UNCED called for the improvement and strengthening of international co-operation and solidarity in the combat against desertification through the preparation and adoption of an international convention to combat desertification in all affected areas of the world, particularly in Africa. The Council agreed that WMO should respond positively to these recommendations and urged its Members to strengthen their efforts in the combat against the effects of drought and desertification. It also requested the Secretary-General to implement within available resources the recommendations of UNCED as contained in Agenda 21. Accordingly, the Council adopted Resolution 5 (EC-XLIV).

6.2.15 The Executive Council, in accordance with the guidelines set up for the Norbert Gerbier Mumm International Award, designated Mr J. C. Marques (Brazil) as a member of the Selection Committee in replacement of Mr C. A. Grezzi (Uruguay) and designated Mr A. J. Daniel (Netherlands Antilles) as chairman. Prof. C. J. Stigter (The Netherlands), president of CAgM, became ex officio member in replacement of Mr A. Kassar (Tunisia).

6.2.16 The Council approved the proposal of the Selection Committee for the Norbert Gerbier - Mumm International Award for 1993 and conferred the 1993 Award on Messrs T. R. Carter, M. L. Parry and J. H. Porter for the paper entitled "Climate change and future agroclimatic potential in Europe", submitted by the Permanent Representative of the United Kingdom.

6.3 AERONAUTICAL METEOROLOGY; THE REPORT OF THE PRESIDENT OF CAgM AND THE REPORT OF THE CONJOINT WMO CAEM-IX ICAO COM/MET/OPS DIVISIONAL MEETING (1990) (agenda item 6.3)

6.3.1 The Executive Council noted with appreciation the report of the conjoint session of the Commission for...
Aeronautical Meteorology with the Communications/Meteorology/Operations (COM/MET/OPS) Divisional Meeting held in Montreal in September 1990. It further noted the action taken by the ICAO Council on the recommendations developed by the conjoint session.

6.3.2 With regard to the applicability date of amendments to WMO Technical Regulations (C.3.1) arising from the recommendations of the conjoint session, the Executive Council agreed with the conjoint session's view, endorsed by the ICAO Council, that all amendments should become applicable on 12 November 1992 apart from those amendments dealing with meteorological reports and forecasts at airports, which would become applicable on 1 July 1993.

6.3.3 The Executive Council recorded its decision on the various recommendations of the conjoint meeting in Resolution 6 (EC-XLIV).

6.3.4 The Council noted with interest the report of the president of CAeM, Mr C. Sprinkle, which highlighted the activities carried out by members of the Commission over the past year. It welcomed the initiatives of the Advisory Working Group and of the Working Group on Advanced Techniques Applied to Aeronautical Meteorology (ATEAM) in holding informal meetings, at no cost to WMO, on the occasion of the WMO/American Meteorological Society (AMS) Fourth International Conference on Aviation Weather Systems (Paris, July 1991). At those meetings the overall direction of the Aeronautical Meteorology Programme during the inter-sessional period was agreed.

6.3.5 The fourth ATEAM Newsletter, consisting of abstracts of papers presented during the WMO/AMS Fourth International Conference, was welcomed with satisfaction by the Council, which felt that it was particularly important that the results of such conferences and scientific meetings should receive wide dissemination in the aeronautical meteorological community. Plans to devote a future ATEAM Newsletter specifically to training opportunities in aeronautical meteorology in line with the high priority given both by the Commission at its last session and Eleventh Congress met with approval by the Council.

6.3.6 The Council noted that the PROMET Working Group at its session in July 1992 would consider, inter alia, the results of the Expert Group Meeting on General Aviation held in Geneva, June 1991, under the chairmanship of Mr J. Dear (Australia), the current PROMET chairman. The Council felt that in view of the world-wide increase in general aviation, the provision of meteorological information to meet general aviation requirements was a subject that merited special attention.

6.3.7 The Council stressed the importance it attached to the World Area Forecast System (WAFS) and commended the active pursuit of solutions to some of the remaining problems in reaching the final phase of the WAFS. It noted with interest progress on the automation of WAFS significant weather charts and the plans currently being implemented for regional satellite broadcasts of WAFS products by both the London and Washington World Area Forecast Centres (WAFCs).

6.3.8 Satisfaction was expressed by the Council on the progress of the WMO/ICAO inter-secretariat feasibility study on the possible joint use of satellite-based communication systems. It noted that agreement had been reached that the study should address technical and implementation aspects, exchange of such information as amount and type of data, logical channels and protocol requirements, traffic flow characteristics and regulatory issues. Much interest was expressed in the joint project for North and Central America to assess the feasibility of combining the new WMO Regional Meteorological Telecommunication Network in RA IV and the ICAO satellite-based dissemination system for the distribution of WAFS products to cover North, Central and South America.

6.3.9 The Council felt that co-operation with ICAO and aviation user organizations was most important in providing the optimum meteorological service to meet the requirements of civil aviation and noted with approval the close and fruitful collaboration in this respect. It noted the various ICAO groups in which WMO had actively participated and agreed that this augured well for the future.

6.3.10 Information concerning the automated meteorological reports from aircraft under the US Meteorological Data Collection and Reporting System (MDCRS) was greeted with enthusiasm by the Council. It noted that in this system, en-route data received every 15 minutes consisted of very accurate automated aircraft wind and temperature reports gathered from the participating US airlines by the Aircraft Communications Addressing and Reporting System (ACARS), which used VHF communications. It further noted that some 7 000 of those automated aircraft reports per day were being received from over North America, a number expected to increase to about 50 000 per day by 1995. The Council was further informed that such reports would soon be available from Japan. In addition, outside North America, the daily volume was expected to increase by 1995 to about 15 000 by VHF and another 12 000 by satellite communications (primarily over oceanic areas). The Council further noted that, over Australia, some 18 000 automated aircraft reports per day were received daily, a number expected to increase to approximately 40 000 daily by 1995. The Council felt that such extensive data would be of immense benefit to the aeronautical meteorological community and indeed to the aviation industry itself and commended Australia, Japan and the USA for their initiative in this respect. Satisfaction was expressed by the Council at the contribution by ASDAR-equipped aircraft. The Council noted that eight ASDAR units were in service, with another two scheduled to be fitted in 1993. Each such unit was capable of some 70 observations at altitude and between two to four profiles per day. The Council noted with concern, however, that many countries were still experiencing difficulties in the collection of aircraft reports by conventional methods.

6.3.11 The Council noted with much satisfaction the increase in training activities under the Aeronautical Meteorology Programme in accordance with the direc-
Activities of both the Commission and Eleventh Congress requesting that high priority be given to training requirements. It noted the success of the WMO/AMS Fourth International Conference on Aviation Weather Systems (Paris, June 1991), the WMO Regional Seminar on Aeronautical Forecasting, Briefing and Documentation (Singapore, October 1991), the WMO Regional Seminar on Weather Hazardous to Air Navigation in South-East Asia (Hanoi, October/November 1991) and in particular the WMO Roving Seminar on New Forecasting Techniques in Aeronautical Meteorology held in five SADCC countries in Africa (November/December 1991), from which more than 60 participants benefited. The Council was informed of an aeronautical meteorology training event entitled "Meteorological services for aviation in the 2000s" held in February 1992 in Singapore. The workshop, attended by some 15 aeronautical meteorologists from the ASEAN region, was fully funded by the Japan International Co-operation Agency. The Council noted with approval the plans for the WMO/UK Seminar on the Application and Interpretation of NWP Products in Aviation Forecasting (Reading, July 1992) for participants from RA I, RA II and RA VI. It looked forward with much interest to the results of the Technical Conference on Tropical Aeronautical Meteorology (TECTAM) to be held in Geneva in October 1992.

6.3.12 Much support was expressed for the expansion of future training activities. The representative of ASECA asked that consideration be given by WMO to the support of a training course for instructors in aeronautical meteorological codes due to come into operation on 1 July 1993. There was marked support for a training event involving radar meteorology, although it was pointed out that because of the budgetary problems facing the Organization such an event, planned for 1993, would have to be postponed. It was agreed that the possibility of ICAO, IATA and other aviation user organizations becoming involved in the organization and perhaps funding of training activities in aeronautical meteorology should be explored.

6.4 Marine Meteorology and Associated Oceanographic Activities; The in-depth report of the President of CMM (agenda item 6.4)

6.4.1 The Council noted with interest and appreciation the in-depth report of the president of CMM on the ongoing work of the Commission, including in particular activities during the current inter-sessional period. It expressed its thanks to Mr Shearman for his excellent report, as well as for the high-quality and important achievements of his Commission. The Council was pleased to note that all the CMM working groups were progressing well with their programme of work for the inter-sessional period. The Council also agreed that CMM had an important and substantial role to play, in conjunction with IGOS and CBS, in the maintenance and further development of marine meteorological and oceanographic observing networks, as components of GOOS, in support of all categories of marine users.

6.4.2 The Executive Council agreed further that the Marine Meteorology and Associated Oceanographic Activities Programme generally was of major and increasing importance to WMO, in the light of:

(a) The substantial requirements for ocean data for global climate studies;
(b) The continuing and expanding requirements of marine user groups for marine meteorological and oceanographic services;
(c) The results ofUNCED, including the relevant provisions of Agenda 21, relating to the oceans, and their implications for the marine-related activities of many international organizations, both within and outside the UN system.

In this context, the Council stressed the importance of the co-operation in particular between WMO and IOC on matters of mutual interest and concern. It expressed its appreciation to IOC for the present high level of this co-operation, and emphasized its desire that this co-operation and co-ordination should increase even further in the future. It further noted the importance of enhanced co-ordination amongst the constituent bodies responsible for marine-related activities within WMO and IOC, in particular CMM and the Joint Committee for IGOS, and requested the Secretary-General to explore various practical ways of effecting such enhanced co-ordination, in consultation with the Secretary IOC and the chairman of the bodies concerned. With regard to the WMO Long-term Plan, the Council considered that the increasing importance of WMO's marine-related activities within the overall context of the Organization's programmes, the wide-ranging nature of these activities, and the crucial importance of WMO's co-operation with IOC to many components of WMO programmes, should be fully taken into account in the preparation of the fourth LTP.

6.4.3 The Executive Council noted that the full implementation of the marine programme required the active participation of all maritime Members. It agreed that suitably trained specialized personnel were essential for such active participation, and that those personnel could be made available only through substantial enhancement of the specialized education and training facilities currently existing in marine meteorology and physical oceanography. In this context it strongly endorsed the joint WMO/IOC project for a diploma course in marine meteorology and physical oceanography at the RMTC Nairobi, and urged Members to support the implementation of this course in every way possible. It also urged that consideration be given to the development of projects for similar courses at other RMTCs, as well as of specialized courses in this field for other classes of meteorological personnel.

Integrated Global Ocean Services System

6.4.4 The Executive Council noted with appreciation the report of the sixth session of the Joint IOC/WMO Committee for IGOS and recorded its decisions on the recommendations developed at the session in Resolution 7 (EC-XLIV), bearing in mind the decisions already taken by the twenty-fifth session of the IOC Executive Council (Paris, March 1992) on these same recommendations. The Council noted that appropriate
6.4.10 The Executive Council noted with interest and appreciation that the new globally co-ordinated WMO system for the preparation and dissemination of meteorological forecasts and warnings to shipping on the high seas under the Global Maritime Distress and Safety System of IMO had been implemented provisionally as from 1 February 1992, in accordance with the implementation schedule for the GMDSS as adopted by IMO. The Council offered its thanks and congratulations to CMM, and to all Members having accepted responsibilities under the new system, for their major efforts in support of the safety of life at sea.

6.4.11 The Executive Council was informed of the results of the WMO Workshop on the GMDSS, held in Geneva from 18 to 22 May 1992. It noted with concern that meteorological forecast and warning coverage was not yet available globally through the International SafetyNet Service of INMARSAT, although such coverage was required as from 1 February 1992 under the implementation schedule for the GMDSS. At the same time, the Council recognized that the implementation of the new WMO GMDSS marine broadcast system required major changes in operational procedures by Members as well as new levels of international collaboration. In addition, in many cases the delays in implementation had been due to reasons beyond the control of Members concerned.

6.4.12 The Council reaffirmed the importance which WMO placed on the provision of the best possible meteorological services in support of the safety of life.
and property at sea. It therefore endorsed the interim procedures for the provision of a basic minimum urgent meteorological warning service to shipping, which had been developed by the workshop, to be used until full implementation of the new WMO GMDSS system was achieved. It expressed appreciation to those Members having agreed to operate the interim procedures, and urged all Members with full responsibilities under the new system to implement the system for their area(s) of responsibility as quickly as possible. Resolution 8 (EC-XLIV) was adopted.

6.4.13 The Council agreed that work would be required to refine and further develop the new system during the transition period for the GMDSS (until 1 February 1999). It therefore urged CMM, and Members concerned, to continue their efforts in this regard, so that a finalized system, offering the best possible meteorological services for mariners, might be considered for adoption by CMM-XII towards the end of the decade.

INTERNATIONAL INCENTIVE AWARD SCHEME FOR VOLUNTARY OBSERVING SHIPS (VOS)

6.4.14 The Council recalled that, at its forty-second session (June 1990), it had requested CMM to investigate the possibility of implementing an international incentive award scheme for VOS, as a means of perhaps improving the availability of ships' weather reports from data-sparse ocean areas. It noted that the CMM Advisory Working Group, at its seventh session (November 1990), had accepted the advice of the CMM Working Group on Basic Marine Meteorological Services that such a scheme would be neither practicable to implement, nor likely to achieve its desired objective, and that it had therefore recommended to the Executive Council that the idea of such a scheme should not be pursued further.

6.4.15 The Council accepted this recommendation of the CMM Advisory Working Group, at the same time expressing its continuing concern at the lack of meteorological and oceanographic data, in particular from the southern hemisphere oceans and particular areas such as the Caribbean and the western Mediterranean. It noted with interest that the CMM Advisory Working Group was currently co-ordinating a project to develop specific proposals aimed at improving both marine data from and services for these areas and urged CMM to pursue this project, and any proposals which might issue from it, with the utmost vigour.

DRIFTING BUOY CO-OPERATION PANEL (DBC1)

6.4.16 The Executive Council noted with interest and appreciation the report of the chairman of the DBCP, Mr Derek Painting, on the work of the panel over the past year. In particular, it expressed satisfaction:

(a) That an International Arctic Buoy Programme (IABP) had been established, to maintain an enhanced, operational network of buoys in the Arctic Basin, and that the IABP had been accepted as an Action Group of the panel;

(b) That work was under way to implement a new ARGOS GTS processing chain, with both financial and technical support from the panel;

(c) That a new, delayed-mode, quality-control scheme for drifting buoy data had been introduced as from 1 January 1992;

(d) That operational testing of the new low-cost drifter with pressure sensor was under way;

(e) That funds had been made available for a drifting buoy network in the south-west Indian Ocean and that the panel was providing technical and logistic advice and support to implement this network.

6.4.17 The Council congratulated the panel and its technical co-ordinator, Mr E. Charpentier, for their continuing achievements. It noted that the work of the panel was having a significant beneficial impact on the quality and quantity of buoy data on the GTS, in support of all the programmes of WMO and IOC, and that this work would assume even greater importance in the future with the development of new requirements under GCOS and GOOS. It therefore urged Members to continue and increase their support to the panel, including in particular financial contributions towards the maintenance of the technical co-ordinator's position.

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 Council was informed of the action taken by the Secretary-General for the implementation of Resolution 22 (CG-XII) - Hydrology and Water Resources Programme (HWRP). It noted that efforts had concentrated in particular on assisting the Commission for Hydrology and its president in the completion of tasks set by CHy-VIII in time for their results to be presented to CHy-IX. In this context the Council noted with appreciation that, at the invitation of Jamaica, the ninth session of CHy was planned to be held there between 12 and 23 October 1992.

7.1.2 The Council requested the Secretary-General to continue assisting those concerned to complete the tasks of the Commission before its next session and called upon the Commission itself to maintain its past record of effective and efficient use of the resources put at its disposal. It asked the president to make arrangements for CHy to contribute, both during CHy-IX and thereafter, to the development of the Fourth Long-term Plan.

7.1.3 The Council was informed of the support being provided to the six regional associations' Working Groups on Hydrology (RAs WGH). It noted with interest that these six regional bodies, which had increased in membership and levels of activity in recent years, were currently composed of some 150 experts and 55 rapporteurs on different subjects. The Council recognized that this increased activity in the RAs WGH implied increased support by the Secretariat. It was pleased to note that steps had been taken to implement fully the working procedure developed to ensure effective communication between CHy and RAs WGH.

7.1.4 In the context of the above the Council was also informed by several regional hydrological advisers to the
presidents of regional associations of particular concerns which were of importance in their respective Regions. It recommended that CHy seek advice as to the nature of these issues and take action to respond to them and thus support the RAS WGH. As regards RA III specifically, the Council noted with concern that budgetary constraints were affecting the activities of a number of Hydrological Services in that Region, in many cases preventing their adequate participation in the WMO HWRP. This was also reflected in the very low number of hydrologists participating in the sessions of CHy and the Association. On the other hand, the Council was informed that there were a number of other national and international agencies in the Region active in development and management of water resources which would be interested in, and would benefit from, participating in the relevant WMO activities. The Council agreed that there was a need for a closer link with these agencies, which could be instrumented by the Permanent Representatives concerned, the president of the Regional Association and by the WMO Regional Office. In addition, the Council was of the opinion that WMO’s presence in the Region in the field of hydrology and water resources should be more “aggressive”. This would increase, on the one hand, the visibility of the Organization in water-related matters and, on the other, the assistance to Hydrological Services of Members in the planning and development of projects.

7.1.5 The Council was pleased to note that the Secretary-General had informed the donor countries, the Permanent Representatives and their hydrological advisers of the arrangements for the implementation of the Voluntary Co-operation Programme (VCP) for projects on hydrology and water resources. The Council’s decisions on technical co-operation activities are recorded under agenda item 10.

7.1.6 The president of the Commission for Hydrology presented to the Council an in-depth report on the activities of CHy, which included a general review of past developments, the ongoing projects and proposals for the future in the field of operational hydrology. The Council was pleased to note the increased interest of the Commission in interdisciplinary areas and in particular in climate- and environment-related activities. This was reflected particularly in the establishment of a Working Group on Operational Hydrology, Climate and the Environment and the appointment of a number of individual rapporteurs on associated topics. The Council was appreciative of the efforts of the president of CHy to involve an increasing number of CHy experts in the work of the Commission. The network of some 40 associate rapporteurs which had been established was noted as a particularly good example.

7.1.7 The Council noted the concern expressed by the president of CHy that more than one quarter of WMO Members were not represented on CHy and could not, therefore, participate in and benefit from the work of the Commission. It therefore urged Members concerned to nominate experts from their Hydrological Services (e.g. those experts involved in national and international activities in hydrology and water resources) to serve as hydrological advisers, rapporteurs of CHy and/or officers-in-charge of HOMS National Reference Centres (HNRCs).

7.1.8 The Council also noted the observation by the president of CHy that over the past sixteen years the demands on the Hydrology and Water Resources Programme (HWRP) had not been matched with any significant budget increases and that programme implementation was therefore also dependent on direct assistance from some Members. Such assistance was offered in various forms: secondment of experts, implementation of certain projects, hosting of meetings and translation and/or publication of reports, etc. In this context the Council was informed that, pursuant to the request of Eleventh Congress, assistance had been sought from Members in support of the HWRP budget. The Council noted that a number of countries (for example, Canada, France, Germany and the Netherlands) had responded generously to such requests, and encouraged the Secretary-General to continue seeking such support.

7.1.9 The Council recognized the value of the various intercomparison projects being implemented under the auspices of CHy and the efforts required to bring each to a successful conclusion. It encouraged Members to participate in those projects and, where possible, to contribute directly to them.

7.1.10 The Council noted that, as approved by Eleventh Congress, HOMS was now used as the acronym for the Hydrological Operational Multipurpose System. It appreciated the monitoring and co-ordinating role carried out by the Secretariat but recognized that the technical development of the system would largely be dependent on the HOMS National Reference Centres (HNRCs).

7.1.11 The Council recognized the growing effort aimed at protecting the world’s freshwater resources. Noting WMO’s mandate to assist Hydrological Services of Members in monitoring these resources, it was pleased at the efforts being made at maintaining the high technical level of the WMO Technical Regulations (Volume III – Hydrology), the Guide to Hydrological Practices and the HOMS Reference Manual.

7.1.12 The Council noted the concern expressed by the president of CHy regarding delays in issuing important publications and his proposal for improving the situation. As regards the proposal for returning a proportion of the income from sales to the budget of the technical programmes, the Council noted its discussion on the subject under agenda item 14.2 in which it had been recognized that the current situation could not be amended until Twelfth Congress.

7.1.13 The Executive Council was apprised of the cooperation between CHy and other WMO bodies, in particular CAS, CBS, CCI, CAGM and CIMO, and of the efforts by CHy to improve the co-ordination of its activities with those of the RAS WGH.

7.1.14 As regards the plans for future activities of the Commission, the Council recognized that operational hydrology, in its widest sense, covering the quantity and quality of surface water and groundwater, continued to
develop rapidly throughout the world, so that development and management of water resources could be better harmonized with protection of the environment. However, there were still countries where operational hydrology was either at an initial stage or where there had been no developments during the previous five years. As an intergovernmental body, CHy should therefore also consider these urgent needs in planning and implementing its programmes. In this context, the Council agreed that the statement and report of the International Conference on Water and the Environment (ICWE) (reported under paragraphs 7.3.5 to 7.3.10 below) should be used as major guidance for future activities of CHy. The Council endorsed the proposal of the President of the Commission that the following items receive special consideration in the planning of these activities:

(a) Application of up-to-date technology;
(b) Improvement of the associated networks and hydrological instruments on the basis of the financial assistance provided by those who fund the management projects;
(c) Inclusion of observations of man-made influences on both the quantity and quality of water resources;
(d) Development of hydrological knowledge of catastrophic situations to ensure that Hydrological Services are able to monitor and forecast such events.

7.1.15 The Council noted the increasing use of desalination in many countries, and the environmental impact this could have on the water cycle. It urged CHy to consider this in its future work.

7.1.16 With rising costs for the operation of networks, the Council noted the increasing need to integrate the measurement networks for water quantity and quality. These hydrological networks should also be integrated with meteorological networks, thus enhancing the data obtained from both sets of networks, and minimizing costs.

7.1.17 Noting that this was the last time that he would address the Council in his capacity as President of CHy, the session congratulated Dr. O. Starosolszky for his strong and effective leadership of the Commission's activities during the two inter-sessional periods. It expressed admiration for his dynamic and collaborative approach, which had greatly fostered and improved the links with other programmes of WMO. The President, on the other hand, expressed his thanks to the Secretary-General and his staff for the support rendered to the Commission, and to the working groups, rapporteurs and CHy members for the implementation of the Commission's ambitious work plans. He concluded by expressing his appreciation to the Executive Council for its support to the Hydrology and Water Resources Programme in general and to CHy in particular.

7.2 OPERATIONAL HYDROLOGY; BASIC SYSTEMS, APPLICATIONS AND ENVIRONMENT (agenda item 7.2)

7.2.1 The Council was apprised of the action taken for the execution of activities of the two component programmes of the Operational Hydrology Programme (OHP) and the second phase of HOMS. This had included the implementation of a number of major intercomparison projects. It was noted that the preparations of the fifth edition of the Guide to Hydrological Practices were well in hand for the draft to be approved by CHy-JX, and that the issuing of the updated version of the INFOHYDRO Manual (WMO No. 683) was also being attended to. Noting with concern, however, that progress with some of these tasks had been hampered by a lack of priority assigned to WMO projects by national agencies, it encouraged Members to support the undertaking of these projects.

7.2.2 The Council expressed its appreciation at the continued success in the transfer of technology in hydrology through HOMS. It noted with satisfaction the number of HOMS National Reference Centres and the continuing rise in the number of transfers of components.

7.2.3 The Council noted with interest the information on WMO's training activities in the field of hydrology and water resources and expressed its satisfaction that, in pursuance of Resolution 22 (Cg-XI), support for training had been received from various extra-budgetary sources, such as UNDP, VCP and bilateral sources. Courses organized nationally, but open to participants from other countries, such as the course on hydrological forecasting organized by the US National Weather Service at Davis, California, were felt to make a valuable contribution. The Council was particularly pleased to note that the first session of the annual postgraduate course in hydrology had been launched in September 1991 at the RMTC Nairobi, and urged donor countries to continue their support for the course in succeeding years.

7.2.4 The Council noted progress in the implementation of projects under WCP-Water and endorsed the need for a review of them in the light of developments since SWCC and Eleventh Congress. In particular, it saw considerable advantages in harnessing the expertise of CHy and of the international hydrological community in general to the support of GCOS. It asked the Secretary-General to seek ways of strengthening hydrology in GCOS so as to ensure the success of the system.

7.2.5 The Council discussed recent developments at the Global Runoff Data Centre (GRDC), which is supported by the Government of Germany and is located within the Federal Institute for Hydrology in Koblenz. It recognized the importance of the Centre's work for a number of WMO programmes, including not only HWRP but also GCOS, WCP and other components of the WCP. Recognizing the valuable contribution of Germany in providing the facilities for the GRDC, the Council called on Members to support the Centre by providing it with the necessary hydrological data on a regular basis.

7.2.6 The publication of the Manual on Hydrological aspects of accidental pollution of water bodies was seen as a most valuable contribution to the work of Hydrological Services. The Council commended the follow-up activities being undertaken in cooperation with IAEA, as specified in the TLTP.

7.3 OTHER WATER-RELATED ISSUES (agenda item 7.3)

7.3.1 The Council was informed of the co-operation of WMO with other international organizations on water-related issues, implemented on the basis of Resolution 22 (Cg-XI).
7.3.2 Particular reference was made to the WMO/UNESCO publication on water resource assessment that had been prepared as part of the UN strategy for water, which also constituted one of the basic inputs to the International Conference on Water and the Environment (ICWE) (see paragraphs 7.3.5 to 7.3.10 below). Furthermore, an expert consultation convened by WMO, with the co-sponsorship of WHO and UNEP, had developed global strategies for water quality assessment and management, also as part of the preparatory process leading to ICWE.

7.3.3 General developments in the International Decade for Natural Disaster Reduction were discussed under agenda item 12.3. As far as the hydrological aspects were concerned, the Executive Council was pleased to note that the two relevant special projects had now been launched.

7.3.4 The representative of UNESCO spoke of the complementary nature of WMO and UNESCO programmes in water and of the excellent and very productive co-operation that existed between the two Secretariats, despite the problems that both faced from lack of funding. He expressed the wish that WMO would increase its input to UNESCO's work in the field of education and training, and advised the Council of the close collaboration between the two organizations during the preparations for the Dublin Conference and the current planning for a fourth joint international conference on hydrology. Recalling the benefits of WMO's long association with UNESCO in hydrological matters, the Council requested the Secretary-General to proceed with plans for convening a fourth joint international conference on hydrology in 1993, bearing in mind the budgetary limitations that would need to be faced.

7.3.5 The Council was informed of the success of the organization of the International Conference on Water and the Environment and of the outcome of the Conference. It noted with satisfaction that WMO had taken the lead in convening the conference on behalf of the 24 UN bodies and agencies which are members of the UN ACC Inter-Secretariat Group for Water Resources (ISG-WR). It also noted that the Government of Ireland had hosted the Conference and that it had been held under the aegis of the United Nations Conference on Environment and Development (UNCED), to provide the major input on fresh water to the preparations for the Earth Summit. In addition ICWE was seen to be the most important UN conference on fresh water since the UN Water Conference in 1977.

7.3.6 Acknowledging that the Conference had a number of aims, particularly to emphasize the importance of water resources and to identify a strategy for water for the remainder of this century and into the next, the Council appreciated that the Dublin Statement provided a succinct summary of both the problems of water and an agenda for their solution. The report of the Conference was seen as a substantial supplement to the Statement, addressing the strategy in more detail for the wide range of water issues over scales from global to local. A number of the areas identified for action were highly pertinent to the HWRP and other WMO programmes: water scarcity, protection against natural disasters, water conservation and protection of the aquatic environment, the impact of climate change, monitoring and data collection and capacity building, for example. Fundamental to most if not all of these matters was WMO's role in the improvement of the knowledge base that was called for regarding the hydrosphere and the atmosphere.

7.3.7 Recalling the numerous occasions when the need for inter-agency collaboration had been stressed, the Council welcomed the high degree of co-operation achieved across the UN system in ICWE. The active participation of so many Members was also applauded, particularly the fact that 115 countries had been represented in Dublin by their experts in water. Support for ICWE in cash and in kind had been provided by a number of Members in addition to that received from UN bodies and agencies and from certain non-governmental bodies. This support was to the satisfaction of the Council, as was the accommodating of the office of the co-ordinator for the Conference in the WMO Secretariat and the assistance provided by the Secretariat itself.

7.3.8 The Council noted that while much of the material for the Conference had been pre-published, a substantial volume remained to be published. The initiatives taken to ensure the wide circulation of the Statement and report were acknowledged, while the steps to publish the other material were appreciated by the Council.

7.3.9 The fact that a follow-up to Dublin was foreseen was welcomed by the Council, which recognized that this should develop within the framework created for UNCED as a whole. It noted that a strengthening of existing UN institutions had been proposed as part of this endeavour. As regards WMO's follow-up, the Council recommended that CHy specifically address this item at its ninth session. Particular mention in this regard was made of the very broad and integrated approach taken and recommended by the Dublin Conference and its strong focus on social and economic, as well as technological, aspects of water resource management. The need was also mentioned for CHy to concentrate its efforts in fields where its responsibility and expertise were greatest.

7.3.10 The Council expressed its appreciation of the success of the International Conference on Water and the Environment to the Secretary-General, to the co-sponsoring nations and UN bodies and agencies, to Prof. J. C. J. Dooge, who had chaired the Conference, and to Prof. G. J. Young, the ICWE Co-ordinator. The Council thanked most warmly the Government of Ireland for hosting the Conference and for all the effort entailed.

8. EDUCATION AND TRAINING PROGRAMME (agenda item 8)

GENERAL

8.1 The Executive Council noted the decisions of Eleventh Congress concerning WMO activities in the
field of education and training and, in particular, Resolution 23 (Cg-XI) - Education and Training Programme. The Council noted moreover that in this resolution Congress had requested it to ensure the overall co-ordination of the WMO Education and Training Programme and take all necessary action to enable the Programme to meet its objectives under the Third WMO Long-term Plan.

8.2 The Council also noted with satisfaction the information on WMO activities which had taken place in education and training since its last session, and stressed that those activities were of significant importance for national Meteorological and Hydrological Services in developing their manpower resources. It recognized that there was an increasing trend in the number of personnel to be trained in all WMO Classes during the eleventh financial period and that Member countries, especially in the developing world, should make every effort to develop their national training centres to ensure their self-reliance in training meteorological and hydrological personnel.

REPORT OF THE EC PANEL OF EXPERTS ON EDUCATION AND TRAINING

8.3 The Council noted with satisfaction the report on the fourteenth session of the Executive Council Panel of Experts on Education and Training, which was held at the WMO Secretariat in Geneva from 9 to 13 December 1991. It considered the views and recommendations of the panel and made the comments and decisions indicated below.

8.4 The Council recognized that, as a result of the impacts of advances in technology on the education and training process, it was necessary to bring one of the terms of reference of the panel (adopted by Resolution 10 (EC-XXXIX)) up to date. It accordingly decided to adopt Resolution 9 (EC-XLIV) - Amendment to the terms of reference of the EC Panel of Experts on Education and Training.

MANPOWER DEVELOPMENT

8.5 The Executive Council emphasized the importance of the Manpower Development programme, in particular to developing countries, and further stressed the need for a strategic approach to the implementation of such a programme. In this connection, it noted the information provided on the results of the second global survey of Members' training requirements, which was carried out during 1989, and felt that the results of the survey constituted a useful source of information for a number of users, including planning officials. The Council requested the Secretary-General to develop appropriate measures to assist Members with the Manpower Development programme.

8.6 The Council noted that Task (a) of the Manpower Development programme (TLTP, Part II, Vol. 6, project 6.1 of Table B) provided for a comprehensive survey of Members' training requirements on a global scale once in each financial period and recommended that the next survey should be carried out in 1993. It agreed that the next survey should have a similar format and that when designing the questionnaire steps should be taken to give more explicit instructions or explanations, to enable respondents to complete the questionnaire uniformly, and a comparison of the results with the trends of the last survey. It also agreed that the next survey should more explicitly include hydrological training needs.

8.7 The Council expressed the hope that active participation of Members in the next survey of training requirements would allow a proper assessment of WMO training activities and would be a base for modifications and improvements in the Education and Training Programme.

TRAINING ACTIVITIES

8.8 The Executive Council noted the various tasks listed under programme 6.2 (TLTP, Part II, Vol. 6, Table A) as approved by Eleventh Congress. The Council urged Members, as well as presidents of technical commissions and regional associations, to execute their respective roles in these tasks, as identified in the TLTP. It requested the Secretary-General to establish a suitable mechanism to enable a two-way flow of information between, on the one hand, technical commissions, regional associations or their Working Groups and Rapporteurs on Education and Training, and, on the other, the WMO Secretariat to ensure that the Education and Training Department and the EC Panel of Experts on Education and Training would be aware of the training plans and proposals of working groups and rapporteurs before their adoption by constituent bodies (see also paragraph 2.5.5). It also requested the Secretary-General to continue assisting Members, within the limits of available resources, with the training of their personnel through the implementation of projects approved under the Third Long-term Plan. The Council placed emphasis on the value of, and continued need for, the training of instructors in training techniques and training in the management of meteorological and hydrological institutions.

8.9 The Council was pleased to note the training activities which had been developed in China and Japan and further noted with appreciation the offers of these Members to make training opportunities available to WMO in general. It accordingly urged Members to make use of these training programmes.

8.10 The Council agreed with the view of the panel that training events in operational hydrology and climate change should increase and include wherever possible topics on climatology, climate change, natural disasters and mass education to increase awareness of environmental matters. In addition, the Council recognized that there was a need for meteorologists and operational hydrologists to be competent to advise their governments on the roles to be played to gain access to international funding (e.g. GEF) that might be available for national implementation of the Framework Convention on Climate Change. It agreed that suitable training events should be organized to prepare relevant personnel to perform these advisory functions.
8.11 The Council expressed satisfaction with the priority given and progress made in the preparation of new WMO training publications and the revision of existing ones, as well as their translation into the official languages of the Organization. It expressed its appreciation to those Members and persons who had collaborated and assisted in these activities.

8.12 The Council urged Members to continue the provision of financial and other support to the WMO Training Publications Programme under the VCP and other relevant mechanisms, and expressed the hope that other Members, which had not done so before, would also co-operate in the future. It requested the Secretary-General to continue efforts to obtain additional funds and effective means for the production of more training publications.

WMO TRAINING LIBRARY
8.13 The Council was pleased to note the information on the activities of the Training Library and the extensive use which had been made by Members of the possibilities to acquire or borrow video films and slides. It also noted with appreciation the efforts of the Education and Training Department to produce locally copies of the 16 mm films on standard VHS video cassettes and agreed that these actions should be encouraged and continued.

8.14 The Council noted with satisfaction the progress made by the Education and Training Department in the development of its computer system and recommended that ETR should continue to acquire the necessary equipment and training materials to enable it to improve its facilities and expertise in this area and expand its involvement in computer-assisted learning (CAL) activities. It also felt that the Training Library should place emphasis on its function of fostering the exchange of computer-assisted training materials so that Members could participate in these activities.

REGIONAL METEOROLOGICAL TRAINING CENTRES (RMTCs)
8.15 The Council noted with appreciation the investment in human and monetary resources which Members hosting RMTCs and other supporters had put into the establishment and operation of these centres and expressed its appreciation to them for doing so. It also encouraged them to continue their support for, and further development of, the centres to enable them to meet the training needs in their Regions. The Council noted with satisfaction that the network of the WMO RMTCs was in general functioning satisfactorily and contributed significantly to the training of meteorological and operational hydrological personnel from their Regions and in some instances from other Regions.

8.16 The Council also noted the progress achieved by a number of Centres, in particular with regard to:
(a) The introduction of new routine courses and the holding of specialized courses;
(b) The use of computers in practical exercises and development of computer-assisted learning programmes;
(c) The development of staff and teaching facilities, resulting from the assistance provided by Members hosting RMTCs, the WMO Secretariat and some other sources of assistance.

8.17 At the same time the Council expressed concern about some deficiencies which had been observed. It noted in particular that there was still a pressing need for a considerable number of meteorological and hydrological personnel to be trained in other Regions due to the non-coverage of certain subjects by training institutions (including RMTCs) in their own Regions.

8.18 The Council recommended that Members hosting RMTCs should make as much use as possible of the results of the recent survey of Members’ training requirements for their advanced planning and programme development and in particular for the training of hydrological personnel. It also felt that centres should periodically update their training programmes to meet the needs of the users.

8.19 At the same time the Council saw a need for continued support to the RMTCs for organizing re-training, specialized and advanced training of personnel, as well as assistance in providing training equipment and materials to enable such advanced training to be carried out. Reference was also made to the need for training instructors at RMTCs in satellite applications as indicated in paragraph 3.4.5 above.

8.20 The Council shared the panel’s concern at the apparent inactivity of three Centres during the past few years. Accordingly, it recommended that the Secretariat should look into the matter and submit a relevant report to the next session of the Council. In this connection, the Council felt that the regional associations concerned might wish to note the need to consider whether any new or replacement RMTCs should be designated in the event of any loss of designated Centres. The Council also noted with appreciation the kind offer of China to host an RMTC at the Nanjing Meteorological Institute in response to requests for training received by China from certain Members and expressed the view that this should be considered by Regional Association II under the procedure established for the designation of RMTCs.

8.21 The Council drew the attention of Members hosting inactive RMTCs to this development and requested that they should make every effort towards bearing the responsibilities and obligations in accordance with the criteria laid down by the Executive Council for the designation of WMO Regional Meteorological Training Centres.

8.22 The Council was pleased to note the initiatives within the United Kingdom to give greater support to the RMTCs in the preparation of training materials, and a joint venture commenced with the Meteorology Department of the University of Edinburgh, where the Meteorological Learning Materials Centre was developing training materials for use by other institutions.

MEETING OF DIRECTORS/REPRESENTATIVES OF RMTCs
8.23 The Council was pleased to note that a meeting of Directors/Representatives of RMTCs had been held on 24 August 1991 in Toronto (Canada). It expressed the
view that Members hosting RMTCs and the Secretariat should make the best use of the meeting’s recommendations when developing the RMTCs’ facilities and training programmes.

**Training Institutions of National Meteorological Services**

**8.24** The Council noted with interest the developments leading to the establishment of the Standing Conference of Heads of Training Institutions of National Meteorological Services and the report of the second meeting of this body which had taken place in Toronto on 26 August 1991, and felt that this new group could be a very effective and important body in the ongoing development of WMO Education and Training Programme. It recognized the value of the establishment of the Standing Conference’s working groups dealing with up-to-date scientific and technical issues in education and training processes and hoped that all Members would benefit from the activities of these working groups.

**8.25** The Council fully endorsed the high level of cooperative activity in seeking solutions to common training problems and was especially supportive of the Standing Conference’s moves to organize an international conference on new computer-assisted learning and distance learning materials in 1993. It strongly urged the participation of representatives from countries engaged in the preparation and use of such material. The Council also requested the Secretary-General to assist, as far as possible, in co-sponsoring the proposed conference.

**WMO Symposium on Education and Training**

**8.26** The Council noted with satisfaction that the Symposium on Methods of Meteorological Education and Training Including New Relevant Technologies had been successfully held in Toronto, Canada, from 19 to 23 August 1991, and expressed its appreciation to Canada for the excellent arrangements and facilities provided for the event.

**8.27** The Council agreed on the considerable value of the outcome of the symposium towards the achievement of the longer-term goal of the Education and Training Programme and recommended that action should be taken to enable their implementation. It also agreed with the panel’s proposal that the theme for the next symposium should deal with “curriculum needs for training all classes of meteorological and hydrological personnel in the year 2000 and beyond”, on the understanding that the exact title of the event would be appropriately formulated.

**8.28** The Council noted the symposium’s proposal that a WMO Technical Commission on Education and Training be established, which was also supported by the Standing Conference of Heads of Training Institutions of National Meteorological Services. The Council noted the views of the panel, and also those of its members. While some members felt that it was useful to consider the establishment of such a commission, it was recognized that there was insufficient information on which to formulate any decision, and there was a general opinion that the time was not right for the Organization to undertake such an expansion.

**Education and Training Fellowships**

**8.29** Noting the enormous gap between the training needs and the limited funding opportunities within the fellowship programme, the Council urged the Secretary-General to pursue his efforts in searching for new sources of extra-budgetary financing from potential donors and international development funding agencies, and requested Members to consider the possibility of increasing bilateral and multilateral co-operation schemes. It also requested the Secretary-General to continue to promote the implementation of the cost-effective tripartite fellowship arrangements, whereby the country hosting an RMTC would waive tuition fees, the beneficiary country would meet the cost of international travel of its candidates and WMO and VCP donors would meet the stipend and living expenses of the fellows concerned.

**8.30** The Council considered that fellowships at the RMTCs tended to be more cost-effective and urged VCP donor Members to provide more VCP fellowships for training at the RMTCs or at other training institutions in the candidates’ own Regions.

**8.31** The Council noted with appreciation that an agreement had been concluded in March 1992 between the Secretariat and the Government of Portugal for the award of Portuguese VCP fellowships for studies in the field of meteorology for the five African Portuguese-speaking countries. It also noted with appreciation that the Governments of Saudi Arabia and Turkey had offered VCP fellowships for studies in the field of meteorology and that arrangements were being made by the Secretariat for the implementation of these fellowships for the benefit of all concerned.

**8.32** The Council noted that the new scientific and technical developments in the applications of meteorology and hydrology had resulted in an increasing demand for fellowships for postgraduate and specialized studies in such areas as the atmospheric environment, climate change, computer science and communications equipment. It urged donor Members to arrange for relevant training at all levels to enable meteorological personnel to utilize more effectively the new technologies in these specialized fields and to participate more actively in these disciplines.

**Collaboration with Other Organizations in Education and Training**

**8.33** The Executive Council was pleased to note the collaboration of WMO with other organizations in education and training, and recommended that this collaboration be continued and enhanced.

**8.34** The Council expressed its satisfaction with the well-established collaboration with UNDP and urged Members to promote the importance of meteorological training programmes to the planning authorities in their respective countries when new UNDP projects were being developed.

**8.35** The Council was in favour of the panel’s view that action should also be taken by the Secretariat to enhance the UNDP technical co-operation projects’ involvement in education and training and, accordingly, recommended that action be taken to:
(a) Foster the development of UNDP umbrella projects in different Regions to fund group training events in the context of the strategic approach to training for national manpower development as provided for in programme 6.1, TLTP, Vol. 6;

(b) Explore possibilities of mobilizing funds for training in meteorology and hydrology with other international financial organizations.

THE WMO EDUCATION AND TRAINING PROGRAMME BEYOND 1995

8.36 The Executive Council noted the panel's comments and ideas on the future of the WMO Education and Training Programme in the light of the development of the WMO Fourth Long-term Plan and agreed that the EC Panel of Experts on Education and Training should itself provide assistance and guidance on the identification of the "services" which the ETRP should provide to Members now and in the foreseeable future and submit a document to the next session of the Executive Council.

9. REGIONAL PROGRAMME (agenda item 9)

9.1 REGIONAL ACTIVITIES (agenda item 9.1)

9.1.1 The Executive Council reiterated its recognition of the importance of the Regional Programme, which supports regional associations and assists the Members in their efforts towards the development of their national Meteorological and Hydrological Services. It considered, therefore, that every effort should be made to enhance the Programme according to the priorities set by the regional associations in conformity with the new priority areas of WMO activities, particularly the climate-change and related environmental issues.

9.1.2 The Council noted with satisfaction the increasing role of the Regional Offices as focal points for regional activities. It therefore invited the Secretary-General to continue his efforts to develop these Offices as requested by Eleventh Congress.

9.1.3 The Council was pleased to note the satisfactory progress made, with the support and assistance of Members, for the establishment of the African Centre of Meteorological Applications for Development (ACMAD) and the ASEAN Specialized Meteorological Centre (ASMC). In particular, it noted with satisfaction that ACMAD had entered its active phase with the participation of the Members from the Region which had seconded staff and with contributions from some donors. The Council requested the Secretary-General and the donor community to continue their support, as appropriate, to these Centres so that the progress achieved will not be eroded due to lack of resources and so that the centres may be effectively operational as soon as possible. It also encouraged Members to support other regional co-operation efforts to establish such Regional Specialized Meteorological Centres or similar institutions.

9.1.4 The Council welcomed the offer of the African Centre of Meteorological Applications for Development (ACMAD) to host the Depository Library of RA I as recommended by the tenth session of RA I (Bamako, Mali, November/December 1990). It invited Members to offer relevant publications to the Centre and the Secretary-General to provide assistance, as appropriate, for the development of the Library.

9.1.5 The Council noted that technical conferences provide an excellent forum for the exchange of views and experience in the management and development of Meteorological Services. In this regard, the Council noted with satisfaction that a number of technical conferences on Meteorological Services were planned to be held during the eleventh financial period, including one in RA I. In particular, it was pleased to note that the RA II Technical Conference on the Management of Meteorological Services had been successfully held in Shanghai from 23 to 27 September 1991 at the kind invitation of the Government of the People's Republic of China. The Council was also pleased to note that the Conference had concluded with the following recommendations addressed to WMO and Directors of Meteorological and Hydrological Services:

(a) That WMO should assist Members of developing countries to play a more active role in the technical commissions' activities; facilitate transfer of technology and knowledge through fellowship awards and training events; hold technical conferences on management more frequently; and that some aspects of management should be incorporated in training events of WMO in the future;

(b) That Directors of national Meteorological and Hydrological Services should exercise flexibility in order to seize opportunities as they arise to enhance the visibility of their Services. They should explore every avenue for the pooling of resources through regional co-operation as a mechanism for a more cost-effective approach to problems of common interest and take full advantage of regional groupings already providing the political/economic bases for developing regional activities.

The Council requested the Secretary-General to give his support and initiate necessary follow-up action where appropriate. In view of the usefulness of technical conferences, it also agreed that consideration should be given to the holding of more such events in the future.

9.1.6 The Council noted that the South American Desk operating at the Washington World Meteorological Centre continued to offer valuable training to meteorologists of Region III. It welcomed the information that the USA had announced the establishment of a Tropical Desk which would be operating for the benefit of RA IV and some RA III Members in a manner similar to the South American Desk. The Tropical Desk was expected to start operating in November 1992. In this respect, the Council expressed its appreciation to the USA for the co-operation it was offering to the countries of RA III and RA IV.

9.2 WMO ANTARCTIC ACTIVITIES (agenda item 9.2)

9.2.1 The Executive Council noted with appreciation the invitation received for WMO to participate in the SCAR International Conference "Antarctic science - Global concerns" and in the Sixteenth Antarctic Treaty
Consultative Meeting (ATCM-XVI) and expressed its gratitude to the Australian Bureau of Meteorology for the support given to Dr N. Streten, chairman of the EC Working Group on Antarctic Meteorology to participate as WMO representative in these important events. The Council also noted with satisfaction the reports of Dr Streten on the results of the Scientific Committee on Antarctic Research (SCAR) Conference and ATCM-XVI, and expressed its appreciation to the British Antarctic Survey for its valuable assistance in the preparation of the WMO presentation at the SCAR Conference. The Council reaffirmed its view that the WMO participation in the Antarctic Treaty Consultative Meetings as well as in SCAR meetings was necessary for the further co-operation and co-ordination of ongoing activities in the Antarctic. The Secretary-General was requested to make suitable arrangements for the participation of a WMO representative in future ATCMs and SCAR meetings.

PROMOTION OF INTERNATIONAL CO-OPERATION

9.2.2 The Executive Council noted the views of ATCM on the necessity to continue the research work on the depletion of the ozone layer over Antarctica by national and international efforts and urged Members concerned to continue systematic measurements of ozone, both at Antarctic stations and by using satellites and ozone sondes, and their transmission in near-real time. In this connection it also noted with satisfaction the joint activities initiated by Argentina and Finland on the ozone measurements at the Antarctic Meteorological Centre Marambio and encouraged those Member countries to continue this important initiative. The Council also urged Members operating ozone-monitoring stations to carry out measurements of atmospheric composition on a continuous basis.

9.2.3 The Executive Council noted with satisfaction information provided by the IOC Representative on the efforts of IOC in the Southern Ocean which, during the previous two years, had been concentrated primarily on the development of ocean observations and data-management systems, *inter alia*, through joint WMO/IOC activities such as IGROSS and DBCP. The Council welcomed the invitation of IOC to establish closer links between WMO and IOC in the development of co-ordinated plans for research and monitoring of the Southern Ocean. As the first step, the Council requested the Secretary-General to co-operate with IOC in the preparation of a review paper on WMO- and IOC-related research and observational activities being carried out in the Southern Ocean, to be submitted to the next sessions of WMO and IOC governing bodies respectively.

ANTARCTIC METEOROLOGY AND TELECOMMUNICATIONS

9.2.4 The Executive Council noted that the implementation of Antarctic meteorological observations and telecommunication programmes required further co-ordination at national level and emphasized the importance of frequent dialogue between the Permanent Representatives and the Managers of National Antarctic Programmes in seeking to improve the Antarctic observation and telecommunication networks.

9.2.5 The Executive Council noted with satisfaction the report of the Expert Meeting on Antarctic Telecommunications held in Geneva from 21 to 24 October 1991. The Council agreed that the operations of circuits linking Antarctic stations and of HF broadcasts from Antarctic stations should be maintained, particularly to satisfy the requirements for observational data and processed information at Antarctic stations. It also noted that satellite systems to be used for the collection and the distribution of Antarctic data could be based on either commercial communication satellites or meteorological satellites. Noting that the current telecommunication arrangements were at variance with the *Manual on the GTS*, the Council considered the draft amendments to the *Manual on the Global Telecommunication System* — Volume II — Regional Aspects — The Antarctic, submitted by the chairman of the EC Working Group on Antarctic Meteorology. The Council recorded its decision in Resolution 10 (EC-XLIV).

MARINE HYDROMETEOROLOGICAL SERVICES TO NAVIGATION IN THE SOUTHERN OCEAN

9.2.6 The Executive Council noted the view of the Sixteenth Antarctic Treaty Consultative Meeting that at the present time the questions concerning the improvement of meteorological and ice information services should be dealt with mainly at the national level and the matter be followed up in the appropriate bodies of the Council of Managers of National Antarctic Programmes (COMNAP) and WMO. The Council requested the chairman of the EC Working Group on Antarctic Meteorology to continue consultations and co-operation with COMNAP on this issue.

10. TECHNICAL CO-OPERATION PROGRAMME

(agenda item 10)

10.1 The Executive Council reviewed the report submitted by the Secretary-General on the Technical Co-operation Programme. It noted with satisfaction that technical co-operation activities continued to be supported financially by the United Nations Development Programme (UNDP), the WMO Voluntary Co-operation Programme (VCP), trust fund (TF) arrangements and WMO regular budget (RB). The total financial value of assistance provided in 1991 was US $325.5 million.

10.2 The Council noted that with the total delivery of US $15.6 million in 1991 UNDP continued to be the principal source of funding for WMO's technical co-operation activities. Nearly half of this resource was used for the procurement of observing, telecommunication and data-processing equipment.

10.3 The Council noted with appreciation that the sectoral support missions funded in 1991 by UNDP had been carried out in 29 countries for the preparation of technical co-operation project proposals.

10.4 The Council noted that the new rules for computation of support cost reimbursement for UNDP-funded projects had come into effect on 1 January 1992. However, WMO, together with other small UN agencies, would stay with the old, but slightly modified, rules until some experience with the new rules had been gained.
10.5 The Council observed with satisfaction that many Members supported the Technical Co-operation Programme through a trust-fund arrangement, whereby WMO implemented projects on behalf of the donors. In 1991 the total trust-fund project delivery was US $7.9 million.

10.6 The Council noted that in view of the recent economic development, particularly in Central and Eastern Europe, which had led to a dramatic increase in the workload in the TCO Office for the Arab States and Europe, the Secretary-General had authorized the conversion of a General Service post to a Professional post of a Programme Officer in order to provide adequate support to projects mainly in the eastern and southeastern part of Region VI. The Council authorized the Secretary-General to re-establish the General Service post in the Office for the Arab States and Europe and recorded its decision under item 15.4. The Council was informed that both measures would be implemented in such a way as to be in conformity with the relevant decisions of Congress (paragraph 8.11, abridged final report of Eleventh Congress).

10.7 Through the WMO Natural Disaster Assistance Fund for Meteorological and Hydrological Services, Bangladesh had received assistance to rehabilitate the meteorological observing and telecommunication equipment destroyed by a tropical cyclone in April/May 1991. The Executive Council expressed its appreciation to China, Finland and the UK for promptly responding to the request submitted by Bangladesh after the cyclone and noted with satisfaction that these donations had been adequate to satisfy the requirements stated by Bangladesh.

10.8 The Council was informed that the Secretary-General had approached the governments of the major donors to the WMO Technical Co-operation Programme requesting contributions to the Natural Disaster Assistance Fund. Other than the three responses mentioned in paragraph 10.7, no contributions had been made so far.

10.9 Eleventh Congress requested the Executive Council to explore the possibility of establishing a more permanent and effective mechanism (including all possible sources of funding) to assist Members affected by weather- and climate-related disasters. The Council considered various possibilities and concluded that for the time being such contributions should remain on a voluntary basis. It requested the Secretary-General to continue his efforts for raising resources for the Fund.

10.10 The Executive Council noted that the contributions to the Voluntary Co-operation Programme (VCP) in 1991 had totalled US $7.8 million. A large portion of the support given was in the form of equipment for meteorological observations, telecommunications and data processing.

10.11 The Council expressed its gratitude to the Members which had made contributions to the VCP in the form of funds, equipment and services as well as fellowships. It reiterated the need for all WMO Members to make contributions to the VCP and requested the Secretary-General to continue strengthening the programme.

10.12 The Council received with satisfaction the report of the twenty-sixth session of the EC Panel of Experts on the WMO Voluntary Co-operation Programme and endorsed the various conclusions.

10.13 The Council approved the allocations proposed by the EC Panel of Experts for the VCP(F) fund, noting that these allocations had been made on a basis of estimated income. The Secretary-General should therefore make expenditures only as funds become available. The Secretary-General may use his discretion as to which expenditures should be given priority; this applies also to adjustments that the Secretary-General may make to allocations previously approved by the Council.

10.14 The Council reviewed the rules of the WMO Voluntary Co-operation Programme and considered that there was a need to amend them to include in the fields of support the establishment and maintenance of the Global Atmosphere Watch (GAW) stations and the hydrometeorological activities related to environment protection. Moreover, the Council considered that the name “World Climate Applications Programme” should be amended in the rules to read “World Climate Applications and Services Programme”. Resolution 11 (EC-XLIV) was adopted.

10.15 The Council noted with satisfaction that the Secretary-General was soliciting information on bilateral and multilateral assistance provided outside direct involvement of WMO. It was recognized that the volume of such support was difficult to estimate because in many cases the donor and/or recipient agencies were other than the national Meteorological Services. However, the Council recommended that this type of information should be collected on an annual basis in order to permit more effective co-ordination between all projects in meteorology and related fields.

10.16 The Council received with appreciation the document “Bridging the gap”, introducing a number of important developments in the Technical Co-operation Programme, which had taken place since Eleventh Congress. These included Global Environment Facility (GEF) proposals, dialogue with equipment manufacturers and the use of the WMO Natural Disaster Assistance Fund for Meteorological and Hydrological Services to support the rehabilitation of meteorological facilities destroyed by a cyclone in Bangladesh in 1991. Efforts had continued to secure financial support for the African Centre of Meteorological Applications for Development (ACMAD) and the ASEAN Specialized Meteorological Centre (ASMC).

10.17 The Council agreed that there was an even greater need now to bridge the gap between the level of meteorological/hydrological services provided in developing and developed countries, although it recognized that the availability of funds from external sources was becoming even more difficult. The Council agreed with the Secretariat proposals in efforts to seek new donors and to gain further support from many of the current donors.
10.18 The Council noted with concern the decrease in UNDP regional funding for sub-regional activities such as the AGRHYMET programme and the drought monitoring centres in eastern and southern Africa. In view of the current drought severely affecting several African countries, the Council requested the Secretary-General to convey this concern to the Administrator of UNDP and to pursue other sources with the goal of securing additional funds.

10.19 The Council took note of the substantial needs of the Meteorological and Hydrological Services of the countries of Central and Eastern Europe in economic transition and noted with satisfaction the measures taken so far in that respect by the Secretary-General. It requested the Secretary-General to continue his efforts in soliciting support for the meteorological and hydrological activities in the region.

11. LONG-TERM PLANNING (agenda item 11)

11.1 The Executive Council considered the report of the chairman of the EC Working Group on Long-term Planning (WGLTP), which had held its first session 15–20 June 1992, and expressed its appreciation to the working group for its work. The final report of the session had been made available in English only to EC-XLIV. The Council noted the follow-up action taken by the Secretary-General and the working group in response to the decisions of Eleventh Congress on the Third Long-term Plan (TLTP). It also considered the working group's initial proposals on preparation of the Fourth Long-term Plan (4LTP).

THIRD LONG-TERM PLAN
PUBLICATION OF THE THIRD LONG-TERM PLAN

11.2 The Executive Council noted that both the Part I and Part II volumes of the TLTP approved by Eleventh Congress had been published and distributed in English and that the volumes in the other languages would follow shortly. The Council also reviewed the final draft of the self-contained glossy version of the Executive Summary, which is directed particularly towards decision-makers and funding organizations.

11.3 The Council was concerned that, because of the long delay between approval of the Plan by Congress and its distribution in published form, some sections of the text might appear to be already out of date.

11.4 Although it considered that the TLTP was rather long and that the Part II volumes might have been improved by the inclusion of more informative illustrative material and less detailed time-line charts, the Council expressed its general satisfaction with the TLTP. It endorsed the wide distribution of the Executive Summary, Part I, and the detailed Part II volumes within and outside Members' national Meteorological and Hydrological Services as well as to other interested international organizations.

11.5 The Council extended its appreciation to the Secretary-General for the Secretariat's efforts in finalizing the TLTP in the difficult circumstances associated with the Organization's heavy workload of preparation for the United Nations Conference on Environment and Development (UNCED).

MONITORING AND EVALUATION

11.6 The Executive Council noted that Eleventh Congress had requested that it report to Twelfth Congress on the implementation of the scientific and technical programmes over the period 1990–93 on the basis of the objectives set down in the relevant parts of the Second and Third Long-term Plans. In this context, it recalled that, through Resolution 1 (EC-XLIII), it had requested the WGLTP to assist it in the evaluation of progress with the implementation of WMO Programmes during its forty-sixth session, in 1994.

11.7 The Council was advised that, following a review of the two-level programme monitoring and evaluation system established in 1989 (Resolution 17 (EC-XLI)), the WGLTP, at its recent first session, had recommended the abandonment of project-level monitoring reports and proposed that a single monitoring report for each WMO programme be submitted to EC-XLVI as one of the bases for its programme evaluation and report to Twelfth Congress. The Council agreed with this approach and adopted Resolution 12 (EC-XLIV).

FOURTH LONG-TERM PLAN

11.8 The Executive Council was advised that the WGLTP had comprehensively reviewed the WMO long-term planning process in the light of experience with the First, Second and Third Plans and the guidance provided by Congress. The working group had considered, in particular, the proposals of X-RA VI in respect of the format and length of the Plan. It had also given special consideration to the implications of UNCED for the future development of international meteorology, hydrology and oceanography and for the planning of WMO Programmes. In the light of the working group's advice and its own consideration of the issues involved, the Council took action on a number of features of the 4LTP as a basis for further work on the preparation of the Plan.

FORMAT AND GUIDELINES

11.9 The Executive Council agreed that the Fourth Long-term Plan should consist of three separate components as follows:

(a) A self-contained, separately published Executive Summary, which should focus on the objectives and policies of WMO and which should be oriented towards decision-makers;

(b) Part I, which should set out overall WMO policy and strategy for the decade 1996–2005. It should be structured along broadly similar lines to Part I of the TLTP but should be shorter, preferably not more than about 60 pages;

(c) The separate Part II volumes, which should set out the implementation strategy for each of the major Programmes of the Organization. There should be an executive summary for each volume. These volumes should be more attractively presented than in the past and need no longer include detailed time-line charts as a mandatory component for each Programme.

11.10 The Executive Council noted that the proposed modifications to the structure and format of the Plan had been incorporated in a revised edition of the guidelines.
on "The WMO Planning Process" which had been prepared by the working group during its session. Among the more significant of the suggested detailed changes which the Executive Council endorsed as a basis for initial drafting were:

(a) Deletion of material on the purpose and scope and current status of each programme from the programme chapter of Part I;

(b) More explicit identification, in both Parts I and II, of specific programme objectives (while noting that those dependent on regular budget funding will be defined in detail only for the first four years);

(c) Inclusion in Part I of an overall timetable or timeline chart of major programmed events (such as Congress and sessions of technical commissions and regional associations) for the decade;

(d) Inclusion of the approved four-year budget allocations for each of the scientific and technical programmes, bearing in mind that the published LTP is the only official detailed publication of the outcome of Congress consideration of the Secretary-General's four-year programme and budget proposals.

FUTURE POLICIES, STRATEGY AND PRIORITIES

11.11 The Executive Council noted that the WGLTP had carefully reviewed the statement of overall objectives and policies of WMO and its major objectives and strategy for the decade 1992–2001 as set down in the TLTP. In the light of its consideration of the outcome of UNCED and a range of other new developments affecting WMO as presented in a document submitted by the Secretary-General, the working group had prepared a summary of proposed policy and strategy principles for the decade 1996–2005 for inclusion in the 4LTP.

11.12 The Council agreed with the increased emphasis given to sustainable development issues and to a more integrated approach to observation and research into the atmosphere, ocean and inland waters. It acknowledged that the precise wording of the summary statement of objectives and policies would need considerable fine tuning over the next few years as the drafting of the 4LTP proceeded against the background of post-UNCED initiatives in the UN system. It agreed that the working group's first draft of the summary statement (see Annex VI to this report) should be circulated to all Permanent Representatives and to presidents of technical commissions with a request for comments and alternative proposals so that the Council would be in a position to have a detailed discussion on future policies and strategy at its forty-fifth session. During the discussion of the working group's initial draft, the following suggestions for improvement were offered (in summary):

(a) Increased emphasis needed on:

(i) The promotion and assistance of international co-operation by reorganizing and reformulating the proposed list of overall objectives and general policies;

(ii) Scientific activities rather than disciplines;

(iii) The importance of user-oriented policies for national Meteorological and Hydrological Services (NMHSs);

(b) Further clarification of policy needed on:

(i) The extent to which WMO should extend its activities beyond meteorology and operational hydrology to involve itself in other environmental issues;

(ii) The role and responsibilities of WMO with respect to the total meteorological and hydrological activities of Members rather than just with those of NMHSs;

(iii) Choice of appropriate wording to describe WMO's policy and objectives regarding specialized services and commercialization;

(iv) The extent to which WMO's programme structure should align with its major objectives for the decade;

(c) Amendments to the draft text needed in order to:

(i) Encompass WMO responsibilities in all sectors of activity, not just the governmental sector;

(ii) Present the strategy in language appropriate for 1996;

(iii) Emphasize the importance of studying climate fluctuations and the issue of regional climate change as well as global climate change;

(iv) Address the importance of learning more about atmospheric processes relevant to weather forecasting;

(v) Identify the need to make full use of the existing meteorological infrastructure when addressing new problems.

The Executive Council requested that the Secretary-General, in consultation with the Working Group on Long-term Planning and in the light of the above comments and those received from Permanent Representatives and presidents of technical commissions, provide a further updated version of the draft policy and strategy principles for review by EC-XLV. The Council agreed that final drafting of the 4LTP should in particular take into account the work carried out by the Organization on the matter of commercialization of meteorological and hydrological data and products.

PROGRAMME STRUCTURE

11.13 The Council agreed that WMO should give very high priority in its Fourth Plan to meteorological and hydrological activities in support of the goals of sustainable development and those related to implementation of the Climate Change Convention and a probable future International Convention on Desertification. It also agreed that the regional associations should be asked to review carefully their statements of regional priorities as set out in the TLTP in order to provide guidance for the formulation of the Part II volumes of the 4LTP and the Secretary-General's programme and budget proposals for the twelfth financial period.

11.14 The Executive Council noted the preliminary views of the working group on programme structure for the twelfth financial period for use in drafting the 4LTP. It agreed that consideration should be given by the relevant WMO bodies over the coming year to the possibility of identifying the Global Climate Observing System (GCOS) as a new major Programme of WMO which would
be included in the WMO Programme listing between the World Weather Watch and the World Climate Programme. It acknowledged the complex interrelationship and interdependency between programme elements that would be inherent in such a structure and asked the Secretary-General, in consultation with the working group and other relevant bodies, to submit a range of programme structure options to EC-XLV so that the Council, with the assistance of its WGLTP, could reach a firm decision on the preferred programme structure for the twelfth financial period at its next session.

11.15 The Council also agreed that a number of other minor programme re-groupings consistent with an increased emphasis on an integrated approach to environmental observation and data collection should be considered and included in the options presented to EC-XLV.

12. CO-OPERATION WITH THE UNITED NATIONS AND OTHER INTERNATIONAL ORGANIZATIONS (agenda item 12)

12.1 United Nations (agenda item 12.1)

12.1.1 The Executive Council noted the reports of the Joint Inspection Unit referred to WMO and, where appropriate, the comments of the Secretary-General.

12.1.2 The Executive Council adopted Resolution 13 (EC-XLV) in connection with the reports of the Joint Inspection Unit.

Resolutions addressed to WMO by the United Nations

12.1.3 The Executive Council took note of the following resolutions addressed to the Organization by the fortieth session of the General Assembly of the United Nations: 12, 13, 17, 20, 24, 44, 45, 46, 47, 48, 61, 68, 70, 71, 72, 73, 76, 78, 79, 84, 85, 87, 90, 92, 93, 94, 95, 96, 98, 100, 102, 109, 114, 121, 123, 126, 141, 142, 143, 144, 150, 151, 152, 156, 157, 159, 163, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 179, 181, 182, 184, 191, 192, 204, 207, 213, 216, 219, 221.

12.1.4 The Council further noted that those resolutions containing recommendations addressed to WMO, or relevant to its activities, were taken into account within the normal programmes and activities of the Organization. It also noted that action was taken, as appropriate, when the resolutions were addressed to all the organizations of the United Nations system or the specialized agencies in general terms.

12.2 United Nations Conference on Environment and Development (agenda item 12.2)

12.2.1 The Executive Council expressed its appreciation to the Secretary-General for his efforts in keeping Members informed regarding the developments which took place during Intergovernmental Negotiating Committee on a Framework Convention on Climate Change (INC) meetings and in preparation for the United Nations Conference on Environment and Development (UNCED), especially the comprehensive reports issued following each meeting. In addition, the Council noted with appreciation the efforts made to provide information concerning relevant WMO activities to Members during the meetings of the INC and the UNCED Preparatory Committee.

12.2.2 The Executive Council noted the public information activities of WMO with respect to UNCED and INC, which included the preparation of brochures on GCOS and on WMO and UNCED, WMO Publication No. 772 on Climate change, environment and development - World leaders' viewpoints. World Climate News (newsletter), the Dublin Statement and Conference Report, and the UNCED posters highlighting WMO's activities.

12.2.3 The Council further noted that the Secretary-General would provide a report to all Members on the outcome of UNCED, especially regarding the Rio Declaration, Agenda 21, conventions on climate change and biodiversity, and forest principles agreement. This report would include the identification of specific follow-up action that could be made by WMO and its Members, especially their national Meteorological and Hydrological Services.

12.2.4 As further action is taken to implement Agenda 21, the Council requested the Secretary-General to continue active involvement with other relevant UN bodies. The Council felt that, in relation to Agenda 21, it was important to keep Members informed on relevant UN-wide and other activities.

12.2.5 The Council concluded that Agenda 21 and the Framework Convention on Climate Change had important implications for the future of the Organization. It noted that WMO, in its role as a specialized scientific and technical agency of the UN, needed to establish closer collaboration with outside funding agencies, with other parts of the UN system and with international non-governmental organizations. In particular, the Council asked the Secretary-General to ensure that the Intergovernmental Negotiating Committee (INC), the agencies involved with the Global Environment Facility (GEF) and other funding institutions, as well as the UN Economic and Social Council (ECOSOC) and the Second Committee of the UNGA, were made fully aware by WMO of its unique scientific and technical competence in the areas relevant to the follow-up to UNCED, particularly climate change.

12.2.6 In addition, the Council asked the Secretary-General to enhance his efforts, in the light of the likely future activities of the Organization, to ensure an effective Secretariat response, including strengthening of internal co-ordination between departments and consideration of future needs for special expertise within the Secretariat. In particular, the Council recognized the immediate need for expertise in the area of obtaining additional external funds which might be available for support of the activities of the Organization and its Members from both individual donors and/or established funding mechanisms.

12.2.7 The Council also requested the Secretary-General to further enhance the liaison and external affairs capability within the Secretariat. It suggested that part of the external affairs activities should be to liaise with other groups and organizations in all matters relating to the Framework Convention on Climate Change and
the implementation of the relevant parts of Agenda 21 by WMO.

12.2.8 The Council also concluded that Agenda 21 and the Framework Convention on Climate Change had important implications for the future of national Meteorological and Hydrological Services. It asked the Secretary-General to prepare, as a matter of urgency, and in consultation with the EC Working Group on the Follow-up of UNCED, including Capacity Building (see paragraph 12.2.10), a detailed analysis of the implications of Agenda 21 and the Framework Convention on Climate Change for national Meteorological and Hydrological Services, for distribution to Members, including:

(a) Detailed guidance to national Meteorological and Hydrological Services to assist them on how to participate actively at the national level in activities related to Agenda 21 and the Framework Convention, especially in providing climate data and information to the general public and national leaders as well as in preparing for and attending future meetings of the INC and in assisting, where possible, with national reports, studies, and inventories as mentioned in the Framework Convention;

(b) Ideas and concrete suggestions on how national Meteorological and Hydrological Services, in association with WMO as appropriate, can serve as effective, authoritative sources of scientific information;

(c) How national Meteorological and Hydrological Services can apply for, and assist other of their national authorities to apply for, external funding to support activities related to Agenda 21 and the Framework Convention.

12.2.9 In this respect, the Council noted that, during regularly scheduled meetings of WMO such as those associated with regional associations, technical commissions, technical conferences, and the Council itself, opportunities existed for conducting briefing sessions or workshops for national Meteorological and Hydrological Services personnel in these areas. The Council asked the Secretary-General to ensure that such opportunities were utilized over the next few months in order further to assist Members.

12.2.10 The Council noted the reference in the Framework Convention on Climate Change and Agenda 21 to the need for endogenous capacity building*, particularly in developing countries. It urged Members, especially the developing countries, to develop specific plans for enhancing their national Meteorological and Hydrological Services as well as their participation in WMO programmes and activities as part of national capacity-building plans, as appropriate. The Council established an "open" EC Working Group on the Follow-up of UNCED, including Capacity Building (see Resolution 14 (EC-XLIV)) to further elaborate the implications of the Framework Convention on Climate Change, Agenda 21 and the Rio Declaration on WMO and make proposals for refining WMO's policies and strategies for follow-up, including assistance, as appropriate, to developing countries in preparing input to national capacity-building plans, and to the Secretary-General in providing a detailed analysis of the implication of Agenda 21 and the Framework Convention on Climate Change for national Meteorological and Hydrological Services. The Council asked the chairman of the working group to initiate this activity as soon as possible with the view to having relevant parts of national plans as input to the Intergovernmental Meeting the World Climate Programme (IGMWCP) in April 1993. In this respect, it urged Members from developed countries having experience in these areas to consider working in partnership with Members from developing countries to assist them in developing national plans. The Council asked that the working group give a report during EC-XLIV which, in turn, would review the need for further work of the group.

12.2.11 Following useful interaction with international non-governmental organizations during the UNCED process, the Council recognized the increasing importance of co-operation between these organizations and the UN system, especially in the execution of parts of Agenda 21. It asked the Secretary-General to explore ways to encourage greater involvement of international non-governmental organizations with WMO activities related to Agenda 21 and the Framework Convention.

12.2.12 The Council also recognized that, because Agenda 21 and the Framework Convention on Climate Change cover all major areas of WMO activities, detailed actions for their implementation must be considered in each programme and relevant WMO technical commissions as well as by the regional associations. It requested the Secretary-General to facilitate this review by the relevant bodies of the Organization and looked forward to considering the results at its next sessions.

12.2.13 The Council understood that current issues of world-wide concern, such as sustainable development, climate change, biodiversity, and trans-boundary pollution, involved many more of the geosciences than just meteorology and operational hydrology. It also recognized that the UN system was currently undergoing restructuring in order to operate more effectively. The Council therefore asked the Secretary-General to continue his consultations with other UN agencies and international non-governmental organizations to begin to develop a more unified scientific approach to these and similar issues which relate to WMO's areas of expertise.

12.2.14 The Council noted the growing recognition of the important role of WMO in environment and development issues such as climate change. It was pleased that, when the UN Secretary-General established the Task Force on Sustainable Development in the Administrative Committee for Co-ordination (ACC), WMO had been included in the core group.

12.2.15 The Council welcomed the recommendation by UNCED to the UN General Assembly that an intergovernmental negotiating process begin to develop an international convention on desertification to be
completed by June 1994. The Council felt that, considering WMO's role in issues of drought and desertification, WMO should play an active role during the negotiation process. It recommended that WMO Members consider engaging representatives of their respective national Meteorological and Hydrological Services in national delegations to the desertification negotiations.

12.2.16 The Council felt it important for WMO to begin taking specific, visible action within the Organization to support the concept of sustainable development. In the light of this, the Council therefore requested the Secretary-General to initiate studies on relevant action that could be taken within the Secretariat, such as the use of recycled paper, environmentally-friendly inks, and reduction of volume of paper used in documents by compressing the text and eliminating blank pages as far as possible.

12.2.17 In view of the preceding considerations and concerns, the Council adopted Resolution 14 (EC-XLIV).

MATTERS SPECIFIC TO THE FRAMEWORK CONVENTION ON CLIMATE CHANGE

12.2.18 The Council was informed that the Framework Convention on Climate Change had been opened for signature on 4 June 1992. The opening for signature was marked by a ceremony attended by the Secretary-General and presided over by President F. Collor of Brazil. Among those attending the ceremony were UN Secretary-General Mr Boutros Boutros-Ghali, UNCED Secretary-General Mr Maurice Strong, INC Chairman Ambassador Jean Ripert, and UNEP Executive Director Dr Mostafa Tolba. As of 14 June 1992, 154 countries and the European Economic Community had signed the Framework Convention on Climate Change.

12.2.19 The Council noted with approval the support given by WMO to the ad hoc secretariat for the Inter-governmental Negotiating Committee for the Framework Convention on Climate Change, established by UNGA Resolution 45/212. It requested the Secretary-General, within available resources, to continue support to the ad hoc secretariat during the interim period before the first meeting of the Conference of the Parties. The Executive Council noted the appreciation by the INC Executive Secretary of support received from WMO and welcomed the constructive relationship that had developed between the two Secretariats.

12.2.20 The Council noted the statements made by the Secretary-General at UNCED regarding WMO's willingness to consider hosting the secretariat for the Framework Convention on Climate Change. It asked the Secretary-General to pursue this proposal actively, as necessary, during the interim period before the first meeting of the Conference of the Parties of the Framework Convention on Climate Change.

12.2.21 The Council urged Members which ratify the Framework Convention on Climate Change to designate competent government representatives with sufficient knowledge of WMO Programmes to the Subsidiary Body on Scientific and Technological Advice of the Conference of the Parties.

12.2.22 While the Council recognized that WMO had been contributing significantly to activities in support of the Framework Convention on Climate Change, it expressed its strong concern that any new and/or additional tasks required of the Organization in order to respond to some of the immediate and long-term needs of the Framework Convention could not be fully met under its existing budget. These new and/or additional tasks put increased demands on the majority of the Programmes of the Organization, and specifically include:

(a) Providing increased levels of availability of global climate data and information, especially those affecting socio-economic matters;
(b) Improving, with some urgency, climate understanding;
(c) Narrowing the uncertainties in climate predictions for more cost-effective long-term planning;
(d) Substantially strengthening endogenous capacity for systematic observations, research, transfer of technology, as well as education and training;
(e) Providing increased amounts of authoritative scientific information in a timely manner to the general public and to national decision-makers.

12.2.23 The Council made an urgent appeal to donor countries to support the WMO Special Trust Fund for Climate and Atmospheric Environment Activities which was specifically established to initiate and enhance projects in areas related to Agenda 21 and the Framework Convention on Climate Change.

12.2.24 The Council recognized that WMO was uniquely qualified to implement and respond to many of the basic scientific and technical needs of the Framework Convention on Climate Change and that the Organization had a long and successful experience in these areas. The Council was particularly concerned that without a substantial increase in available funds for the Organization, it would be unable to meet fully both these new and/or additional tasks as well as those associated with other environmental issues such as sustainable development, ozone layer depletion, and air pollution, while maintaining the quality of services in other more traditional areas, such as aviation meteorology, operational hydrology, and global telecommunications.

12.2.25 In order to respond to these concerns, the Council adopted Resolution 15 (EC-XLIV) on the Framework Convention on Climate Change.

12.3 THE INTERNATIONAL DECADE FOR NATURAL DISASTER REDUCTION (IDNDR) (AGENDA ITEM 12.3)

12.3.1 The Executive Council noted developments concerning the IDNDR subsequent to Eleventh Congress, in particular the key role that could be played by national Meteorological and Hydrological Services in achieving the aims set for the Decade. It reiterated its earlier call to Members to participate actively in Decade projects at both national and international levels, and to do so in co-operation with national committees for the IDNDR, where these had been established. The Council also noted with satisfaction that a number of Permanent Representatives, or former Permanent Representatives, were serving on the Scientific and Technical Committee.
for the Decade, and expressed its appreciation of their efforts.

12.3.2 The Council requested the Secretary-General to arrange for the continued implementation of the WMO Plan of Action for the IDNDR, in accordance with the wishes of Congress and within financial support provided, and to report on progress at its forty-fifth session in 1993.

12.3.3 The Council was informed that the 46th session of the United Nations General Assembly had decided that a world conference, marking the mid-point of the decade, would be held in early 1994. It expressed the hope that WMO would participate strongly in this conference, and that its planning should start in the immediate future.

12.3.4 The Council noted recent changes in the organization of the UN Secretariat which, inter alia, brought the IDNDR Secretariat under the new Department of Humanitarian Affairs (DHA). It requested the Secretary-General to write to the Secretary-General of the United Nations informing him of the importance that WMO attached to the IDNDR and to the continuing WMO scientific and technical programmes which achieve the aims of the IDNDR. The letter should encourage him to accelerate the full operation of the IDNDR Secretariat and the provision of necessary resources to enable it to carry out its mission.

12.3.5 It was noted that a proposal would be made to the next session of CBS for more specific numerical model guidance on severe weather conditions, in plain language, to be offered to national Meteorological Services. This proposal was being prepared within the context of the IDNDR and was in no way intended to usurp the authority of the national Services.

12.3.6 The Council stressed the need to recognize the linkages existing between the goals and activities of the IDNDR and those of several of the activities initiated as a follow-up to UNCED, in particular those on climate change. It emphasized the need to develop these linkages in order to maximize the benefit for both sets of activities.

12.4 SPECIALIZED AGENCIES

12.4.1 The Council noted that there was no specific item which required consideration and decision by the Council on matters relating to other specialized agencies at that time.

12.5 OTHER INTERNATIONAL ORGANIZATIONS (agenda item 12.5)

WORKING ARRANGEMENTS WITH THE WORLD TOURISM ORGANIZATION

12.5.1 The Executive Council took note of the request submitted by the World Tourism Organization (WTO) for the establishment of working arrangements with WMO.

12.5.2 Having considered the objectives and functions of WTO and taking into account the practice followed by WMO in establishing working arrangements concerning its scientific and technical co-operation with other organizations, the Council agreed that it would be in the mutual interest of the two organizations to establish a close working relationship.

12.5.3 The Council therefore authorized the Secretary-General to finalize working arrangements with the Secretary-General of WTO on the basis of the text contained in Annex VII to this report. It also requested the Secretary-General to inform Members accordingly.

13. PUBLIC INFORMATION (agenda item 13)

13.1 THEME FOR WORLD METEOROLOGICAL DAY (agenda item 13.1)

The Executive Council decided that the theme for the World Meteorological Day 1994 would be "Observing the weather and climate". It considered that the theme would be of interest to a wide audience, including schoolchildren, media representatives, the general public and decision-makers. Materials produced on the topic should highlight activities that relate to the follow-up of UNCED, in particular the need for improved observation networks.

GENERAL

13.2 The Council emphasized the need for a strong and active Public Information Programme with a well-defined strategic communications plan. This was considered particularly important at the current time when the Organization was considering new directions as well as ways and means of reinforcing WMO's Programmes following UNCED. The Council therefore encouraged the Secretary-General to ensure that the Public Information Office was fully staffed to continue his efforts to enhance its capabilities to meet the new challenges.

13.3 Concerning Regional Public Information Centres, the Council requested the Secretary-General to review relevant proposals and consider for implementation those which were feasible.

13.4 The Council stressed the need, when preparing material on WMO Programmes for wide distribution, to remain sensitive to the role of national Meteorological and Hydrological Services as the usual focal points for information on WMO activities within individual countries.

14. PROGRAMME SUPPORT SERVICES AND PUBLICATIONS (agenda item 14)

14.1 LANGUAGES (agenda item 14.1)

14.1.1 The Executive Council noted with appreciation the Secretary-General's report on the study of language arrangements in the UN system, including WMO, which constitutes the first step towards the full report to be presented to Twelfth Congress. It noted that the arrangements in WMO were similar to those of the majority of other organizations and that the languages in which interpretation and translation should be provided during the eleventh financial period for sessions of Congress, the Executive Council and technical commissions as well as of regional associations, at the request of the respective presidents, had been determined by Eleventh Congress. Such requirements for meetings of subsidiary bodies were decided by the presidents of the relevant constituent bodies.

14.1.2 The Council noted that interpretation and translation costs were based on agreements between WMO and AITC or AIIC, as appropriate, and that WMO
had special arrangements with the Russian Federation for interpretation and translation and with China for interpretation. It requested the Secretary-General to define the costs associated with those services in WMO and to carry out a comparative cost study. The Executive Council reiterated the concern expressed by Congress at the increasing volume of documents presented at meetings and requested the Secretary-General to establish a mechanism to ensure a reduction so that all documents were concise and to the point.

14.1.3 The Council congratulated the Secretary-General on having introduced remote conference servicing whereby texts were transmitted from the conference venue to WMO Headquarters for translation and typing then transferred back to the conference venue. Noting that this substantially reduced the costs of translators' and typists' services, the Council encouraged the Secretary-General to continue implementing such innovative solutions to reduce operating costs.

14.2 Publications (agenda item 14.2)

14.2.1 The Executive Council noted with satisfaction the report on the Publications Programme, which summarized the activities carried out in 1991.

14.2.2 The Council also noted that in spite of severe funding problems only minor delays had occurred in the production of mandatory publications in all the required languages, thanks to the measures taken by the Secretary-General to ensure the most efficient methods of using modern technology and other resources to expedite this work. It requested the Secretary-General to continue to seek increased efficiency in the Publications Programme in the current financial period.

14.2.3 The Council recognized the considerable improvement achieved by the introduction of computer-assisted publication systems in the production of the Organization's publications, leading to better presentation of information and more economic use of printing and distribution resources. Originals stored in the WMO computer library would facilitate reprinting according to demand, the production of the final reports of sessions of constituent bodies as well as the amendment and updating of publications such as Guides and Manuals. It was noted that as the new methods allowed most of the work to be carried out in-house, requiring the engagement of temporary staff (graphic and typographic designers, editors and text-processing clerks), they necessitated a change in the way the resources of the Publications Fund were disbursed. The Council encouraged the Secretary-General, in his report on the Publications Programme to EC-XLV, to indicate changes in production costs attributable to changes in production methods and to pursue, within the resources allocated for the production of publications, further modernization of the production mechanisms.

14.2.4 The Council encouraged the Secretary-General to seek ways to issue as many publications as possible in other working languages of WMO if these were clearly required. It noted that Eleventh Congress, in its Resolution 26 (Cg-XI), had incorporated all volumes of the WMO Manuals as well as the International Meteorological Vocabulary and the International Glossary of Hydrology (published jointly with UNESCO) in the list of mandatory publications.

14.2.5 The Council encouraged the Secretary-General to consider the possibilities of marketing WMO publications with the aim of improving their sales and utility. It also requested him to submit to its next session the list of criteria to be followed to ensure the quality of programme-supporting publications (as stipulated in paragraph 3(a) of the annex to Resolution 16 (EC-XLIV)).

14.2.6 The Council adopted Resolutions 16, 17, 18 and 19 (EC-XLIV) to ensure adequate guidance for the implementation of the Publications Programme in the eleventh financial period.

14.3 Office Automation and Information Technology Support (agenda item 14.3)

14.3.1 The Executive Council noted with appreciation the progress report on the Office Automation System and was pleased to learn that implementation of certain core components (cabling, central equipment, user software and connection equipment) had begun. It noted that the overall plan for the Office Automation System was still under discussion but that the core components had been analysed and chosen so that their implementation could proceed independently of, but without compromising decisions on, the other components. It acknowledged that such a project, with implications for all units of the Secretariat, could be long to define in its entirety. It encouraged the Secretary-General to continue the implementation, taking all necessary measures to ensure its timely completion.

14.3.2 The Executive Council also noted that the study requested by Eleventh Congress on communications between Members and the Secretariat would be conducted during 1992, as part of the elaboration of the External Communications Facilities components of the OAS. The results of the study will be reported to the forty-fifth session of the Executive Council.

14.3.3 The Executive Council noted that the eleventh financial period's budget provisions for OAS implementation (SFR 1.2m) fell short of its estimated minimum cost (SFR 2.0m), but would cover the costs of the basic core system, and that the operational or running costs were provided for. It asked that future annual reports on the Office Automation System include status information on budget and expenditures, as well as on the efficiency achieved, so that the Executive Council could keep the financial aspect of the project under review.

15. General, Legal and Administrative Matters (agenda item 15)

15.1 Thirty-Seventh IMO Prize (agenda item 15.1)

15.1.1 The Executive Council awarded the thirty-seventh IMO Prize to Professor Yu. A. Israel.

15.1.2 Dr T. Nitta was appointed to the Selection Committee to replace Mr P. Lo Su Siew. The committee now consists of Dr J. A. Adejokun, Dr N. Sen Roy, Mr J. Zielinski and Dr T. Nitta.
GENERAL SUMMARY

INCREASE OF THE MONETARY AWARD COMPONENT OF THE IMO PRIZE

15.1.3 The Executive Council noted that the principles for the IMO Prize, which form the basis for financing the IMO Prize, are laid down by Resolution 48 (Cg-VIII). The Council also noted that the monetary award of US $1 200 currently made was insufficient to express the prestige of the prize and had to be substantially increased.

15.1.4 As an interim measure for the eleventh financial period, the Council agreed to increase the monetary award from US $1 200 to US $3 000. In this connection, it was noted that the annual interest earned on the principal of the IMO Fund permitted the above increase without modification of the current rules.

15.1.5 For the longer term, the Council considered that an in-depth review of the rules of financing the Prize may be necessary. It therefore requested the Secretary-General to submit a study on this matter to EC-XLV with a view to enabling the Council to present a proposal to Twelfth Congress.

15.2 CONSTITUTIONAL AND REGULATORY MATTERS (agenda item 15.2)

15.2.1 The Executive Council discussed its Rules of Procedure as given in the annex to Resolution 13 (EC-XL) in the light of the amendments to the General Regulations adopted by Resolution 40 (Cg-XI) and concluded that certain amendments had to be introduced in its Rules of Procedure. These amendments were mainly of an editorial nature concerning the change in the numerical order of some General Regulations referred to in the Rules of Procedure.

15.2.2 The Council also decided to amend Rules 15 and 16 of its Rules of Procedure to comply with the provision of Resolution 37 (Cg-XI), which stipulates that the nationals of a Member country in arrears for more than two consecutive calendar years shall not be eligible for nomination or renomination as members of the Executive Council and that this provision will not be applied if the provisions of Article 13(c) (ii) of the Convention are not met.

15.2.3 The Council noted that, at its fortieth session, the Rules of Procedure had been largely revised on the basis of experience which had been gained in their application. It considered that there was no need for any further revision at present.

15.2.4 The Council adopted Resolution 20 (EC-XLV), the annex to which contains the full text of the Rules of Procedure as amended.

15.2.5 The Council noted that the Russian Federation had taken over the membership of the former Union of Soviet Socialist Republics (USSR), including all rights and obligations stemming from the Convention and Regulations of the Organization, and that Members had been informed accordingly.

15.3 STAFF MATTERS (agenda item 15.3)

AMENDMENTS TO THE STAFF RULES

15.3.1 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 the forty-third session of the Council.

ANNUAL REPORT OF THE INTERNATIONAL CIVIL SERVICE COMMISSION

15.3.2 The Executive Council took note of the seventeenth annual report of the International Civil Service Commission (ICSC), submitted in accordance with Article 17 of the Commission’s Statute.

15.3.3 The Council considered that, in order to allow it to have a more up-to-date overview of the various conditions of service, it should be provided with a summary of decisions of the United Nations General Assembly arising from the recommendations of the ICSC. It therefore requested the Secretary-General to provide this information, as well as that concerning any other recent developments, in the future.

VIEWS OF THE STAFF ON THEIR CONDITIONS OF SERVICE

15.3.4 The Executive Council noted the views of the staff on developments concerning conditions of service which had taken place in the UN Common System and in the WMO Secretariat since the last session of Congress.

15.3.5 The Council expressed its strong support for the Secretariat staff and recognized the substantial contributions made by the staff to the successful functioning of the WMO Secretariat. It was pleased to note the positive steps made during the last year, including the work toward a new Performance Appraisal System and continued joint staff/management efforts to address concerns and issues.

15.3.6 The Council noted that several reviews were under way in the ICSC that could affect the conditions of remuneration and pension for existing staff. The Executive Council urged the Secretary-General to work to ensure that any changes in the UN Common System would protect the acquired rights of the staff.

15.3.7 The Council encouraged the Secretariat to continue to provide opportunities for the staff members to improve their effectiveness through increased skills in languages, computers, etc. It invited the Secretary-General to examine the practices in other UN organizations with respect to language qualifications and incentive measures for learning other languages and to report back to EC-XLV with his findings, recommendations, and possible financial consequences.

STANDARD OF ACCOMMODATION FOR TRAVEL BY AIR

15.3.8 The Executive Council recalled that Eleventh Congress had considered the proposal to upgrade the standard of accommodation for travel by air and had decided that further study was necessary and that staff should be invited to offer views, including specific and suggested implementation procedures. Congress had also requested the Executive Council to study the issue taking account of procedures and practices in other organizations of the United Nations system as well as the views of staff, and had authorized the Executive Council to recommend implementation or otherwise to the Secretary-General.

15.3.9 The Council noted the results of the study carried out by the Secretary-General in this connection.
15.3.10 The Council decided that, in view of the financial situation of the Organization and while recognizing the validity of UN common system guidelines, consideration of the proposal to adopt new modalities related to standards of accommodation for travel by air should be postponed and that the matter be reviewed at a more appropriate time.

**SALARIES OF UNGRADED OFFICIALS**

15.3.11 The Council noted that, in December 1991, the General Assembly of the United Nations by Resolution 46/191 had adopted a new base salary scale for staff in the Professional and higher categories, which had come into effect on 1 March 1992. It further noted that this scale reflected the consolidation, on a no-gain/no-loss basis, of six post adjustment multiplier points into the net base salaries in effect under the previous base salary scale.

15.3.12 The Council recalled that Eleventh Congress had decided to authorize the 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 eleventh financial period.

15.3.13 Using as a basis the methodology proposed by the ICSC and approved by 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 1992 as follows:

- Secretary-General $ 91,775
- Deputy Secretary-General $ 84,240
- Assistant Secretary-General $ 77,393

15.3.14 The Council noted that with the introduction of these revised salary rates, all separation payments, other than commuted annual leave, for ungraded officials would be calculated on the basis of the new annual net basic salary rates effective 1 March 1992.

15.3.15 The Council noted that an increase in pensionable remuneration had been promulgated by the ICSC and decided also to apply with retroactive effect from 1 November 1991 the following levels of annual pensionable remuneration:

- Secretary-General $ 161,382
- Deputy Secretary-General $ 149,162
- Assistant Secretary-General $ 138,066

15.3.16 The Council requested the Secretary-General to take appropriate administrative action as required by the decisions thus taken.

**REPORT ON STAFF APPOINTMENTS, PROMOTIONS, NOMINATIONS AND TRANSFERS**

15.3.17 In accordance with Article 21 (6) of the Convention, the Executive Council examined and approved the appointments made by the Secretary-General since its forty-third session and listed in Part A of Annex VIII.

15.3.18 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 and listed in Part B of Annex VIII.

15.3.19 The Council further noted the promotions made by the Secretary-General since its last session and listed in Part C of Annex VIII.

15.3.20 The Council also noted the transfers listed in Part D of Annex VIII.

15.3.21 The Council finally took note of the special appointment made by the Secretary-General since its last session and given in Part E of Annex VIII.

**APPOINTMENT OF THE ASSISTANT SECRETARY-GENERAL**

15.3.22 The Executive Council considered the appointment of the Assistant Secretary-General in accordance with the procedure laid down by Tenth Congress (1987) and recorded in paragraph 9.4.9 of its abridged report.

15.3.23 The Secretary-General sought the guidance of the Executive Council concerning the procedure. The Council felt that the existing procedure was valid for the period up to next Congress. The Secretary-General was asked to present a suitable document reviewing the procedure for Twelfth Congress.

15.3.24 Following this discussion, the Council approved the proposal of the Secretary-General to appoint Dr A. S. Zaitsev to the post of Assistant Secretary-General in accordance with the terms of the vacancy notice.

15.4 **FINANCIAL MATTERS (INCLUDING THE REPORT OF THE EXTERNAL AUDITOR) (agenda item 15.4)**

**CONSIDERATION OF ACCOUNTS FOR 1990–1991 FOR WMO PROJECTS FINANCED FROM UNDP**

15.4.1 The Executive Council considered and approved the audited financial statements for the periods ended 31 December 1990 and 31 December 1991 in respect of those United Nations Development Programme projects and trust funds being administered by WMO. In this respect, Resolution 21 (EC-XLIV) was adopted.


15.4.2 The Executive 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 1990–1991.

15.4.3 The Executive Council noted that the certificate of the External Auditor on the accounts did not contain any qualification. With respect to the detailed report, the Council had before it the replies of the Secretary-General on all matters raised. It expressed its satisfaction at the steps taken by the Secretary-General to address the issues raised in the report of the External Auditor.

15.4.4 The Executive Council noted with concern the continuation of financial difficulties consequent to cash shortages caused by substantial amounts of outstanding assessed contributions of certain Members. It decided to appeal to the Members again to clear their dues at an early date. Noting Recommendation 2 of the Financial Advisory Committee, the Council decided to keep the matter under review and requested the Secretary-General and the Financial Advisory Committee to report to EC-XLV.

15.4.5 The Council adopted Resolution 22 (EC-XLIV).


15.4.6 The Executive Council considered the interim financial report of the Secretary-General.
15.4.7 The Council recalled that Eleventh Congress in May 1991 had approved the budget for 1992-1995 based on the Secretary-General's proposals adjusted downward to zero real growth in a manner that initially represented negative growth in substantial amounts for several programmes and parts and which Eleventh Congress recognized might be difficult to achieve in practice. Congress therefore authorized maximum flexibility to the Executive Council and the Secretary-General within the framework of the Financial Regulations to implement approved programmes in a manner that would be cost-effective and would produce optimum results. Congress wished that this would be achieved by continuously reviewing programme needs and adjusting the expenditure levels appropriately. Furthermore, the Executive Council, in Resolution 23 (EC-XLIII), had decided that the substantial deficit in the budget for Secretariat support for WMO Technical Co-operation activities for the biennium 1992-1993 should be met from the regular budget through a contribution from economies within the approved budget.

15.4.8 In addition to the above budgetary difficulties resulting from the decisions of Eleventh Congress and EC-XLIII, the Council had before it several documents describing the inadequate recovery of assessed contributions, which were projecting severe cash shortages during the biennium and a deficit of revenue in substantial amounts at the end of the biennium. Further steps, including the adjustment of expenditure levels, were necessary to avoid the extreme measure of external borrowing. In this connection, the Executive Council generally agreed with Recommendations 1 and 2 of the Financial Advisory Committee. However, in respect of Recommendation 1.1, it was considered preferable to integrate appropriately detailed information on the approved maximum expenditure for the financial period into the published version of the Long-term Plan.

15.4.9 The Council noted that the steps taken by the Secretary-General to address this difficult financial and budgetary situation had been examined in great detail by the Financial Advisory Committee, which had found them to be following a rational methodology and sensible procedure. It requested the Secretary-General to continue to monitor the situation closely and to keep the Council appropriately informed of the action being taken to minimize the adverse impacts on the implementation of WMO programmes.

15.4.10 With regard to non-payment and delay in payment of contributions, the Council expressed alarm at the potential serious degradation in the financial position of the Organization and appealed to the Members to pay their dues at an early date. (See also general summary paragraph 15.4.4 and Resolution 22 (EC-XLIV).)

15.4.11 The Council noted the information presented to it by the Secretary-General. The Council was made aware of the likely changes in revenues and expenditures which might occur during the biennium (1992-1993). It decided to revert to the matter at its next session when more up-to-date information was expected to be available.

Re-establishment of a GS post in the Technical Co-operation Department

15.4.12 The Executive Council was informed of the additional needs of the Office for the Arab States and Europe in the Technical Co-operation Department of the Secretariat. It decided to re-establish, as an exception, the post of one secretary in the GS category for this Office. The incremental additional cost of appointing a secretary in the established post is SFR 33 000 for 1992-1993 over that of a temporary secretary presently being employed. This additional cost will be met by delaying recruitment of other vacant approved post(s) as necessary.

Contribution Matters

15.4.13 The Council noted that Latvia had become the 161st Member of WMO effective 14 June 1992 and Lithuania the 162nd Member of WMO on 3 July 1992. In accordance with the authorization given to it by Eleventh Congress, the Council considered provisional assessment on the new Members. In the absence of the assessment rate for UN contribution, the Council requested the President of WMO to establish the provisional assessment rate for Latvia and Lithuania when the decision of the UN General Assembly on the matter was known. The Council also adopted a similar decision in respect of Estonia, any other Republics of the former USSR and any other countries which might be expected to become Members in the near future.

15.4.14 In this connection the Council adopted Resolution 23 (EC-XLIV).

Financial Support for Attendance of EC Members at Sessions of the Council

15.4.15 The Executive Council examined the recommendation by the Bureau to provide for both travel expenses and subsistence allowance to EC members from developing countries that are eligible for VCP and UNDP assistance and who are in need of such support to enable their full participation in sessions of the Executive Council. In this regard the Council approved Recommendation 4 of the Financial Advisory Committee. It therefore decided in favour of granting, upon request, in exceptional cases, both travel expenses and subsistence allowance to EC members from the least developed countries who are in need of such support to enable their full participation in sessions of the Executive Council and that the maximum estimated cost of implementing this decision, i.e. SFR 15 000 per full session of EC, should be absorbed within the approved maximum expenditure for the financial period.

15.4.16 The Executive Council therefore decided that the rules governing payment of travel expenses and subsistence allowances in respect of non-staff members of WMO would stand revised in this respect. The amendments will be incorporated in a revised version of the rules on an appropriate occasion in the future.
**APPOINTMENT OF THE EXTERNAL AUDITOR**

15.4.17 The mandate of the President of the Cour des Comptes, France, as External Auditor of WMO expires on 30 June 1993. The Council was informed that the External Auditor was willing to submit his candidature for the renewal of his term of office. It considered the terms set out by the External Auditor in his letter dated 10 September 1991, which were the same as had prevailed during his previous terms. Considering that the services rendered by him were appreciated by the Council in the past, it was decided to adopt Resolution 24 (EC-XLIV) extending the mandate of the present External Auditor.

15.4.18 The Council also discussed the proposal submitted by the External Auditor regarding the possibility of extending his term to either three or five years so that complete budget periods could be covered. Having given full consideration to all aspects of this matter, the Council decided that the mandate of the External Auditor should end on 30 June 1996.

15.4.19 Regarding the possibility of obtaining the most economical audit services, the Council recorded his decision under agenda item 2.4.

15.5 WMO HEADQUARTERS BUILDING (agenda item 15.5)

15.5.1 The Executive Council recalled that Eleventh Congress had adopted Resolution 35 (Cg-XI) approving in principle the construction of a new WMO Headquarters building in Geneva on a plot of land offered by the Swiss authorities. Congress had requested the Executive Council to define more accurately the accommodation requirements to be met by the new building. It had authorized the Secretary-General to continue negotiations with the Swiss authorities with a view to the construction of a new WMO Headquarters building and also authorized the Council to approve the results of the negotiations on its behalf.

15.5.2 The Council also recalled that at its forty-third session it had noted the recommendation of the Financial Advisory Committee that certain issues needed to be addressed before final approval for the construction of a new building could be given, and requested the Secretary-General to study the issues and report to EC-XLIV. The Council had also requested the Secretary-General to continue negotiations with the appropriate authorities with a view to obtaining the most favourable price for the present building. It had further requested the Secretary-General to provide a plan to cover the short-term needs, in particular the requirements for health and safety modifications to the present building, and to report to EC-XLIV.

15.5.3 The Council examined with interest the report of the consultant appointed by the Secretary-General to study the issues identified by the Financial Advisory Committee and the Council. It also examined in detail the report submitted by the chairman of the EC Advisory Committee on the WMO Headquarters building on behalf of the Committee. The Council further noted the new estimate of the cost of construction of a new WMO Headquarters building made by the Swiss authorities and the possibility of renting office space to other organizations. The Council considered the recommendations of the EC Advisory Committee, which had been affirmed by the Financial Advisory Committee.

15.5.4 The Council concluded that a decision to construct a new WMO Headquarters building at this time was a strategic decision about the future of WMO, particularly in view of the Organization's desire to assume some of the challenges offered by the UN Conference on Environment and Development and the opportunity to work more closely with other international organizations.

15.5.5 The Council therefore urged the Secretary-General to proceed expeditiously to complete negotiations for the sale of the present building. It noted with satisfaction the negotiations with the appropriate authorities to obtain the most favourable sale price for the present building. The Council also noted the valuation of the present WMO building by the Swiss authorities.

15.5.6 The Council approved the construction of a new WMO Headquarters building and authorized the Secretary-General to negotiate with the Swiss authorities the financing of the new building. It noted that due to the economic situation prevailing in Geneva the estimate for the construction cost for the new building had recently been reduced. Recalling that the Swiss authorities had offered to extend the required loan for the construction of a new building, the Council noted that a significant amount could be paid from the sale proceeds of the present building. The balance could be repayable over a forty-year period with an interest of three per cent per annum. The Council decided to authorize the Secretary-General to prepare the documents required by the Swiss authorities in order to obtain the necessary funding.

15.5.7 On the basis of communication from FIP0I concerning the opportunity for rental income, the Council was convinced that planning for the largest possible building on the plot of land offered by the Swiss authorities should proceed. Nevertheless, it concurred with the recommendations of the EC Advisory Committee on the WMO Headquarters building and the Financial Advisory Committee that additional information was required in time for EC-XLV.

15.5.8 In particular, the Council requested the Secretary-General to prepare a realistic report on the projected staff growth over the forty-year planning period, taking into consideration actual staff, anticipated growth rate and the introduction of new office and data-processing technologies. This report should be submitted to EC-XLIV to enable it to decide on the nature of the building and the type of space allocation. Furthermore, the Council requested the Secretary-General to investigate aggressively the interest of other organizations in co-locating in the new building. As regards financing the new building, the Council requested the Secretary-General to prepare options for consideration by EC-XLIV and subsequent submission to Twelfth Congress. Finally, the Secretary-General was asked to prepare for governments a document which
would present a clear and compelling case for support of this initiative.

15.5.9 The Council further noted the various proposed plans to cover the short-term needs for the present building. It requested the Secretary-General to implement the safety and security measures included in the Geneva Fire Department's report for the current building and to meet the short-term office space needs of the Secretariat by renting space in another building, as required.

15.5.10 Considering the importance of this matter for the future of the Organization and the need to proceed promptly and efficiently, and considering also the specificity of the task and its limited duration, the Executive Council felt that the appointment of a project manager holding full responsibility and reporting directly to the Secretary-General would be essential. The Council accordingly invited the Secretary-General to establish such an office within existing budgetary authority as soon as possible.

15.5.11 The Executive Council provided guidance to the Secretary-General on the extent of discretion regarding financial arrangements by letter from the President.

15.6 INTERNAL MATTERS OF THE EXECUTIVE COUNCIL (agenda item 15.6)

EFFICIENCY OF SESSIONS OF THE EXECUTIVE COUNCIL

15.6.1 The Council discussed various possible measures to improve further the efficiency of its sessions. In particular it mentioned that the agenda and the schedule should be adhered to more closely, that the agenda itself should be reduced and that the documents should be more concise, and generally limited to matters requiring opinions or decisions of the Council.

15.6.2 The Council requested the Secretary-General to seek further opinions from members of the Council, and to prepare and circulate a document summarizing these views to be submitted to the Bureau, which could then take appropriate action in planning for EC-XLV.

COMMERCIALIZATION OF METEOROLOGICAL AND HYDROLOGICAL SERVICES

15.6.3 The Council discussed its serious concern regarding maintaining the principle and practice of free and unrestricted international exchange of data and products, while noting potential interactions between the principle and national and international commercial activities.

15.6.4 The Council directed the Working Group on the Commercialization of Meteorological and Hydrological Services to study all aspects of the problem and to take into account in its work the views expressed during the discussion.

15.7 DESIGNATION OF ACTING MEMBERS OF THE EXECUTIVE COUNCIL (agenda item 15.7)

15.7.1 The Council designated General G. Faraco (Italy), Dr T. Mohr (Germany), Mr L. Ndorimana (Burundi), Dr T. Nitta (Japan), Dr N. Sen Roy (India) and Mr Yu. F. Zubov (Russian Federation) as acting members of the Executive Council in replacement of Dr F. Fantauzzo, Dr H. Reiser, Mr J. Rugirangoga, Dr R. Tatehira, Dr S.M. Kulshrestha and Prof. Yu. A. Izrael, respectively.

15.8 REVIEW OF PANELS AND OTHER BODIES REPORTING TO THE EXECUTIVE COUNCIL (agenda item 15.8)

Following changes in the membership of the Executive Council, the Council decided on the following changes in the composition of EC panels and other bodies reporting to the Executive Council:

(a) EC Panel of Experts on the Voluntary Co-operation Programme

- J. I. Valencia Franco to replace C. A. Grezzi
- J. Hunt to replace J. T. Houghton
- Yu. Zubov to replace Yu. A. Izrael
- N. Sen Roy to replace S. M. Kulshrestha
- T. Mohr to replace H. Reiser
- T. Nitta to replace R. Tatehira

(b) EC Working Group on Long-term Planning

- Yu. Zubov to replace Yu. A. Izrael

(c) EC Working Group on the Commercialization of Meteorological and Hydrological Services

- J. I. Valencia Franco to replace C. A. Grezzi
- J. Hunt to replace J. T. Houghton
- Yu. Zubov to replace Yu. A. Izrael
- N. Sen Roy to replace S. M. Kulshrestha
- T. Nitta to replace R. Tatehira

(d) EC Working Group on Environmental Emergency Response

- J. Hunt to replace J. T. Houghton
- Yu. Zubov to replace Yu. A. Izrael

The vice-chairman, A. A. Algain, assumes the chairmanship of the working group.

(e) EC Advisory Committee on the WMO Headquarters Building

- G. Faraco to replace F. Fantauzzo
- T. Nitta to replace R. Tatehira

(f) Selection Committee for the IMO Prize

- N. Sen Roy to replace S. M. Kulshrestha
- P. Lo Su Liew assumes the chairmanship of the committee.

(g) Selection Committee for the Professor Dr Vilho Vaisala Award

- Yu. Zubov to replace Yu. A. Izrael

(h) Selection Committee for the Gerbier-MUMM International Award

- J. C. de Jesus Marques to replace C. A. Grezzi
- A. I. Dania assumes the chairmanship of the committee.

(i) Selection Committee for the WMO Research Award for Young Scientists

- G. Faraco to replace F. Fantauzzo
- A. M. Noorian assumes the chairmanship of the committee.

(j) WMO Staff Pension Committee

- T. Mohr to replace H. Reiser
- T. Mohr assumes the chairmanship of the committee.

15.9 DATE OF THE TWELFTH CONGRESS (agenda item 15.9)

15.9.1 The Executive Council noted that Eleventh Congress had decided that Twelfth Congress would be
held in Geneva from (Tuesday) 4 to (Wednesday) 26 April 1995, subject to any change which might be decided by the Executive Council.

15.9.2 The Executive Council also noted that, although EC-XLVI had preparations for Twelfth Congress on its agenda, it would be too late to consider the session dates since the conference facilities at CICG needed to be reserved several years in advance.

15.9.3 Since the proposed session dates for Twelfth Congress conflicted with two major religious holidays, Al-Adha (Hajj) on 8–13 May 1995 and Easter on 14–17 April 1995, and bearing in mind the availability of conference staff and facilities, the Council decided to change the proposed dates of Twelfth Congress to the period Tuesday 30 May to Wednesday 21 June 1995.

16. SCIENTIFIC LECTURES AND DISCUSSIONS (agenda item 16.1)

16.1 SCIENTIFIC LECTURES AND DISCUSSIONS (agenda item 16.1)

16.1.1 The Executive Council, at its previous session, had selected the following themes for the scientific lectures at EC-XLIV:

(a) Climate, climate change and the development of nations;
(b) The Global Climate Observing System – principles and objectives;
(c) The Global Atmosphere Watch – monitoring the atmospheric environment.

16.1.2 The President introduced the three distinguished experts who had been invited to deliver the lectures:

Dr U. Kirdar, UNDP, New York: topic (a)
Dr G. Kullenberg, IOC/UNESCO, Paris: topic (b)
Dr R. Bojkov, WMO Secretariat, Geneva: topic (c)

16.1.3 The President thanked the lecturers for their excellent presentations, which had been followed by lively discussions. It requested the Secretary-General to arrange for the appropriate publication of the lectures.

16.2 ARRANGEMENTS FOR SCIENTIFIC LECTURES DURING EC-XLV (agenda item 16.2)

16.2.1 The Executive Council decided that the subjects of the scientific lectures to be given at EC-XLV should be:

(a) Applications of meteorology to environment and development problems (including hydrology);
(b) Advances in numerical weather prediction;
(c) Changing relationships between Meteorological Services and national governments.

16.2.2 The Council recalled its earlier decision that the number of lectures should not be more than three. The Secretary-General was requested to make the necessary arrangements in this connection, including selecting three lecturers and inviting them to make presentations at EC-XLV.

16.3 ARRANGEMENTS FOR THE EIGHTH IMO LECTURE (agenda item 16.3)

16.3.1 The Executive Council selected the theme “Tropical cyclones” for the eighth IMO Lecture, to be given at Twelfth Congress. The Secretary-General was requested to draw up a list of scientists who would be invited, in order of preference, to deliver the lecture, and to submit the report to EC-XLV.

17. REVIEW OF THE PREVIOUS RESOLUTIONS OF THE EXECUTIVE COUNCIL (agenda item 17)

In accordance with Rule 27 of its Rules of Procedure, the Executive Council reviewed those of its past resolutions which were still in force at the time of the forty-fourth session and adopted Resolution 25 (EC-XLIV).

18. DATE AND PLACE OF THE FORTY-FIFTH AND FORTY-SIXTH SESSIONS OF THE EXECUTIVE COUNCIL (agenda item 18)

18.1 The Executive Council agreed that the forty-fifth session of the Executive Council would be held in Geneva from Tuesday 8 June to Friday 18 June 1993.

18.2 The Council also agreed tentatively that the forty-sixth session of the Executive Council would be held in Geneva from Tuesday 7 June to Friday 17 June 1994.

19. CLOSURE OF THE SESSION (agenda item 19)

The forty-fourth session of the Executive Council closed at 12 noon on 4 July 1992.
RESOLUTIONS ADOPTED BY THE SESSION

RESOLUTION 1 (EC-XLIV)
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

THE EXECUTIVE COUNCIL,
NOTING:
(1) Resolution 11 (Cg-XI) - Intergovernmental Panel on Climate Change - and Resolutions 4 (EC-XL), 4 (EC-XLI) and 4 (EC-XLII),
(2) Decision 16/41 of the 16th session of the Governing Council of the United Nations Environment Programme (UNEP) - Climate change,
FURTHER NOTING that the work of the Panel is based upon the results of the World Climate Programme and other relevant programmes of WMO and other organizations,
WELCOMING the United Nations Framework Convention on Climate Change and, in particular, its interim arrangements including those in Resolution INC/1992/1 adopted by the Intergovernmental Negotiating Committee for the Framework Convention on Climate Change (INC),
AWARE of the steps being taken by the Panel to review its structure in light of the changing nature of its work and the need for broader participation,
RECOGNIZING the need expressed by many countries for continually re-evaluating the steps taken to understand and address climate change based on relevant and credible scientific, technical and economic considerations,
COMMENDS the Panel for completing the 1992 IPCC Supplement in a timely fashion and its continuing efforts towards increasing the participation of developing countries in its activities;
EXPRESSES its appreciation to governments and organizations for their continued support of the Panel's activities;
REQUESTS the Secretary-General, in consultation with the Executive Director of UNEP, to arrange for continuing support of the work of the IPCC;
REITERATES the views of Congress embodied in Resolution 11 (Cg-XI), particularly the terms of reference of the IPCC; and
REQUESTS the Panel, under the provisions of subparagraph (g) in Resolution 11 (Cg-XI), inter alia, to:
(a) Provide scientific and technical assessments in support of the United Nations Framework Convention on Climate Change, in particular:
(i) Such assessments related to the objective of the Framework Convention of "stabilization of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (Article 2 of the Framework Convention);
(ii) Ways and means to strengthen developing country capacities and capabilities in terms of research, systematic observation/detection of climate change and its impacts;
(iii) Innovative and state-of-the-art technologies and know-how;
(iv) Participate in the development and assessment of methodologies, working in concert with other relevant international, intergovernmental and non-governmental organizations, in support of the United Nations Framework Convention on Climate Change, in particular:
(i) Comparable methodologies for national inventories of anthropogenic emissions by sources and removal by sinks (Article 4.1 of the Framework Convention);
(ii) Methodologies for the calculation of anthropogenic emissions by sources and removal by sinks, including effective capacity of sinks and respective contributions of gases (Article 4.2 (c) of the Framework Convention);
(c) Continue to undertake periodic and timely updates assessing the available information on climate change and the resulting environmental and socio-economic impacts with the goal of furthering the understanding and reducing or eliminating the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response options, with particular emphasis on the most vulnerable regions of the world;
(d) Take appropriate measures to strengthen further the scientific and technical character of the Panel in all its work, to co-ordinate its work within scientific and other bodies, and to provide for the effective participation of scientific and technical experts from developing countries in its activities;
(e) Make recommendations and take appropriate measures to raise public awareness and facilitate education with respect to climate change, through inter alia the broad and timely dissemination of the Panel's work and its information exchange seminars effort;
URGES the Panel to co-operate closely with the Interim Secretariat for the United Nations Framework Convention on Climate Change and its associated institutions;
Convention on Climate Change in responding to the need for objective scientific and technical advice; 

FURTHER URGES the Panel to continue to draw upon the existing expertise of relevant UN agencies and programmes, and of regional and other Intergovernmental and non-governmental organizations, in undertaking its work; 

URGES WMO Member countries to ensure that their Permanent Representatives with WMO play a major role in the future development of the structure of the IPCC; 

REQUESTS the Panel to report to the next session of the Executive Council; and 

REQUESTS the Secretary-General, in consultation with the Executive Director of UNEP, to report to the United Nations General Assembly on the progress of the Panel's activities.

THE EXECUTIVE COUNCIL, 

NOTING: 

(1) Resolution 12 (Cg-XI) – World Climate Programme and its co-ordination, 

(2) Decision 16/41 by the UNEP Governing Council – Climate Change, 

(3) Relevant recommendations made by the meeting of the Executive Heads of agencies involved in climate-related matters, 

(4) Relevant parts of Agenda 21, adopted by the UN Conference on Environment and Development, 

(5) The Ministerial Declaration of the Second World Climate Conference, 

(6) The UN Framework Convention on Climate Change, 

NOTING FURTHER: 

(1) That the Eleventh Congress, by virtue of Resolution 12(Cg-XI), decided that the inter-agency arrangements of the co-ordination of the World Climate Programme should be complemented by strengthening the co-ordination at intergovernmental level in view of increasing governmental interest and involvement in the full range of issues covered by the programme, 

(2) That Congress identified the objectives of the Intergovernmental meeting to be held for this purpose as to review the means of co-ordination of the WCP and to consider appropriate means for the provision of adequate resources for the WCP and associated activities such as GCOS, 

CONSIDERING: 

(1) That the objectives of the Intergovernmental meeting as formulated by the Eleventh Congress remain valid; 

(2) That the UN Conference on Environment and Development and, in particular, the signature of the Framework Convention on Climate Change demonstrated ever-increasing governmental interest in climate- and climate-change-related issues and the demand for solid scientific and technical information that can form the basis for relevant decision-making, 

(3) That Chapter 9 of Agenda 21 – Protection of the atmosphere – addresses the fundamental climate-related issues in which WMO is involved, such as systematic observations and data management research, and building scientific capacities, particularly in developing countries, and that the World Climate Programme is capable of contributing to those issues, 

(4) That the current governmental recognition of the importance of relevant research and observations represents a unique opportunity to convey to governments a proposal for the future development of, and support to, the World Climate Programme and, inter alia, the needs of the Programme that have to be satisfied to enable the WCP to provide necessary scientific and technical information in the implementation of the Framework Convention on Climate Change, 

RECOGNIZING WITH APPRECIATION: 

(1) The co-operative attitude of relevant agencies, in particular UNEP, UNESCO and its IOC, ICSU, and FAO, towards the organization of the Intergovernmental meeting on the WCP, 

(2) The steps already taken by the Secretary-General as a follow-up of relevant decisions by the Eleventh Congress and the forty-third session of the Executive Council, 

(3) The work of the group of senior representatives of organizations involved in the WCP, which acted as a steering committee for the preparations for the Intergovernmental meeting, 

DECIDES: 

(1) That special attention should be given to the organization of the Intergovernmental meeting on the WCP, to ensure that it attains the objectives of the meeting, as formulated by Eleventh Congress; 

(2) That governments should be approached with a view to encouraging them to consider their preparatory actions and, in particular, to establish their national positions towards provision of adequate resources to the WCP; 

(3) That an Organizing Committee, including representatives of Members, should be established urgently to advise on specific actions to prepare further for the Intergovernmental meeting; 

(4) That a small secretariat should be provided, using the resources of the WMO Secretariat and staff secondment by Members, to assist the Secretary-General and the Organizing Committee in the preparation and holding of the Intergovernmental meeting; 

(5) That extrabudgetary resources should be sought, in addition to funds allocated by the Eleventh Congress, to cover expenses for the Intergovernmental meeting, in particular with respect to participation of developing countries; 

RESOLUTION 2 (EC-XLIV)

INTERGOVERNMENTAL MEETING ON THE WORLD CLIMATE PROGRAMME
APPEALS to agencies involved in climate-related matters, in particular UNEP, UNESCO and its IOC, ICSU and FAO, and to funding organizations such as UNDP and World Bank, to consider and identify support to the organization of the intergovernmental meeting, including support to participation of developing countries; URGES Members to provide financial and other support to the preparatory process for the intergovernmental meeting and to make every effort to ensure adequate participation in the meeting, bearing in mind the desirability for representatives of national Meteorological Services to be included in national delegations; REQUESTS the Secretary-General, in consultation with the Executive Heads of agencies involved in the World Climate Programme, to take urgently the necessary action as formulated in DECIDES (1) to (5) above.

RESOLUTION 3 (EC-XLIV)
TECHNICAL REGULATIONS OF THE WORLD METEOROLOGICAL ORGANIZATION

THE EXECUTIVE COUNCIL.
NOTING:
(1) Paragraph 2.4.4 of the general summary of the abridged report of Eleventh Congress.
(2) The report of the president of CAS to EC-XLIV,
ADOPTS the text of Chapter B.2 - Global Atmosphere Watch (GAW) - in Volume I of the Technical Regulations as given in the annex to this resolution;
DECIDES that this amendment shall come into force on 1 October 1992;
REQUESTS the Secretary-General to make any editorial amendments to the Technical Regulations rendered necessary by this decision.

ANNEX TO RESOLUTION 3 (EC-XLIV)
WMO TECHNICAL REGULATIONS, VOLUME I
CHAPTER B.2
GLOBAL ATMOSPHERE WATCH (GAW)

[B.2.] 1 GENERAL

[B.2.] 1.1 The purpose and long-term goal of the GAW shall be to provide data and other information on the atmospheric chemical composition and related physical characteristics of the background atmosphere from all parts of the globe required to improve understanding of the behaviour of the atmosphere and its interactions with the oceans and the biosphere, and to enable prediction of the future states of the Earth system.

NOTES:
(1) GAW measurements will facilitate the preparation of scientific assessments of the state of the atmospheric environment that are required for operational, research, policy and other appropriate purposes.
(2) In particular, GAW measurements will be essential to the investigations of:
• The links between meteorological and chemical phenomena in the atmosphere;
• The relationship between changes in atmospheric composition and physical characteristics and changes in the global and regional climate;
• The impact of changes in climate and other aspects of the Earth system on the chemical composition and related physical characteristics of the atmosphere;
• The long-range atmospheric transport, transformation and deposition of potentially harmful substances;
• The natural cycling of chemical elements in the global atmosphere/ocean/biosphere system, and anthropogenic impacts thereon.

[B.2.] 1.2 The GAW shall be a co-ordinated system of networks of observing stations, facilities and arrangements encompassing the many monitoring and related scientific assessment activities devoted to the investigation of the changing chemical composition and related physical characteristics of the global atmosphere.

[B.2.] 1.3 Existing WMO networks of stations such as the Global Ozone Observing System (GOS) and the Background Air pollution Monitoring Network (BAPMoN) shall be consolidated into the GAW system. The GAW system should also encompass a number of other relevant existing and new networks, both within and outside WMO.

[B.2.] 1.4 The GAW shall be organized, to the extent feasible, in co-operation with other international programmes concerned with aspects of the chemical composition and related physical characteristics of the evolving state and behaviour of the atmosphere and the climate.
[B.2.] 1.5
The GAW shall be composed of networks of stations and central facilities operated by Members and shall include arrangements for the:
(a) Scientific leadership and the continuing involvement of scientists in the component programmes;
(b) Collection of samples of atmospheric precipitation, gases and particles and the chemical analysis of the samples for selected chemical constituents;
(c) Direct measurement of selected chemical constituents and physical properties of the atmosphere;
(d) Provision of concurrent meteorological data;
(e) Collection of air, aerosol and precipitation samples for archiving;
(f) Central facilities for, inter alia, the preparation and supply of standards, and for carrying out calibrations and intercomparisons;
(g) Central facilities for, inter alia, the processing, archiving and publication of data, derived products and information, which provide a means to assess the integrity and uncertainties of the basic data;
(h) Quality control and quality assurance procedures;
(i) Continuing use and scientific assessments of the data;
(j) Training of appropriate operational, managerial and scientific personnel.
NOTE: The desirable and committed facilities and arrangements for the GAW will be detailed in the GAW Manual.

[B.2.] 1.6
The GAW shall be designed as a flexible and evolving system, capable of continual improvement in response to advances in scientific knowledge and technology, and in accordance with changing needs for data on atmospheric composition and related physical characteristics.

[B.2.] 1.7
The planning, implementation and ongoing coordination of the GAW shall be realized through the recommendations of the Commission for Atmospheric Sciences (CAS) in consultation with Members, regional associations, other technical commissions and other organizations, as necessary.

B.2.2
PRINCIPLES OF IMPLEMENTATION

[B.2.] 2.1
The GAW should be implemented in accordance with the following principles:
(a) All activities connected with the implementation of the GAW in the territories of individual countries should be the responsibility of the countries themselves and should, as far as possible, be met from national resources;
(b) The implementation of the GAW in the territory of developing countries should be based on the principle of the utilization of national resources; but, where necessary and so requested, particularly by least developed countries, full assistance should be provided through WMO within joint bilateral (including "twinning") and/or multilateral projects with other Members or organizations (e.g. United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), WMO Voluntary Co-operation Programme (VCP));
(c) The implementation of the GAW in regions outside the territories of individual countries (e.g. outer space, oceans, the Antarctic) shall be based on the principle of voluntary participation of countries that desire and are able to contribute by providing facilities and services, on a sporadic or regular basis, either individually or jointly from their national resources, or by having recourse to collective financing. The possibility of granting assistance under the WMO VCP or other international sources should not, however, be excluded;
(d) In the implementation of the GAW, maximum use should be made of existing facilities, personnel and arrangements in the different related fields of activity involved.

NOTES:
(1) The implementation of the GAW includes the improvement of existing facilities and the establishment of new ones called for in the GAW planning, and any necessary further work concerning these facilities;
(2) The establishment and/or operation of existing, improved and new facilities and services require a considerable amount of scientific research, development/engineering, co-ordination of procedures and standardization of methods;
(3) The further development of the GAW will include an important feature of the GAW planning which aims at the following actions:
(a) The establishment of additional stations, laboratories and centres, especially in developing countries;
(b) The short- and long-term training of experts and scientists in developing nations with a view to the latter's full participation in GAW activities;
(c) The extension and improvement of the operation of the stations and related facilities with a view to achieving system effectiveness, reliability and stability as measured by promptness in data processing and publication, the high quality and completeness of the data produced, and the quality of the scientific assessments;
(d) The rapid adaptation to opportunities provided by scientific and technological advances;
(e) Additional emphasis on the analysis, interpretation and application of the collected data, in particular by linking the chemical data and data on related physical characteristics of the atmosphere with both conventional meteorological data and theoretical models;
(f) The timely response to changing environmental needs;
(g) The provision of the support needed by other WMO programmes and by relevant international programmes established by other organizations (e.g. UNEP-GEMS, EMEP, IGBP-IGAC).
[B.2.] 3
**REQUIREMENTS FOR DATA ON THE CHEMICAL COMPOSITION AND RELATED PHYSICAL CHARACTERISTICS OF THE ATMOSPHERE**

[B.2.] 3.1
**CLASSIFICATION OF REQUIREMENTS**

[B.2.] 3.1.1
Requirements for data from global stations shall be related to Members' needs to address environmental issues of global scale and importance (e.g. climate change, stratospheric ozone changes, oxidizing capacity of the atmosphere).

[B.2.] 3.1.2
Requirements for data from regional stations shall be related to regional aspects of global environmental issues, to environmental issues of regional scale and importance (e.g. acid rain, photo-oxidants including ozone, long-range transport of pollutants across national boundaries) and/or to recommendations by regional and national bodies.

[B.2.] 3.2
**SYSTEMS FOR MEETING THE REQUIREMENTS**

[B.2.] 3.2.1
The networks of surface-based stations, complemented by satellites, shall be the main source of the data.

**NOTE:** Data from satellites will be of increasing importance in the GAW in the near future.

[B.2.] 4
**NETWORKS OF STATIONS**

[B.2.] 4.1
**GENERAL**

[B.2.] 4.1.1
Corresponding to the requirements for data on the chemical composition and related physical characteristics of the atmosphere, two categories of stations – global and regional – shall be established.

[B.2.] 4.1.2
The global stations shall have extensive research and monitoring programmes. They shall focus on the measurement of a broad spectrum of variables related to atmospheric composition, climate and atmospheric ozone changes and other environmental issues of global scale and importance. They should serve as reference stations for regional networks and have facilities for visiting investigators to conduct complementary short-term research and development studies.

[B.2.] 4.1.3
The regional stations shall be similar to the existing BAPMoN and GO3OS stations but have a more flexibly defined measurement programme. Their goals shall be to satisfy regional needs in different parts of the world as well as the specific needs of individual Members.

[B.2.] 4.1.4
The frequency and spacing of the various observations shall be appropriate to the temporal and spatial requirements of the specific issues addressed.

[B.2.] 4.2
**GLOBAL STATIONS**

[B.2.] 4.2.1
Global stations shall be designed in relation to the global requirements which are to provide for data required to address environmental issues of global scale and importance.

[B.2.] 4.2.2
The specifications for the network configuration, observing programmes and frequency of observations for global stations should be as laid down by recommendations of CAS based on the Quality Assurance/Quality Control (QA/QC) Plan.

**NOTE:** These specifications will be published in the GAW Manual.

[B.2.] 4.2.3
Subject to the specific observational requirements of the various issues under investigation, Members should establish or co-operate in the establishment of a minimum of about 30 global stations world-wide. It would be desirable to locate at least one global station in each principal climate zone and in each major biome.

[B.2.] 4.3
**REGIONAL STATIONS**

[B.2.] 4.3.1
Regional stations shall be designed primarily to address regional aspects of global environmental issues and environmental problems of regional scale and importance.

**NOTES** to paragraphs [B.2.] 4.1 to [B.2.] 4.3.1:

1) In addition to global and regional stations, Members may wish to establish other stations to satisfy specific national requirements for data on the chemical composition and related physical characteristics of the atmosphere.

2) However, when implementing such stations, Members should take into account the need to complete the networks of global and regional stations and the desirability of using global and regional stations as reference stations for national networks.

3) The list of all global and regional stations known to be in operation under the GAW is published in a WMO programme-supporting publication entitled *Status of the WMO Global Atmosphere Watch Stations*.

[B.2.] 5
**LOCATION OF THE STATIONS**

[B.2.] 5.1
Each global station should preferably be located in a remote area where no significant changes in land-use practices are expected for the coming decades within a reasonable distance (30-50 km) in all directions from the station. The site should be away from major popu-
lation centres and major highways, preferably in a
principal terrestrial biome or on an island, entirely free
of the effects of local pollution and nearly free of the
influence of regional pollution sources at least 60 per-
cent of the time evenly distributed over the year. The
site should be at least less frequently experience direct
effects from natural phenomena such as volcanic activ-
ity, forest fires and severe dust storms.
[B.2.] 5.2
Each global station should have a complete set of
surface meteorological observations and be located on
or near (50-70 km) an upper-air synoptic station.
[B.2.] 5.3
Locations for GAW regional stations should be
selected in such a way that the observations collected
there are representative of a significant portion of
the region and are not unduly affected by nearby
pollution sources such as roads, combustion, industrial
and extensive farming activities, etc. Furthermore, sites should be avoided where sig-
nificant land-use changes are foreseen. Regional
stations should also have a complete set of surface
meteorological observations and be co-located with,
or located near (50-70 km), upper-air synoptic
stations.

NOTES to paragraphs [B.2.] 5.1 to [B.2.] 5.3:
(1) For regional stations which are dedicated to studies on
the atmospheric transport, transformation and deposit-
ion of potentially harmful substances, the representa-
tivity of the station site and the avoidance of local
pollution sources should take priority over co-location
with upper-air synoptic stations.
(2) The surface meteorological observations obtained at a
GAW station or at a co-located surface synoptic station
and the upper-air observations from a co-located or
nearby upper-air synoptic station are essential for a
thorough interpretation of the GAW data set.
(3) The definitions of "surface synoptic station", "upper-air
synoptic station", "meteorological observing station",
"surface observation" and "upper-air observation" are
given in the Definitions section of this volume.
(4) Since baseline conditions are not necessary for the
measurements of total column ozone and/or those of
the vertical distribution of ozone, GAW-0-3OS stations
may be located farther (100-150 km) away from GAW
background stations.
(5) The figures given in paragraphs [B.2.] 5.1 to [B.2.] 5.3 are
approximate and for guidance only. The situation will
differ for each station. Each station must, however,
establish and record its conditions for the background
mode of operation.
(6) Additional details on the criteria for the siting of global
and regional stations are given in the GAW Manual.

[B.2.] 6
INFORMATION ABOUT THE STATIONS
[B.2.] 6.1
When a Member establishes a GAW global or regional
station, the Member shall send the following informa-
tion to the WMO Secretariat within six months of
the start of operations:
(a) Name, address and, if the station is also a synoptic
station, the WMO index number;
(b) Latitudinal and longitudinal co-ordinates in
degrees and minutes of arc;
(c) Elevation above mean sea-level, in whole metres;
(d) List of variables to be measured, with a description
of the initial measurement programme and, for each
variable, details of the instrument(s) used (e.g. type,
serial number, calibration method and factors);
(e) A brief description of the local topography and
other major characteristics of the station's
surroundings.
(f) Name and address of the chemical laboratory
where samples are analysed, with the name of the
person in charge and, for each variable, the
method(s) of analysis used;
(g) Name and address of the organization, agency or
institution supervising the station, with the name
and title of the person in charge;
(h) Any other information required for the completion
of each entry in data reporting forms prepared by
the Secretariat.

NOTE: Data coding guidance, including reporting forms,
will be given in the GAW Manual.

[B.2.] 6.2
Members shall send the necessary amendments to
the information supplied under [B.2.] 6.1 (a) to (k)
above to the Secretariat as soon as possible after any
change occurs, but not later than 31 December of the
year in which the change occurs.

[B.2.] 6.3
Each Member should maintain and publish or make
available in convenient form an up-to-date directory of
its atmospheric composition monitoring stations
participating in GAW. The description of each station
should give the information mentioned in [B.2.] 6.1 (a)
to (k) above and should be in sufficient detail to
enable the assessment of eventual departures from
site representativeness.

NOTE: A site representativeness code, indicating the
representativeness for the various measurement pro-
grammes, is included in the GAW Manual.

[B.2.] 7
SUPERVISION OF THE STATIONS
[B.2.] 7.1
In order to promote a high quality of the measure-
ments of the chemical composition and related
physical characteristics of the atmosphere and the
proper functioning of the Instruments, Members shall
arrange for annual inspections of their GAW stations,
including systems and performance audit based
on the QA/OC Plan by qualified scientists. An ad-
ditional reason for annual station visits should be
to maintain direct contact with the station personnel
as such contact is vital to maintain their morale and
commitment.
[B.2.] 8
MEASUREMENT PROGRAMME

[B.2.] 8.1
Members shall ensure that a record of all the measurements made at each of their stations and the supporting information to assess the integrity and uncertainties of the data are preserved in the country and that the final data set and supporting information are submitted without undue delay to the appropriate WMO data centre for publication and archiving.

NOTE: The various WMO GAW data centres and the procedures for data reporting, including data coding, will be described in the GAW Manual.

[B.2.] 8.2
At each global station, measurements shall be carried out in accordance with the QA/QC Plan and shall include as many as possible of the following variables:

(a) Greenhouse gases (concentration near the surface, total column density and vertical profile): carbon dioxide; chlorofluorocarbons, their substitutes, intermediates and final products; methane, nitrous oxide, tropospheric ozone, water vapour;

(b) Ozone (concentration near the surface, total column density and vertical profile) and related precursor gases (e.g. volatile organic compounds (VOCs), NOx);

(c) Radiation and the optical depth or transparency of the atmosphere: turbidity, solar radiation, UV-B radiation, visibility, total aerosol load (concentration near the surface, in a marine or continental background, and when possible vertical profile up to the tropopause);

(d) Chemical composition of rain, snow and clouds;

(e) Reactive gas species (concentration near the surface, total column density and vertical profile): sulphur dioxide, reduced sulphur species, oxides of nitrogen, reduced nitrogen species, carbon monoxide, VOCs, peroxyacetyl nitrate (PAN), hydrogen peroxyde (H₂O₂) and others;

(f) Physical and chemical characteristics of atmospheric particles, including mineral aerosols and their vertical distribution;

(g) Radionuclides: krypton-85, radon, tritium, isotopes of selected substances;

(h) Routine measurements of the classical meteorological elements (in particular wind direction and speed, wet- and dry-bulb air temperature, relative humidity, atmospheric pressure, present weather, aerological soundings);

(i) Chemical composition of water in the soil and plants, in collaboration with other interested organizations;

(j) Cloud condensation nuclei and ice nuclei;

(k) Integrated air samples for archiving.

[B.2.] 8.3
At regional stations, measurements shall be made of as many or few of the variables listed in [B.2.] 8.2(a) to (k) above and others as the needs of the region or country dictate. However, the following variables should constitute the core measurement programme at GAW regional stations, with the highest priority given to the first four:

(a) Ozone concentration near the surface;

(b) Precipitation chemistry;

(c) Carbon black (in precipitation and in aerosols);

(d) Meteorological parameters;

(e) Solar radiation (visible, ultra-violet B);

(f) Methane;

(g) Carbon monoxide;

(h) Total ozone;

(i) Aerosol composites.

NOTES on paragraphs [B.2.] 8.2 and [B.2.] 8.3:

(1) Surface and upper-air synoptic and asynoptic observations at or near the GAW sites are required for calculations of pollutant trajectories, studies of the effects of meteorological variables on the dispersion, transport, chemical transformations and deposition of the chemical compounds.

(2) For each of the measurements listed in [B.2.] 8.2(a) to (i) above, guidance will be given in the relevant section of the GAW Manual on the following items, as applicable:

- Time and frequency of observation;
- Accuracy and precision that should be achieved in the measurement;
- Units;
- Measurement methods and techniques, including overlapping observations of the same variable;
- Instruments: types, desirable characteristics, calibration and intercomparison, operation, maintenance, extraction of data from readings and recordings;
- Methods and procedures for the collection, storage and transport of samples;
- Chemical analysis techniques and practices;
- QA/QC, data handling, reporting (including reporting deadlines), storage, publication and archiving.

(3) The observational needs listed in paragraph [B.2.] 8.2 are those that, at present, appear to be established clearly enough to be regarded as priority measurements at existing and new GAW stations. They are not a hard and fast set of variables to be measured at each and every station but recommendations to serve as a guide to the spectrum of observational requirements assessed as appropriate for current scientific objectives. This list is likely to evolve steadily with the development of the science of atmospheric physics and chemistry.

(4) Consideration should be given to obtaining ground measurements with coincident satellite observations.

[B.2.] 9
QUALITY ASSURANCE/QUALITY CONTROL

[B.2.] 9.1
Within the framework of the GAW, the purpose of the assurance and control of data quality shall be error detection, possible error correction and, therefore, error prevention, in order to ensure that the data meet and/or exceed the stated standards of accuracy and precision for the optimum use of these data by as many users as possible.
RESOLUTION 4 (EC-XLIV)

REPORT OF THE TENTH SESSION OF THE COMMISSION FOR AGRICULTURAL METEOROLOGY

THE EXECUTIVE COUNCIL,

HAVING CONSIDERED the abridged final report of the tenth session of the Commission for Agricultural Meteorology,

NOTES:

(1) The report;
(2) Resolutions 1 to 19 (CAgM-X);

DECIDES to take the following action on the recommendations:

Recommendation 1 (CAgM-X) – National progress reports on agricultural meteorology

(a) Approves this recommendation;
(b) Requests the Secretary-General:
   (i) To bring it to the attention of Members;
   (ii) To take appropriate action for the preparation of national progress reports on agricultural meteorology by Members, and publication of brief summaries of those reports when received;
   (iii) To assist Members to obtain translations of brief summaries of the national progress reports into other languages;

Recommendation 2 (CAgM-X) – Preparation of a publication entitled “Natural disasters and agricultural production”

(a) Approves this recommendation;
(b) Requests the Secretary-General:
   (i) To bring the recommendation to the attention of Members;
   (ii) To arrange for the preparation and publication of the report, as appropriate;
   (iii) To invite interested international organizations to sponsor the publication of the report jointly;

Recommendation 3 (CAgM-X) – Review of resolutions of the Executive Council based on previous recommendations of the Commission for Agricultural Meteorology (Action on this recommendation was taken by the Executive Council when reviewing its previous resolutions.)

NOTE: This resolution replaces Resolution 8 (EC-XXXIX), which is no longer in force.
RESOLUTION 5 (EC-XLIV)

DROUGHT AND DESERTIFICATION

THE EXECUTIVE COUNCIL,

NOTING:
(1) UN General Assembly Resolution 3337 (XXIX), 1974, on international co-operation in the combat against desertification,
(2) UN General Assembly Resolution 32/172, 1977, on the UNCOD,
(3) The report of UNCOD, 1977, Recommendation 23,
(4) The abridged report of EC-XXX, paragraphs 5.5.1 and 5.5.2 of the general summary,
(5) Resolution 17 (EC-XXX) – WMO activities in contribution to the the combat against desertification,
(6) UN General Assembly Resolutions 44/72 and 44/228, 1989,
(7) The abridged report of EC-XLII, paragraph 6.1.7 of the general summary,
(8) The report of the International Conference on Water and the Environment, 1992, the Dublin Statement,

CONSIDERING:
(1) That drought and desertification have continued to affect many countries,
(2) That drought and desertification have serious implications for socio-economic development and the environment in many countries, especially in arid, semi-arid and sub-humid areas,
(3) That WMO has for many years contributed to the combat against the adverse effects of drought and desertification at national, regional and international levels,

RECOGNIZING:
(1) That the subject of drought and desertification has been considered in detail by UNCED,
(2) That UNCED called for the implementation of the negotiating process for an international convention to combat desertification in all parts of the world, particularly in Africa,

URGES Members of WMO:
(1) 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 soil and land degradation, desertification and 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 support the Secretary-General in the implementation of the recommendations of UNCED;

REQUESTS the Secretary-General:
(1) To bring the relevant recommendations of UNCED as contained in Agenda 21 to the attention of all Members;
(2) To circulate to Members for appropriate action any relevant legal decisions relating to desertification matters which may have meteorological implications for Member countries of WMO;
(3) To take steps towards the implementation of actions recommended by UNCED which are of direct relevance to WMO;
(4) To co-operate, as appropriate, within the budgetary resources, with other relevant international and regional organizations in the implementation of the recommendations of UNCED;
(5) To ensure that WMO participates effectively, as appropriate, in the preparation of the International convention to combat desertification.

RESOLUTION 6 (EC-XLIV)


THE EXECUTIVE COUNCIL,

HAVING CONSIDERED the report of the conjoint session of the Commission for Aeronautical Meteorology with the COM/MET/OPS Divisional Meeting of ICAO (1990),

DECREASES:
(1) To note the report;
(2) To note that, under the terms of the working arrangements between the World Meteorological Organization and the International Civil Aviation Organization, action on the following recommendations is being undertaken by ICAO, although subsequent developments resulting from some of these recommendations may involve some co-operative action by WMO:
Recommendation 5/2 – Development of a new attachment to ICAO Annex 3/WMO Technical Regulations [C.3.1];
Recommendation 7/1 – Study regarding the provision and dissemination of information of low-level weather phenomena hazardous to general aviation;
Recommendation 7/3 – Aeronautical advisories for volcanic ash clouds;
Recommendation 7/5 – Attachment to Annex 3/Technical Regulations [C.3.1] containing guidance for the preparation of SIGMET messages;
Recommendation 8/1 (a) – Attachment C to Annex 3/Technical Regulations [C.3.1] – Operationally desirable and currently attainable accuracy of measurement or observation; Recommendation 10/1 – Development of ICAO/WMO Technical Regulations Standards and Recommended Practices (SARPs) related to automated air reporting for meteorological information;

(3) To take action on the recommendations addressed to WMO as follows:

Recommendation 4/1 – Depiction of information on volcanic eruptions in WAFS significant weather charts;
Recommendation 5/3 – Guidance material concerning proposed new aeronautical requirements and associated meteorological codes;
Recommendation 8/1 (b) – Attachment C to Annex 3/Technical Regulations [C.3.1] – Operationally desirable and currently attainable accuracy of measurement or observation;
Recommendation 9/1 – Inclusion of “state of the sea” and “sea-surface temperature” in flight documentation:

(a) Approves these recommendations;
(b) Invites the president of CAeM to arrange for the appropriate implementation of these recommendations;
(c) Requests the Secretary-General to assist, within the limits of available resources, in the implementation of these recommendations;

(4) To take action on the recommendations addressed to both ICAO and WMO as follows:

Recommendation 5/4 – Monitoring and review of operational experience with the introduction of new aeronautical requirements and associated meteorological codes;
Recommendation 9/3 – Guidance material on provision of meteorological service for international helicopter operations:

(a) Approves these recommendations subject to corollary action by ICAO;
(b) Invites the president of CAeM to take appropriate steps for the implementation of these recommendations;
(c) Requests the Secretary-General in collaboration with ICAO to assist, within the limits of available resources, in the implementation of these recommendations;

NOTING:

(1) The following recommendations for amendment of ICAO Annex 3, which also affect WMO Technical Regulations, Volume II [C.3.1],
(2) The adoption on 23 March 1992 by the Council of ICAO of Amendment 69 to the International Standards and Recommended Practices, Meteorological Service for International Civil Aviation, as contained in the annex to this resolution,
(3) The prescription of 12 November 1992 as the date upon which the amendment becomes applicable except that part arising from Recommendation 5/1 dealing with meteorological reports and forecasts at aerodromes, for which the applicability date will be 1 July 1993,

CONSIDERING that ICAO Annex 3 and WMO Technical Regulations, Volume II, [C.3.1] should be aligned,

APPROVES the alignment of WMO Technical Regulations Volume II, [C.3.1] with amendment 69 to ICAO Annex 3, applicable on 12 November 1992 except that part arising from Recommendation 5/1, for which the applicability date will be 1 July 1993;

Recommendation 4/2 – Amendment to Annex 3/Technical Regulations [C.3.1] – World Area Forecast System (WAFS);
Recommendation 5/1 – Amendment to Annex 3/Technical Regulations [C.3.1] – Aeronautical requirements for the provision of meteorological reports and forecasts at aerodromes;
Recommendation 6/1 – Amendment to Annex 3/Technical Regulations [C.3.1] – Aeronautical climatological information;
Recommendation 7/2 – Amendment to Annex 3/Technical Regulations [C.3.1] – Alignment of Chapter 10 with Annex 3;
Recommendation 7/6 – Amendment to Annex 3/Technical Regulations [C.3.1] – Issuance of special reports for changes in significant meteorological conditions in the climb-out and approach areas;
Recommendation 8/2 – Amendment to Annex 3/Technical Regulations [C.3.1] – Meteorological observations and reports;

AUTHORIZES the Secretary-General, in consultation with the president of CAeM, to introduce consequential changes to WMO Technical Regulations, Volume II, [C.3.2], Aeronautical climatology, and [C.3.3], Format and preparation of flight documentation.

ANNEX TO RESOLUTION 6 (EC-XLIV)
AMENDMENT 69 TO THE INTERNATIONAL STANDARDS AND RECOMMENDED PRACTICES
METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

RESOLUTION OF ADOPTION

THE COUNCIL,
Acting in accordance with the Convention on International Civil Aviation, and particularly with the provisions of Articles 37, 54 and 90 thereof,
1. HEREBY ADOPTS on 23 March 1992, Amendment 69 to the International Standards and Recommended Practices contained in the document entitled

"International Standards and Recommended Practices, Meteorological Service for International Air Navigation" which for convenience is designated Annex 3 to the Convention;

2. PRESCRIBES 27 July 1992 as the date upon which the said amendment shall become effective, except for any part thereof in respect of which a majority of the
Contracting States have registered their disapproval with the Council before that date;

3. **RESOLVES** that the said amendment or such parts thereof as have become effective shall become applicable on 12 November 1992, except for that part of the amendment, annotated accordingly, which will become applicable on 1 July 1993;

4. **REQUESTS the Secretary-General:**
   (a) To notify each Contracting State immediately of the above action and immediately after 27 July 1992 of those parts of the amendment which have become effective;
   (b) To request each Contracting State:
      1. To notify the Organization (in accordance with the obligation imposed by Article 38 of the Convention) of the differences that will exist on 12 November 1992 and 1 July 1993 between its national regulations or practices and the provisions of the Standards in the Annex as hereby amended, such notification to be made before 12 October 1992, and thereafter to notify the Organization of any further differences that arise;
      2. To notify the Organization before 12 October 1992 of the date or dates by which it will have complied with the provisions of the Standards in the Annex as hereby amended;
   (c) To invite each Contracting State to notify additionally any differences between its own practices and those established by the Recommended Practices, when the notification of such differences is important for the safety of air navigation, following the procedure specified in sub-paragraph (b) above with respect to differences to Standards.

NOTE: The text of this amendment is included in the 1992 edition of Volume II of the WMO Technical Regulations.

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**RESOLUTION 7 (EC-XLIV)**

**REPORT OF THE SIXTH SESSION OF THE JOINT IOC/WMO COMMITTEE FOR IGOSS**

**THE EXECUTIVE COUNCIL,**

HAVING CONSIDERED the report of the sixth session of the Joint IOC/WMO Committee for IGOSS,

NOTING Resolution EC-XXV.4 – Sixth session of the Joint IOC/WMO Committee for the Integrated Global Ocean Services System (IGOSS), of the IOC Executive Council,

NOTES:
(1) The report;
(2) Resolutions 1 to 7 (JC-IGOSS-VI);

DECIDES to take the following action on the recommendations:

**Recommendation 1** (JC-IGOSS-VI) – Ocean remote sensing for IGOSS
(a) Approves this recommendation;
(b) Requests the Secretary-General to provide, within the limits of the approved budget, support for:
   (i) Appropriate education and training activities in the field of ocean remote sensing;
   (ii) The planned Technical Conference on Space-based Ocean Observations, Bergen, 6–10 September 1993;

**Recommendation 2** (JC-IGOSS-VI) – XBT fall-rate equation
(a) Approves this recommendation;
(b) Requests the Secretary-General to bring the recommendation to the attention of all concerned and to support the follow-up actions, as proposed;

**Recommendation 3** (JC-IGOSS-VI) – IGOSS Sub-surface Thermal Structure Programme
(a) Approves this recommendation;
(b) Requests the Secretary-General to bring the recommendation to the attention of all concerned;
(c) Approves this recommendation;

(c) Invites the USA to continue to support the operation of the Specialized Oceanographic Centre for the IGOSS Sub-surface Thermal Structure Programme;
(d) Invites the USA to re-activate the pilot project;

**Recommendation 4** (JC-IGOSS-VI) – IGOSS Pilot Project on Altimetric Sea Surface Topography Data
(a) Approves this recommendation;

(b) Expresses its appreciation to Météo France for having accepted to publish the first six issues of the bulletin;
(c) Requests the Secretary-General to continue support for the publication of the bulletin, as appropriate and within the available budgetary resources;
(d) Invites Members concerned to submit products for publication to the bulletin and also to contribute to the fund to be established by the IOC to support the continued long-term publication of the bulletin;

**Recommendation 5** (JC-IGOSS-VI) – IGOSS Products Bulletin
(a) Approves this recommendation;
(b) Requests the Secretary-General to continue support for the publication of the bulletin, as appropriate and within the available budgetary resources;

(c) Requests the Secretary-General to continue support for the publication of the bulletin, as appropriate and within the available budgetary resources;
(d) Invites Members concerned to submit products for publication to the bulletin and also to contribute to the fund to be established by the IOC to support the continued long-term publication of the bulletin;

**Recommendation 6** (JC-IGOSS-VI) – The IGOSS Flexible Code
(a) Approves this recommendation;
(b) Requests the Secretary-General to assist in the submission of the code to the Commission for Basic Systems (CBS) for approval;
Recommendation 7 (IC-IGOSS-VI) – Global ocean and climate observing systems development
(a) Notes this recommendation;
(b) Notes further the institutional arrangements which have been put in place for GOOS and GCOS;
(c) Acknowledges that IGOSS has a major role to play in the collection and management of operational oceanographic data within GOOS and GCOS;
(d) Agrees that the exact institutional relationship of IGOSS to GOOS and GCOS should be determined in the context of the evolution of GOOS and GCOS and in consultation with IOC;
(e) Requests the Secretary-General to pursue this issue, in consultation with the chairman of the Joint IOC/WMO Committee for IGOSS, the chairmen of the appropriate bodies of GOOS and GCOS and the Secretary IOC, and to prepare proposals for an appropriate future session of the Executive Council;
Recommendation 8 (IC-IGOSS-VI) – Review of previous resolutions of the IOC and WMO governing bodies relevant to the field of activity of the Joint IOC/WMO Committee for IGOSS
Action on this recommendation was taken by the Executive Council when reviewing its previous resolutions under agenda item 17.

RESOLUTION 8 (EC-XLIV)
IMPLEMENTATION OF THE NEW WMO GMDS S MARINE BROADCAST SYSTEM

THE EXECUTIVE COUNCIL,
NOTING:
(1) The International Convention for the Safety of Life at Sea (SOLAS), 1974, in particular Chapter V (Safety of Navigation), Regulation 4 (Meteorological Services);
(2) The 1988 Amendments to SOLAS for the Global Maritime Distress and Safety System (GMDSS) which, inter alia, require meteorological broadcasts through SafetyNET to have commenced on 1 February 1992.
(3) Recommendation 3 (CM-M-X) – Areas of responsibility for the issue of weather and sea bulletins,
(4) Eleventh Congress, abridged report with resolutions, general summary, paragraph 3.4.4.3,
(5) The new WMO system for the preparation and dissemination of meteorological forecasts and warnings for the high seas under the GMDSS, which was approved by the President of WMO for provisional implementation from 1 February 1992,

NOTING FURTHER:
(1) IMO Assembly Resolution A.705 (17) – Promulgation of Maritime Safety Information (MSI),
(2) International Hydrographic Conference New Technical Resolution 5.2 on the early implementation of GMDSS services,
(3) That the 60th session of the IMO Maritime Safety Committee (London, April 1992) had urged governments to establish maritime safety information broadcasts via SafetyNET without delay,

RECOGNIZING:
(1) The importance of meteorological warnings and forecasts to the safety of life and property at sea,
(2) The obligations of countries which are signatories to SOLAS to provide meteorological services for shipping as specified in the SOLAS Convention, including the 1988 amendments,
(3) That major changes in operational procedures are required by many Members, as well as new relationships between ministries, to implement the new system,

(4) That new levels of collaboration are required by Members involved in the preparation and issuing of marine meteorological services under the new system,
(5) That the full implementation of the GMDSS requires a close collaborative effort by several international bodies, including IHO, IMO, INMARSAT, WMO, and the operating agencies of Cosst Earth Stations (CES),
BEING CONCERNED that, without full implementation of the new WMO GMDSS marine broadcast system in certain ocean areas, a potential danger exists to the safety of ships in these areas equipped only for the GMDSS, through their inability to access appropriate and timely meteorological information,
EXPRESSING ITS APPRECIATION to those Members which have accepted specific responsibilities under the new WMO GMDSS marine broadcast system,
BEARING IN MIND that difficulties in implementing the new system in some areas are due to reasons beyond the control of Members concerned,
URGES Members with marine forecast and warning preparation and broadcast responsibilities under the new system:
(1) To make every effort to implement their responsibilities at the earliest possible date, if they have not already done so;
(2) To endeavour to impress upon INMARSAT-CES operators the importance of early implementation by them of the International SafetyNET service;
(3) To keep the WMO Secretariat closely informed of progress with implementation;
RECOGNIZING FURTHER that at least a basic minimum urgent meteorological warning service for shipping must be maintained globally at all times,
DECIDES, as an interim measure, until full implementation of the new system in the marine broadcast areas concerned is achieved:
(1) That procedures for the provision of urgent meteorological warning information to shipping in certain
ocean areas, as specified in the annex to this resolution, should be implemented immediately;

(2) That the requirement for these procedures should be kept under continuous review by the WMO Secretariat, with a view to their replacement, on an area-by-area basis, by the full GMDSS marine broadcast system, at the earliest possible opportunity; 

REQUESTS INMARSAT and CES operators to give favourable consideration to requests for the provision, subject to review, of such an interim SafetyNET service free of charge, in view of its critical importance to the safety of life and property at sea;

EXPRESSIONS its additional appreciation to those Members which have agreed to co-operate in the provision of these interim warning services; and

URGES them to apply to relevant CES operators for free use of the INMARSAT system for the interim service;

REQUESTS the Secretary-General:

(1) To provide appropriate technical advisory assistance to Members concerned in the implementation of the interim services, as well as in the full implementation of the new WMO GMDSS marine broadcast system;

(2) To bring this resolution to the attention of IMO, IHO, ICS, INMARSAT and other organizations and bodies directly concerned.

ANNEX TO RESOLUTION 8 (EC-XLIV)

INTERIM URGENT METEOROLOGICAL WARNING INFORMATION SERVICE FOR GMDSS

<table>
<thead>
<tr>
<th>MSI area</th>
<th>Issuing Service</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>United Kingdom</td>
<td>France to provide urgent meteorological warning information to the United Kingdom via GTS</td>
</tr>
<tr>
<td>III</td>
<td>United Kingdom</td>
<td>France and Greece to provide urgent meteorological warning information to the United Kingdom via GTS</td>
</tr>
<tr>
<td>V</td>
<td>USA</td>
<td>Brazil to provide urgent meteorological warning information to USA via GTS</td>
</tr>
<tr>
<td>VI</td>
<td>USA</td>
<td>Argentina to provide urgent meteorological warning information to USA via GTS</td>
</tr>
<tr>
<td>VIII A</td>
<td>Australia</td>
<td>For Area VIII north of Equator, India to provide urgent meteorological warning information to Australia via GTS</td>
</tr>
<tr>
<td>VIII B</td>
<td>South Africa*</td>
<td>For Area VIII south of Equator, Réunion to provide urgent meteorological warning information</td>
</tr>
<tr>
<td>IX</td>
<td>Australia</td>
<td>Outside NAVTEX coverage. Saudi Arabia to provide urgent meteorological warning information to Australia via GTS</td>
</tr>
<tr>
<td>XIII</td>
<td>Japan</td>
<td>South of 60°N. To be broadcast as part of Area XI broadcast</td>
</tr>
<tr>
<td>XIV</td>
<td>Australia</td>
<td>New Zealand to provide urgent meteorological warning information to Australia if New Zealand service delayed</td>
</tr>
<tr>
<td>XV</td>
<td>USA</td>
<td>Chile to provide urgent meteorological warning information to USA via GTS</td>
</tr>
</tbody>
</table>

These interim broadcasts via SafetyNET will normally be made once per day at a scheduled time, which is published separately, and will contain a very short description of extreme meteorological conditions which may present a hazard to shipping on the high seas. NIL warning messages will also be issued at these scheduled times, when appropriate.

* The Government of the Republic of South Africa has been suspended by Resolution 38 (Cg-VII) from exercising its rights and enjoying its privileges as a Member of WMO.
RESOLUTION 9 (EC-XLIV)
AMENDMENT OF TERMS OF REFERENCE OF THE EC PANEL OF EXPERTS ON EDUCATION AND TRAINING

THE EXECUTIVE COUNCIL,
NOTING:
(1) Resolution 10 (EC-XXXIX) – Executive Council Panel of Experts on Education and Training,
(2) The abridged report of EC-XLIII, general summary, paragraphs 2.2, 2.8 and Annex I,
(3) The recommendation of the fourteenth session of the EC Panel of Experts on Education and Training that its term of reference (d), as adopted in Resolution 10 (EC-XXXIX), should be amended better to reflect the impact of new equipment and methodologies in training,
CONSIDERING:
(1) That the Organization’s education and training activities are vital to the success of all WMO Programmes, as well as to the ability of many Members to participate in; and benefit from, those Programmes,
(2) That maintenance of a high standard in the technical and scientific training of personnel as a result of the impacts of advances in technology on the education and training process is of prime importance to the continued development of national Meteorological and Hydrological Services,
DECIDES to amend term of reference (d) of Resolution 10 (EC-XXXIX) to read:
“(d) The training equipment, materials and methodology suitable for use by national Meteorological and Hydrological Services and training institutions”.

RESOLUTION 10 (EC-XLIV)
AMENDMENTS TO THE MANUAL ON THE GLOBAL TELECOMMUNICATION SYSTEM – VOLUME II – REGIONAL ASPECTS – THE ANTARCTIC

THE EXECUTIVE COUNCIL,
NOTING:
(1) Programme 1.9 – WMO Antarctic Activities – Part II, Volume I of the Third Long-term Plan,
(2) The final report of the Expert Meeting on Antarctic Telecommunications (Geneva, 21–24 October 1991),
DECIDES to adopt the amendments to the Manual on the Global Telecommunication System – Volume II – Regional Aspects – The Antarctic, given in the annex to this resolution;
REQUESTS the Secretary-General to make the appropriate amendments as given in the annex to this resolution to the Manual on the Global Telecommunication System – Volume II – Regional Aspects – The Antarctic.

NOTE: This resolution replaces Resolution 14 (EC-XLIII), which is no longer in force.
ANNEX TO RESOLUTION 10 (EC-XLIV)

AMENDMENTS TO VOLUME II – REGIONAL ASPECTS – THE ANTARCTIC – OF THE MANUAL ON THE GTS

Figure 1 – The links for the daily international exchange of meteorological data within the Antarctic

(F1 indicates radioteleprinter broadcasts, F4 indicates facsimile broadcasts, A1 is a morse transmission.)
Figure 2 – The principal routes by which Antarctic meteorological data enter the GTS
RESOLUTION II (EC-XLIV)

AMENDMENTS TO THE RULES OF THE WMO VOLUNTARY CO-OPERATION PROGRAMME (VCP)

THE EXECUTIVE COUNCIL,

NOTING Resolution 16 (EC-XXXV) - Rules of the WMO Voluntary Co-operation Programme - as amended by Resolutions 16 (EC-XXXVIII) and 15 (EC-XLII) - Amendment to the Rules of the WMO Voluntary Co-operation Programme,

RECOGNIZING that there is a need to amend the rules of the WMO Voluntary Co-operation Programme to include in the fields of support the establishment and maintenance of the Global Atmosphere Watch (GAW) stations and the hydrometeorological activities related to the environment protection as well as to update the title of the World Climate Applications and Services Programme,

DECIDES:

1. To amend the rules of the WMO Voluntary Co-operation Programme as laid down in the annex to this resolution;
2. That these amendments shall come into force on 1 January 1993;

REQUESTS the Secretary-General to amend the rules of the Voluntary Co-operation Programme accordingly.

NOTE: This resolution replaces Resolution 16 (EC-XXXV), as amended by Resolutions 16 (EC-XXXVIII) and 15 (EC-XLII), all of which are no longer in force.

ANNEX TO RESOLUTION II (EC-XLIV)

AMENDMENTS TO THE RULES OF THE VOLUNTARY CO-OPERATION PROGRAMME

(The proposed amendments are underlined)

RULES OF THE WMO VOLUNTARY CO-OPERATION PROGRAMME (VCP)

<table>
<thead>
<tr>
<th>TERMINOLOGY</th>
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<tr>
<td>1. The programme shall be known as the WMO Voluntary Co-operation Programme (VCP). It shall consist of two components:</td>
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<tr>
<td>(a) The Voluntary Co-operation Fund (VCP(F));</td>
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<tr>
<td>(b) The Equipment and Services Programme (VCP(ES)).</td>
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<tr>
<th>PURPOSE AND RESOURCES OF THE VCP</th>
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<tr>
<td>2. The VCP shall be established and maintained by voluntary contributions received from Members for the purpose of meeting officially notified requests proposing co-operation projects in different fields as indicated in paragraph 7 below. Contributions may take the form of financial payments in any currency which can be readily used for the VCP(F) and/or offers of equipment and services including fellowships for the VCP(ES). Contributions in the form of equipment shall only be acceptable upon the signing of an agreement between the supporting country and the World Meteorological Organization which shall specify the details of the arrangements for the transfer of the equipment and which shall, inter alia, include a formal statement of the title of the equipment to WMO.</td>
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<tr>
<td>3. Financial contributions are made unconditionally; the Secretary-General shall invite Members once every year to notify him as early as possible of the amount and the currency of financial contributions which they wish to pledge for the next calendar year.</td>
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<tr>
<td>4. Financial contributions for the WMO publications are, however, acceptable, as well as offers of translating or printing some of them free of charge in order to ensure a wider distribution of publications to developing countries.</td>
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<tr>
<th>ADMINISTRATION OF THE VCP</th>
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<td>5. The VCP shall be administered by the Secretary-General in accordance with:</td>
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<td>(a) the provisions of the present rules;</td>
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<td>(b) the Financial Regulations of the Organization, except as otherwise provided for in these rules as a trust fund;</td>
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<tr>
<td>(c) Any supplementary directives for interpretations of these rules and regulations that may be decided upon by the Executive Council.</td>
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<tr>
<td>6. Costs involved in the management of the VCP should be kept to a minimum and should be met from the appropriate allocations in the regular budget together with allocations from VCP(F), as necessary, but not exceeding 10 per cent of VCP(F) and interest credited to VCP(F).</td>
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<tr>
<th>FIELDS OF CO-OPERATION</th>
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<td>7. The fields of co-operation covered by the VCP shall include:</td>
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<td>(a) The implementation of the WWW as first priority;</td>
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<td>(b) The granting of long-term and short-term fellowships;</td>
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<tr>
<td>(c) The support of short-term training seminars for personnel engaged in the WWW and other activities covered under VCP;</td>
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<tr>
<td>(d) The support of agrometeorological activities;</td>
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<tr>
<td>(e) The support of activities in the Hydrology and Water Resources Programme;</td>
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</table>
(f) The establishment of observing and data-processing facilities necessary for the World Climate Programme;

(g) The support to activities within the World Climate Applications and Services Programme (WCASP) particularly related to food, energy and water, including Climate Computing (CLICOM);

(h) The establishment and maintenance of the Global Atmosphere Watch (GAW) stations;

(i) The support of hydrometeorological activities related to the environment protection.

8. The VCP shall not compete with or replace other means and resources available for promoting activities mentioned in paragraph 7 above. Accordingly, the VCP shall be regarded as being a supplement to the following programmes:

(a) National programmes in meteorology, hydrology and operational hydrology;

(b) Bilateral or multilateral programmes of technical co-operation in the above fields;

(c) United Nations Development Programme.

9. Authority to approve the utilization of the VCP(F) and VCP(ES) shall be vested in the Executive Council which shall exercise such authority by approving individual projects. In approving each project the Executive Council shall specify clearly the technical aim of the project, the manner and period of its implementation and, in the case of projects to be implemented under the VCP(F), the amount and currency authorized for this purpose. The Executive Council shall have the right to amend any previously approved project prior to its completion as it considers necessary in the light of changing circumstances. The use of VCP(F) allocation to support TCDC activities can be authorized by the Executive Council. The Secretary-General is authorized to adjust the amount of VCP(F) approved for the implementation of VCP projects by an amount not exceeding 15 per cent provided he is satisfied that adequate financial resources are available in the fund.

APPROVAL FOR THE UTILIZATION OF THE VCP

10. All approved projects shall satisfy the following criteria:

(a) The Executive Council shall be satisfied that the project cannot be implemented under the UNDP and that there is no reasonable prospect of its being met by any of the other means specified in paragraph 8 above;

(b) The Executive Council shall be satisfied that there is a reasonable prospect that at the end of the project the benefits will be lasting or the services installed will be maintained;

(c) The Executive Council shall be satisfied that the project contributes to one or more of the following:

(i) The implementation of an essential or important feature of the overall WMO WWW plan;

(ii) The training of personnel serving or to be employed in a Meteorological or Hydrological Service;

(iii) The support of agrometeorological activities;

(iv) The support of activities in the Hydrology and Water Resources Programme;

(v) The establishment of observing and data-processing facilities necessary for the World Climate Programme or the support of the activities within the World Climate Applications and Services Programme related to food, energy and water;

(vi) The establishment and maintenance of the Global Atmosphere Watch stations;

(vii) The support of hydrometeorological activities related to the environment protection.

TYPES OF CO-OPERATION

11. Support provided through the VCP may consist of any of the following, taking into account the provisions of paragraphs 7 to 10 above:

(a) Equipment;

(b) Expert services;

(c) Fellowships;

(d) Counterpart services.

In the above, item (d) refers to the nature and scope of national contribution to projects which may include accommodation, staff, expendables and the infrastructure within which the completed project will function.

FORMULATION OF PROPOSED PROJECTS

12. Proposed projects concerning the implementation of the WWW plan, the support of agrometeorological activities, the support of activities in the Hydrology and Water Resources Programme, the establishment of observing and data-processing facilities necessary for the World Climate Programme, the support of the new activities within the World Climate Applications and Services Programme related to food, energy and water, the establishment and maintenance of the Global Atmosphere Watch stations, the support of hydrometeorological activities related to the environment protection shall be based on official requests
Proposed projects involving short-term training

Proposed projects concerning fellowships

WMO seminars

The importance of basic conditions governing the award of WMO fellowships under the WMO shall be made on the appropriate WMO request form and accompanied by completed WMO fellowship nomination forms. The acceptance of basic conditions governing the award of fellowships under the VCP, as they appear on the WMO request form, is implied in the submission of the request by the Member concerned.

Proposed projects involving short-term training seminars shall be based on official requests made by (a) Member(s) and endorsed by the regional association(s) concerned or the president(s) on their behalf. These projects shall contain:

(a) Nature and scope of the project;
(b) Participating countries;
(c) Relation to WWW or other activities covered under the VCP;
(d) Duration of the project.

APPROVAL OF PROJECTS

A list of proposed projects will be submitted by the Secretary-General to the Executive Council, which will establish a list of approved projects. This list will then be circulated by the Secretary-General with a minimum of delay to all Members, requesting each to notify him for which of the approved projects it is prepared to provide the equipment and related services.

In the light of the offers received from Members, the Secretary-General will submit to the Executive Council the proposed VCP projects, giving full information on which of these projects can be implemented from the offers of equipment and services made by Members and which will require for implementation financing from the VCP(F). The Executive Council shall then establish a list of projects authorized for implementation by means of either the offers from Members for equipment and services (VCP(ES)) or financing from the VCP(F). In particular, when more than one offer is received for the same project, the Executive Council, in consultation with the countries concerned, shall decide which shall be accepted.

The Secretary-General will periodically notify Members of the Organization of the projects authorized for implementation through VCP.

PROCEDURES FOR IMPLEMENTATION OF PROJECTS

Before implementation of any approved project begins, the Secretary-General shall negotiate the appropriate agreements between the Members concerned and the Organization. These agreements make take the form of an exchange of letters.

The following principles shall be incorporated in the agreements between WMO and the Members providing equipment and services:

(a) Each agreement shall relate to and be consistent with a project within the VCP which has been approved by the Executive Council;
(b) The agreement shall be signed by a person designated by the Minister for Foreign Affairs of the contributing government on behalf of the contributing government on the one hand and the Secretary-General of WMO on the other;
(c) The agreement shall specify in detail the equipment and training to be provided and services to be rendered by the contributing government, with a planned schedule for the implementation of the project;
(d) The agreement shall specify clearly that the equipment in question is donated to the
Organization, the transfer of title to be effective at a time and place specified:

(e) Notwithstanding principle (d) above, the agreement may and shall normally include arrangements for the transportation of equipment and its installation. As far as possible the costs involved shall be met by one or other of the cooperating parties;

(f) The agreement shall specify that after completion of the project a report will be drawn up and signed by both co-operating parties stating that the equipment is operational and the project completed.

20. The following principles shall be incorporated in the agreements between WMO and the Members being provided with cash, equipment or services under the VCP:

(a) Each agreement shall relate to and be consistent with a project within the VCP which has been approved by the Executive Council;

(b) The agreement shall be signed by a person designated by the Minister for Foreign Affairs of the government on the one hand and the Secretary-General of WMO on the other;

(c) The agreement shall specify in detail the equipment which the Organization shall transfer to the government and the services which shall be rendered by the Organization or its authorized agent. The authorized agent may be the contributing country;

(d) In the case of projects which involve a contribution in cash to a Member the agreement shall specify the items for which the cash contribution will be used and shall lay down procedures for the financial accounts to be submitted by the Member concerned;

(e) The agreement shall specify in detail the counterpart responsibilities accepted by the government in respect of the local facilities, internal transportation, site preparation, provision of personnel to be trained, installation, subsequent operation and maintenance of the equipment, with a planned schedule for the implementation of the project;

(f) The agreement shall specify the conditions for the transfer of the title of equipment from the Organization to the government concerned;

(g) The agreement shall specify that after implementation of the project a report will be drawn up and signed by both co-operating parties stating that the equipment is operational, the project completed and the operating Member assumes responsibility for continued operation of the equipment from national resources. The agreement shall also specify the arrangements for periodic reporting by the Member concerned to the Secretary-General on the ongoing effectiveness of the project; the period for submitting reports will depend on the types of equipment provided.

21. From the time of negotiating the agreements referred to in paragraph 18, the Secretary-General shall act as a focal point during the entire implementation of the projects, keep the projects under constant review and take all possible steps to ensure that unforeseen difficulties are removed and the prescribed rate of progress in implementation is maintained in each case.

22. The Secretary-General shall submit a progress report on the programme to each session of the Executive Council.

23. The Executive Council shall submit a report to Congress on the projects approved and an evaluation of their results. The Secretary-General shall submit an overall financial statement on the Voluntary Co-operation Programme to Congress.

DURATION OF VALIDITY OF PROJECTS

24. Projects which have been circulated for more than five years and have not been supported shall be reviewed, updated or cancelled as appropriate. The Secretary-General shall take appropriate action in this respect with Members concerned and if necessary assist them in reformulating the VCP request.

REVIEW OF THESE RULES

25. These rules can be amended by the Executive Council as necessary to ensure an efficient management of the Voluntary Co-operation Programme.

RESOLUTION 12 (EC-XLIV)

GUIDELINES ON MONITORING AND EVALUATION OF THE IMPLEMENTATION OF THE LONG-TERM PLANS

THE EXECUTIVE COUNCIL,

NOTING:

(1) That Eleventh Congress in its Resolution 28 (CG-XI) requested the Executive Council to use the Third Long-term Plan as a benchmark to monitor progress and performance in the implementation of the scientific and technical programmes of the Organization and to submit a report to Twelfth Congress.

(2) That the Executive Council in its Resolution 1 (EC-XLIII) requested the Working Group on Long-term Planning to assist the Executive Council during its forty-sixth session to evaluate progress towards achievement of the main long-term objectives of WMO programmes over the period 1990-1993 as set down in the relevant parts of the Second and Third Long-term Plans.
CONSIDERING:

(1) That monitoring and evaluation should be an integral part of the management process in order continually to improve the implementation of WMO's programmes;

(2) That reports on programme monitoring and evaluation should be concise, consolidated and well-analysed documents conducive to efficient discussion at sessions of the Executive Council and of Congress;

(3) That it is desirable to have a standard reporting format to facilitate both the preparation and reading of the documents;

(4) That the monitoring and evaluation reports should be integrated into the system of documentation for sessions of the Executive Council and Congress in a way that ensures that duplication of effort and text is minimized.

DECIDES:

(1) That the monitoring and evaluation procedure should incorporate programme monitoring reports summarizing in a standardized, concise form the main points of the programme performance together with an evaluation, from Members' point of view, of how far the main long-term objectives of a programme have been achieved or promoted;

(2) That the programme-monitoring reports, relating to the individual programmes, should be prepared by the Secretariat in consultation with the presidents or chairmen of the relevant responsible bodies and submitted to the Executive Council under the appropriate programme agenda items, as integral parts of the documentation under those items;

(3) That the relationship between the relevant tasks of the WMO constituent bodies and the Secretariat, i.e. the respective roles of Members and of various WMO bodies, in the process of monitoring and evaluation of the implementation of the Long-term Plans should be as given in the annex to this resolution;

REQUESTS:

(1) The Secretary-General to submit to the forty-sixth session of the Executive Council, under the appropriate programme agenda items, the respective programme-monitoring reports specified under DECIDES (1), covering the period 1990-1993, including relevant parts of the Second and Third Long-term Plans;

(2) The Working Group on Long-term Planning to review, at its session preceding EC-XLVI, the above-mentioned programme-monitoring reports and to include its appraisal of programme performance.

NOTE: This resolution replaces Resolution 17 (EC-XLI), which is no longer in force.

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ANNEX TO RESOLUTION 12 (EC-XLIV)

RESPECTIVE ROLES OF MEMBERS AND OF VARIOUS WMO BODIES IN THE PROCESS OF MONITORING AND EVALUATION OF THE IMPLEMENTATION OF WMO LONG-TERM PLANS

The participation of the various WMO constituent bodies and the Secretariat in monitoring and evaluation of the implementation of the Long-term Plan (LTP) may be summarized as follows:

(a) WMO Members, through their participation in various constituent bodies which consider monitoring aspects of the LTP, and through direct input of views to the WMO Secretariat via response to questionnaires and other means, provide information on the impact of activities performed under the LTP on their meteorological and hydrological services;

(b) The Congress, as the general assembly of Members, considers and approves the report of the Executive Council on the results of monitoring and evaluation of the implementation of the LTP, and takes decisions as may be required to improve programme performance;

(c) The Executive Council:
   • Defines the machinery to be used for monitoring of the implementation of the LTP;
   • Provides general guidance for the monitoring and evaluation of the plan;
   • Monitors in depth the progress in implementation of each plan and submits a report to Congress.

(d) The technical commissions, as the principal source of scientific and technical expertise in the WMO system:
   • Evaluate at their sessions, or at sessions of their advisory working groups, the impacts of activities performed under the LTP within the area of their responsibilities;
   • Either at their sessions or through their presidents, make comments and suggestions for further development of programme plans in the light of their evaluation;

(e) The regional associations, as the bodies ensuring regional implementation and co-ordination of the WMO programmes:
   • Evaluate at their sessions, or at sessions of their working groups, the impacts of activities performed under the LTP in their Regions;
   • Either at their sessions or through their presidents, make comments and suggestions for the further development of the individual programme plans;

(f) The EC Working Group on Long-term Planning:
   • On behalf of the Executive Council, proposes methodology, procedures and criteria for monitoring the implementation of the LTP;
RESOLUTION 13 (EC-XLIV)
REPORTS OF THE JOINT INSPECTION UNIT

THE EXECUTIVE COUNCIL,

RECALLING the procedures for transmitting and handling the reports of the Joint Inspection Unit adopted by the Economic and Social Council of the United Nations in its Resolution 1457 (XLVII);

NOTING that the following reports of the Joint Inspection Unit have been formally transmitted to the World Meteorological Organization:

- From the optical disc pilot project at the United Nations Office at Geneva to an optical disc system for the United Nations (JIU/REP/90/1);
- Distribution and dissemination of documents and publications of the United Nations Educational, Scientific and Cultural Organization, particularly in the developing countries (JIU/REP/90/2);
- The co-ordination of activities related to early warning of possible refugee flows (JIU/REP/90/3);
- Extrabudgetary resources of the United Nations: towards transparency of presentation, management and reporting (JIU/REP/90/4);
- African Institute for Economic Development and Planning (IDEP) (JIU/REP/90/5);
- Technical co-operation and the use of National Professional Project Personnel (NPPP) (JIU/REP/91/1);
- Assessment of the environmental focus of projects financed by UNDP and other United Nations agencies (JIU/REP/91/2);
- Rotation of staff within the United Nations (JIU/REP/91/3);
- Follow-up report on the Management Advisory Service of the United Nations (JIU/REP/91/4);
- Note on transport operations of the United Nations Children's Fund (programming and management issues) (JIU/NOTE/91/1);

NOTING also the twenty-second and twenty-third annual reports on the activities of the Joint Inspection Unit for the period July 1989–June 1991,

TAKES NOTE of these reports of the Joint Inspection Unit and the comments thereon;

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;
(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 14 (EC-XLIV)
THE RIO DECLARATION AND AGENDA 21

THE EXECUTIVE COUNCIL,

NOTING:

(1) Resolution 3 (EC-XLIII) – United Nations Conference on Environment and Development (UNCED),
(2) UNGA Resolutions 44/228 and 46/168,
(3) The results of the United Nations Conference on Environment and Development, especially the Rio Declaration and Agenda 21,

(4) The Framework Convention on Climate Change signed by 154 countries and the EEC in Rio de Janeiro (Brazil) as of 14 June 1992,

CONSIDERING:

(1) The UN General Assembly will consider means and modalities for actions based upon the results of UNCED which may directly affect WMO's programmes and activities,
The UN is undergoing institutional changes in the areas of environment and development which will affect agencies of the UN with which WMO regularly co-operates.

A variety of funding mechanisms, especially a restructured Global Environment Facility, are expected to meet the needs identified by the Rio Declaration and Agenda 21.

There is an expected increase in collaborative actions within the UN system and with non-governmental organizations.

Recognizing that:

(1) Opportunities exist at regularly scheduled meetings of WMO for conducting briefing sessions for national Meteorological and Hydrological Service personnel about possible national responses to Agenda 21 and their role in its future development and implementation as well as how to apply for external funding related to Agenda 21,

(2) WMO, in its role as a specialized agency of the United Nations, needs to establish closer collaboration with outside funding agencies, with other parts of the UN system, and with international non-governmental organizations,

(3) There are financial implications to the increased need for the Organization to collaborate with other parts of the UN, especially the UN General Assembly and ECOSOC, and with international non-governmental organizations,

(4) There is an immediate need for special expertise within the WMO Secretariat in the area of obtaining additional external funds to support activities of the Organization and its Members associated with Agenda 21,

Decides to establish, in accordance with the provisions of Regulation 32 of the General Regulations, an "open" EC Working Group on the Follow-up of UNCED, including Capacity Building, under the chairmanship of Mr. H. M. Fijnaart and consisting of Messrs. J. Adeejokun, M. Bautista-Pérez, C. E. Berridge, K. Dawson, P. Lo Su Siew, J. Marques, T. Mohr and N. Sen Roy as core members, to elaborate further the implications of the Framework Convention on Climate Change, Agenda 21 and the Rio Declaration for WMO and make proposals for refining WMO's policies and strategy for follow-up, including assistance, as appropriate, to developing countries in preparing input to national capacity building plans as mentioned in Agenda 21 and the Framework Convention on Climate Change, and to the Secretary-General in providing a detailed analysis of the implications of Agenda 21 and the Framework Convention on Climate Change for national Meteorological and Hydrological Services. The relevant parts of the national plans are to be prepared as input to the Intergovernmental Meeting on the World Climate Programme (IGMWCPC), as appropriate. The EC working group will meet as required, using available resources such as the WMO Special Trust Fund for Climate and Atmospheric Environment Activities, and will report to EC-XLV.

URGES Members to respond to the proposals of the EC Working Group on the Follow-up of UNCED, including Capacity Building, in a timely manner in order to prepare specific relevant input to national capacity building plans as recommended in Agenda 21 and the Framework Convention on Climate Change for consideration, as appropriate, at the Intergovernmental Meeting on the World Climate Programme in April 1993;

Calls on presidents of regional associations and technical commissions to ensure that proper consideration is given to the implications of Agenda 21 at their meetings;

Requests the Secretary-General as a matter of urgency:

(1) To consider carefully all available opportunities for external funding resulting from UNCED for WMO Programmes, especially through regular contact with those responsible for the Global Environment Facility and other financial institutions concerned;

(2) To keep Members apprised of decisions, activities and funding opportunities which occur in implementing Agenda 21, especially in capacity building, which are relevant to meteorology and operational hydrology;

(3) To begin to develop a more unified scientific approach in the geosciences to cross-sectoral issues of current world-wide concern through co-ordinated efforts with other UN agencies and with international non-governmental organizations;

(4) To enhance his efforts, in light of the likely future activities of the Organization, to ensure an effective Secretariat response to Agenda 21, including strengthening of internal co-ordination between departments and consideration of future needs for special expertise within the Secretariat;

(5) To assist the EC Working Group on the Follow-up of UNCED including Capacity Building to contact Members from developing countries in a timely manner before the Intergovernmental Meeting on the World Climate Programme;

(6) In consultation with the EC working group, as appropriate, to provide Members with a detailed analysis of the implications of Agenda 21 for national Meteorological and Hydrological Services, including:

(a) Detailed guidance to national Meteorological and Hydrological Services on how they can actively participate at the national level in activities related to Agenda 21;

(b) Ideas and concrete suggestions on how national Meteorological and Hydrological Services, in association with WMO as appropriate, can serve as effective, authoritative sources of scientific information;

(c) How national Meteorological and Hydrological Services can apply for, and assist other of their national authorities to apply for, external funding to support activities related to Agenda 21;

(7) To bring to the attention of all WMO bodies the need to take advantage of opportunities during regularly scheduled meetings of WMO, such as those associated with regional associations, technical commissions, technical conferences, and the Executive Council, to further assist Members by conducting...
briefing sessions or workshops for national Meteorological and Hydrological Service personnel in areas related to Agenda 21;
(8) To monitor actively the implementation of the Rio Declaration and Agenda 21 within the UN system, with respect to WMO Programmes and activities, especially within the relevant bodies such as the UN General Assembly, ECOSOC, ACC, UNEP, UNDP, FAO, UNESCO and its IOC, and to keep relevant UN bodies informed on WMO Programmes and activities;
(9) To continue to explore ways to increase cooperation and collaboration between UN agencies and with international non-governmental organizations (such as ICSU) in WMO Programmes and activities in implementing relevant parts of Agenda 21;
(10) To further enhance the liaison and external affairs activities capability within the Secretariat;
(11) To keep Members informed on the developments concerning an intergovernmental negotiating process for an international convention on desertification, to encourage Members to include experts from the meteorological and hydrological community as active participants in national delegations when such negotiations take place, to provide WMO Secretariat support during negotiations, as appropriate, and to follow the progress of the negotiations and report regularly thereon to the Executive Council and WMO Members.

RESOLUTION 15 (EC-XLIV)
FRAMEWORK CONVENTION ON CLIMATE CHANGE

THE EXECUTIVE COUNCIL,
NOTING:
(1) Resolution 10 (Cg-XI), - Intergovernmental Negotiating Committee for a Framework Convention on Climate Change,
(2) Resolution 8 (EC-XLI) - Framework Convention on Climate Change,
(3) UNGA Resolutions 43/23, 44/207, 45/212 and 46/169,
(4) Resolution INC/1992/1 on interim arrangements, adopted by the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on 9 May 1992,

CONSIDERING that:
(1) The Framework Convention on Climate Change shall enter into force on the ninetieth day after the date of deposit of the fifth instrument of ratification and that the first meeting of the Conference of the Parties will occur within one year of the Convention's entry into force,
(2) Under interim arrangements for the Framework Convention on Climate Change, the Intergovernmental Negotiating Committee (INC) shall continue to meet to prepare for the first meeting of the Conference of the Parties and for other relevant activities,
(3) The implementation of the provisions of the Framework Convention on Climate Change will require involvement of national Meteorological and Hydrological Services as well as of WMO for many years,
(4) All programmes and activities of WMO, particularly the IPCC, are closely linked with several aspects of the Framework Convention,

RECOGNIZING that:
(1) The Framework Convention on Climate Change is rooted in scientific fields within the mandate of WMO, and that the Organization is uniquely qualified to implement and respond to many of the basic scientific and technical needs associated with the Framework Convention on Climate Change and has had a long and successful experience in these areas; thereby giving the Organization and the national Meteorological and Hydrological Services a responsibility to provide authoritative scientific information to the general public and to national leaders on issues involving climate and climate change,
(2) Opportunities exist at regularly scheduled meetings of WMO for conducting briefing sessions for national Meteorological and Hydrological Service personnel about possible national responses to the Framework Convention on Climate Change and their role in its future development and implementation, as well as about how to apply for external funding related to the Framework Convention on Climate Change,
(3) WMO, in its role as a specialized agency of the United Nations, needs to establish closer collaboration with outside funding agencies, with other parts of the UN system, and with international non-governmental organizations,
(4) There are financial implications to the increased need for the Organization to collaborate with other parts of the UN, especially the UN General Assembly and ECOSOC, and with international non-governmental organizations,
(5) There is an immediate need for special expertise within the WMO Secretariat in the area of obtaining additional external funds to support activities of the Organization and its Members associated with the Framework Convention on Climate Change,

EXPRESSES its strong concern that any new and/or additional tasks required of the Organization in order to respond to some of the immediate and long-term needs of the Framework Convention on Climate Change cannot be fully met under its existing budget. These new and/or
additional tasks put increased demands on most of the Programmes of the Organization, and specifically include:

(a) Providing increased levels of availability of global climate data and information, especially those affecting socio-economic matters;
(b) Improving, with some urgency, climate understanding;
(c) Narrowing the uncertainties in climate predictions for more cost-effective long-term planning;
(d) Substantially strengthening endogenous capacity for systematic observations, research, transfer of technology, as well as education and training;
(e) Providing increased amounts of authoritative scientific information in a timely manner to the general public and to national decision-makers;

Decides that WMO should continue its participation in interim arrangements under the Framework Convention, and play an active role in future relevant activities;

Draws attention to the establishment by the Council, in accordance with the provisions of Regulation 32 of the General Regulations, of an “open” EC Working Group on the Follow-up of UNCED, including Capacity Building, as set out in DECIDES of Resolution 14 (EC-XLV);

Urgently appeals to donor countries to support the WMO Special Trust Fund for Climate and Atmospheric Environment Activities, which was specifically established to initiate and enhance projects of direct relevance to national and international needs in relation to the Framework Convention on Climate Change;

Urges:

(1) Members to take the opportunity of any national review of the terms of the Framework Convention on Climate Change to evaluate their climate-related activities and consider strengthening their participation in relevant programmes of the Organization, as appropriate;

(2) Members to respond to the proposals of the EC Working Group on the Follow-up of UNCED, including Capacity Building, in a timely manner in order to prepare specific relevant input to national capacity building plans as recommended in Agenda 21 and the Framework Convention on Climate Change for consideration, as appropriate, at the Intergovernmental Meeting on the World Climate Programme in April 1993;

(3) All Members which ratify the Framework Convention on Climate Change to designate competent government representatives to the Subsidiary Body for Scientific and Technological Advice who have sufficient knowledge of WMO Programmes;

Calls on presidents of regional associations and technical commissions to ensure that proper consideration is given to the implications of the Framework Convention on Climate Change at their meetings;

Requests the Secretary-General as a matter of urgency:

(1) To continue to support, within available resources, the INC Secretariat as established by UNGA Resolution 45/212 until completion of the first meeting of the Conference of the Parties;

(2) To explore opportunities for WMO to host the secretariat for the Framework Convention and to take the necessary steps to make such an offer at the first meeting of the Conference of the Parties, after appropriate consultations;

(3) To ensure that the Intergovernmental Negotiating Committee, the agencies involved with the Global Environment Facility (GEF) as well as ECOSOC and the Second Committee of the UN General Assembly are made fully aware by WMO of its unique scientific and technical competence in the area of climate change;

(4) To enhance his efforts, in light of the likely future activities of the Organization, to ensure an effective Secretariat response to the Framework Convention on Climate Change, including strengthening of internal co-ordination between departments and consideration of future needs for special expertise within the Secretariat;

(5) To assist the EC Working Group on the Follow-up of UNCED, including Capacity Building, to contact Members from developing countries in a timely manner before the Intergovernmental Meeting on the World Climate Programme:

(6) In consultation with the EC working group, as appropriate, to provide Members with a detailed analysis of the implications of the Framework Convention on Climate Change for national Meteorological and Hydrological Services including:

(a) Detailed guidance to national Meteorological and Hydrological Services on how they can actively participate at the national level in activities related to the Framework Convention on Climate Change, especially in providing climate data and information to the general public and national leaders as well as in preparing for and attending future meetings of the INC and in assisting, where possible, with national reports, studies, and inventories as mentioned in the Framework Convention;

(b) Ideas and concrete suggestions on how national Meteorological and Hydrological Services, in association with WMO, as appropriate, can serve as effective, authoritative sources of scientific information;

(c) How national Meteorological and Hydrological Services can apply for, and assist other of their national authorities to apply for, external funding to support activities related to the Framework Convention;

(7) To bring to the attention of all WMO bodies the need to take advantage of opportunities during regularly scheduled meetings of WMO, such as those associated with regional associations, technical commissions, technical conferences, and the Executive Council, to further assist Members by conducting briefing sessions or workshops for national Meteorological and Hydrological Service personnel in areas related to the Framework Convention on Climate Change;

(8) To keep Members informed on WMO’s interaction with activities associated with the Framework Convention, including their financial implications, and to report to EC-XLV.
RESOLUTION 16 (EC-XLIV)

GUIDELINES ON THE PLANNING, PRODUCTION AND DISTRIBUTION OF WMO PUBLICATIONS

THE EXECUTIVE COUNCIL,

NOTING:
(1) Resolution 26 (Cg-XI) - Publications Programme for the eleventh financial period,
(2) Resolution 8 (EC-XL) - Guidelines on the planning, production and distribution of WMO publications,

CONSIDERING the need to revise the Guidelines taking into account the decisions of Eleventh Congress,

ADOPTS the revised Guidelines on the planning, production and distribution of WMO publications as contained in the annex to this resolution.

NOTE: This resolution replaces Resolution 8 (EC-XL), which is no longer in force.

ANNEX TO RESOLUTION 16 (EC-XLIV)

GUIDELINES ON THE PLANNING, PRODUCTION AND DISTRIBUTION OF WMO PUBLICATIONS

1. GENERAL

The publications of the Organization generally fall into two broad categories:

(a) Mandatory publications, defined by Congress as those which WMO is under an obligation to produce within the given financial period;
(b) Programme-supporting publications, produced within the series defined by the Executive Council.

2. PLANNING OF WMO PUBLICATIONS

(a) Planning and funding of the Publications Programme

(i) The programme of producing mandatory publications during a given financial period is defined by the resolution of Congress. Funding is provided by Congress on the basis of the Secretary-General's programme and budget proposals under the Publications Programme.

(ii) The programme-supporting publications, such as WMO Technical Notes, WWW Planning Reports, Operational Hydrology Reports, Marine Science Affairs Reports, Special Environmental Reports, the WMO Training Publications, etc. form part of the relevant scientific and technical programmes and their production is planned and funded under those programmes.

(b) Languages

Congress defines the languages in which the mandatory publications shall be issued. Programme-supporting publications are generally issued in the original language only, unless the technical bodies initiating their publication request that they be issued also in other languages. As a general policy, translation of operational and technical publications, and especially the education and training publica-
the framework established by Congress and taking into account the general guidance given by the Executive Council (see DECIDES (2) of Resolution 26 (Cg-XI)). A concerted effort will be made to use, as appropriate, recycled, recyclable and other environmentally sound materials in the production of WMO publications.

In addition to the mandatory and programme-supporting publications, certain scientific and technical publications (such as proceedings of technical conferences, etc.) provided in camera-ready form may be reproduced directly. These publications would be produced in their original language only, with a note indicating that no editing has been done in the Secretariat. This is similar to the procedure for the production of technical documents, which are excluded from the Publications Programme and not offered for sale.

4. DISTRIBUTION OF WMO PUBLICATIONS

(a) CATALOGUE OF WMO PUBLICATIONS

The Secretariat shall publish, on a regular basis, a catalogue to provide basic information for meteorologists interested in ordering WMO publications. This catalogue may also serve as a reference work for librarians, institutes and scientists in other fields and be of use for sales promotion. It should be divided into sections showing separately a historic listing and the publications at present available for sale.

(b) NUMBERING OF WMO PUBLICATIONS

The mandatory and programme-supporting publications shall receive a WMO publication number and an ISBN (International Standard Book Number, which identifies the publication within the book trade and is coded to indicate the language, edition and WMO number of each publication). In addition, the individual volumes of a series shall receive a serial number. For example:

Technical Note No. 152 (serial number)
WMO-No. 467 (WMO number)

(c) FREE DISTRIBUTION

A specified number of each WMO publication shall be made available free of charge to Member countries, officers and members of WMO bodies, participants in meetings, regional training centres, depository libraries, UN and its specialized agencies, etc. For this purpose the Executive Council establishes a "List of free distribution of WMO publications" and authorizes the Secretary-General, at his discretion, to exceed this when it is clearly in the best interests of the Organization to do so (see Resolution 18 (EC-XLIV)).

Publications prepared for public information purposes, including Annual Reports and Long-term Plans, shall not normally be sold. They shall receive free distribution according to lists approved from time to time by the Secretary-General in the best interests of promoting the Organization's aims to the widest practical audience.

(d) PRICING OF PUBLICATIONS

When pricing a publication — other than the WMO Bulletin — no account shall be taken of the cost of preparing the manuscript or of the translation and editing. The only costs to be calculated shall be those relating to the actual graphic and layout work, typesetting, printing, cover and binding, multiplied by a factor to cover partially the costs of the copies distributed free of charge. The same price shall be charged for each language version of a given publication.

5. REVIEW OF THE PUBLICATIONS PROGRAMME

As decided by Eleventh Congress:

(a) The Executive Council should continue to review regularly the status of the Publications Programme, taking into account the funds and facilities available, and to review the continuing needs resulting from the introduction of new technology.

(b) The Secretary-General should assist in these reviews by providing sessions of the Executive Council with information on available funds, facilities, sales potentials and any possible limitations.

RESOLUTION 17 (EC-XLIV)

PUBLICATIONS FUND

THE EXECUTIVE COUNCIL,

NOTING:

(1) Financial Regulation 9.8,
(2) Resolution 9 (EC-XL) – Publications Fund,
(3) Resolution 26 (Cg-XI) – Publications Programme for the eleventh financial period,

CONSIDERING the need to revise the rules governing the Publications Fund in light of modern technology,

ADOPTS the definition of the purpose and limits of the Publications Fund as contained in the annex to this resolution.

NOTE: This resolution replaces Resolution 9 (EC-XL), which is no longer in force.
ANNEX TO RESOLUTION 17 (EC-XLIV)

PUBLICATIONS FUND

1. **Purpose of the Publications Fund**
   The Publications Fund is established to support the implementation of the Publications Programme.

2. **Income**
   (a) Appropriations made by Congress for mandatory publications under the Publications Programme;
   (b) Appropriations made by Congress for relevant scientific and technical programmes credited to the Fund in the amount estimated for the purpose of producing specified programme-related publications and other printed and visual materials;
   (c) Revenues from the sales of publications and subscriptions;
   (d) Revenues derived from advertisements in the WMO Bulletin;
   (e) Voluntary contributions, gifts and donations accepted by the Organization in accordance with Financial Regulation 10.2 for the promotion and/or the production of WMO publications.

3. **Expenditures**
   Expenditures which are incurred for the following purposes shall be debited to the Fund:
   (a) Cost of services for translation, editing, illustration, design, text processing, typesetting, page preparation for programme-supporting publications and other items when necessary;
   (b) Costs of all equipment necessary for the production of publications and costs of maintenance and repair of such equipment;
   (c) Costs of printing, cover and binding of WMO publications and reprints as required;
   (d) All costs relating to the production and distribution of catalogues and other sales-promotion material;
   (e) Direct and identifiable administrative costs involved.

4. **Management of the Fund**
   Unless otherwise specified herein, all financial transactions of the fund shall be subject to the WMO Financial Regulations.

5. **Surplus**
   At the end of each financial period, subject to the approval of Congress, the unobligated cash balance available in the Publications Fund shall be transferred to the credit of the fund on the first of January of the subsequent biennium. Should it be decided to close the Publications Fund, then the unobligated cash balance will be credited as miscellaneous income to the General Fund.

6. **External Audit**
   The Secretary-General shall submit the accounts of the fund for audit by the External Auditor in the same way as the regular accounts of the Organization.

RESOLUTION 18 (EC-XLIV)

FREE DISTRIBUTION OF WMO PUBLICATIONS

THE EXECUTIVE COUNCIL,

NOTING:
(1) Resolution 26 (Cg-XI) – Publications Programme for the eleventh financial period,
(2) Resolution 10 (EC-XL) – Free distribution of WMO publications – together with its annex, List of free distribution of WMO publications,

DECEDES to replace the list given in the annex to Resolution 10 (EC-XL) by the updated list for the free distribution of publications as given in the annex to this resolution;

AUTHORIZES the Secretary-General, at his discretion, to exceed these numbers when it is clearly in the best interests of the Organization to do so.

NOTE: This resolution replaces Resolution 10 (EC-XL), which is no longer in force.
## ANNEX TO RESOLUTION 18

### LIST OF FREE DISTRIBUTION OF WMO PUBLICATIONS

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<th>Mandatory publications</th>
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<td>6. Annual Reports of WMO</td>
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### Programme-supporting publications (see annex to Resolution 19 (EC-XLIV))

| Programme-supporting publications | (1+1) | 1    | 1    | 1    | 1    | 1    | (a)  |      |      |      |      |      |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|      |      |
| 1. WMO Long-Term Plan            |      |      |      |      |      |      |      |      |      |      |      |      |
| Part I                           |      |      |      |      |      |      |      |      |      |      |      |      |
| Part II                          |      |      |      |      |      |      |      |      |      |      |      |      |
| 2. Other programme-supporting publications |      |      |      |      |      |      |      |      |      |      |      |      |

1 See explanatory notes; 2 Published jointly with UNESCO; 3 WMO Training Publications; 4 Free distribution of Annual Reports and public information material is decided by the Secretary-General.

### Explanation:

1. Governments (Foreign Ministers): Additional copy, indicated in brackets, to Permanent Missions with UNOG
2. Permanent Representatives of Members; Meteorological and Hydrometeorological Services (Note: Directors who are not Permanent Representatives receive two copies of all publications free of charge); World and Regional Specialized Meteorological Centres
3. Hydrological advisers to Permanent Representatives of Members
4. Presidents and vice-presidents of technical commissions
5. Members of technical commissions (Note: As designated in accordance with General Regulation 481)
6. Members of working groups and rapporteurs of technical commissions who are not members of the technical commission concerned
7. Participants at meetings of constituent bodies (provided the publication is not available under another capacity)
8. Regional Meteorological Training Centres
9. Depository libraries (one per regional association)
10. UN and specialized agencies (Note: UN Dag Hammarskjold Library is entitled to one free copy of all WMO publications. Additional reference copies are available on request to other UN documentation services. On an exchange basis, one free copy of publications not specified in this column is available to all UN specialized agencies and other international or scientific organizations and Institutions)
(11) Retired WMO staff members
(12) UN Information Centres and Resident Representatives of UNDP

NOTES:
(a) Available upon written request, provided the publication is not available under another capacity
(b) One copy of those publications related to hydrology
(c) One copy of those publications related to the work of each specific technical commission
(d) One copy of those publications directly related to the work of the specific working group for chairmen of working groups and rapporteurs
(e) Reports of that regional association to which the hydrological adviser belongs

RESOLUTION 19
REGULAR WMO PROGRAMME-SUPPORTING PUBLICATIONS

THE EXECUTIVE COUNCIL,

NOTING:

(1) Resolution 26 (EC-XI) – Publications Programme for the eleventh financial period, together with its annex defining the mandatory publications of the Organization,
(2) Resolution 11 (EC-XL) – Regular WMO programme-supporting publications,

TAKING INTO ACCOUNT Resolution 16 (EC-XLIV) – Guidelines on the planning, production and distribution of WMO publications,
RE-ESTABLISHES a list of regular WMO programme-supporting publications as given in the annex to this resolution.

NOTE: This resolution replaces Resolution 11 (EC-XL), which is no longer in force.

ANNEX TO RESOLUTION 19 (EC-XLIV)
REGULAR WMO PROGRAMME-SUPPORTING PUBLICATIONS

A. REGULAR SERIES
1. WMO Long-term Plan, PART I: Overall policy and strategy
2. WMO Long-term Plan, PART II: Programme plans:
   Volume 1 — The World Weather Watch Programme
   Volume 2 — The World Climate Programme
   Volume 3 — The WMO Atmospheric Research and Environment Programme
   Volume 4 — The Applications of Meteorology Programme
   Volume 5 — The Hydrology and Water Resources Programme
   Volume 6 — The WMO Education and Training Programme
   Volume 7 — The WMO Technical Co-operation Programme
3. WWW Planning Reports
4. WWW Status Reports (biennial)
5. Technical Notes
6. Special Environmental Reports
7. Reports on Marine Science Affairs
8. Operational Hydrology Reports
9. WMO Training Publications
10. Voluntary Co-operation Programme Reports

B. OTHER WMO PROGRAMME-SUPPORTING PUBLICATIONS
1. Handbooks (and service information)
2. Climatic Atlases
3. Catalogues
4. Bibliographies
5. Proceedings of scientific conferences and symposia
6. IMO lectures, lectures presented at Congress and sessions of the Executive Council
7. Booklets (including those on the subject of World Meteorological Day)
8. Instruments and Observing Methods Reports
9. Casebooks

C. JOINT INTER-AGENCY PUBLICATIONS
1. Joint IGOS and IOC/WMO publications
2. Joint WMO/UNESCO publications
3. Joint IAHS/WMO publications
4. Joint WMO/UNEP publications
5. Any other joint publication as may be agreed between the Secretary-General of WMO and the executive head of another agency

This list may be amended by the Secretary-General by the deletion or addition of series at the request of any constituent body.
RESOLUTION 20

RULES OF PROCEDURE OF THE EXECUTIVE COUNCIL

THE EXECUTIVE COUNCIL,

NOTING:

(1) Regulation 4 of the WMO General Regulations,
(2) Resolution 13 (EC-XL) – Rules of Procedure of the Executive Council,
(3) Resolution 40 (Cg-XI) – Revision of the General Regulations,
(4) Resolution 37 (Cg-XI) – Suspension of Members for failure to meet financial obligations,

ADOPTS the Rules of Procedure of the Executive Council as given in the annex to this resolution;

DECIDES to bring the amended Rules of Procedure of the Executive Council into force on 5 July 1992;

REQUESTS the Secretary-General to have the amended Rules of Procedure of the Executive Council reproduced and distributed.

NOTE: This resolution replaces Resolution 13 (EC-XL), which is no longer in force.

ANNEX TO RESOLUTION 20 (EC-XLIV)

RULES OF PROCEDURE OF THE EXECUTIVE COUNCIL

<table>
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<tr>
<th>RULE</th>
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<tr>
<td><strong>GENERAL</strong></td>
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<tr>
<td><strong>Rule 1</strong></td>
<td>These rules, established in accordance with Regulation 4 of the General Regulations, are adopted by the Executive Council under the authority of the Convention and of the General Regulations of the World Meteorological Organization. In the event of any conflict between any provision of these rules and any provision of the Convention or of the General Regulations, the texts of the latter two documents shall prevail.</td>
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<td><strong>Rule 2</strong></td>
<td>(a) The provisional agenda for a session of the Executive Council shall be prepared by the President in consultation with the Secretary-General; (b) Subject to the conditions mentioned in (c) and (d), it shall include, apart from items listed in Regulation 155 of the General Regulations and those referred to it by Congress, all items proposed by the President, members of the Executive Council, the regional associations, the technical commissions, the United Nations, international organizations authorized by virtue of agreements or working arrangements to submit items, and the Secretary-General; (c) The explanatory memorandum to the provisional agenda shall be prepared by the Secretary-General; (d) No item can be added to the provisional agenda unless accompanied by an explanatory memorandum summarizing the problem to be discussed. No item relating to the field of activity of a regional association or technical commission will be included in the agenda before the body in question has examined it.</td>
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<td><strong>Rule 3</strong></td>
<td>Each member or invited organization shall notify the Secretary-General of the names of the persons who will attend the session in their name by virtue of Regulations 18, 141, 142 and 143 of the General Regulations, or who will accompany them by virtue of Regulation 153 of the General Regulations. This notification shall be conveyed by a letter signed by the member or by a person authorized by him to do so and, in the case of an international organization, by the responsible officer. The letter of invitation addressed by the President of the World Meteorological Organization to an expert shall be regarded as appropriate credentials.</td>
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<tr>
<td><strong>Rule 4</strong></td>
<td>When a member objects to the admission of a person other than another member, that person shall attend with the same rights as he would normally enjoy, until the Executive Council has examined the case and has taken a decision.</td>
</tr>
<tr>
<td><strong>Rule 5</strong></td>
<td>On the demand of at least two members present at a meeting, and in all elections, voting shall be by secret ballot.</td>
</tr>
<tr>
<td><strong>Rule 6</strong></td>
<td>In all voting by secret ballot, two tellers selected from amongst the members present shall be appointed to count the votes.</td>
</tr>
<tr>
<td><strong>Rule 7</strong></td>
<td>Apart from the opening meeting of the session, which is public, and meetings in camera, meetings of the Executive Council shall normally be private. When there are special circumstances, the Executive Council may decide to hold all or part of a meeting in public.</td>
</tr>
</tbody>
</table>
On agreement by two-thirds of the members present, a meeting of the Executive Council will be held in camera. In such a case, the meeting shall be confined to the members of the Council, defined in Article 13 of the Convention, to observers (if any) representing the President or Vice-Presidents, and to such additional persons as may be agreed to.

Subject to Rule 8, the Secretary-General shall act in the capacity of Secretary in all meetings of the Executive Council and its committees. He may designate one of the senior officers of the Secretariat to act as his representative.

The Secretary-General or his representative may, subject to Regulations 94 and 95 of the General Regulations, make oral as well as written statements to the Executive Council, its committees or working groups, concerning any question under consideration.

The result of a vote by correspondence by members of the Executive Council, in the form of the number of votes cast for and against and the number of abstentions, shall be communicated to all members of the Council.

Except in a secret ballot by correspondence, a list showing the votes of members of the Executive Council shall be sent to any member, on request, provided such a request is received within 180 days of the close of the ballot and unless two or more members of the Council have requested, before the voting terminates, that this information be not communicated.

The distribution of non-confidential documentation (documents, working papers and minutes) for a session of the Executive Council shall be restricted to members of the Executive Council, other participants at the session and, upon request, to the United Nations specialized agencies and other international organizations with which the Organization has established working arrangements. All such documentation shall be marked "Restricted". Members of the Organization wishing to receive all or some of the above-mentioned documentation are entitled to receive one copy of each on request to the Secretary-General. The distribution to such Members of pre-session documentation will be made at the same time as the normal distribution; all other documentation will be sent after the session. Such requests shall be valid only for one session.

Documentation for meetings in camera shall be distributed only to the participants at such meetings.

As soon as possible after the end of each session of the Executive Council, the Secretariat shall send by airmail, to the persons who attended the session, those of the minutes which were not submitted to the session.

The recipients will be requested to send to the Secretariat within sixty days of the date of dispatch any alterations proposed to their statements or any remarks on the minutes. Minutes for which, during this period, no alterations or comments are received or for which the amendments proposed are of a minor or of an editorial nature only, are approved. For other minutes, the proposed corrections and comments will be circulated amongst the other participants as soon as received. They will be requested to send their comments, if any, to the Secretariat within sixty days. After this period all alterations and comments received will be forwarded to the President of the Organization whenever necessary, together with the relevant extracts taken from the recordings of the meetings. If the extracts tally with the proposed alterations and comments, the President may approve the minutes. If there is disagreement in substance as to what was said or done, approval shall be deferred until the next session. The relevant facts will be communicated by the President to those who participated in the session and to the members of the Executive Council who did not attend the session.

When the Executive Council has to select a person from two or more candidates for a post or office, or for the award of a distinction, it will indicate a preference amongst the candidates submitted by secret ballot, in accordance with the procedure described in Regulation 196 of the General Regulations, substituting the words "member of the Executive Council" for "principal delegate of the Members" and "Executive Council" for "Congress", and the following provision being inserted at the end of sub-paragraph (a): "If during the separate vote of preference all the candidates receive an equal number of votes, one of them shall be eliminated by the drawing of lots."

When the Executive Council has to select two or more candidates, the same method shall be applied with the following modifications: each member shall nominate as many candidates as there are posts to fill or distinctions to award, and the procedure shall cease when the number of candidates remaining is equal to the number of candidates to be selected. A candidate who, in any stage of the proceedings, obtains two-thirds of the votes for and against shall be appointed or selected and the procedure shall continue only if there are still posts to fill or distinctions to award.
DESIGNATION* OF ACTING MEMBERS

RULE 15

For the designation, during a session of the Executive Council, of an acting member in accordance with Regulation 144 of the General Regulations, the Council shall establish a list of eligible candidates fulfilling the conditions of Article 13(c) of the Convention. It will be confined to those candidates coming from the same Region as the outgoing member and consisting of:

(a) Candidates proposed by the Nomination Committee, if such a committee has been set up;
(b) Candidates proposed from the floor by members of the Executive Council.

When there is only one candidate, the candidate shall be declared elected.

When the list of candidates is complete, the candidate is chosen during a meeting in camera in accordance with the indication of preference procedure (see Rule 14), with the exception that this designation of an acting member will be by a simple majority as described in Regulation 63 (b) of the General Regulations.

RULE 16

(a) The election of an acting member in accordance with Regulation 144 of the General Regulations 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;

(b) In this case, the list of candidates fulfilling the conditions of Article 13(c) of the Convention shall be confined to those eligible candidates coming from the same Region as the outgoing member proposed by members of the Executive Council within thirty days of the announcement of the vacancy;

(c) The Secretary-General shall verify that all persons whose names have been submitted in accordance with the conditions of paragraph (b) are willing to be considered as candidates. For this purpose, a period of thirty days shall be allocated, after which he shall establish a final list accordingly;

(d) When there is only one such candidate, the candidate shall be declared elected;

(e) If the list includes several names, a secret ballot by correspondence shall be organized. Regulations 71 (a), 73 and 82 of the General Regulations shall apply. The candidate who obtains a simple majority as described in Regulation 63 (b) of the General Regulations shall be elected as an acting member of the Executive Council. If the designation is not made at the first ballot the decision shall be left to the next session of the Executive Council.

ESTABLISHMENT OF THE LIST OF CANDIDATES FOR THE IMO (INTERNATIONAL METEOROLOGICAL ORGANIZATION) PRIZE

RULE 17

The IMO Prize shall be awarded annually by the Executive Council for outstanding work in the field of meteorology or in any other field referred to in Article 2 of the Convention.

The Secretary-General shall send to all Members of WMO a circular letter informing them of the Executive Council decisions concerning the IMO Prize and inviting them to submit the names of all potential recipients, accomplished in each case by a statement of about one page on the qualifications and merits of each candidate. A curriculum vitae and a list of publications should be attached to the statement.

The number of candidates submitted by a Member for a given Prize should not exceed three.

A candidature submitted for a given Prize shall normally be retained on the list of candidates for subsequent Prizes during that financial period.

Any candidature received after the opening of a session of the Executive Council shall not be considered at that session, but shall be taken into consideration for all subsequent Prizes during that financial period.

The names of candidates presented by Members will be referred to a Selection Committee if they do not fall into either of the following categories:

- Members of the Executive Council who, as electors, are not eligible for the award during their term of office as members of the Executive Council;
- Candidates who are no longer alive on the date of their nomination. The award may nevertheless be made posthumously to a candidate who dies between the date of his nomination and the award of the Prize.

A Selection Committee consisting of four members of the Executive Council shall be appointed at each session of the Executive Council to prepare, in readiness for the following session of the Executive Council, a list of not more than five names for consideration by the Executive Council, which shall make the final selection by secret ballot. The Selection Committee shall change one member each year.

CHOICE OF THE RECIPIENT OF THE IMO (INTERNATIONAL METEOROLOGICAL ORGANIZATION) PRIZE

RULE 18

(a) A list of candidates designated by the Selection Committee shall be distributed under confidential cover to each member of the Executive Council at least 48 hours before the final decision is taken. The list shall be accompanied by statements on the qualifications and merits of the candidates appearing therein. These statements shall be reproduced

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* Tenth Congress reiterated the decision of Ninth Congress that the word "designated" in Regulation 142 of the General Regulations should continue to mean "elected" until Congress decides otherwise (paragraph 10.3.2 of the general summary of the abridged report of Tenth Congress).
as received from the authorities presenting these candidates:
(b) The recipient shall be selected during a plenary meeting held in camera, using the indication of preference procedure (see Rule 14).

INVITATION TO PRESIDENTS OF TECHNICAL COMMISSIONS TO ATTEND MEETINGS OF THE EXECUTIVE COUNCIL

Rule 19

Under the provisions of Article 19(4) of the Convention and Regulation 154(a) of the General Regulations, the presidents of technical commissions or ex-presidents, under whose direction a session of a commission has been held since the preceding session of the Executive Council, may be invited to a session of the Executive Council at the discretion of the President.

INVITATION TO HYDROLOGICAL ADVISERS TO PRESIDENTS OF REGIONAL ASSOCIATIONS TO ATTEND MEETINGS OF THE EXECUTIVE COUNCIL

Rule 20

Under the provisions of Regulation 154(6) of the General Regulations, hydrological advisers to presidents of regional associations should, at the discretion of the President, be invited to a session of the Executive Council which deals with policy questions related to hydrology and water resources.

CONSIDERATION OF ABRIDGED FINAL REPORTS OF SESSIONS AND INTER-SESSIONAL DECISIONS OF REGIONAL ASSOCIATIONS AND TECHNICAL COMMISSIONS

Rule 21

The Executive Council shall consider the abridged final reports of sessions of regional associations and technical commissions submitted to it by the Secretary-General in accordance with the provisions of Regulation 115 of the General Regulations. The results of the consideration of each report shall be dealt with by a resolution of the Executive Council. This resolution shall first contain a formal statement that the report has been noted and shall also include any general observations approved by the Council. As appropriate, the resolution shall further contain:
(a) The list of recommendations submitted which were adopted as resolutions of the Executive Council;
(b) Statements concerning the action to be taken on those recommendations which were not adopted as resolutions of the Executive Council. Such statements shall contain specific information on the action concerning the recommendations to be taken by the president or body to which responsibility for action is entrusted;
(c) The comments of the Council on resolutions upon which it considers it desirable to express its views or issue directives to the constituent body which passed the resolution. If any resolution included in the report is not mentioned, it implies that the Executive Council sees no objection to the proposed course of action. This does not imply, however, formal approval of the technical aspects of such action.

Copies of the resolution of the Executive Council to which reference is made in the first paragraph of this rule shall be given the same distribution as the report to which the resolution applies.
In all cases, the abridged report of the Executive Council will contain a statement about the report submitted.

Rule 22

Inter-sessional decisions of regional associations and technical commissions, adopted by correspondence, shall be submitted by their respective presidents to the Executive Council together with any comments received by the Secretary-General thereon, in accordance with the provisions of Regulation 125 of the General Regulations.
The results of their consideration by the Executive Council shall be recorded, as appropriate, in a resolution of the Executive Council or in the general summary of the report of its session.

ACTION TO BE TAKEN BY THE PRESIDENT OF THE ORGANIZATION IN ACCORDANCE WITH REGULATION 9(5) ON RECOMMENDATIONS OF REGIONAL ASSOCIATIONS AND TECHNICAL COMMISSIONS

Rule 23

At the request of the president of a regional association or technical commission, the President of the Organization shall take action in accordance with the provisions of Regulation 9(5) of the General Regulations on a recommendation adopted by that body during session or by correspondence. If such action cannot be deferred until the next session of the Executive Council. For this purpose the Secretary-General shall provide the President with the comments of other associations and commissions concerned on the recommendation(s) in accordance with the provisions of Regulation 125 of the General Regulations, as appropriate.
The President of the Organization shall fix the date of implementation of any recommendation which he has approved in accordance with Regulation 9(5) of the General Regulations. In fixing this date the President shall take due account of the interval necessary for the Secretary-General to give appropriate notification of the decision. The Secretary-General shall inform the president of the body which submitted the recommendation of the action taken on it.

Rule 24

When the President of the Organization decides to conduct an exchange of opinion prior to a vote by correspondence, the Secretary-General shall collect opinions expressed and shall communicate them to the members of the Council. The same procedure will be followed in the case of an exchange of opinion between Members of the Organization, as a whole, prior to a vote being taken. A period of thirty days shall be allotted for such an exchange of opinion between members of the Executive Council. A period
of sixty days shall be allotted for such an exchange of opinion between Members of the Organization.

**Rule 25**

After a vote by correspondence the Secretary-General shall inform the president of the body which submitted the recommendation of the results of the vote and, if these are favourable, shall notify him of the text of the resolution thus adopted.

**Rule 26**

If the President of the Organization decides that neither a vote by correspondence nor action in accordance with the provisions of Regulation 9(3) of the General Regulations shall be taken on a recommendation, the Secretary-General shall inform the president of the constituent body which made it of the reasons for the decision and shall arrange for the recommendation to be submitted to the next session of the Executive Council.

**Review of the past resolutions of the Executive Council**

**Rule 27**

In accordance with the provisions of Regulation 155 (9) of the General Regulations, the Executive Council resolutions in force will be reviewed at each session of the Council.

(a) Notwithstanding the provisions of this rule, the review of previous resolutions may be dispensed with, at the discretion of the Executive Council, at its short session held immediately after a Congress, if the time available does not permit this work to be carried out. All such resolutions will then be deemed to remain in force with the exception of those which may be superseded by new resolutions adopted at that session. Any working group or panel of experts established by a previous resolution of the Executive Council, unless specifically dissolved by decision of the Council, will therefore automatically continue to exist until the next session of the Council within the meaning of Regulation 32 of the General Regulations:

(b) Past resolutions should be incorporated as far as possible in any subsequent resolution adopted on the same subject. Resolutions thus incorporated will not be kept in force. Resolutions which are partly obsolete should be replaced by revised texts containing only those parts which are maintained:

(c) As far as appropriate, the substance of the Executive Council resolutions should be included in an appropriate WMO publication such as Technical Regulations, Working Arrangements, Rules of Procedure, Staff Rules, etc., provided that the publication has the required status:

(d) When the date on which a resolution ceased to be in force is not specified, that resolution shall be cancelled on the date on which the session closes;

(e) Resolutions of the Executive Council adopted by previous sessions and kept in force by the last session shall be published in a separate publication.

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**RESOLUTION 21 (EC-XLIV)**

**Consideration of the accounts for 1990–1991 – WMO projects 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 1990 and 31 December 1991, 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 1990 and 31 December 1991;

**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.

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**RESOLUTION 22 (EC-XLIV)**

**Consideration of the accounts of the World Meteorological Organization for the biennium 1990–1991**

**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 1991 and the report of the External Auditor to the Executive Council,

**Gives formal approval** to the audited financial accounts of the World Meteorological Organization for the biennium 1990–1991;

**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 the World Meteorological Organization:
NOTING with concern the financial difficulties arising from severe cash shortages which the Organization has been facing continuously for several years,
APPEALS to the Members still in arrears to clear their dues at an early date;
REQUESTS the Secretary-General and the Financial Advisory Committee to suggest measures to overcome this problem;
NOTING that the sum of one million two hundred thousand, eight hundred and seventy-nine Swiss francs (SFR 1,200,879) appears as fixed assets in the statement of assets and liabilities as at 31 December 1991,
AUTHORIZES this amount to be written down to the nominal sum of one Swiss franc (SFR 1) and this transaction to be recorded in the accounts for the biennium ending 31 December 1993;
NOTING that the sum of sixty-nine thousand, one hundred and ninety-six Swiss francs (SFR 69,196) in respect of the Technical Library (books, periodicals, etc.) appears in the statement of assets and liabilities, as at 31 December 1991,
AUTHORIZES this amount to be written down to the nominal sum of one Swiss franc (SFR 1) and this transaction to be recorded in the accounts for the biennium ending 31 December 1993.

RESOLUTION 23 (EC-XLIV)
PROPORTIONAL CONTRIBUTIONS OF MEMBERS

THE EXECUTIVE COUNCIL,
NOTING:
(1) Resolution 36 (Cg-XI) – Assessment of proportional contributions of Members for the eleventh financial period,
(2) That the WMO Convention entered into force for Latvia on 14 June 1992,
(3) That the WMO Convention entered into force for Lithuania on 3 July 1992,
ALSO NOTING the decision of the United Nations General Assembly contained in Resolution 46/771 of its forty-sixth session to postpone the determination of the assessment rate for Latvia and Lithuania,
FURTHER NOTING that the authorities of the Russian Federation have informed the Secretary-General that the Russian Federation has taken over the rights and obligations of the former USSR,
DECIDES that the WMO provisional assessment for Latvia and Lithuania will be based on principles similar to those governing the assessment of existing Members including the factor of UN contribution;
DECIDES FURTHER:
(1) That the precise percentage of provisional assessment for Latvia and Lithuania shall be decided by the President of WMO, acting on behalf of the Executive Council, following the decision of the United Nations in this connection and respecting the principles mentioned in Resolution 36 (Cg-XI);
(2) That the provisional assessment for Latvia shall be retroactive to 14 June 1992;
(3) That the provisional assessment for Lithuania shall be retroactive to 3 July 1992;
(4) That in accordance with the authorization of Congress to adjust individual percentage assessments, the assessment rate for the Russian Federation will be reduced by the rate provisionally assessed on Latvia, Lithuania, and any other Republics of the former USSR, on their becoming Members of WMO;
NOTING FURTHER that Estonia, any other Republics of the former USSR and any other countries might also deposit their instruments of accession to the WMO Convention in the near future,
DECIDES that a similar procedure will be applied to Estonia, any other Republics of the former USSR and any other countries on their becoming Members of WMO.

RESOLUTION 24 (EC-XLIV)
APPOINTMENT OF THE EXTERNAL AUDITOR

THE EXECUTIVE COUNCIL,
NOTING Article 15 of the Financial Regulations,
NOTING ALSO that the term of office of the External Auditor expires on 30 June 1993,
DECIDES to extend the appointment of the President of the Cour des Comptes of France in his capacity as External Auditor of the World Meteorological Organization for a period of three years until 30 June 1996.
### REVIEW OF PAST EXECUTIVE COUNCIL RESOLUTIONS

#### THE EXECUTIVE COUNCIL,

**Noting:**
1. Regulation 155 of the General Regulations, concerning the review of the Executive Council resolutions,
2. Rule 27 of its Rules of Procedure on the same subject.

**Having examined** its past resolutions still in force,

**Decides:**

1. To keep in force the following resolutions:
   - EC-X 2
   - EC-XII 6, 30
   - EC-XVII 11
   - EC-XVIII 27, 31 (except part 2 of the annex on radiation)
   - EC-XIX 9 (except paragraph 3.2 of the annex which is replaced by paragraph 12 of the annex to Resolution 19 (EC-XLII))
   - EC-XXI 15
   - EC-XXII 12, 18
   - EC-XXIV 4
   - EC-XXV 8, 12
   - EC-XXVI 17

2. Not to keep in force the other resolutions adopted before its forty-fourth session.

#### EC-XXIX 11
- EC-XXX 8, 17, 18 (except paragraph 2 under REQUESTS)
- EC-XXXII 5
- EC-XXXIV 13, 18
- EC-XXXV 10, 18, 21
- EC-XXXVI 1, 2, 3, 6
- EC-XXXVII 10, 13
- EC-XXXVIII 8, 9, 10, 13, 19, 20
- EC-XXXIX 5, 7, 10, 17, 21, 24
- EC-XL 1, 2, 4
- EC-XLI 1, 2, 3, 4, 5, 6, 8, 10, 12, 13, 15, 16, 23
- EC-XLII 1, 2, 3, 4, 5, 6, 10, 11, 12, 13, 14, 22, 23
- EC-XLIII 1, 2, 4, 5, 6, 7, 8, 10, 11, 12, 13, 16, 17, 18, 19, 20, 21, 22, 23

**NOTE:** This resolution replaces Resolution 24 (EC-XLII), which is no longer in force.
ANNEXES

ANNEX I
Annex to paragraph 2.4.1 of the general summary

RECOMMENDATIONS OF THE FINANCIAL ADVISORY COMMITTEE

PROCEDURAL MATTERS

RECOMMENDATION 1:
1.1 That, as soon as possible after Congress, the Secretary-General make available to members of the Executive Council a revised four-year programme and budget document incorporating the decisions of Congress.
1.2 That, when reporting to the Executive Council on the activities carried out under the various programmes, a financial summary statement in addition to financial details be provided in the programme document of those activities, drawing attention to any deviations from the agreed budget, and the practical implications of these deviations. (Note that by this procedure the financial details will be available well before the EC meeting.)
1.3 That, when new proposals are brought before the Executive Council, the financial implications of those proposals be clearly explained, including any consequences for individual programmes within the agreed budget.

CONSIDERATION OF THE FINANCIAL SITUATION OF THE ORGANIZATION

RECOMMENDATION 2:
That, in the short run, the Executive Council should continue strongly to urge Members to pay arrears of their contributions as soon as possible. For the future, the Executive Council should give consideration to recommending to Twelfth Congress (1995) further measures to dissuade Members from defaulting from their financial obligations under the WMO Convention. As the recommendations to Twelfth Congress on financial matters will be formulated by EC-XLVI (1994), the members of the Council might reflect on these questions and eventually inform the Secretary-General of their views for inclusion in the appropriate documents.

APPOINTMENT OF THE EXTERNAL AUDITOR

RECOMMENDATION 3:
3.1 That the mandate of the External Auditor be extended for a period of three years effective 1 July 1993.
3.2 That the Secretariat be requested to investigate the possibility of obtaining less expensive audit services from the Swiss authorities and to report on this matter to RNAC-12 and EC-XLV.

FINANCIAL SUPPORT FOR ATTENDANCE OF EC MEMBERS AT SESSIONS OF THE COUNCIL

RECOMMENDATION 4:
That the Council decide in favour of granting, in exceptional cases, both travel expenses and subsistence allowance to EC members from the least developed countries who are in need of such support to enable their full participation in sessions of the Executive Council, and that the maximum estimated cost of SFR 15,000 per full session of the Council should be absorbed within the approved maximum expenditure for the financial period.

WMO HEADQUARTERS BUILDING

RECOMMENDATION 5:
That the Council endorse the recommendations of the EC Advisory Committee on the WMO Headquarters Building. These recommendations are reproduced below:
5.1 That advice should be sought to prepare, in consultation with the WMO Secretariat and its programme managers, a report on the projected staff growth over the forty-year planning period, taking into consideration actual staff, anticipated growth rate and the introduction of new office and data-processing technologies. Consultations with ICAO officials on the procedures which they are using to determine the size of their new building should be considered.
5.2 That, furthermore, the planning for the projected staff growth rate should take into consideration the impact that the conclusions of the UN Conference on Environment and Development and the Intergovernmental Negotiating Committee on a Framework Convention might have on WMO. A range of scenarios for the post-UNCED future of WMO should be available to governments prior to the next Congress.
5.3 That, as mandated by Congress, the Secretary-General should continue discussions with the Swiss authorities for the construction of a new building and the negotiations for the sale of the current building.
5.4 That an investigation should be undertaken to ascertain the interest of other international organizations engaged in related work to co-locate in a new WMO building.
5.5 That more detailed information on the options proposed by the consultant regarding sources of funding...
for a new building should be made available to the Council. This matter is of particular importance during the current and projected period of fiscal restraint.

5.6 That the results of these five recommendations should be assembled in a compelling document designed to demonstrate clearly to all concerned the importance and cost-effectiveness of WMO moving positively to construct a new and larger Headquarters building with minimum delay. This should be available for review at the forty-fifth session of the Executive Council.

STANDARD OF ACCOMMODATION FOR TRAVEL BY AIR

RECOMMENDATION 6:
That, in view of the financial situation of the Organization, and while recognizing the validity of UN common system guidelines, the Council should decide to postpone consideration of the proposal to adopt new modalities related to standards of accommodation for travel by air and review it at a more appropriate time.

PUBLICATIONS – REVISION OF THE PURPOSE AND LIMITS OF THE PUBLICATIONS FUND

RECOMMENDATION 7:
That the Executive Council approve Resolution 17 (EC-XLIV) – Publications Fund, inter alia, incorporating the possibility of employing temporary staff for the production of WMO publications. Furthermore, that the Executive Council authorize for this purpose the transfer to the Publications Fund of the appropriations relating to temporary, supernumerary and auxiliary staff approved by the Council for the Publications Programme under Part 5 of the regular budget.

ANNEX II
Annex to paragraph 3.3.13 of the general summary

GUIDELINES TO BE USED FOR THE GRANTING OF THE PROFESSOR DR VILHO VAISALA AWARD

1. PURPOSE
The purpose of the Professor Dr Vilho Vaisala Award is to encourage and stimulate interest in important research programmes in the field of instruments and methods of observation in support of WMO programmes.

2. CRITERIA FOR GRANTING AWARDS
(a) Each award shall be made for an outstanding research paper in the field defined in paragraph 1 above;
(b) Only papers which have been published in scientific journals will normally be eligible for consideration; a summary of a successfully defended Ph.D. thesis, however, would also be acceptable;
(c) Papers published in languages other than the official languages of WMO will be eligible for consideration if accompanied by full translations in one of the working languages of WMO;
(d) Only papers published during the 18-month period immediately preceding the year in which the award is made will be eligible for consideration;
(e) Papers that have previously won an international prize will not be eligible.

3. METHOD OF SUBMISSION
(a) All Permanent Representatives of Members of WMO will be invited to submit nominations during a specified period in accordance with a schedule established by the Secretary-General;
(b) Nominations, together with four copies of the paper in a WMO working language (original or translation) and an adequate summary, should be submitted to the Secretary-General;
(c) The number of nominations submitted by each Permanent Representative should not exceed two.

4. METHOD OF SELECTION
(a) The president of CIMO, in consultation with the vice-president thereof, should nominate three persons as assessors, who should be distinguished scientists in the field of instruments and methods of observation, who shall not themselves be candidates for this award;
(b) Each assessor should allot a mark to each paper, which should be a digit in the range 0 (lowest) to 5 (highest), and submit the evaluation to the Secretary-General. The evaluation should be based on the following:
   (i) Significance of topic;
   (ii) Novelty of ideas and methods;
   (iii) Value of results to WMO programmes;
   (iv) Equal weight being assigned to each of these sectors;
(c) The final selection of the award winner, or winners, will be made by the Selection Committee of not more than two members of the Executive Council and, ex officio, the president of CIMO. This committee will be specially constituted for this purpose by the Executive Council for a four-year period;
(d) The Executive Council Selection Committee may decide not to recommend an award if none of the papers submitted is of a sufficiently high standard.
5. **Nature of the Award**

The award will consist of a diploma, a medal and the sum of US $5,000. The award may also be shared between co-authors provided the other criteria for the granting of the award are met. In the event of there being more than two co-authors, each of them will be awarded US $2,500.

6. **Award Ceremony**

The award ceremony shall normally take place in the country of the award winner (or winners). The arrangements for the presentation will be decided in consultation between the President of WMO, the Permanent Representative concerned and the Secretary-General.

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### ANNEX III

**WMO REQUIREMENTS FOR CONTINUITY OF THE SPACE-BASED PORTION OF THE GOS**

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#### I. Introduction

1. The purpose of this statement is to provide guidance to the satellite operators who support the space-based sub-system of the GOS in the preparation of their contingency plans.

2. The Eleventh Congress of WMO urged Members concerned to maintain the polar-orbiting and geostationary satellite systems to ensure the continuity of operation, and the data dissemination and distribution services of those satellite systems.

3. Ensuring continuity in this context refers to minimizing any interruption in WMO-required environmental satellite mission services due to a failure in the space-based portion of the GOS. The GOS space segment operators have developed internal contingency plans to provide substitute products and services in the event of a service outage. Many of these internal plans draw upon the data and products of other space segment operators. In addition, the satellite operators of the space-based portion of the GOS have through a policy of "help your neighbour" worked together to help each other in the event of such a failure, the most recent example of this being the willingness of EUMETSAT to make available a METEOSAT spacecraft for coverage over the Atlantic. This event highlights the importance of cooperation contingency planning amongst the operators.

4. The Co-ordination Group for Meteorological Satellites has long served as a forum for addressing the concern of the WMO Executive Council Panel of Experts on Satellites regarding ensuring continuity of the meteorological satellite services and will continue to be the focus for continuity planning.

#### II. Satellite Mission Service Requirements

5. The WMO general requirements for the space-based sub-system of the Global Observing System were endorsed at EC-XLI, which requested that they be used by WMO when stating overall WMO satellite requirements (see report of the EC Panel of Experts on Satellites, ninth session). All of the current operational mission requirements of WMO should be addressed in the contingency plans of the satellite operators. The most urgent attention of the operators should be directed to the key missions listed below:

   - **For geostationary satellites:**
     - The imagery mission;
     - The capability to produce wind data;
     - The capability to broadcast data to local users;
     - The capability to collect and relay in situ data;

   - **For polar satellites:**
     - The sounding mission;
     - The imagery mission;
     - The capability to broadcast data to local users;
     - The capability to collect and relay in situ data.

6. The importance of the continuity of direct services such as APT, WEFAX and DCS must be considered.

7. In the case of geostationary satellites, contingency action should be taken if the number of operating satellites and/or their location are not suitable to ensure that the primary missions listed below are met:

   - **Images taken under a zenith angle not higher than 70 degrees are available over all latitudes lower than 50 degrees (for higher latitudes, the polar satellites provide frequent images);**
   - **The image quality is such that wind data can be produced up to a zenith angle of 60 degrees over all latitudes lower than 40 degrees;**
   - **The capability to distribute data and possibly perform other telecommunication functions (e.g. data collection) must be exploited up to a latitude of at least 70 degrees;**

8. In the case of polar satellites, contingency action should be taken if the number of operating satellites and/or their orbital parameters and/or the instrument swaths are not suitable to ensure that the primary missions listed below are met:

   - **The sounding observations under a zenith angle not higher than 60 degrees are available four times per day over all latitudes higher than 30 degrees;**
   - **Global coverage from images is available four times per day, any site being observed under a zenith angle not higher than 70 degrees;**
(c) Any direct read-out station is able to acquire direct read-out data with a coverage area of at least 6000 km (W-E) by 3000 km (N-S).

III. GUIDANCE

9. Contingency plans prepared by the satellite operators should take into account the duration of the possible interruption of data and services and the requirements of the user community.

10. For short-term interruption of service, the internal contingency plans of satellite operators will usually be sufficient to address this problem. In this case, the loss of a critical sub-system may result in loss of the associated critical mission service for a short time, assuming a replacement satellite is available.

11. For a longer-term interruption, the matter can be considered one of major programme continuity. It is considered that in an operational programme, the operator has in principle the capacity to integrate and launch a new satellite.

12. In the event of an extended satellite outage where no standby satellite is available, co-operative contingency plans developed by the operators would be essential. The satellite operator should explore a wide range of contingency strategies involving for example spacecraft, ground systems, alternative products, etc. The satellite operators should also explore measures to improve the compatibility of their various systems.

13. Section II outlines the mission requirements considered critical by WMO. The contingency plans of satellite operators should ensure coverage of those regions of the world where severe weather conditions (e.g. cyclones, tornadoes, etc.) develop. The importance of the continuity of direct broadcast services such as APT, WEFA, HRPT should also be considered. To ensure the continued availability of high-resolution data, standardization of transmission links and formats should be considered.

14. Contingency planning of this nature requires a continuing dialogue between the satellite operators and their user representatives in order to develop practical cost-effective contingency alternatives which respond to the needs of the user communities.

ANNEX IV

Annex to paragraph 5.5.1 of the general summary

WMO STATEMENT ON THE STATUS OF WEATHER MODIFICATION

1. INTRODUCTION

1.1 For thousands of years people have sought to modify weather and climate so as to augment water resources and mitigate severe weather. The modern technology of weather modification was launched by the discovery in the late 1940s that supercooled cloud droplets could be converted to ice crystals by insertion of a cooling agent such as dry ice or an artificial ice nucleus such as silver iodide. Over 40 years of subsequent research have greatly enhanced our knowledge about the microphysics, dynamics and precipitation processes of natural clouds and the impacts of human interventions on those processes.

Currently, there are dozens of nations operating more than 100 weather modification projects, particularly in arid and semi-arid regions all over the world, where the lack of sufficient water resources limits their ability to meet food, fibre, and energy demands. The purpose of this document is to present a review of the status of weather modification.

1.2 The most realistic approach to modifying weather is to work with the natural energies prevailing in the atmosphere. Conditions of instability are therefore sought wherein a relatively small human-induced disturbance in the system can substantially alter the natural evolution of atmospheric processes.

1.3 The ability to influence cloud micro-structures has been demonstrated in the laboratory, simulated in numerical models, and verified through physical measurements in some natural systems such as fogs, layer clouds and cumulus clouds. However, direct physical evidence that precipitation, hail, lightning, or winds can be significantly modified by artificial means is limited. The complexity and variability of clouds result in great difficulties in understanding and detecting the effects of attempts to modify them artificially. As knowledge of cloud physics and statistics and their application to weather modification has increased, new assessment criteria have evolved for evaluating cloud-seeding experiments. The development of new equipment - such as aircraft platforms with microphysical and air-motion measuring systems, radar (including Doppler and polarization capability), satellites, microwave radiometers, wind profilers, automated raingauge networks, mesoscale network stations - has introduced a new dimension. Equally important are the advances in computer systems that permit large quantities of data to be processed. New data sets, used in conjunction with increasingly sophisticated numerical cloud models, help in testing various weather modification hypotheses. Chemical and chaff tracer studies help to identify airflow in and out of clouds and the source of ice nucleation as the seeding agent. With these new technologies, a better climatology...
of clouds and precipitation can be prepared when contemplating a weather modification project.

1.4 If one were able to predict precisely the precipitation from a cloud system, it would be a simple matter to detect the effect of artificial cloud seeding on that system. The expected effects of seeding, however, are often within the range of natural variability (low signal-to-noise ratio) and our ability to predict the natural behaviour is still limited.

1.5 Comparison of precipitation during seeded periods with that during historical periods presents problems because of climatic and other changes from one period to another, and does not generally inspire confidence. However, target and control areas can be established and various methods used to analyse the data. This is sometimes the least expensive and easiest way to obtain information about a cloud-seeding project and has been used extensively throughout the world, providing some evidence for the efficacy of cloud seeding.

1.6 In currently accepted evaluation practice, randomization methods (target/control, crossover or single area) are considered most reliable for detecting cloud-seeding effects. Such randomized tests require a number of cases readily calculated on the basis of the natural variability of the precipitation and the magnitude of the expected effect. In the case of very low signal-to-noise ratios, experiment durations in the range of five to over ten years may be required.

1.7 The effect of natural precipitation variability on the required length of an experiment can be reduced through the employment of physical predictors which are effective in direct proportion to our understanding of the phenomenon. The search for physical predictors, therefore, holds a high priority in weather modification research. Physical predictors may consist of meteorological parameters (such as stability, wind directions, pressure gradients) or cloud quantities (such as liquid water content, updraught speeds, ice-crystal concentration or radar reflectivity).

1.8 Direct and objective measures of precipitation quantities are to be preferred for testing weather modification methods. Secondary measures, such as insurance data (as have in the past been employed to show changes in hailfall) are, at least by themselves, not held to be satisfactory in most situations.

1.9 Operational programmes should be conducted with recognition of the risks inherent in a technology which is not totally developed. For example, it should not be ignored that, under certain conditions, seeding may cause more hail or reduce precipitation. However, properly designed and conducted operational projects seek to detect and minimize such adverse effects. Therefore, weather modification operators are encouraged to add, whenever possible, scientifically accepted evaluation methodologies in order to avoid negative effects remaining undetected and to allow improvements in the understanding and in the methodology that is used.

1.10 Brief summaries of the current status of weather modification are given in the following sections. These summaries were restricted to weather modification activities that appear to be based on acceptable physical principles and which have been tested in the field.

2. THE ENHANCEMENT AND REDISTRIBUTION OF PRECIPITATION FROM SUPERCOOLED CLOUDS

2.1 Basic concepts

It is often observed that supercooled clouds, that is, those clouds that contain liquid droplets at temperatures below 0°C, also contain large amounts of supercooled water. This is evident from aircraft icing as well as from research aircraft measurements. It has been observed that large amounts of the supercooled water in such clouds are not converted to precipitation and eventually evaporate (an indication of low efficiency of precipitation production). This unconverted supercooled water can be thought of as an untapped reservoir of water in the natural cloud system. There are two theoretical approaches to seeding supercooled clouds to enhance precipitation: static seeding and dynamic seeding.

The main thrust of the static seeding concept is to enhance the precipitation efficiency of supercooled clouds. The hypothesis is that introduction of an “optimum” concentration of ice crystals will enhance the precipitation efficiency of a cloud by tapping that reservoir of supercooled water. Ice crystals can be created by the introduction of ice nuclei (such as AgI) or a coolant (such as dry ice). The challenge then is to identify those clouds that contain substantial amounts of supercooled liquid water that is not participating, or will not eventually participate, in the precipitation process. This seeding method generally involves complex icing processes, such as riming or aggregation of ice crystals, or freezing of drops and riming, or the natural and artificial multiplication of ice particles. The interactions of these microphysical processes with the existing cloud dynamics (airflow) can sometimes be the controlling factors in whether more or less precipitation occurs.

The major thrust of the dynamic seeding concept is to seed a supercooled cloud with large enough quantities of ice nuclei or a coolant to cause rapid glaciation of the cloud. The resultant latent heat release from the vapour deposition growth of ice crystals and/or freezing of supercooled drops will then increase the buoyancy of a cloud. In favourable conditions, this will cause the cloud to grow deeper, increase the vertical transport of water through the cloud, increase the width of the cloud, and may increase rainfall on the ground. Furthermore, the formation of the precipitation might cause more intense downdraughts and interactions with the environment, promoting more active convection. Other recent theoretical results have shown that dynamic seeding can affect relatively dry stratus-type clouds as well as wet cumulus clouds. The challenge in the application of the dynamic seeding hypothesis is to identify those clouds and cloud environments which will yield enhanced cloud growth and cloud interactions in response to seeding.

Both static seeding and dynamic seeding can also result in dynamic changes in a cloud through the redistribution of condensed water or changes in water loading.
and cooling by evaporation and melting of the increased amounts of precipitation. Interactions with the environment will occur. In dynamic seeding one takes a more aggressive approach, inserting large amounts of ice nuclei into clouds and attempting to target the seeding agent more precisely into the vigorous, actively growing cells before entrainment processes deplete liquid water and weaken the natural buoyancy of the cloud. In order to conduct a cloud seeding operation or research experiment properly, the following actions must occur (for supercooled clouds, as discussed in this section, and for all other seedable situations mentioned below with slight modification):

(a) Identification of a suitable situation;
(b) Reliable production of an appropriate seeding agent;
(c) Successful transport and diffusion, or direct placement, of the seeding agent to supercooled regions of the cloud;
(d) Availability of adequate time and supercooled liquid and vapour to produce precipitation-size particles;
(e) Eventual fallout of the particles on the ground in the desired location before evaporating or sublimating completely, or transport out of the target area.

These are not easy tasks. Of those cloud-seeding projects or experiments which have failed in the past, the reason can often be traced to failure of execution. Consequently, very competent operational and scientific personnel are essential to conduct successful cloud-seeding operations and experiments.

2.2 OROGRAPHIC CLOUDS

In our present state of knowledge, it is considered that the glaciogenic seeding of clouds or cloud systems either formed, or stimulated in development, by airflow over mountains offers the best prospects for increasing precipitation in an economically viable manner. These types of cloud attract great interest in their modification because of their potential in terms of water management, i.e., the possibility of storing water in reservoirs or in the snowpack of higher elevation. Numerous research and operational projects conducted since the beginning of weather modification as a science provide the evidence. Statistical analyses suggest seasonal increases (usually over the winter/spring period) of the order of 10 to 15% in certain project areas. Physical studies using the new technology highlighted above give convincing evidence of the production of an effective seeding agent, the tracing of the agent to supercooled liquid water portions of the cloud, the initiation and development of ice crystals to precipitation-size particles, and the fallout of additional precipitation on the mountain slopes in favourable situations over limited areas. Numerical simulations of the process corroborate the physical studies.

This does not imply that the problem of precipitation enhancement in such situations is solved. Much work remains to be done in pursuit of the goals of strengthening the results and producing incontrovertible statistical and physical evidence that the increases occurred over a wide area, over a prolonged period of time and with minimum, or positive, extra-area effects. Existing methods should be improved in the identification of seeding opportunities and the times and situations in which it is not advisable to seed, thus optimizing the technique and quantifying the result.

Also, it should be recognized that the successful conduct of an experiment or operation is a difficult task that requires competent scientists and operational personnel. It is difficult and expensive to fly aircraft safely in supercooled regions of clouds. Such flying requires experienced crews and aircraft with de-icing equipment and sufficient power to carry the heavy ice loads that are sometimes acquired. It is also difficult to target the seeding agent from ground generators or from broad-scale seeding by aircraft upwind of an orographic cloud system.

There is limited physical evidence that deliberate heavy seeding of clouds in certain mountainous situations can result in the diversion of snowfall (up to 50 km). However, seeding trials of this type have not been subjected to statistical or numerical modelling evaluation.

2.3 STRATIFORM CLOUDS

The seeding of cold stratiform clouds began the modern era of weather modification. Deep stratiform cloud systems (but still with cloud tops warmer than -20°C) associated with cyclones and fronts produce significant amounts of precipitation. A number of field experiments and numerical simulations have shown the presence of supercooled water in some regions of these clouds and there is accumulating evidence that increased precipitation can be obtained by glaciogenic seeding of such volumes. Shallow stratiform clouds can be made to precipitate, often resulting in clearing skies in the region of seeding. One project using these techniques attempts to allow more sunshine to a city, thus reducing the energy requirements of the metropolitan area. The general applicability of these results — when, where and how extensive the seeding could be in various regions of the world — has not been determined. A world-wide cloud climatology would be useful for this task as well as others listed in this report.

2.4 CUMULIFORM CLOUDS

In many regions of the world, cumuliform clouds are the main precipitation producers. These clouds (from small fair-weather cumulus to giant thunderclouds) are characterized by vertical velocities often greater than 1.0 m s⁻¹ and consequently contain high condensation rates. They can hold the largest condensed water contents of all cloud types and can yield the highest precipitation rates. Their strong vertical currents can suspend particles for a long enough time for them to grow to large sizes (hail, large raindrops).

For these reasons cumulus clouds appear to be candidates for modification according to both the static and the dynamic seeding hypotheses. Field experiments
with in-cloud microphysical measurements and experimental seeding trials in several regions have shown that isolated cold cumulus clouds which do not produce rain naturally can be stimulated to produce rain by ice-phase cloud seeding. However, the rainfall amounts from these isolated clouds are very small. Reports of limited success have been obtained from attempts to prove that statistically significant rainfall amounts can be produced on a seasonal basis from these cumuli and larger systems. Attempts to enhance rainfall significantly from cumuliform clouds have concentrated their efforts on systems which produce rainfall naturally.

A long-standing programme to augment rainfall from winter-time cumulus in the eastern Mediterranean is one of the most widely accepted examples of precipitation enhancement (13 to 15% increases) associated with a seeding experiment. Research and operations continue, with recent results indicating the presence of dust affecting the results in one region in a detrimental fashion. Randomized experiments in seeding of warm-based cumulus congestus associated with raining thunderstorms have demonstrated the possibility of enhancing rainfall from such clouds by intensive seeding. Extending this result to increasing the rain over an area met with difficulties. Other randomized experiments have reported enhancement of rainfall from warm-based multicell thunderstorms: those results are still under international review. New randomized experiments in rain enhancement are being prepared in several areas.

3. ENHANCEMENT OF RAIN FROM WARM CLOUDS

3.1 In most countries, the source of water is precipitation and in tropical regions that precipitation is generally in the form of convective showers, from clouds with tops often not exceeding the height of the freezing level of the so-called warm clouds. In these clouds, the physical processes involved in the initiation and development of rain are condensation, collision-coalescence, and breakup.

3.2 Depending on the environment in which these clouds are formed and developed, mainly the type of cloud condensation nuclei (CCN) distribution available to the system, the growth of large drops can be sufficiently delayed in such a way that the cloud may dissipate before drops grow to precipitation sizes.

3.3 The possibility of affecting the condensation/ collision-coalescence/break-up growth processes by seeding the clouds with either a hygroscopic material (e.g., artificial CCN) or with small water drops, thereby tapping the potential precipitation efficiency of the cloud system, has led to the hypothesis of rain enhancement from warm clouds.

3.4 Most of the warm rain processes have been simulated both in laboratory as well as in modelling work. Although favourable from the theoretical point of view, the experiments for rain enhancement from warm clouds conducted up to the present time do not have the necessary physical observations for clear-cut evaluation and possible technology transfer.

4. CLEARING OF WARM AND COLD FOGS

4.1 Certain techniques have been shown to be effective in clearing warm and cold fogs. The most reliable is the thermal method, which employs intensive heat sources (such as jet engines) to warm the air directly and evaporate the fog. These systems are expensive to install and to use. Such a system is in operational use in some airports. Another technique that has had occasional utility is the use of hovering helicopters to mix drier air from higher levels to evaporate warm fogs.

4.2 To clear warm fogs, seeding with hygroscopic materials has also been used. Hygroscopic seeding with NaCl, for example, induces the formation of a few drops that, as they settle to the ground, can sweep out many fog droplets. In addition, the relative humidity is depressed slightly during condensation on the hygroscopic particles and the fog droplets partially evaporate to bring the relative humidity back to 100%. The physical principles upon which these techniques are based are well understood. An increase in visibility is sometimes observed in such experiments, but the manner and location of the seeding and the size distribution of seeding material are critical and difficult to specify in individual cases. The corrosive properties of some hygroscopic agents may pose problems, while other agents, such as urea/ammonium nitrate, may be quite beneficial.

4.3 Supercooled fog can be dissipated by growth and sedimentation of ice crystals. This may be induced with high reliability by seeding the fog with artificial ice nuclei from ground-based or airborne systems. This technique is in operational use at several airports where there is a relatively high incidence of supercooled fog. Suitable techniques are dependent upon wind, temperature and other factors. Dry ice has commonly been used in airborne systems. Other systems employ rapid expansion of compressed gas (propane) to cool the air enough to form ice crystals. At a few airports in some countries, liquid nitrogen is being used in ground-based systems. Because the effects of this type of seeding are easily measured and results highly predictable, randomized statistical verification generally has been considered unnecessary.

5. HAIL SUPPRESSION

5.1 Hail causes considerable damage to crops and property. Many hypotheses have been proposed for suppressing hail. The most common rationale has been creating enhanced competition among hailstones and their embryos for available moisture. This hypothesis is known as “beneficial competition”. More recently, efforts have focused upon (in addition to the above) glaciating as much of the supercooled water as possible in the cells fuelling the major hail-producing updraughts.

5.2 Such seeding strategies may lead to premature rain-out of the “feeder” cell and/or produce more ice in the cell, essentially robbing the hail-producing updraught of additional energy.

5.3 Seeding clouds for such effects concentrates on the peripheral regions of large storm systems. It is
generally thought ineffective to seed directly into the main hail-forming updraught as in most such cases the nuclei would end up as small ice crystals in the anvil and little of the supercooled liquid would have been used up.

5.4 At times the feeder cells themselves may have the potential to develop into a mature storm capable of producing hail. The above seeding method may then produce early precipitation and less hail.

5.5 Only recently have numerical cloud-model simulations been carried out to test these concepts. They do in general support these general concepts and also illustrate the important interactions that can occur between the seeded cells and the mature storm. Unfavourable interactions can lead to increase in hail with decrease in rain from the model clouds. The actual situation is normally very complex but competent operational and research scientists are working hard to delineate the favourable times, locations and seeding amounts for effective modification treatments.

5.6 Although progress has been made over the last few years, and some hail suppression projects are showing signs of success, much more research is needed in all phases of hail suppression. This includes improved forecasts of hail occurrence and experimental designs, and a better understanding of the origin and growth of hailstone embryos and hailstorm structure and dynamics.

6. TROPICAL CYCLONE MODERATION

6.1 Tropical cyclones contribute significantly to the annual rainfall of many areas, but they are also responsible for considerable damage to property and for a large loss of life. Therefore, the aims of any modification procedure should be to reduce the wind, storm surge, and rain damage, but not necessarily the total rainfall.

6.2 Hurricane modification experiments were conducted in the 1960s and early 1970s with the aim of either weakening pressure gradients near the storm centre or causing enhanced cloud growth in the outer rainbands. The idea behind the first approach is that seeding and enhanced latent heat release in the vigorous eyewall clouds would weaken low-level horizontal pressure gradients and thereby weaken the strength of the winds. Numerical modelling studies suggest this approach would not weaken a storm appreciably. On the other hand, those modelling studies revealed that if enhanced vertical transport of moisture could be initiated by dynamic seeding of clouds in the outer rainbands, the redirection of water from the eyewall would weaken eyewall clouds, shift the heating maxima to greater radii and thereby weaken the strength of the storm winds appreciably. The challenge is to find sufficient numbers of clouds in the outer rainband regions that are amenable to dynamic enhancement.

6.3 Aircraft observations and sampling of clouds in three Atlantic hurricanes in 1978 and 1980 have indicated low supercooled liquid-water contents and relatively abundant ice-crystal concentration at relatively high temperatures (−5°C), throwing doubt on man's capability to modify substantially the life history of a hurricane.

7. LIGHTNING SUPPRESSION

7.1 There has been some interest in the suppression of lightning. Motivation includes reducing occurrences of forest fires ignited by lightning and diminishing this hazard during the launching of space vehicles. The concept usually proposed involves reducing the electric fields within thunderstorms so that they do not become strong enough for lightning discharges to occur. To do this, chaff (metallized plastic fibres) or silver iodide (to produce large concentrations of ice crystals) has been introduced into thunderstorms. The chaff is postulated to provide points for corona discharge which controls the electric field to values below those required for lightning, whereas augmenting the ice-crystal concentration is postulated to change the charge distribution within the clouds. Field experiments have used these concepts and limited numerical modelling results have supported them. The results, while encouraging, have no statistical significance.

7.2 Field experiments have used rockets to fire thin metallic wires into growing clouds to trigger and channel premature lightning strokes. The physical evidence shows some success.

8. ECONOMIC, SOCIAL AND ENVIRONMENTAL ASPECTS OF WEATHER MODIFICATION

8.1 Weather modification is sometimes considered when there is a need to improve the economy of a region by increasing water resources for agricultural use, water supplies for cities, or for hydroelectric power generation. In general, the positive effects observed up to now have occurred when natural rain or snow are in progress and the attempt is to produce beneficial increases in precipitation, usually of modest amounts over seasonal periods. The benefits of the modification should be larger than the costs. However, in considering benefits to some segments of the population, losses to other groups should also be weighed, together with possible compensation schemes. For example, one type of crop or region of a country may benefit from more rain, another may not. Thus, it is necessary to consider all of the important economic complexities of a planned weather modification activity, preferably during the design stage of an operation.

8.2 Precipitation enhancement should be viewed from the overall aspect of total water-resource management. It may be difficult or impossible to lessen drought conditions when they occur. Replenishing aquifers with water or filling reservoirs and augmenting snowpacks is obviously easier because the timing of precipitation is not crucial.

8.3 Sometimes, weather modification causes problems of a legal nature. Weather modification activities within the boundaries of a particular State may be perceived by a neighbouring State as having adverse effects within its borders (the so-called "extra-area effects").

8.4 Some countries have provisions for regulating the conduct of weather modification activities, while the international community is developing guidelines for resolving international conflicts arising out of weather
modification activities. However, it must be emphasized that weather modification still remains largely in the realm of research. Any legal system aimed at regulating weather modification at the international level must be developed hand-in-hand with scientific knowledge in the field.

8.5 The implications of any projected long-term weather modification operation on ecosystems need to be assessed. Such studies could reveal changes that need to be taken into account. During the operational period, monitoring of possible environmental effects should be undertaken as a check against estimated impacts.

9. SUMMARY STATEMENT AND RECOMMENDATIONS

9.1 The science and technology of weather modification have advanced at an uneven but significant pace in the past 10 to 15 years. Large numbers of operational programmes (some transformed from research programmes) in fog suppression, rain enhancement and hail suppression continue around the world. Research experimental programmes are no longer supported in some countries which had previously supported them. Other nations are expanding their scientific research, including randomized statistical experiments, into the possibilities of weather modification. New technologies and methods are being applied in weather modification research and operations and in basic cloud physics and cloud chemistry studies that increase the potential for the further development of weather modification. Certainly the need for more water and less hail is becoming of increased importance in many regions of the world.

9.2 In the light of this review of the status of weather modification, the following recommendations are made to the Member States of WMO interested in water resources management and severe storm mitigation. It is recommended that:

(a) Operational cloud-seeding projects be designed to allow evaluation of the results of seeding (i.e. have components containing measurements of physical response variables and a randomized statistical component, if at all possible);
(b) Cloud climatologies be established in all countries as vital information for weather modification and water resource studies and operations;
(c) Educational and training efforts in cloud physics, cloud chemistry, weather modification and other associated sciences and technologies be enhanced;
(d) State-of-the-art cloud and mesoscale numerical prediction models be applied, whenever possible, to investigations of physical/dynamic responses to cloud seeding; be used as a component in the design, analysis, and evaluations of field projects; and be used as forecast aids in the operation of field programmes;
(e) Finally, but perhaps most importantly, comprehensive multinational field programmes be implemented to strengthen the physical basis of weather modification by cloud seeding. Such experiments should make use of state-of-the-art technology such as advanced Doppler multi-parameter radars, sophisticated instrumented aircraft, automated and telemetered surface mesonet stations, and air tracing methods to allow identification of a number of hypothesized physical responses to seeding.

These last recommendations, if followed, would lead to the most rapid progress in research and operations related to weather modification activities. Some of these recommendations, however, particularly the last two, cannot be afforded by most nations in the world, many of which are conducting operational programmes now. It is therefore suggested that Members make as many observations as possible pertinent to the cloud-seeding objectives, call upon expert evaluation, remain abreast of developments in the field, and keep a good record of the operations conducted.

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ANNEX V
Annex to paragraph 5.5.2 of the general summary

REVISED GUIDELINES FOR ADVICE AND ASSISTANCE RELATED TO THE PLANNING OF WEATHER MODIFICATION ACTIVITIES
(Underlining indicates amendments to existing text)

On receipt of a request from a Member for advice or assistance on weather modification, the Secretary-General should act on the following lines:

(a) Any necessary clarification of the request should be sought, preferably by correspondence.
(b) If the request is general, it may suffice to send a copy of the "Review of the present status of weather modification" or (other) relevant WMO documents with a covering letter.
(c) If advice is sought on specific activities, the Member should be advised:

(ii) That weather modification is an evolving science and that activities should be specifically designed for the conditions occurring at the intended location;
(iii) Of the steps which should be taken prior to beginning actual weather modification operations;
(iii) That the scope of the effort involved in the design, conduct or evaluation of a weather modification programme precludes the Organization from giving detailed advice.
(d) However, if requested, the Secretary-General may assist by obtaining advice from scientists on other weather modification projects or with special expertise on the understanding that:
   (i) Costs will be met by the requesting country;
   (ii) The Organization can take no responsibility for the consequences of the advice;
   (iii) The Organization accepts no legal responsibility in any dispute that may arise.

(e) Bring to the attention of the interested Member that weather modification projects can be divided into three distinct categories: Type I, Type II and Type III:

Type I
Projects in which the primary emphasis is increased precipitation or decreased hail, however little or no attempt is made to gather the necessary physical or statistical data to evaluate the effects of seeding. Type I projects are the quickest, simplest and cheapest but it is nearly impossible to determine the effects of the seeding. Consequently, one remains indefinitely in the same state of ignorance. This type of project is impossible or extremely difficult to evaluate statistically. For example, if a seeding programme is initiated to extinguish or fight a forest fire, the concept of statistical significance loses all meaning. Another example is the seeding of clouds over a mountain range where the precipitation is all in the form of snow. When yearly runoff is the measure of effectiveness — giving one data point only per year — many years will be required to give evidence of seeding effects. Operational programmes such as this can be evaluated now only by comparison with adjacent or similar watersheds that are not treated in the future. The use of realistic cloud and mesoscale models applied retroactively to the projects may provide evidence of seeding effectiveness. Just as current global climate models provide much of the scientific basis for the effects of added greenhouse gases on global warming.

Type II
Projects in which serious attempts are made to document the effects of seeding through physical measurements and/or statistical controls (preferably randomization of the seeding events). Such projects could contribute to scientific research programmes. Type II projects can be both operational and research or primarily research. They are usually government-funded and of long duration because precipitation variability is generally much greater than the increases or decreases claimed for weather modification. If appropriate, it should be stated that Type II weather modification activities are more likely to be successful in a specific situation if:

- Studies indicate that conditions occur that are suitable for the modification technique to be employed;
- Studies demonstrate that, for the frequency with which suitable conditions occur, the changes resulting from the modification technique can be detected at an acceptable statistical significance level;
- Studies indicate that an operational activity can be carried out at a cost acceptably less than the socio-economic benefit likely to result;

Type II projects provide the hope of determining the effects of seeding and establishing the cost-benefit ratio. Such projects are greatly preferred over Type I projects.

Type III
Projects of an exploratory nature in cloud physics and chemistry which contribute directly to advance the science, such as cloud microphysics studies, modelling of cloud processes, relevant satellite studies etc. It is these projects that could hasten progress and improve the quality of the science. Type III projects are as designated exploratory weather modification. Over the last decade there has been a steady growth in the knowledge of cloud physics and chemistry as they apply to weather modification. In some cases at the expense of field programmes of Type II projects. In this category have been included projects other than those purely statistical, that contribute to understanding the basic physics and chemistry of cloud and precipitation (including hail) processes. These exploratory studies draw on the new technology available and constitute the forefront of research in weather modification. They help develop the source of the manpower pool greatly needed in this field.

Before embarking on a programme where the statistical significance of precipitation changes determines success or failure of a programme, there should be a careful analysis of the precipitation network and the precipitation climatology. A precipitation simulation study should be conducted to determine if a 10% to 15% change in precipitation can even be detected and how many years of data it would require to reach an acceptable level of statistical significance. These facts should be spelled out and known to the sponsoring organization before initiating the programme.

It should be stated that all these studies require expert judgement and that results will depend not only on the site, but also on the season and duration of the activity.

If appropriate, attention should be drawn to the procedures used in the WMO Precipitation Enhancement Project, which serves as an example of a properly designed weather modification activity.
OVERALL OBJECTIVES OF WMO

- To provide an efficient mechanism for international co-operation in meteorology, operational hydrology and related disciplines;
- To ensure maximum potential benefit for all nations from sound application of meteorological, hydrological and related atmospheric environmental data, knowledge and services;
- To bridge the gap between the national Meteorological and Hydrological Services of the developed and developing countries;
- To anticipate the needs of future generations for long-term historical records of meteorological, hydrological and related environmental information and to ensure the availability of such information;
- To promote understanding of atmospheric and related processes through effective national and international research programmes;
- To respond authoritatively to the increasing demand of the world community for expert advice in all areas of competence of the Organization;
- To provide an informed, authoritative and effective scientific voice for meteorology and operational hydrology and the atmospheric component of environmental issues within the United Nations system;
- To contribute effectively to national and international programmes for sustainable development;
- To contribute, through its involvement with global issues which transcend national boundaries and affect all peoples, to the strengthening of international ties and co-operation between nations.

GENERAL POLICIES

- Actively assist Members to achieve fully the benefits available from the operation of modern well-equipped and adequately staffed national Meteorological and Hydrological Services and from international co-operation in meteorology, operational hydrology and related disciplines;
- Explore and develop all appropriate mechanisms for encouraging and facilitating the transfer of knowledge, technology, and proven methodology between Members;
- Pay particular attention to the identification of probable future needs for long-term meteorological, hydrological and related environmental records on a world-wide and on a regional basis, both for purposes within its own areas of responsibility and to meet the future needs of other agencies;
- Maintain the principle of free and unrestricted exchange of meteorological data and agreed information between national Meteorological Services;
- Promote the participation of Members in relevant atmospheric and related research programmes and their collaborative exchange of both theoretical and applied results;
- Place high priority on upgrading the effectiveness of the technical commissions in the overall co-ordinated planning and management of the scientific and technical programmes of the Organization;
- Assign an increasingly active role to regional associations in the planning and implementation of the scientific and technical programmes within their areas of responsibility;
- Enhance the co-operative interaction and mutual benefits between WMO activities and the activities of other international organizations having relevance to the meteorological, hydrological and related fields;
- Provide appropriate support to the implementation of United Nations and other International programmes for sustainable development;
- Establish the timely delivery of WMO's expert opinion on global and regional geophysical and geochemical issues to relevant international and national bodies and authorities as a high-priority activity;
- Enhance contributions to monitoring, research and assessments related to the global environment through the work of the technical commissions and participation in collaborative global observational and research programmes.

THE ROLE OF WMO (1996-2005)

- Basic purposes (Article 2 of the Convention) and overall objectives of WMO will remain valid through the period 1996-2005;
- WMO programmes will increasingly contribute to the objectives of economically and environmentally sustainable development;
- WMO will work in an increasingly close partnership with other international organizations with complementary objectives.

MAJOR OBJECTIVES (1996-2005)

- Global observations: To enhance the integration of programmes for comprehensive and reliable observations of the state of the Earth system over the globe; and to support the following major objectives through the free and unrestricted exchange of these observations:
• **NATURAL DISASTER REDUCTION**: To contribute to the goals of the International Decade for Natural Disaster Reduction (IDNDR) through the implementation of detection, prediction and warning systems, aimed at safety of life and reduction of the social and economic impact of natural disasters;

• **CLIMATE**: To ensure that WMO effectively fulfils its responsibility for climate monitoring, research, prediction and applications, and provides an authoritative international scientific voice on matters related to climate and climate change;

• **ENVIRONMENTAL QUALITY**: To contribute, through scientifically sound monitoring and research, to understanding, arresting and reversing the degradation of the atmosphere and the marine and hydrological environment and, using WMO capabilities, to provide information and warnings of impending disasters;

• **PUBLIC SERVICES, SAFETY AND WELFARE**: To ensure that, in all countries, the general community better understands the value of, and is better assisted to benefit from, the basic public information, weather forecast and warning services provided by national Meteorological and Hydrological Services, and to give specific attention to transportation safety; provision of food, fibre and fresh water; land-use planning and energy production and use;

• **SUSTAINABLE DEVELOPMENT**: To contribute, through the meteorological, hydrological and oceanographic monitoring, research and prediction facilities and programmes of national Services, to environmentally and economically sustainable development in all countries;

• **CAPACITY BUILDING**: To bridge the gap between the national Meteorological and Hydrological Services of the developing countries and those of the developed countries through a co-ordinated strategic approach to education, training and technical co-operation;

• **COMMERCIAL ACTIVITIES**: To foster an effective and harmonious relationship between the public and commercial sectors of the meteorological and hydrological communities.

---

**STRATEGY FOR ACHIEVEMENT OF OBJECTIVES (1996–2005)**

The strategy for achievement of these major objectives is based on effectively harnessing the efforts of the global meteorological and hydrological community consistent with the agreed outcomes of the 1992 UNCED in:

• Collecting, managing and freely exchanging the data, information, knowledge and expertise gained from current and future geophysical and geochemical observing systems including WWW, GCOS, GOOS and GAW;

• Developing systematic procedures to monitor, evaluate and improve the WMO operational systems and programmes;

• Assisting the national Meteorological and Hydrological Services to improve their ability to detect, predict and warn of severe weather conditions and floods, through co-operative research and technology transfer;

• Increasing the understanding of the global climate system and producing and communicating assessments of the global climate and predictions of climate change;

• Building on the existing WMO international frameworks for global data exchange and processing and for collaborative research and applications activities with other international organizations;

• Enhancing WMO and national capabilities to monitor the atmospheric, hydrological and related geophysical environment and to provide information and warnings of critical changes including the prediction of trans-boundary air pollution episodes;

• Increasing the capabilities of developing countries through exchange of scientific and technological knowledge and the transfer of technologies, applications and operating systems;

• Establishing the means of communication aimed at identifying areas of mutual interest and at resolving differences between the public and commercial sectors of the meteorological and operational hydrological communities.*

---

* Provisional proposal subject to review by the EC Working Group on the Commercialization of Meteorological and Hydrological Services.
2. Both Organizations, WTO and WMO, agree to keep each other informed concerning all programmes of work and projected activities in which there may be mutual interest, and shall exchange publications concerning these and related fields.

3. Suitable arrangements will be made for the participation of each party to this working arrangement as an observer in those sessions and meetings of the other party which relate to items of common interest.

---

**ANNEX VIII**

Annex to paragraphs 15.3.17 to 15.3.21 of the general summary

**STAFF APPOINTMENTS, PROMOTIONS, NOMINATIONS AND TRANSFERS SINCE EC-XLIII**

### PART A: APPOINTMENTS

<table>
<thead>
<tr>
<th>Name and nationality</th>
<th>Title, grade and organizational unit</th>
<th>Effective date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr T. W. SPENCE (USA)</td>
<td>Director (D.2), Joint Planning Office for the Global Climate Observing System</td>
<td>5 April 1992</td>
</tr>
<tr>
<td>Mrs E. DAR-ZIV (Switzerland)</td>
<td>Chief (P.4), Conferences Unit, Languages, Publications and Conferences Department</td>
<td>1 August 1991</td>
</tr>
<tr>
<td>Mr N. T. DIALLO (Guinea)</td>
<td>Scientific Officer (P.4), Aeronautical Meteorology Unit, World Weather Watch Department</td>
<td>6 August 1991</td>
</tr>
<tr>
<td>Dr I. DRAGHICI (Romania)</td>
<td>Programme Officer (P.4), Office for the Arab States and Europe, Technical Co-operation Department</td>
<td>15 June 1992</td>
</tr>
<tr>
<td>Mr S. E. S. GIWA (Zimbabwe)</td>
<td>Personnel Officer (P.4), Personnel Division, Administration Department</td>
<td>29 July 1991</td>
</tr>
<tr>
<td>Dr J. M. MILLER (USA)</td>
<td>Scientific Officer (P.4), Environment Division, Atmospheric Research and Environment Programme Department</td>
<td>25 January 1992</td>
</tr>
<tr>
<td>Mr J. A. de SOUSA BRITO (Brazil)</td>
<td>Regional Officer (P.4), Regional Office for the Americas (Asunción, Paraguay)</td>
<td>5 July 1991</td>
</tr>
<tr>
<td>Mr A. E. ORIAS BLEICHER (Bolivia)</td>
<td>Assistant Editor (P.2), Publications Division, Languages, Publications and Conferences Department</td>
<td>2 January 1992</td>
</tr>
</tbody>
</table>

### PART B: NOMINATIONS AND/OR PROMOTIONS AS A RESULT OF COMPETITION AFTER ISSUANCE OF VACANCY NOTICES

<table>
<thead>
<tr>
<th>Name and nationality</th>
<th>Title, grade and organizational unit</th>
<th>Effective date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr K. ABE (Japan)</td>
<td>Senior Scientific Officer (P.5), Tropical Cyclone Programme Office, World Weather Watch Department (promoted from P.4)</td>
<td>1 September 1991</td>
</tr>
<tr>
<td>Miss K. M. CHESTOPALOV (France)</td>
<td>Personnel Officer (P.4), Personnel Division, Administration Department (promoted from P.3)</td>
<td>1 June 1991</td>
</tr>
<tr>
<td>Mr J.-M. RAINER (France)</td>
<td>Chief (P.4), Telecommunications and Monitoring Unit, World Weather Watch Department</td>
<td>1 May 1992</td>
</tr>
<tr>
<td>Mr. E. A. ROUSSEAU (Chile)</td>
<td>Procurement Officer (P.4), Procurement Unit, Procurement and Common Services Division, Administration Department</td>
<td>1 September 1991</td>
</tr>
</tbody>
</table>
PART C: PROMOTIONS

Mr A. W. KABAKIBO (Syria)
Director, Languages, Publications and Conferences Department, promoted from D.1 to D.2
1 September 1991

Mr J. K. MURITHI (Kenya)
Director, Administration Department, promoted from D.1 to D.2
1 September 1991

Dr J. C. RODDA (UK)
Director, Hydrology and Water Resources Department, promoted from D.1 to D.2
1 September 1991

PROMOTION AS A RESULT OF CLASSIFICATION OF POST

Mr. T. AIDONIDIS (Greece)
Chief, Common Services Branch, Procurement and Common Services Division, Administration Department, promoted from P.4 to P.5
1 November 1991

PART D: TRANSFERS

Mrs M. L. BURNS (UK)
Chief (P.3), Documents Production Section, Languages, Publications and Conferences Department
1 June 1991

Mrs J. STICKINGS (UK)
Editor (P.3), Publications Division, Languages, Publications and Conferences Department
19 August 1991

PART E: SPECIAL APPOINTMENT

Mr S. G. CORNFORD (UK)
Director (Special Duties) (D.1), Intergovernmental Negotiating Committee for a Framework Convention on Climate Change
26 June 1991
# APPENDIX A

## LIST OF PERSONS ATTENDING THE SESSION

### 1. MEMBERS OF THE EXECUTIVE COUNCIL

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zou Jingmeng</td>
<td>President</td>
</tr>
<tr>
<td>J. W. Zillman</td>
<td>First Vice-President</td>
</tr>
<tr>
<td>S. Alaimo</td>
<td>Second Vice-President</td>
</tr>
<tr>
<td>A. Lebeau</td>
<td>Third Vice-President</td>
</tr>
<tr>
<td>K. Konare</td>
<td>President RA I</td>
</tr>
<tr>
<td>I. H. Al-Majed</td>
<td>Acting President RA II</td>
</tr>
<tr>
<td>J. I. Valencia Franco</td>
<td>President RA III</td>
</tr>
<tr>
<td>C. E. Bereidge</td>
<td>President RA IV</td>
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<tr>
<td>P. Lo Su Siew</td>
<td>President RA V</td>
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<tr>
<td>A. Grammeltvedt</td>
<td>President RA VI</td>
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<tr>
<th>Name</th>
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<tr>
<td>M. E. Abdalla</td>
<td>Elected members</td>
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<tr>
<td>J. A. Adejokun</td>
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<tr>
<td>M. Bautista Pérez</td>
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<td>W. Castro Wrede</td>
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<td>A. S. Cissoko</td>
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<tr>
<td>A. J. Dania</td>
<td></td>
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<tr>
<td>E. Dowdeswell (Ms)</td>
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<tr>
<td>E. Ekoko-Etoumann</td>
<td></td>
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<tr>
<td>G. Faraco (acting)</td>
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<tr>
<td>H. M. Fljnaut</td>
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<td>E. W. Friday</td>
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<tr>
<td>J. Hunt (acting)</td>
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<td>N. Kawas</td>
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<tr>
<td>R. L. Kintanar</td>
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<tr>
<td>J. C. Marques</td>
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<tr>
<td>B. K. Mienga</td>
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<tr>
<td>T. Mohr (acting)</td>
<td></td>
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<tr>
<td>E. A. Mukolwe</td>
<td></td>
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<tr>
<td>L. Ndorimana (acting)</td>
<td></td>
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<tr>
<td>T. Nitta (acting)</td>
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<tr>
<td>A. M. Noorian</td>
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<tr>
<td>N. Sen Roy (acting)</td>
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<tr>
<td>H. Trefelsi</td>
<td></td>
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<tr>
<td>J. Zieliński</td>
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<tr>
<td>Yu. F. Zubov (acting)</td>
<td></td>
</tr>
</tbody>
</table>

### 2. ALTERNATES AND ADVISERS

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen Guofan (Ms)</td>
<td>(part time)</td>
</tr>
<tr>
<td>Lei Zhaochong</td>
<td>(part time)</td>
</tr>
<tr>
<td>Wang Caifang</td>
<td>(part time)</td>
</tr>
<tr>
<td>Wang Xiaoming</td>
<td>(part time)</td>
</tr>
<tr>
<td>Wu Xianwei</td>
<td>(part time)</td>
</tr>
<tr>
<td>Wu Zhenxiang</td>
<td>(part time)</td>
</tr>
<tr>
<td>Yan Hong</td>
<td>(part time)</td>
</tr>
<tr>
<td>V. Tsui</td>
<td>Adviser to Zou Jingmeng</td>
</tr>
<tr>
<td>L. Broadbridge</td>
<td>Adviser to Zou Jingmeng</td>
</tr>
<tr>
<td>D. Lambergeon</td>
<td>Adviser to Zou Jingmeng</td>
</tr>
<tr>
<td>P. Delacroix</td>
<td>Adviser to Zou Jingmeng</td>
</tr>
<tr>
<td>H. Lejeune</td>
<td>Adviser to A. Lebeau</td>
</tr>
<tr>
<td>L. Svendsen (Ms)</td>
<td>Adviser to A. Grammeltvedt</td>
</tr>
</tbody>
</table>
2. **ALTERNATES AND ADVISERS (contd.)**

Y. Salahu

A. Al-Zabin, Saleh

A. Henaidi

J. Segovia

E. Comenzana

K. Dawson

J. G. Côté

J. Boula

J. C. Sloan

R. Sorani

P. Serpi

N. Vassalli di Dachenhausen

B. Kamp

J. H. Smits Simon

E. W. Bierly

H. L. April

J. Buncher (Ms)

G. D. Cartwright

A. I. Koeppen

C. C. McMahon (Ms)

J. R. Neilon

R. Ruebensaal

J. Weiss

S. Wilson

M. J. Atkins (Ms)

D. J. Griggs

H. M. Pickering (Ms)

E. C. Robson (Ms)

J. Oliveira

R. Pimentel (Ms)

H.-G. Schulze

M. Breuch-Moritz (Ms)

D. Fromming

W. Milzow

W. Wagner

W. M. Chebukaka

K. Nagasaka

N. Ide

H. Nishida

K. Tabatabaee

M. Homaei-Nejad

R. Kleijnowski

S. S. Hodkin

A. Karpov

V. P. Meleshko

E. Petukhov

Adviser to J. A. Adejokun

Alternate to A. A. Algain

Adviser to A. A. Algain

Alternate to M. Bautista Pérez

Adviser to M. Bautista Pérez

Alternate to E. Dowdeswell

Adviser to E. Dowdeswell

Adviser to E. Dowdeswell

Alternate to G. Faraco

Adviser to G. Faraco

Adviser to G. Faraco

Alternate to H. M. Fijnaut

Adviser to H. M. Fijnaut

Alternate to E. W. Friday

Adviser to E. W. Friday

Adviser to E. W. Friday

Adviser to E. W. Friday

Adviser to E. W. Friday

Adviser to E. W. Friday

Adviser to E. W. Friday

Adviser to E. W. Friday

Adviser to E. W. Friday

Alternate to I. Hunt

Adviser to I. Hunt

Adviser to I. Hunt

Alternate to J. C. Marques

Advisor to J. C. Marques

Alternate to T. Mohr

Alternate to T. Mohr

Advisor to T. Mohr

Advisor to T. Mohr

Advisor to T. Mohr

Alternate to E. A. Mukolwe

Alternate to T. Nitta

Advisor to T. Nitta

Advisor to T. Nitta

Alternate to A. M. Noorian

Advisor to A. M. Noorian

Alternate to I. Zielinski

Alternate to Yu. F. Zubov

Advisor to Yu. F. Zubov

Advisor to Yu. F. Zubov

Advisor to Yu. F. Zubov

3. **PRESIDENTS OF TECHNICAL COMMISSIONS**

C. H. Sprinkle

C. J. Stigter

D. J. Gauntlett

A. A. Vasiliev

J. Mander

Ó. Starosolszky

J. Kruus

R. J. Shearman

Commission for Aeronautical Meteorology

Commission for Agricultural Meteorology

Commission for Atmospheric Sciences

Commission for Basic Systems

Commission for Climatology

Commission for Hydrology

Commission for Instruments and Methods of Observation

Commission for Marine Meteorology
4. **Regional Hydrological Advisers**

T. Patas Regional Association III  
D. A. Davis Regional Association IV  
M. P. Mosley Regional Association V  
F. Bullot Regional Association VI

5. **Invited Experts**

D. Kohnke  
G. McBean  
H. Orville  
D. J. Painting  
D. M. Whelpdale

6. **Lecturers**

R. D. Bojkov  
U. Kirdar  
G. Kullenberg

7. **Representatives of International Organizations**

S. Khmelnikski United Nations  
S. Briccño  
S. G. Cornford Intergovernmental Negotiating Committee for Framework Convention on Climate Change  
M. Zammit Cutajar United Nations Development Programme  
A. François United Nations Environment Programme  
P. E. Usher United Nations Educational, Scientific and Cultural Organization  
W. H. Gilbrich Intergovernmental Oceanographic Commission  
G. Kullenberg United Nations Educational, Scientific and Cultural Organization  
I. Oliouine  
A. Tolkachev International Telecommunication Union  
D. Mage World Health Organization  
L. Roque  
J. P. Antchoué Agency for Air Safety in Africa and Madagascar  
P. Ranaivoson European Organisation for the Exploitation of Meteorological Satellites  
G. Bridge  
J. Morgan International Council of Scientific Unions  
J. W. M. La Rivière European Space Agency  
R. Tessier  
M. N. Askalani League of Arab States  
M. Dayri  
M. H. Tunis Organization of African Unity
## APPENDIX B
### AGENDA

<table>
<thead>
<tr>
<th>Agenda item</th>
<th>Documents</th>
<th>Resolutions adopted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. ORGANIZATION OF THE SESSION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Opening of the session</td>
<td>1; 1, REV. 1; 1, REV. 2; 1, REV. 3; 2; 2, REV. 1; 2, REV. 2; 2, REV. 3; PINK 3</td>
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<tr>
<td>1.2 Approval of the agenda</td>
<td>PINK 3</td>
<td></td>
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<tr>
<td>1.3 Establishment of committees</td>
<td>PINK 3</td>
<td></td>
</tr>
<tr>
<td>1.4 Programme of work of the session</td>
<td>PINK 3</td>
<td></td>
</tr>
<tr>
<td>1.5 Approval of the minutes</td>
<td>PINK 3</td>
<td></td>
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<tr>
<td><strong>2. REPORTS</strong></td>
<td></td>
<td></td>
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<tr>
<td>2.1 Report by the President of the Organization</td>
<td>73; 73, REV. 1 (English and Spanish only); PINK 4</td>
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<tr>
<td>2.2 Report by the Secretary-General</td>
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<tr>
<td>2.3 Reports by the presidents of regional associations</td>
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<tr>
<td>2.4 Report of the Financial Advisory Committee</td>
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<td></td>
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<tr>
<td>2.5 Report on the 1991 meeting of the presidents of technical commissions</td>
<td>27; PINK 22</td>
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<tr>
<td>2.6 Report of the Chairman of the Intergovernmental Panel on Climate Change</td>
<td>45; 45, CORR. 1; 83; PINK 57</td>
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<tr>
<td><strong>3. WORLD WEATHER WATCH PROGRAMME</strong></td>
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<tr>
<td>3.1 WWW basic systems and support functions; the in-depth report of the president of CBS</td>
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<td></td>
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<tr>
<td>3.2 WWW support for and co-ordination with other Programmes</td>
<td>7; PINK 29; PINK 66</td>
<td></td>
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<tr>
<td>3.3 Instruments and Methods of Observation; the report of the president of CIMO</td>
<td>20; 20, REV. 1; PINK 13</td>
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<td>3.4 WMO satellite activities</td>
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<tr>
<td>3.5 Tropical Cyclone Programme</td>
<td>16; PINK 14</td>
<td></td>
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<tr>
<td><strong>4. WORLD CLIMATE PROGRAMME</strong></td>
<td></td>
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<tr>
<td>4.1 World Climate Programme and its co-ordination; the in-depth report of the president of CCI</td>
<td>24; 25; 25, ADD. 1; 85; PINK 59</td>
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<tr>
<td>4.2 World Climate Data and Monitoring Programme</td>
<td>23; PINK 53</td>
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<tr>
<td>4.3 World Climate Applications and Services Programme</td>
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<td>4.4 World Climate Impact Assessment and Response Strategies Programme</td>
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<tr>
<td>4.5 World Climate Research Programme</td>
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<tr>
<td>4.6 Global Climate Observing System</td>
<td>62; PINK 65</td>
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<tr>
<td>Agenda item</td>
<td>Documents</td>
<td>Resolutions adopted</td>
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<tr>
<td><strong>5.</strong> ATOMIC RESEARCH AND ENVIRONMENT PROGRAMME</td>
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<tr>
<td>5.1 Atmospheric Research and Environment Programme; the report of the president of CAS</td>
<td>9; PINK 58</td>
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<tr>
<td>5.2 Global Atmosphere Watch</td>
<td>40; 59, 59, ADD. 1; PINK 58</td>
<td></td>
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<tr>
<td>5.3 Weather prediction research</td>
<td>40; PINK 58</td>
<td></td>
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<tr>
<td>5.4 Tropical meteorology research</td>
<td>40; PINK 58</td>
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<tr>
<td>5.5 Physics and chemistry of clouds and weather modification research</td>
<td>6; 40; PINK 58</td>
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<tr>
<td><strong>6.</strong> APPLICATIONS OF METEOROLOGY PROGRAMME</td>
<td></td>
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</tr>
<tr>
<td>6.1 Public weather services</td>
<td>57; PINK 54</td>
<td></td>
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<tr>
<td>6.2 Agricultural meteorology; the report of the president of CAeM and report of the tenth session of the Commission</td>
<td>33; 78; PINK 67</td>
<td>4, 5</td>
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<tr>
<td>6.3 Aeronautical meteorology; the report of the president of CAeM and report of the conjoint WMO CAeM-IX ICAO COM/MET/OPS Divisional Meeting (1990)</td>
<td>22; 38; PINK 55</td>
<td>6</td>
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<tr>
<td>6.4 Marine meteorology and associated oceanographic activities; the in-depth report of the president of CMM</td>
<td>5; 10; 10, ADD. 1; 11; 11, ADD. 1; PINK 56</td>
<td>7, 8</td>
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<tr>
<td><strong>7.</strong> HYDROLOGY AND WATER RESOURCES PROGRAMME</td>
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APPENDIX D

LIST OF ABBREVIATIONS

ACARS  ARINC (VHP) Communications Addressing and Reporting System
ACC   Administrative Committee for Co-ordination
ACCAD  Advisory Committee on Climate Applications and Data
ACMAD  African Centre of Meteorological Applications for Development
AIIC  International Association of Conference Interpreters
AITC  International Association of Conference Translators
AMIP  Atmospheric Model Intercomparison Project
AMS  American Meteorological Society
ARGOS  Data relay and platform location system
ASAP  Automated Shipboard Aerological Programme
ASECNA  Agency for Air Safety in Africa and Madagascar
ASCEND-21  International Conference on an Agenda of Science for Environment and Development
ASDAR  Aircraft-to-satellite data relay
ASEAN  Association of South-East Asian Nations
ASMC  ASEAN Specialized Meteorological Centre
ATCM  Antarctic Treaty Consultative Meeting
ATCW  Australian Tropical Cyclone Workstation
ATEAM  Advanced Techniques Applied to Aeronautical Meteorology
ATMES  Atmospheric Transport Model Evaluation Study
CaEM  Commission for Aeronautical Meteorology
CAL  Computer-assisted learning
CARS  Climate Applications Referral Service
CAS  Commission for Atmospheric Sciences
CBS  Commission for Basic Systems
CCI  Commission for Climatology
CCWCP  Co-ordinating Committee on the World Climate Programme
CEOS  Committee for Earth Observation Satellites
CGC  Co-ordination Group for the Composite Observing System for the North Atlantic
CGMS  Co-ordination Group for Meteorological Satellites
Chy  Commission for Hydrology
CIMO  Commission for Instruments and Methods of Observation
CLICOM  Climate computing
CMM  Commission for Marine Meteorology
COMNAP  Council of Managers of National Antarctic Programmes
CSM  Climate System Monitoring
DBCP  Drifting Buoy Co-operation Panel
DCP  Data collection platforms
DHA  Department of Humanitarian Affairs
DRS  Data retransmission system
EC  Executive Council
ECE  Economic Commission for Europe
ECOSOC  UN Economic and Social Council
ENSO  El Niño-Southern Oscillation
ERS  European Organisation for the Exploitation of Meteorological Satellites
ETEX  European Tracer Experiment
FAO  Food and Agricultural Organization of the United Nations
FCCC  Framework Convention on Climate Change
FINNIDA  Finnish International Development Agency
GAW  Global Atmosphere Watch
GCIP  Continental-scale International Project
GCOS  Global Climate Observing System
GDPS  Global Data-processing System
GEF  Global Environment Facility
GEMS  Global Environment Monitoring System
APPENDIX D

GEWEX  Global Energy and Water Cycle Experiment
GMDSS  Global Maritime Distress and Safety System
GOOS  Global Ozone Observing System
GOOS  Global Ocean Observing System
GOS  Global Observing System
GRDC  Global Runoff Data Centre
GTS  Global Telecommunication System
HNRC  HOMS National Reference Centre
HWR  Hydrology and Water Resources
HWRP  Hydrology and Water Resources Programme
IABP  International Arctic Buoy Programme
IAEA  International Atomic Energy Agency
IAMAP  International Association of Meteorology and Atmospheric Physics
ICAO  International Civil Aviation Organization
ICG  IOC Committee for GOOS
ICSC  International Civil Service Commission
ICSPRO  Inter-Secretariat Committee on Scientific Programmes Related to Oceanography
ICSU  International Council of Scientific Unions
ICTP  International Centre for Theoretical Physics
ICWE  International Conference on Water and the Environment
IDCC  International Data Co-ordination Centre
IDNDR  International Decade for Natural Disaster Reduction
IGBP  International Geosphere-Biosphere Programme
ICG  Intergovernmental Meeting
IGM  Intergovernmental Meeting on the World Climate Programme
IGOSS  Integrated Global Ocean Services System
IM  Integrated monitoring
IMO  International Maritime Organization
IMO  International Meteorological Organization
IMOP  Instruments and Methods of Observation Programme
INC  Intergovernmental Commission
INMARSAT  Intergovernmental Negotiating Committee for the Framework Convention on Climate Change
IOPC  Intergovernmental Oceanographic Commission
IPCC  Intergovernmental Panel on Climate Change
ISG-WR  Inter-Secretariat Group for Water Resources
ISO  International Organization for Standardization
ITU  International Telecommunications Union
IWTC-III  Third International Workshop on Tropical Cyclones
JPO  Joint Planning Office
JSC  Joint Scientific Committee
JSTC  Joint Scientific and Technical Committee of GCOS
LTP  Long-term Plan
MDCE  Meteorological Data Collection and Reporting System
MDD  Meteorological data distribution
MTN  Main Telecommunication Network
NCP  National Climate Programmes
NMHS  National Meteorological and Hydrological Services
NOAA  National Oceanic and Atmospheric Administration (USA)
ODA  Overseas Development Administration
OECD  Organization for Economic Co-operation and Development
OHP  Operational Hydrology Programme
OWSE  Operational WWW Systems Evaluation
PC  Personal computer
PROMET  Provision of Meteorological Information Required Before and During Flight (CAeM working group)
OA  Quality assurance
OC  Quality control
RMTC  Regional Meteorological Training Centres
RMTN  Regional Meteorological Telecommunications Network
SAC  Scientific Advisory Committee
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>SADCC</td>
<td>Southern Africa Development Co-ordination Conference</td>
</tr>
<tr>
<td>SCAR</td>
<td>Scientific Committee on Antarctic Research</td>
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<tr>
<td>SPARC</td>
<td>Stratospheric Processes and their Role in Climate</td>
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<tr>
<td>SST</td>
<td>Sea-surface temperature</td>
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<tr>
<td>START</td>
<td>System for Analysis, Research and Training</td>
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<tr>
<td>STC</td>
<td>Scientific and Technical Committee</td>
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<tr>
<td>TCO</td>
<td>Technical co-operation</td>
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<tr>
<td>TCP</td>
<td>Tropical Cyclone Programme</td>
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<tr>
<td>TECTAM</td>
<td>Technical Conference on Tropical Aeronautical Meteorology</td>
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<tr>
<td>TLTP</td>
<td>Third Long-term Plan</td>
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<tr>
<td>TOGA</td>
<td>Tropical Ocean/Global Atmosphere Programme</td>
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<tr>
<td>TRMM</td>
<td>Tropical Rainfall Measuring Mission</td>
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<tr>
<td>TRUCE</td>
<td>Tropical Urban Climate Experiment</td>
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<tr>
<td>UN</td>
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<td>UNCED</td>
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<td>UNEP</td>
<td>United Nations Environment Programme</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<tr>
<td>UNGA</td>
<td>United Nations General Assembly</td>
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<tr>
<td>VCP</td>
<td>Voluntary Co-operation Programme</td>
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<td>WAFC</td>
<td>World Area Forecast Centre</td>
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<td>WAFS</td>
<td>World Area Forecast System</td>
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<td>WCAS</td>
<td>World Climate Applications and Services</td>
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<td>WCASp</td>
<td>World Climate Applications and Services Programme</td>
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<tr>
<td>WCDMP</td>
<td>World Climate Data and Monitoring Programme</td>
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<tr>
<td>WCIARP</td>
<td>World Climate Impact Assessment and Response Strategies Programme</td>
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<td>WCRP</td>
<td>World Climate Research Programme</td>
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<tr>
<td>WDCGG</td>
<td>World Data Centre for Greenhouse Gases</td>
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<tr>
<td>WEFAX</td>
<td>Weather facsimile</td>
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<td>WGLTP</td>
<td>EC Working Group on Long-term Planning</td>
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<td>WGNE</td>
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<td>WWR</td>
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