

COMPENDIUM OF PROJECT INITIATIVES TO BE FUNDED FROM VOLUNTARY CONTRIBUTIONS

2012-2015



**World
Meteorological
Organization**

Weather • Climate • Water

MAY 2011

CONTENTS

	<i>Page</i>
A. Introduction	2
B. Priority 1: Global Framework for Climate Services (GFCS)	6
C. Priority 2: Aviation meteorological services	23
D. Priority 3: Capacity building for the developing and least developed countries	27
E. Priority 4: Implementation of the WMO Integrated Observing System and WMO Information Systems	55
F. Priority 5: Disaster Risk Reduction	70
G. List of Project Initiatives	79

BUDGET FOR THE SIXTEENTH FINANCIAL PERIOD (2012-2015)

**COMPENDIUM OF PROJECT INITIATIVES TO BE FUNDED
FROM VOLUNTARY CONTRIBUTIONS (2012-2015)**

A. Introduction

1. The Compendium of Project Initiatives supplements the Budget Proposal for the sixteenth financial period (2012-2015) and presents activities not funded from the regular budget and requiring, as a result, funding from voluntary contributions during the sixteenth financial period. These project initiatives have been designed in accordance with the five priorities as contained in the WMO Strategic Plan for 2012-2015, namely: (i) the Global Framework for Climate Services (GFCS); (ii) aviation meteorological services; (iii) capacity building for the developing and least developed countries; (iv) implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS); and (v) disaster risk reduction. Members are invited to support these priority activities as part of the integrated planning, budget and funding process of the Organization through voluntary contributions.

2. The Compendium of Project Initiatives takes into account the results of recent studies on socio-economic benefits of the meteorological and hydrological services (such as, the various World Bank studies, studies carried out by WMO, the World Bank and the United Nations International Strategy for Disaster Risk Reduction (UNISDR)) in South Eastern Europe and Central Asia, various national studies in Africa, as well as identified national needs for adaptation to climate change as described in National Adaptation Programmes of Action (NAPAs). Therefore contributions of Members and donor agencies towards the adaptation, capacity development, disaster risk reduction and other agreed international goals, through the WMO projects, would be more focused, effective and measurable at a country/region level.

3. Summary descriptions by priority are included in Part II of the budget proposal for the sixteenth financial period (2012-2015). The resource summary by priority is presented in Table 1.

Table 1: Summary of project initiatives to be funded by voluntary contributions
(in thousands of Swiss francs)

Priorities	Voluntary resources	Total voluntary
1. Global Framework for Climate Services (GFCS)		47,600
2. Aviation meteorological services		1,750
3. Capacity building for the developing and least developed countries		62,400
4. Implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS)		22,400
5. Disaster risk reduction		7,850
TOTAL		142,000

The estimated prioritized funding required through voluntary contributions for the sixteenth financial period (2012-2015) totals CHF 142.0 million. As indicated in Table 1 above, the largest sum of voluntary funds are required for Priority 3 (Capacity building for the developing and least developed countries), followed by Priority 1 (GFCS). The total amount does not include voluntary resources of CHF 33.0 million for jointly-funded activities (IPCC, GCOS and WCRP) which are indicated in Part III of the budget proposal for the sixteenth financial period. IPCC, GCOS and WCRP mobilize resources through their own mechanisms.

4. This document contains a brief description of the project initiatives, the duration, the resource requirements and the mandates given by WMO constituent bodies, as well as the Departments in the WMO Secretariat responsible for their implementation. Projects are referenced to relevant Expected Results and Key Outcomes.

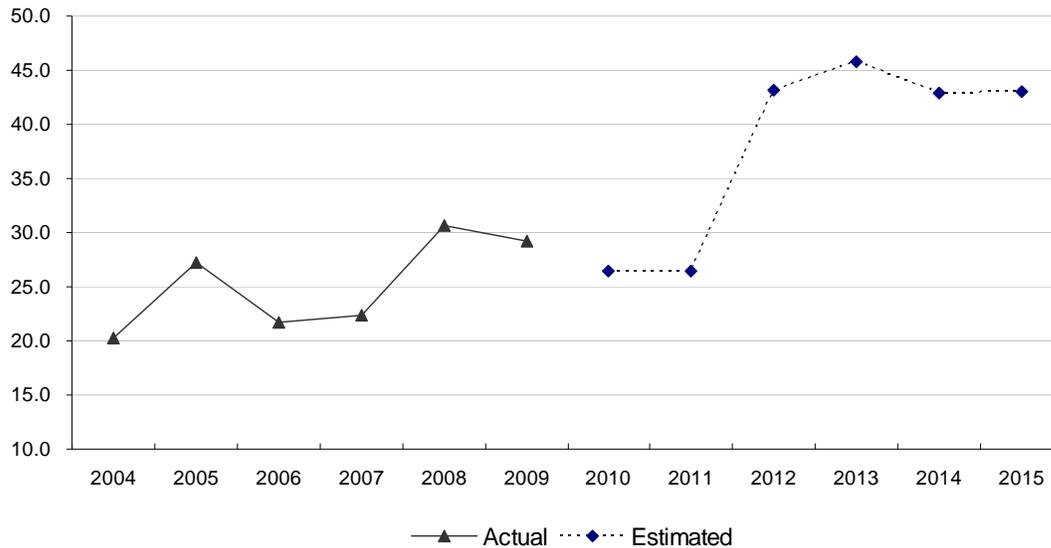
5. Most of the project activities are mandated by Congress and the Executive Council and are normative activities that supplement regular budget activities. In terms of project funding, the project initiatives are classified into the following three categories:

- (1) *Extension of ongoing programme activities without financial commitments:* The project initiative is an extension and/or scaling-up of the activities implemented with limited regular budget resources, or limited voluntary resources, during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will therefore require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015);
- (2) *Extension of ongoing programme activities with limited voluntary contributions likely to be made available:* The project is an extension and/or scaling-up of the activities implemented with limited regular budget resources, and/or limited voluntary resources, during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to continue to be made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to full resource requirements indicated in the Compendium, for its full implementation in the sixteenth financial period;
- (3) *New project activities without financial commitments:* The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will therefore require the voluntary resources indicated in the Compendium, for its full implementation in the sixteenth financial period.

6. Direct costs (e.g. project staff, mission travel, consultancy services, equipment) to be incurred for the implementation of project initiatives will be included in the project budget. Implementation of the project initiatives, however, entails incremental indirect administrative costs that would not be incurred if the Organization did not administer voluntary contribution funding including the work effort directly affected by transaction volume. Such incremental costs will not be borne by the regular budget. In order to cope with the requirement for incremental costs, the Executive Council adopted Resolution 19 (EC-LVI) in 2004 and approved the programme support cost policy. This policy has established differentiated programme support cost recovery rates ranging from 7 per cent to 13 per cent, depending on the nature of project activities implemented. This policy was reviewed by the Working Group of the Executive Council on Capacity Building and will be considered by Sixteenth Congress for updating in order to ensure its coherence with current donor environment and the structural changes in WMO since the inception of the policy.

7. The trend in voluntary contributions (excluding co-sponsored programmes GCOS, IPCC and WCRP) during the period 2004–2015 is shown in Figure 1 below. Voluntary contributions were reaching the level of CHF 25 to 30 million per annum. The level of voluntary resources should be raised up to CHF 43-46 million per annum in the sixteenth financial period (2012-2015) to implement the priority-funded activities contained in this Compendium of Project Initiatives.

Figure 1: Trend in voluntary contributions during the period 2004-2015
(in millions of Swiss francs)



8. WMO will further increase its resource mobilization efforts among major funding agencies, traditional WMO partners, other agencies and the Members. This new, forward-programming approach to voluntary funding is being taken to improve planning and to incorporate a greater degree of certainty into the budget process for voluntary resources which has been more opportunistic in the past and strongly influenced by donor organization policies and priorities. This will ensure that WMO priorities are being met and programme activities are being driven by the Strategic Plan.

9. EC-LX, in 2008, supported the Mission Statement and Resource Mobilization Strategy for 2008-2011 and the proposed focus on supporting the NMHSs to enhance the level of in-country and external support and funding to activities aimed at development of NMHSs, with particular emphasis on the LDCs and SIDS, post conflict countries. Progress was made in the main areas of focus: (i) the Voluntary Cooperation Programme (VCP); (ii) Strategic Partnerships; (iii) UN System Country Programmes; (iv) assisting NMHSs to find financing opportunities at National Level especially using INTAD Networks and through capacity building; (v) Demonstration of Socio-Economic Benefits of NMHS Products and Services, and (vi) Advocacy and Marketing of WMO and NMHSs.

10. Resource mobilization requires systematic and coherent management approach to optimize the contact with current and potential donors. WMO will require a suitable organization-wide strategic approach for resource mobilization in order to speak to current and potential donors with one single voice. WMO will continue to systematically approach, on a regular basis, current and potential donors to maintain optimized contact with them and keep them informed of the work of the WMO Secretariat and Members in this regard. The WMO Secretariat will regularly call for pledges for priority areas and specific projects, and also organize pledging events/conferences at sessions of the policy-making organs (Congress, the Executive Council, the technical commissions and the regional associations) and at special occasions (such as the World Meteorological Day). Regular meetings with major donors will be organized, and information on current projects requiring additional support and pipe-line projects will be provided to current and potential donors. A regular quarterly Newsletter will also be issued informing of WMO Capacity Development Projects underway, in the pipeline, or seeking support, as is currently the practice for the Voluntary Cooperation Programme. The Compendium of Project Initiatives will be updated on a regular basis and will be made available to donors.

Compendium of project initiatives

11. Measures will be taken to further enlarge the donor base, including: (i) WMO Members; (ii) national development agencies; (iii) international financial institutions (e.g. the World Bank, regional development banks); (iv) and international organizations (e.g. European Commission various Directorates and financing mechanisms including the European Development Fund, and the Global Climate Change Alliance for Least Developed Countries and Small Islands States); and (v) financing mechanisms of the United Nations system (e.g. the Adaptation Fund, the Green Climate Fund and the Global Environment Facility).
12. A state-of-the-art project management system will be established to optimize the use of resources made available through voluntary contributions. Project agreements and/or umbrella agreements encompassing a set of projects will be concluded as per usual practice between donors and WMO.
13. During the implementation phase of projects, a stringent project management approach will be applied as per the Project and Risk Management Framework recently developed. This Framework proposes a systematic management, monitoring and evaluation framework with regular reporting to keep the donors informed of the progress in the project implementation. Reporting to donors on the programme and budget performance of projects, as per stipulated reporting intervals will be more institutionalized in the Secretariat with clear lines of responsibility by Project Managers in the various Departments with a Project Oversight Committee established for each major project or groups of smaller projects on a more formal basis than is currently occurring. This will include submission of programme and budget performance reports, a project evaluation system to assess the impact, the efficiency and the effectiveness of project implementation, the outcomes of which will be fed back to the project design.

B. Priority 1: Global Framework for Climate Services (GFCS)

14. GFCS is a cross-cutting priority that touches specifically upon Expected Results 3, 4, 5 and 7, while it will be indirectly related to all the other Expected Results. The implementation of GFCS will heavily rely on the voluntary resources of CHF 47.6 million that will finance a critical part of this priority, while regular resources will be used as seed money to initiate the implementation and attract voluntary funding.

**Table 1.1: Priority-funded voluntary resources 1:
Global Framework for Climate Services (GFCS)
(in thousands of Swiss francs)**

	Staff resources	Non-staff resources	Total voluntary
Expected Result 3			
KO 3.1	-	400.0	400.0
KO 3.4	1,400.0	4,100.0	5,500.0
KO 3.5	4,000.0	16,200.0	20,200.0
KO 3.6	1,600.0	8,200.0	9,800.0
KO 3.7	650.0	2,600.0	3,250.0
KO 3.8	600.0	3,500.0	4,100.0
Sub Total	8,250.0	35,000.0	43,250.0
Expected Result 4			
KO 4.1	750.0	600.0	1,350.0
Sub Total	750.0	600.0	1,350.0
Expected Result 5			
KO 5.1	-	400.0	400.0
KO 5.3	-	200.0	200.0
KO 5.4	-	400.0	400.0
Sub Total	-	1,000.0	1,000.0
Expected Result 7			
KO 7.2	-	1,500.0	1,500.0
KO 7.3	400.0	100.0	500.0
Sub Total	400.0	1,600.0	2,000.0
TOTAL	9,400.0	38,200.0	47,600.0

Expected Result 3: Enhanced capabilities of Members to produce better weather, climate and water and related environmental information, predictions and warnings to support in particular disaster risk reduction and climate impact and adaptation strategies.

Key Outcome 3.1: Improved long-range forecasts and long-term projections

Project 1.3.1.1: Support for the implementation of climate watch system in the Regions

Expected Result: 3; **Key Outcome:** 3.1

Department: Observing and Information Systems Department

Project abstract:

The goal of the implementation of climate watch at national level is to allow NMHSs a robust system to enhance user awareness on ongoing or foreseen climate anomalies and the negative consequences they might cause. The system output should be climate advisories with standard format and user agreed type of content, thresholds and dissemination mechanisms. The systems should be based on improved climate monitoring products and long-range forecasting capabilities. The regional infrastructure including existing and potential Regional Climate Centres, should provide the necessary input products and guidance for the National Meteorological and Hydrological Services (NMHSs) to support the implementation.

In this regard, in 2008 WMO started to facilitate the organization of workshops to develop collaborative efforts in the Regions to make best use of existing facilities. The workshops aim at ensuring consistent approaches amongst the NMHSs in using WMO guidelines on climate watches. Each workshop is defined for a Region or a Sub-region where climate anomalies and related extremes have common origin and similar impacts.

These workshops, which so far have covered RA III, part of RA II and RA VI, need to be continued and expanded within the next financial period to cover other WMO Regions. Also, as climate watch concept is a new one for most NMHSs, in particular with respect to its warning aspect, it was recommended during the last workshop, Offenbach, October 2010, that in addition to these workshops, a few pilot projects for each Region need to be launched to develop regional best practices.

Through voluntary contributions funding will target the following activities:

1. Organization of five (5) sub-regional workshops to cover the following sub-regions: Southern Africa, West Africa, East Africa, Pacific Islands, North Africa and Middle East;
2. VCP will also be used to support field expertise for launching and evaluating national climate watch pilot projects, keeping in view that the operational and organizational aspects should be born by the Members conducting these projects.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 400,000

Mandate: Resolution 12 (Cg-XV), CCI Resolution 8 (CCI-XV)/Annex 3 - OPACE2 (h)

Key Outcome 3.4: Drought information and prediction for risk management is improved

Project 1.3.4.2: Strengthening Drought Early Warning and Integrated Drought Management

Expected Result: 3; Key Outcome: 3.4

Department: Climate and Water Department

Project abstract:

WMO, through its Agriculture Meteorology and Hydrology and Water Resources Programmes, has been providing drought early warning and related tools and methodologies. With the development of better climate information under GFCS the application of drought monitoring and early warning would provide the scientific basis for better management of droughts duly integrating the climatological, hydrological and agricultural aspects in close collaboration with the agricultural and water communities.

The proposed project is part of the Integrated Drought Management Programme that will contribute to the global coordination of drought-related efforts of existing organizations and would focus on provision of better scientific understanding and inputs for drought management; drought risk assessment, monitoring, prediction and early warning; policy and planning for drought preparedness and mitigation across sectors; and drought risk reduction and response. The approach centres on the key principles of moving from reactive to proactive measures through mitigation, vulnerability reduction and preparedness and will promote evolution of a knowledge base and establishing mechanisms through dialogue for sharing it with stakeholders across sectors at all levels.

The expected outcome of the project includes provision of policy and management guidance through globally coordinated generation of scientific information and sharing best practices and knowledge for drought management.

The project includes the following activities: (i) coordination of regional activities on a global scale in the context of Integrated Drought Management; (ii) improved drought early warning services as demonstration projects in certain regions, including monitoring and prediction and application of drought prediction products, building upon existing regional initiatives; (iii) mechanisms for stakeholders to gain entry to processes and access to information through establishment of drought action networks for these regions; (iv) technical as well as managerial and institutional guidance through a series of techniques, tools and methodologies; (v) advocacy and specific recommendations for implementing a new integrated approach to drought management; (vi) stakeholder buy-in for the integrated drought management approach through regional and country dialogues; and (vii) establishment of an online Drought HelpDesk to respond to expressed needs for assistance in drought risk assessment, monitoring, prediction, early warning, preparedness and mitigation.

A project coordinator will be required.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 5.5 million

Mandate: Resolution 9 (EC-LXII)

Key Outcome 3.5: Provision of improved comprehensive climate observations

Project 1.3.5.3: Strengthening the capacities of Member countries to provide climate services

Expected Result: 3; **Key Outcome:** 3.5

Department: Climate and Water Department

Project abstract:

WMO, over the years, has been engaged in enhancing the capacity of NMHSs in various aspects of climate activities, training component of Regional Climate Outlook Forums (RCOFs), implementation of Climate Data Management Systems, development of knowledge on climate extremes and indices, homogenization of climate time series, data rescue, regional workshops on climate monitoring and Climate Watch systems, user awareness activities, including the regional/thematic training workshops under the Climate Information and Prediction Services (CLIPS) project.

The project aims at consolidating the gains of these early initiatives and addresses the gaps and builds a WMO-wide comprehensive strategy with the overarching goal of mainstreaming, and strengthening capacity building at various levels within the Member countries to implement the Global Framework for Climate Services (GFCS).

The expected outcome of the project includes improved availability of comprehensive climate observations, data and assessments, and improved infrastructure, human resources and capacities of Members to carry out GFCS climate functions.

The project includes the following activities: (i) developing guidelines on standards for climate observations and promoting their adherence by Members; (ii) development of a high-quality global climate data management system for efficient climate data access; (iii) large-scale integrated global and regional data rescue projects; (iv) application of space-based climate observations and data; (v) promoting optimized, improved and sustained climate observing networks; (vi) improved climate monitoring and prediction assessments and consensus-based Global Climate Updates; (vii) training NMHSs in the use of improved and standardized prediction tools and products; (viii) development and implementation of a comprehensive WMO climate training programme including a certification process, delivered on a sustainable basis through RTCs and NMHSs; and (ix) strengthening computational, Internet and communication technologies to facilitate optimal utilization of modern climate information products.

A project coordinator will be required.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 8.0 million

Mandate: Resolution 9 (EC-LXII)

Project 1.3.5.4: Training aspects related to GPC and RCC infrastructure

Expected Result: 3; **Key Outcome:** 3.5

Department: Climate and Water Department

Project abstract:

GPCs and RCCs are integral components of the Climate Services information System of the Global Framework for Climate Services (CSIS/GFCS), for production of operational climate prediction products at global and regional scales. Training is required for GPC and RCC professionals to design, develop, produce, communicate and foster effective use of GPC and RCC products.

The project aims to ensure that high-quality products are available, that these products are useful to user communities in key socio-economic sectors, and that professionals in GPCs and RCCs have the competencies and skills to manage the full development cycle of these products, from concept to application. Project staff will be required.

The expected outcome of the project includes: (i) appropriate training curricula and modules for basic to advanced training for all aspects of climate prediction; and (ii) the associated training workshops for GPC, RCC and regional centre professional staff.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.6 million

Mandate: Report of Cg-XV, paragraphs 3.1.3.15-18 and 3.2.2.23-24; Report of EC-LX, paragraphs 3.2.3.7-8 and 3.2.4.1-4; Resolution 4 (EC-LX); Report of EC-LXII, paragraphs 3.2.4.3-6

Project 1.3.5.5: Enhanced capacity of NMHSs to more effectively use GPC and RCC products to develop and deliver climate services at national levels

Expected Result: 3; **Key Outcome:** 3.5

Department: Climate and Water Department

Project abstract:

NMHSs will be a key component of any climate services approach at national levels, under the Global Framework for Climate Services (GFCS). As such, NMHSs will be the recipients of the technical products disseminated by GPCs and RCCs, and therefore NMHS technical staff must have the knowledge and skill necessary for interpreting and enhancing these products for use at national scales. Further, NMHSs will play a key role in communicating user feedback to RCCs and GPCs, to underpin product improvements and to support verification.

The project will assist NMHSs to enhance their capability to provide effective climate services using GPC and RCC products, to add value to national efforts in operational climate activities.

A project coordinator will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015). No such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 10.6 million

Mandate: Report of Cg-XV, paragraphs 3.2.5.5-7; Report of EC-LXI, paragraphs 3.2.7.1-2, Report of EC-LXII, paragraph 3.2.6.3

Key Outcome 3.6: Improved and sustained interaction between the research, the operational prediction and product development and the sectoral user communities for putting climate and applied climate research advances into practice under GFCS.

Project 1.3.6.6: Establishment of a worldwide system of Regional Climate Centres, with special focus on vulnerable developing regions

Expected Result: 3; **Key Outcome:** 3.6

Department: Climate and Water Department

Project abstract:

WMO Regional Climate Centres (RCCs) play a key role in climate services information system and are envisaged as centres of excellence that create regional climate products including long-range forecasts in support of regional and national climate activities and thereby strengthen national capacities to deliver better climate services to national users. WMO has already put in place a formal designation process for RCCs, closely involving its regional associations and technical commissions, to ensure quality and harmonization of operational products and services. The WMO RCCs are expected to perform mandatory functions, such as operational activities in long-range forecasting and climate monitoring, and the associated data services and training; and a set of highly recommended functions that include climate projections, non-operational data services, coordination, training and capacity building, and research and development.

This project aims to accelerate the process of establishing a worldwide system of RCCs, with a particular focus to implement these on a priority basis in vulnerable developing regions. The project components include assessment of the needs and capabilities of countries for consistent and reliable regional climate information, as well as assessment of potential regional/national institutions to serve as RCCs. The project will support enhancement of infrastructural facilities and technical skills to undertake both mandatory and highly recommended functions by WMO RCCs.

Expected Outcome includes standardized technical procedures and tools and enhanced capacities for development and coordinated operational flow of GFCS information and products with improved research and operational linkages.

The project activities include:

- Development of sustainable mechanisms to enhance institutional capacities to serve as RCCs (including enhancement of computational and communications capacities), in close coordination of all the relevant stakeholders;
- Improving the access (e.g., hardware, software and human skills required for such an access) to and use of global products by RCCs (with two-way interaction mechanisms as well as training);
- Development of standardized procedures and practices to improve the effectiveness of RCC products and services;
- Development and application of standardized tools (e.g., downscaling, tailoring, data management and mining) for regional climate operations;
- Coordinated development of regional climate change scenarios;
- Development and implementation of new/improved products through greater uptake of research advances as well as addressing key research needs in close collaboration with the research community;
- Development and implementation of a sustainable training strategy for effective utilization of RCC products; and
- Development and implementation of operational climate activities at the national level, effectively integrating global and regional inputs.

The project will be implemented through sub-projects, which will be set up in all WMO Regions, to consolidate and fully operationalize the ongoing activities in Regions II, and VI, and to initiate RCC

establishment in Regions I, III, IV and V.

Sub-project 1.1: RA I is working towards multi-functional RCCs building on the existing regional institutions ACMAD, ICPAC and SADC-DMC, and is planning a pilot phase. This sub-project supports enhancing the capacities of these institutions to undertake the RCC functions in a comprehensive and efficient manner, to successfully complete the pilot phase, obtain WMO RCC designation and undertake operational activities in a sustained manner, and also promote their effective uptake at the national level.

Sub-project 1.2: RA III is yet to initiate implementation plans for establishing RCCs. This sub-project will initiate the establishment of RCCs in RA III, by supporting the RA in assessing the needs and capabilities. The sub-project will also enhance the capacities of the potential institutions identified to perform the RCC functions, implement the pilot phase, attain WMO RCC designation, and undertake operational activities in a sustained manner, and also promote their effective uptake at the national level.

Sub-project 1.3: RA IV is yet to initiate implementation plans for establishing RCCs. This sub-project will initiate the establishment of RCCs in RA IV, by supporting the RA in assessing the needs and capabilities. The sub-project will also enhance the capacities of the potential institutions identified to perform the RCC functions, implement the pilot phase, attain WMO RCC designation, and undertake operational activities in a sustained manner, and also promote their effective uptake at the national level.

Sub-project 1.4: RA V is yet to initiate implementation plans for establishing RCCs. This sub-project will initiate the establishment of RCCs in RA V, by supporting the RA in assessing the needs and capabilities. The sub-project will also enhance the capacities of the potential institutions identified to perform the RCC functions, implement the pilot phase, attain WMO RCC designation, and undertake operational activities in a sustained manner, and also promote their effective uptake at the national level.

Sub-project 1.5: RA II has two designated RCCs and efforts are underway to establish additional RCCs. RA VI is implementing a pilot phase of an RCC-Network. This sub-project will consolidate, enhance and fully operationalize the RCC products and services in RA II and RA VI, including their effective uptake at the national level.

A project coordinator will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements:

Overall Project Coordination: Total: CHF 1.0 million

Sub-project 1.1 : Total: CHF 2.8 million

Sub-project 1.2 : Total: CHF 2.3 million

Sub-project 1.3 : Total: CHF 1.2 million

Sub-project 1.4 : Total: CHF 1.5 million

Sub-project 1.5 : Total: CHF 1.0 million

Total : Total: CHF 9.8 million

Mandate: Resolution 9 (EC-LXII)

Key Outcome 3.7: Improved infrastructure and standardized technical procedures and tools, for development and coordinated flow of GFCS information and products

Project 1.3.7.7: Development of Climate Outlook Forums worldwide, on regional and national scales.

Expected Result: 3; **Key Outcome:** 3.7

Department: Climate and Water Department

Project abstract:

WMO has helped establish regional climate outlook forums (RCOFs) across all the Regions with an overarching responsibility to produce and disseminate assessments, using a predominantly consensus-based approach, of the current and future states of the regional climate. RCOFs bring together national, regional and international climate experts, on an operational basis, to produce regional climate outlooks based on input from NMHSs, regional institutions, Regional Climate Centres (RCCs) and global producers of climate predictions. They facilitate interaction between users and climate experts, and catalyze the development of user-targeted climate information. RCOFs are in operation in many parts of the world, and are widely recognized to be very important mechanisms for promoting networking and partnership among the relevant stakeholders to achieve a common understanding of the operationally available climate information for adaptation and risk management.

Recognizing that there are several countries which are yet to benefit from the RCOF process, WMO has been making concerted efforts to implement the RCOF concept worldwide and support and extend the concept to the national level, with particular emphasis on developing and least developed countries vulnerable to climate variability and change. Through this project, WMO aims to consolidate, streamline and improve the existing RCOF process and initiate the process in uncovered regions through a clear implementation strategy.

The expected outcome of the project includes enhanced capacity and communication mechanisms for improving user interface for developing and disseminating regional and national climate information.

The project activities include: (i) establishment of best practices in RCOF operations through standardized tools and products, and put in place a mechanism to promote adherence to best practices in the existing as well as future RCOFs for optimizing their outputs; (ii) sustaining and strengthening the existing RCOF processes and capacity building including appropriate research inputs; (iii) expansion of RCOFs into new regions and nurturing them in the initial stages; (iv) promote RCOF follow-ups at the national scale, through National Climate Outlook Forums (NCOFs).

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 3.25 million

Mandate: Resolution 9 (EC-LXII)

Key Outcome 3.8: Enhanced and expanded user interface and communications mechanisms and user-driven outlook forums for improved climate services

Project 1.3.8.8: Development of user-targeted climate services for agriculture, water, and health sectors for Climate Risk Management and adaptation.

Expected Result: 3; **Key Outcome:** 3.8

Department: Climate and Water Department

Project abstract:

With the establishment of the Global Framework for Climate Services (GFCS), WMO is undertaking to orient its technical activities increasingly towards provision of information, and products to address the requirements of key socio-economic sectors for use in decisions related to Climate Risk Management (CRM) and for adaptation to climate change, including requisite policy issues, increasing resilience, supporting decision making that reduce risks.

The aim of the project is to accelerate the process of provision of the information, products and services required by users to support their efforts in CRM and adaptation, and to address the needs of the more vulnerable communities and developing countries as a priority. The project will build on work already initiated under the auspices of WCP, HWRP, AgMP and their respective technical commissions (CCI, CHy and CAgM) and will rely on information provided by/through WMO's global, regional and national climate entities (e.g. GPCs, RCCs, NMHSs, etc.). It is intended to develop methods and tools that can be expanded upon and used in any vulnerable region, along with the requisite training and outreach materials. In particular, this project will focus on the agriculture, water and health sectors.

The expected outcomes of the project includes enhanced and expanded user interface and communications mechanisms to make effective use of GFCS including, among others, through applied climate research in to sectoral user communities.

The project activities include: (i) establishment, in collaboration with WCRP and IPCC, of a mechanism that facilitates access to long-term scenario outputs; (ii) developing, in partnership with relevant agencies, the tools, guidance and methods to produce climate information pertinent to different sectoral application to facilitate the users' interpretation and effective use of such products; (iii) facilitate establishment of sector-based (or multi-sector) forums at regional and national levels, in liaison with regional and national Climate Outlook Forums (COFs); (iv) developing guidance for NMSs to interact with various user groups, for effective two-way dialogue, and users' feedback on the available information, products and services; (v) developing, with relevant partners, user-targeted information with guidance, for CRM and adaptation decisions; (vi) conduct training workshops for providers and users, in collaboration with sector partners, in the application of climate information in their decision processes; (vii) conduct one or more national-scale workshops on development of adaptation policy and strategies, for agriculture, water or health sectors.

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 4.1 million

Mandate: Resolution 9 (EC-LXII)

Expected Result 4: Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO

Key Outcome 4.1: WMO Integrated Global Observing System is implemented

Project 1.4.1.9: Development of marine observations partnership

Expected Result: 4; **Key Outcome:** 4.1

Department: Observing and Information Systems Department

Project abstract:

The goal is to build partnership between developed countries and developing countries on ocean data use and ocean observing system implementation. This is based on the proven and successful Partnership for New GEOSS Applications (PANGEA) concept developed by JCOMM whereby developed countries bring expertise on ocean data use to a region, and developing countries provide assistance in terms of logistics for the implementation of the ocean observing system (e.g. deployment of instruments as seen using ship resources). The plan is to develop this partnership by mean of two regional workshops organized in 2012 and 2013, one in RA I to address data gaps in the Gulf of Guinea, and one in RA II for the Indian Ocean. Expected Outcome will be increased availability, globally, of ocean observations from the region, and enhanced sustainability of the ocean observing networks in the targeted regions, as well as better use of the data in the region to address requirements for the Global Framework for Climate Services (GFCS) and socio-economic benefits.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 200,000

Mandate: Report of EC-LXII, paragraph 3.4.22; Report of JCOMM-III, paragraph 6.5, item (v)

Project 1.4.1.10: Development of a simple PC-based software tool to assist countries and Regions in designing their national and regional synoptic and climatological networks according to WIGOS and GFCS requirements

Expected Result: 4; **Key Outcome:** 4.1

Department: Observing and Information Systems Department

Project abstract:

A simple PC-based software tool should be developed to assist countries and Regions in designing their national and regional networks in response to the Implementation Plan for the global observing systems and the Vision for the GOS in 2025. It is aimed at optimization of synoptic and climatological networks in support of WIGOS, GFCS, and Disaster Risk Reduction activities; it has also a capacity building component.

It should allow for: (i) optimization of observing networks with sufficient spatial and temporal density with priority for climate variables; (ii) harmonization of the criteria for inclusion of stations in the regional basic networks; (iii) classification of existing stations according to their information weights (meteorological, climatological and economical impacts); and (iv) estimation of the degradation of networks in the case of removal of existing operational stations from regional basic networks.

The principle of the computation is to quantify the amount of information which is brought by any observing network by adding or subtracting observing sites to a reference network. This tool should be available to a national project manager and regional implementation groups.

Project staff will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 24 months

Resource requirements: CHF 1.15 million

Mandate: Resolution 13 (EC-LXII)

Expected Result 5: Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development

Key Outcome 5.1: Research in climate prediction/projection to improve the skills of seasonal, decadal, and longer time scales is enhanced

Project 1.5.1.11: Regional and National Climate Information for Decision Makers (GFCS)

Expected Result: 5; **Key Outcome:** 5.1

Department: World Climate Research Programme

Project abstract:

The main goals of this project (initiative) are to strengthen the current capabilities and products/services being offered by the NMHSs and Regional Climate Centres for the provision of a wide range of regional-scale climate information and prediction products as a contribution to the Global Framework for Climate Services. This will require the identification of high-priority research topics, the establishment of regional demonstration projects and collaborative mechanisms for the generation of relevant and reliable regional and national climate predictions and projections on timescales of seasons to decades.

EC-LXII appreciated the outcomes of the joint CCI/WCRP session focussing on the role of research in climate services and encouraged strengthening of collaboration between climate research and services in order to address the urgent needs for regional and national climate prediction systems. In addition, it noted the need to increase the capability of users to effectively use climate services and products. The Council proposed that teams with regional expertise, including from the user community, be formed by the regional associations and in collaboration with the relevant technical commissions, develop regional diagnostics and evaluate the simulations to understand whether the downscaling technique is suitable and implementable for each of the WMO Regional Associations. The Council appreciated the ongoing activities, with support of the Korean International Cooperation Agency (KOICA) and the World Bank, for enhancing the capacity of the IGAD Climate Prediction and Applications Centre (ICPAC) and the associated countries in the Greater Horn of Africa in providing climate products.

This initiative/project proposes to extend these types of activities to all regions, in close cooperation with the evolving RCCs, regional associations and with the future developments in WMO climate service delivery as a part of the Global Framework for Climate Services called for in the High-Level Declaration of the World Climate Conference 3 (WCC-3), namely: (i) international scientific and project group meetings; (ii) the intercomparison of Regional Climate Downscaling (RCD) methodologies and products and evaluation activities; (iii) workshops, training and analysis in support of national and regional activities; (iv) the establishment and implementation of Demonstration Project(s) for selected regions; and (v) follow-up evaluation and assessment of effectiveness of climate products/information and their use. The main deliverables from these activities include: (i) full and open access to regional archives of RCD model outputs and products; (ii) regional analysis and evaluation of RCD products and review of their applicability to national and regional needs; (iii) support to RCCs in climate product/information development; (iv) training workshops to build capacity in the use and evaluation of RCD products.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 400,000

Mandate: Report of EC-LXII, paragraphs 3.2.3.4, 3.2.3.5, 3.2.4.4 and 3.2.4.5

Key Outcome 5.3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments

<p>Project 1.5.3.12: Polar prediction of weather and climate (GFCS)</p> <p>Expected Result: 5; Key Outcome: 5.3</p> <p>Department: Research Department</p>
<p>Project abstract:</p> <p>The main goals of this project (initiative) are to strengthen the current capabilities and products/services being offered by the NMHSs in polar prediction as a contribution to Global Framework for Climate Services. This will require the identification of high-priority research topics, the establishment of international demonstration projects and collaborative mechanisms for research on Polar prediction. The benefit of NWP applications for Polar Regions has been somewhat delayed due the higher priority of forecasting in the more densely populated mid-latitude and tropical regions and because of insufficient understanding of polar processes. At its fifteenth session (Seoul, Republic of Korea, 2009), the WMO Commission for Atmospheric Sciences (CAS) recommended, as a legacy of IPY, the establishment of a THORPEX Polar Prediction Research Project to improve the understanding of polar processes affecting polar weather, the assimilation of data in polar regions and the prediction of high impact weather over polar regions.</p> <p>The CAS recognized that the research outcomes of these efforts would provide valuable input to the WMO activities in the Polar Regions and constitute an important IPY legacy. It noted that the WMO Executive Council Panel of Experts on Polar Observations, Research and Services (EC-PORS) decided that the design and development of polar prediction systems is an essential task that will require effective collaboration across the relevant WMO Technical Commissions along with other partners. The Commission recommended that efforts be made to further polar prediction for weather and climate and to extend efforts to snow, ice, carbon and ecosystem modelling and analysis. This would also require the involvement of the World Weather Research Programme (WWRP), the Global Atmospheric Watch (GAW) and the World Climate Research Programme (WCRP), International Geosphere-Biosphere Programme (IGBP) and support from WMO Members. Finally, the CAS concurred with EC-PORS on the requirement for effective collaboration and therefore recommended that any efforts to develop a future prediction system include outcomes from the IPY-THORPEX cluster of projects and from the planned THORPEX Legacy Project. The Executive Council requested that the WCRP and CAS should develop actions to initiate collaboration in the following areas: development of improved polar prediction systems involving GAW, WWRP, THORPEX, and WCRP in collaboration and cooperation with other WMO technical programmes, noting the need to invest in the polar/cryosphere observations (WIGOS) and the associated telecommunications systems for data/information delivery and analysis (WIS).</p> <p>The main deliverables from these activities include: (i) a new international research activity for Polar Prediction research; and (ii) demonstration projects with societal and economic applications which will include the development and testing of mechanisms for service delivery. The project include: (i) organization of international scientific and project group meetings; (ii) the intercomparison of prediction systems and evaluation activities; (iii) organization of workshops, training and analysis in support of national and regional activities; and (iv) establishment and implementation of Demonstration Project(s) for selected regions/NMHSs.</p> <p>The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of project: 48 months</p>
<p>Resource requirements: CHF 200,000</p>
<p>Mandate: Report of EC-LXII, paragraphs 3.1.53 and 3.2.3.11</p>

Key Outcome 5.4: Seamless forecasts of weather, climate, water and the environment from months to seasons are developed

<p>Project 1.5.4.13: Seamless prediction of weather and climate (GFCS) Expected Result: 5; Key Outcome: 5.4 Department: Research Department</p>
<p>Project abstract:</p> <p>The main goals of the project are to strengthen the current capabilities and products/services being offered by the NMHSs in sub-seasonal to seasonal prediction as a contribution to Global Framework for Climate Services. This will require the identification of high-priority research topics, the establishment of international demonstration projects and collaborative mechanisms for the seamless prediction of the weather and climate for one day to one season. This research initiative will be closely coordinated with the present existing WMO Commission for Basic Systems (CBS) infrastructure for long-range forecasting (with centres producing long-range forecasts and regional climate centres) and with the future developments in WMO climate service delivery as a part of the Global Framework for Climate Services called for in the High-Level Declaration of the World Climate Conference 3 (WCC-3). The Executive Council (EC-LXII) noted the CAS-XV endorsement of this “seamless” approach to coordinate weather, climate, water and environmental prediction research. Noting also that the concept was consistent with the report of the EC-LX Task Team on Research Aspects of an Enhanced Climate, Weather, Water and Environmental Prediction Framework (EC-RTT), and that it benefits Members, the Executive Council (inter alia) requested that the WCRP and CAS should develop actions to initiate collaboration in the following areas:</p> <ol style="list-style-type: none"> 1. Model simulation and forecast improvements and assessments of Madden Julian Oscillation (MJO), which will benefit Members through improvements in weather, seasonal and climate predictions through the activities of an international Year Of Tropical Convection (YOTC) Task Force on the MJO; 2. Development of improved polar prediction systems involving GAW, WWRP, THORPEX, and WCRP in collaboration and cooperation with other WMO technical programmes, noting the need to invest in the polar/cryosphere observations (WIGOS) and the associated telecommunications systems for data/information delivery and analysis (WIS). <p>The Executive Council (EC-LXII) agreed with CAS-XV and requested that the JSCs of the WWRP and the WCRP and also the THORPEX ICSC set up appropriate collaborative activities such as being proposed to carry out an international research initiative on sub-seasonal to seasonal forecasting to address the research topics outlined by CAS-XV.</p> <p>The main deliverables from these activities include: (i) a new international research activity for sub-seasonal to seasonal prediction; (ii) enhanced support for the WMO CLW and WDS Departments; (iii) real-time (TIGGE-like) data bases to support both research and operational prediction; and (iv) demonstration projects with societal and economic applications which will include the development and testing of mechanisms for service delivery. The activities to be implemented within the framework of the project include: (i) organization of international scientific and project group meetings; (ii) the intercomparison of prediction systems and evaluation activities; (iii) organization of workshops, training and analysis in support of national and regional activities; and (iv) the establishment and implementation of Demonstration Project(s) for selected regions/NMHSs.</p> <p>The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of project: 48 months</p>
<p>Resource requirements: CHF 400,000</p>
<p>Mandate: Report of EC-LXII, paragraphs 3.2.3.8 and 3.2.3.9</p>

Expected Result 7: New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategic issues.

Key Outcome 7.2: Participation of NMHSs in relevant national and regional partnerships is enhanced

<p>Project 1.7.2.14: Creation of a climate museum</p> <p>Expected Result: 7; Key Outcome: 7.2</p> <p>Department: Cabinet and External Relations Department</p>
<p>Project abstract:</p> <p>At the World Expo 2010 the CMA/WMO Pavilion attracted the attention of a great number of visitors. Based on this successful experience, the concept of World Expo 2010 CMA/WMO Pavilion and its exhibit would be reproduced, and would result in the creation of a world climate museum. Security and welfare is intertwined with weather, climate and water. More than ever people seek to understand weather and climate phenomena, and what is being done to prevent their negative impacts. A climate museum would illustrate achievements and challenges in equipping society with the information and services it needs to better prepare for extreme weather events and climate change impacts. Climate science and applications for people's safety and well-being would be displayed. The public needs to be informed about climate information and services which are being developed and improved. A climate museum would help respond to such a need and illustrate how the international meteorological community working together within the Global Framework for Climate Services and under the auspices of a Specialized Agency of the United Nations system improves people's safety and well-being.</p> <p>The exhibits could also be exposed as a climate component of an existing science museum. It will involve: (i) negotiation with potential host countries/host museums; and (ii) organization of exhibits.</p> <p>Project staff will be required.</p> <p>The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of project: 24 months</p>
<p>Resource requirements: CHF 1.5 million</p>
<p>Mandate: New initiative</p>

Key Outcome 7.3: Public, decision-makers and other stakeholders are increasingly aware of key WMO and NMHSs issues, activities and priorities through enhanced communication

Project 1.7.3.15: Raising awareness of general public on climate issues and WMO services that are related, in particular, to GFCS

Expected Result: 7; **Key Outcome:** 7.3

Department: Cabinet and External Relations Department

Project abstract:

This project involves the production of public service announcements (PSAs) and the organization of exhibits.

Public service announcements (PSAs) for international broadcast and on-line media will be produced and disseminated in the WMO six official languages. PSA is aimed at raising awareness of people throughout the world about the importance of integrating climate information in their decisions and activities in the context of GFCS, which has a major impact in the area of socio-economic development. Such PSAs will sensitize the awareness of the importance of climate information in the social and economic life of the general public, and will also raise the profile of the NMHSs particularly in developing and least developed countries at international, regional and national levels.

Exhibits will be organized at major international conference on climate issues organized by international organizations such as UNFCCC and UNCCD COPs.

Project staff will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 24 months

Resource requirements: CHF 500,000

Mandate: New initiative

C. Priority 2: Aviation meteorological services

15. In spite of the large increase in resources allocation to the priority aviation meteorological services under the regular budget, voluntary contributions will be required to fully address this priority. The voluntary contributions required amount only to CHF 1,750,000, although they will address specific emerging issues of competency building and quality management aimed at ensuring security and coping with new challenges related to extreme natural phenomena such as volcanic eruptions and associated ashes.

Table 1.2: Priority-funded voluntary resources 2: Aviation Meteorological Services
(in thousands of Swiss francs)

	Staff resources	Non-staff resources	Total voluntary
Expected Result 1			
KO 1.1	1,250.0	500.0	1,750.0
Sub Total	1,250.0	500.0	1,750.0
TOTAL	1,250.0	500.0	1,750.0

Expected Result 1: Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by relevant societal sectors

Key Outcome 1.1: Improved access to seamless weather, climate, water, and related environmental products and services (e.g., warnings, forecasts and supporting information)

Project 2.1.1.16: Development of Aeronautical Meteorological Forecaster Competencies

Expected Result: 1; Key Outcome: 1.1

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

To support the roll-out and implementation of the training modules, competency assessment methodologies developed by the CAeM Task Team on the Competency Assessment Toolkit (TT-CAT), the following actions need to be carried out:

1. To publicize the first and second level competencies for aeronautical meteorological forecasters on suitable websites and publications and distribute widely amongst Members;
2. To assist Members in implementing assessments by workshops, web-based help line and/or dedicated visits;
3. To carry out "model assessments" in participating Members Aeronautical Meteorological Services; protocol and document strengths and weaknesses of different methodologies in the actual working environment and share anonymized results via a dedicated web forum;
4. To carry out necessary fine-tuning of assessment methodologies in the light of experiences gained in Aviation Met Services of different levels of technology and development/complexity.

The activities to be implemented include: (i) issuance of publications; (ii) organization of roll-out workshops; (iii) on-site "model assessments"; and (iv) evaluation of methodologies.

Project staff will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Project duration: 36 months

Resource requirements: CHF 400,000

Mandate: Report of EC-LXII, paragraph 4.2.60

Project 2.1.1.17: Provision of Meteorological Services for Air Traffic Management, SIGMET advisories

Expected Result: 1; Key Outcome: 1.1

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

The objective of the project is to promote, coordinate and facilitate the provision of a new type of services to Air Traffic Management for the terminal area, which is called for by regional projects such as the Single European Sky Air Traffic Management Research (SESAR) and the Next Generation Air Traffic Management Project (NextGen), with wide-ranging implications for other regions due to requirements for interoperability between different regions and systems. A serious threat to the existing service delivery model for many NMHSs that will require assistance from the Aeronautical Meteorology Programme, includes evaluating, sharing, publicizing and implementing of best practice models. This project has a sub-project for trial “Significant Meteorological Phenomenon Effecting Aircraft In-flight” (SIGMET) advisories initiated jointly by WMO and ICAO.

Long-standing deficiencies in the provision of SIGMET, which are safety-relevant for civil aviation, require a significant effort in terms of coordination, harmonization and training by the AeMP in the 2011-2014 time-frame (2014 being the proposed timing for the next conjoint WMO/ICAO Conjoint meeting with CAeM-XV).

The following three specific actions will be carried out:

1. Coordination and support of the development work of the new services by the ET-MSTA, including external experts and cooperative arrangements with interested Members. For this work, at least 3 extraordinary sessions of the ET-MSTA will be required;
2. Roll-out and demonstration of prototype services for Air Traffic Management at relevant aviation-focus meetings such as ICAO, IATA, EUROCONTROL, CANSO and similar organizations, with presentations, trials and mock-ups;
3. Provide organizational support to the efforts of the SIGMET advisory trial in cooperation with the relevant ICAO groups such as Met Warnings Study Group, support of participating Members, analysis of project outcome and preparation of relevant Cg-XVI and Conjoint CAeM-COM-MET-OPS meeting (2014).

The resources to be made available through voluntary contributions will be used to implement the following activities: (i) organization of development workshops, as well as testing and evaluation in support of national and regional projects within the scope of Meteorological Service for the Terminal Area (MSTA); (ii) demonstration of Prototype services at aviation meetings, workshops and exhibitions; (iii) organization of SIGMET advisory development workshops, interfacing with user organizations, evaluation.

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Project duration: 36 months

Resource requirements: CHF 450,000

Mandate: Report of EC-LXII, paragraphs 3.1.19-24 and 4.2.25

Project 2.1.1.18: Implementation of QMS in support of Aeronautical Meteorology

Expected Result: 1; Key Outcome: 1.1

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

The objective is to provide adequate training, implementation and follow-up support to Members in their quest to implement a QMS for their meteorological services to civil aviation by November 2012, the deadline given in ICAO Annex 3. The project also includes follow-up actions to be implemented after the deadline.

The following three specific actions will be carried out:

1. To provide expert support to implementation projects (e.g. by reviewing documentation), and to provide assistance in internal audits and issues (such as calibration of instruments) in cooperation with regional ICAO offices, regional associations and sub-regional groupings such as CMO (Caribbean), SPREP (SW Pacific), EAC and SADC (S/E Africa), ASECNA (W. Africa);
2. To establish and staff a “web help-desk” for QMS to respond to ad-hoc questions or problems Members may encounter;
3. To implement, following the EC-LXII recommendation, a Pilot QMS project within a Secretariat department, demonstrating that such an implementation can be done at low cost and resulting in an overall benefit to the Organization by making structures and processes more cost-effective and efficient.

The activities to be implemented includes: (i) provision of implementation support; (ii) organization of training; (iii) provision of audit services in support of national and regional QMS implementation; (iv) performance of Web Desk functions (web-based); (v) provision of hard-and soft copies of documentation; (vi) Pilot Project of Secretariat QMS implementation; and (vii) creation of a user interface.

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration: 36 months

Resource requirements: CHF 900,000

Mandate: Report of EC-LXII, paragraphs 4.2.30 and 4.2.36

D. Priority 3: Capacity Building for the developing and least developed countries

16. In terms of allocation of voluntary resources, capacity development represents the highest priority among the five priorities for the sixteenth financial period. The total amount of CHF 62.4 million will be required to address various issues relating to the strengthening of the infrastructure of NMHSs and Regional Training Centres in developing and least developed countries and the development of their capacities through education and training.

Table 1.3: Priority-funded voluntary resources 3: Capacity Building for the Developing and Least Developed Countries
(in thousands of Swiss francs)

	Staff resources	Non-staff resources	Total voluntary
Expected Result 6			
KO 6.1	2,150.0	5,800.0	7,950.0
KO 6.2	8,600.0	32,050.0	40,650.0
KO 6.3	500.0	8,500.0	9,000.0
KO 6.4	1,650.0	400.0	2,050.0
Sub Total	12,900.0	46,750.0	59,650.0
Expected Result 7			
KO 7.1	-	-	-
KO 7.3	600.0	2,150.0	2,750.0
Sub Total	600.0	2,150.0	2,750.0
TOTAL	13,500.0	48,900.0	62,400.0

Expected Result 6: Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfil their mandates

Key Outcome 6.1: Visibility and relevance of NMHSs and Regional Centres in regional and national development agendas is improved, particularly in developing and least developed countries

Project 3.6.1.19: Improving planning, management and operational framework of NMHSs in developing countries, LDCs and SIDS

Expected Result: 6; **Key Outcome:** 6.1

Department: Development and Regional Activities Department

Project abstract:

EC-LXII noted the commendable efforts made by Members and the Secretary-General to assist NMHSs of LDCs and SIDS, in comprehensive needs analysis/assessment, management skill building, preparation of NMHS development plans and emergency assistance. Noting that further efforts were required in these areas, the Council requested the Secretary-General to pursue strategies for raising the profiles of NMHSs concerned through sharing best practices in the integration of weather-, climate- and water-related information and services into national and regional development planning frameworks.

A major concern for many developing countries, including LDCs and SIDS, is their inadequate institutional capacity to integrate weather, climate and water information and services into national development policy and corresponding priority programmes.

Support should be provided to at least 10 countries out of these developing countries to enable them to adopt more robust planning and management models in their NMHSs, based upon appropriate best practises and examples from NMHSs of the same size and country development level.

The expected outcomes include skilful planners, managers and leaders of NMHSs, national ownership of the planning process, NMHSs development plans aligned with country development policies, strategies and priorities, particularly poverty reduction and climate change adaptation; and more support from government, stakeholders and development partners.

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources and voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 500,000

Mandate: Report of EC-LXII, paragraph 6.5

Project 3.6.1.20: Implementation of follow-up actions from the First Conference of Ministers responsible for Meteorology in Africa

Expected Result: 6; **Key Outcome:** 6.1

Department: Development and Regional Activities Department

Project abstract:

The successful organization of the Ministerial Conference, 12-16 April 2010, Nairobi, Kenya, resulted in the adoption of an unprecedented Ministerial Declaration and the establishment of the African Ministerial Conference on Meteorology (AMCOMET) as a high-level mechanism for the development of meteorology and its applications in Africa. The Ministers committed themselves to strengthen and sustain National Meteorological Services and created a Task Force of ten members which will define the institutional framework and internal arrangements of AMCOMET.

WMO and its partners were requested to provide support, including Secretariat support, to AMCOMET which should meet every two years, and the Task Force to develop and implement an African Strategy on meteorology, taking into account GFCS, among other things.

EC-LXII requested the Secretary-General to give high priority to the implementation of the outcomes of the Conference and related follow-up activities, in particular those resulting from the Ministerial Declaration.

The project will enable WMO to provide support to the work of the Task Force and the meetings of AMCOMET as appropriate, and then contribute to security and sustainable development in Africa, particularly poverty reduction, climate change adaptation and disaster risk reduction.

A project coordinator will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.05 million

Mandate: Report of EC-LXII, paragraph 2.4.25

Project 3.6.1.21: Ministerial Conferences in the Americas and Asia Pacific

Expected Result: 6; **Key Outcome:** 6.1

Department: Development and Regional Activities Department

Project abstract:

Following the successful engagement of African Ministers responsible for Meteorology in Nairobi in April 2010, this project would provide for Ministerial meetings in other Regions (RAs III/IV and RAs II/V) during the next financial period. These meetings are expected to significantly raise the profile of the NMHSs in national agendas and lead to more regionally-based approaches to key activities such as meteorological support for Disaster Risk Reduction, services to international aviation and the Global Framework for Climate Services.

The duration of each Ministerial meeting is 5 days. Approximately 20 per cent of the work required for the preparation will be absorbed within the regular budget resources. The remaining 80 per cent of the funding needs to be covered by voluntary contributions.

A project coordinator will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.7 million

Mandate: Building upon the success of the First Meeting of Ministers responsible for Meteorology held in Africa in April 2010.

Project 3.6.1.22: Ensuring sustainability and benefits of services provided by NMHSs in developing countries, LDCs and SIDS

Expected Result: 6; **Key Outcome:** 6.1

Department: Development and Regional Activities Department

Project abstract:

NMHSs in many developing countries, including LDCs and SIDS, are still facing the challenge of being recognized for tangible benefits achieved in the use of weather and climate information, services and products in climate-sensitive social and economic sectors.

EC-LXII recognized the positive impacts of projects on socio-economic benefits valuation of weather, climate and water services and in particular in LDCs and SIDS. EC-LXII invited development partners to support related initiatives and WMO to pursue its assistance as appropriate.

Based on innovative ideas of partnership and best practices, support will be provided to 10 developing countries at least to formulate and implement Pilot/Demonstration Projects on socio-economic benefits valuation of weather, climate and water services in sectors such as agriculture and food security, health, disaster risk reduction, water resources management and development, energy generation and distribution, transport, tourism and climate change adaptation.

The expected outcomes include a higher profile in meeting the Millennium Development Goals (MDGs), an increased political and financial support leading to more efficient and sustainable NMHSs and support for the outcomes of the Fourth United Nations Conference on the Least Developed Countries (Istanbul, Turkey, June 2011).

Project staff will be required.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 500,000

Mandate: Report of EC-LXII, paragraph 6.4

Project 3.6.1.23: Emergency assistance aimed at re-instatement of basic services

Expected Result: 6; **Key Outcome:** 6.1

Department: Development and Regional Activities Department

Project abstract:

Most natural disasters have a dual implication for the NMHS of the stricken country. Hydrometeorological infrastructure and services can be severely impacted or totally destroyed at the same time as the products and services themselves are even more critically needed during the recovery phase of the event.

The WMO "Emergency Assistance Fund" was established in 1991 to assist Members affected by disasters to immediately re-instate basic services including rehabilitation and restoration of essential observing networks, data collection and processing facilities. It also assists in international data and weather information products exchange in cases where disasters have destroyed or severely disabled the meteorological and/or hydrological infrastructure. Emergency assistance under this scheme is provided in direct cash contribution and/or through technology transfer or provision of expertise and information products. This fund has been significantly utilized in the past two years and needs to be replenished on an annual basis.

As well as replenishing this fund WMO needs to better institutionalize Emergency Assistance Processes in-house to ensure a more swift and effective delivery of support. In this context it is also planned to develop a WMO Volunteer Programme (similar to "engineers without borders") to further support countries post-disaster, and in particular with provision of expertise in the short- to medium-term.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 500,000

Mandate: Report of EC-LXII, paragraph 6.21 – annex to paragraph 6.21; paragraph 6.5

Project 3.6.1.24: Enhanced education and training regarding the function of WMO for Middle and Senior Managers

Expected Result: 6; **Key Outcome:** 6.1

Department: Development and Regional Activities Department

Project abstract:

EC-LXII appreciated the human resource development opportunities being provided to Members through the Least Developed Country Programme and on a bilateral basis through seminars, online learning and exchange programmes. Considering the positive outcome of past capacity building activities for director-level executives, the Council encouraged Members to explore the possibility of providing opportunities for the director-level executives of NMHSs to exchange their experiences and opinions with a view to further improve the service performance of Members. The Council also noted the work on WMO Reform being undertaken by a small group from the EC Working Group on Strategic and Operational Planning. The initial suggestions from this working group attempt to address improvements that could be made in the way that programmes and constituent bodies operate and function. In addition to these possible reforms, the effectiveness of these sessions could be significantly improved if the delegates attending these sessions were better informed of their roles.

This project aims to assist in improving the effectiveness of WMO constituent body sessions through providing Members with better information on their roles and how to prepare for such sessions. The activities would be a mix of workshops and creation of publications. The workshops would assist the Secretariat to better identify the gaps in Members knowledge and understanding of their role and check the effectiveness of the material produced to address these gaps.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 500,000

Mandate: Report of EC-LXII, paragraph 6.20

Project 3.6.1.25: Support young scientists from developing and least developed countries

Expected Result: 6; **Key Outcome:** 6.1

Department: Research Department, Development and Regional Activities Department, Climate and Water Department, Weather and Disaster Reduction Services Department

Project abstract:

EC-LXII decided to propose to the Congress the organizing of a conference for young scientists from developing countries, to be named after Professor Obasi in recognition of his significant efforts in capacity building. The conference could be organized in 2013 at the cost of about CHF 250,000.

In order to assist Members in education and training on meteorology, relevant WMO publications should be reproduced in electronic and paper form, translated into the WMO official languages, and provided to universities and schools. WMO could also provide limited support in supplying text books on meteorology to training institutions in developing and least developed countries. Resources amounting to CHF 1,750,000 are required for these initiatives.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 2.0 million

Mandate: Report of EC-LXII, paragraph 9.6.2 and new initiatives

Project 3.6.1.26: Implementation of WMO Policy on Gender Mainstreaming

Expected Result: 6; Key Outcome: 6.1

Department: Cabinet and External Relations Department

Project abstract:

In accordance with the decision of EC-LXII, support is required for provision of assistance to Members, technical commissions, regional associations and the Secretariat in implementation, monitoring and evaluation of the WMO Policy on Gender Mainstreaming. This includes the establishment of a gender expert post in the Secretariat on the basis of a half a post at the professional level. Furthermore, it will be required to organize at least two meetings of the EC Advisory Panel of Experts on Gender Mainstreaming and two workshops on gender mainstreaming during the sixteenth financial period.

Project staff will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.0 million

Mandate: Report of EC-LXII, paragraph 6.20

Key Outcome 6.2: Infrastructure and operational facilities of NMHSs and Regional Centres are improved, particularly in developing and least developed countries

Project 3.6.2.27: Modernization of NMHSs at National and Regional Level (improved infrastructure, enhanced institutional frameworks and human capacity)

Expected Result: 6; **Key Outcome:** 6.2

Department: Development and Regional Activities Department

Project abstract:

Much progress has been made in this area of support during the current financial period with regional development projects in several regions but much more still is needed. A more comprehensive sustained approach to modernization is required through national and regional development programmes.

The goal of this activity is to continue to enhance the capabilities in all areas (infrastructure, human capacity, institutional frameworks and stakeholder engagement) of NMHSs in developing and least developed countries to provide services for managing existing and potential climate and weather related risks and to meet the challenge of coping with providing critical services and products in the face of changing climatic conditions and thereby support their progress towards achieving the UN Millennium Development Goals.

Additionally EC-LXII recognized the positive impacts of projects on socio-economic benefits valuation of weather, climate and water services and in particular in LDCs and SIDS. EC-LXII invited development partners to support related initiatives and WMO to pursue its assistance as appropriate. EC-LXII also requested the Secretary-General to pursue strategies for raising the profiles of NMHSs concerned through sharing best practices in the integration of weather-, climate- and water-related information and services into national and regional development planning frameworks.

The objectives are to build scientific, technical, infrastructural and institutional capacity of the National Meteorological and Hydrological Services as an essential service provider and to strengthening the constituency and political and financial support for NMHSs at the national and community level to increase national appropriations to NMHSs. Additionally a project manager is required within the Secretariat to track implementation of development projects across the various technical departments, ensure adequate and timely reporting to donors and support development of new funding proposals.

A project coordinator will be required.

The project is an extension of the activities implemented with limited regular budget resources and voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 30.0 million

Mandate: Report of EC-LXII, paragraphs 6.4 and 6.5

Project 3.6.2.28: WWRP contribution to capacity building

Expected Result: 6; **Key Outcome:** 6.2

Department: Research Department

Project abstract:

The WWRP provision of support to developing countries on socio-economic benefits of weather, climate and water-related information and services, and advisory services is aimed at assisting developing and least developed countries resolve urgent operational problems.

The WWRP has two projects that provide support to developing and at least 10 LDCs through providing socio-economic benefits by transitioning recent research results into operational practice. Both projects include training aspects. The LDCs are located primarily in Africa.

The first project is the Sand and Dust Warning and Advisory Assessment System (SDS-WAS), jointly with the Global Atmospheric Watch (GAW), and provides prediction and operational guidance from research and operational numerical weather prediction models that have recently developed numerical prediction capabilities for dust storms. Such events impact ground and air transportation, public safety, health and other sectors. The adverse health impacts range from crippling diseases such as meningitis in northern Africa, to upper respiratory diseases in children. The SDS-WAS has regional nodes in Africa and Asia.

The second project is the pan-African project called THORPEX Africa. This effort seeks to reduce the vulnerability of Africa to weather and climate events. It will also quantify the impacts of such events on the African economy, environment and societal aspects, while providing guidance on how to reduce vulnerability. Thirty-five African Members are already participating in THORPEX Africa and the benefits will reach across the continent. Both efforts will reduce the vulnerability of developing countries and LDCs to weather and climate variations and climate change.

Voluntary contributions are required for WMO to support meetings and training and also to provide Members in Africa with assistance in resource mobilization.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of the project: 36 months

Resource requirements: CHF 150,000

Mandate: Report of EC-LXI, paragraphs 3.1.26, 3.1.57, and 4.2.12

Project 3.6.2.29: Expansion and Implementation of the SWFDP to all WMO Regional Associations

Expected Result: 6; **Key Outcome:** 6.2

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

The Severe Weather Forecasting Demonstration Project (SWFDP) initiative is successfully enhancing the application of the existing Numerical Weather Prediction (NWP), of Ensemble Prediction System (EPS)-based and satellite-based products in the improvement of severe weather forecasting and delivery of warning services in developing countries.

The SWFDP represents a systematic and practical approach for building capacity, and for transferring new knowledge and skills; and could well serve as a trialling environment for promising outputs from GIFS, and the implementation of new products from THORPEX Interactive Grand Global Ensemble (TIGGE).

Prior to the implementation of the project, the SWFDP has been successfully implemented and is now being expanded to include all sixteen countries of southern Africa (RA I). A second project is also in implementation for four South Pacific Islands (RA V). SWFDP regional subprojects for Southeast Asia (RA II) and Eastern Africa (RA I) are in planning stage.

The expected outcomes of the project include: (i) improving severe weather forecasting; (ii) improving lead-time of warnings and the delivery of services to various socio-economic sectors; and (iii) improving interactions of NMHSs with media, disaster management and civil protection authorities and other user sector communities.

A series of regional subprojects, focused on developing countries, LDCs and SIDSs, will be implemented in East/Central Africa, West Africa, Southeast Asia, South Asia-Bay of Bengal, Central Asia and the Caucasus, South-eastern and Southern South America, Central America and the Caribbean, South East Europe, and the Southwest Pacific Islands, depending upon donor capacity and support. The following activities will be carried out for each sub-project: (i) establishing a regional partnership; (ii) planning and developing a prototype demonstration subproject; (iii) implementing the demonstration project (including evaluation); and (iv) training staff of NMHSs to correctly interpret the various NWP/EPS, satellite-based and guidance products, and to prepare user-focused information (in collaboration with users).

The recipients of the project are NMHSs and user sector communities (including disaster managers, media, agriculture, fisheries, etc.) of developing countries, LDCs and SIDSs in various WMO Regions. QMS and risk management principles will be applied in the implementation of the regional subprojects.

A project coordinator will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 2.5 million

Mandate: Report of EC-LXII, paragraphs 3.1.2, 3.1.4, 3.1.7, 3.1.8, 3.1.9 and 3.1.10

Project 3.6.2.30: Development of Multi-hazard early warning system in South East Europe

Expected Result: 6; **Key Outcome:** 6.2

Department: Development and Regional Activities Department

Project abstract:

The aim of the project is to build on the developments from the South Eastern Europe Disaster Risk Mitigation and Adaptation Programme (SEEDRMAP) and from the “South East Europe Disaster Risk Reduction Project” funded by the European Commission Directorate General for Enlargement, and to further develop and implement a coordinated regional multi-hazard early warning system (MH-EWS) Programme and develop and implement comprehensive end-to-end national MH-EWS projects with a strong regional cooperation component in two WMO (sub) Regions.

The expected outcomes of the projects include utilization of an integrated approach for the development and implementation of MHEWS projects leveraging WMO technical programmes, technical commissions (TC), Members and external partners to address needs and requirements and priorities of NMHS and DRM stakeholders at national and regional level as identified through Phase I of the South Eastern Europe Disaster Risk Reduction Project in 2009-2011.

The project includes the implementation of the following activities: (i) national early warning system policy and coordination dialogues to strengthen disaster risk management and emergency preparedness coordination frameworks and governance as linked to MHEWS; (ii) technical workshops to facilitate regional harmonization, and interoperability of the observing networks and data sharing for hydrometeorological transboundary hazards; (iii) national data rescue programmes and standardization of meteorological-, hydrological- and climate-related hazard databases, with primary focus on floods, droughts and training workshop on hazard mapping for hydrometeorological hazards to support risk analysis for EWS and emergency management with considerations for risks associated with climate variability and change; (iv) training workshops for development and strengthening of operational forecasting capacities for severe weather forecasting and marine-related hazards; (v) training workshops for strengthening of warning dissemination mechanisms, and MHEWS service delivery; (vi) assistance in development of operational cooperation and quality management systems (Standard Operational procedures) engaging NMHS and disaster risk management agencies through national activities; and (vii) performance evaluation at national and regional level for scaling up within the region and expansion of the concept to other regions.

This project will be implemented in eight beneficiaries in South East Europe and Moldova. A project coordinator will be required.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 11.0 million

Mandate: Report of EC-LXII, paragraphs 4.1.6, and 4.1.7; Report of EC-LXI, paragraphs 4.1.2 and 4.1.4; Report of Cg-XV, paragraphs 3.9.9 and 3.9.10; Report of XV-RA VI, paragraph 4.6.1

Key Outcome 6.3: Education and training development activities at national and regional levels are improved, especially in developing and least developed countries

Project 3.6.3.31: Extension of Management by e-learning to French, Spanish, Russian and Arabic
Expected Result: 6; **Key Outcome:** 6.3
Department: Development and Regional Activities Department

Project abstract:

In 2008 the UK Met Office developed and ran a Management by e-learning course which was well received by English-speaking Members. This course has been run twice more and an advanced course has also been delivered. There is wide-spread demand for such a course by non English-speaking Members. This project aims to use the UK Met Office course as a model for the development and delivery of a similar course in French and Spanish, and further in Russian and Arabic. The funds are required to hire contractors to develop and run the courses. Where possible existing resources in French and Spanish will be used to ensure relevance and minimize the cost of translation.

EC-LXII appreciated the human resource development opportunities being provided to Members through the Least Developed Country Programme and on a bilateral basis through seminars, online learning and exchange programmes. Considering the positive outcome of past capacity building activities for director-level executives, the Council encouraged Members to explore the possibility of providing opportunities for the director-level executives of NMHSs to exchange their experiences and opinions with a view to further improve the service performance of Members.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 500,000

Mandate: Report of EC-LXII, paragraph 6.20

Project 3.6.3.32: Increased capabilities of Members to deliver and assess education and training activities

Expected Result: 6; **Key Outcome:** 6.3

Department: Development and Regional Activities Department

Project abstract:

EC-LXII noted that, when the technical commissions developed competencies and education and training requirements for their areas of interest, these requirements should appear in publications produced and maintained by the Commissions.

The implementation of the high priority activities will require Members to address more of their education and training requirements. This project will fund an additional Train-the-Trainer workshop each year to improve the number of personnel in NMHS training institutes who can develop and deliver training sessions including those based around competency training and assessment. This project complements the short-term aviation training project and improved capacities in RTCs. The regular budget provides one workshop for around 20 personnel each year. It takes four years to return to a Region (RAs II and V are generally one workshop and RAs III and IV are generally combined). This would lower the return period for each Region to 2 years and train up to 40 people/year.

Over the next four years a number of the technical commissions will review their education and training requirements in light of the EC-LXII decision on competencies. To enable Members to adapt to the changes in a timely manner it will be necessary to update the training skills of more Members than is currently possible under the regular budget. This project will make a significant contribution to reducing the gap but will not eliminate it.

The project is an extension of the activities implemented with limited regular budget resources and limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 500,000

Mandate: Report of EC-LXII, paragraph 4.2.60

Project 3.6.3.33: Support to LDCs and developing countries for short-term training in aviation

Expected Result: 6; **Key Outcome:** 6.3

Department: Development and Regional Activities Department

Project abstract:

EC-LXII has approved the incorporation of competencies into the mandatory regulations for aeronautical meteorology (EC-LXII) and this will lead to many WMO Members requiring assistance to ensure that their aeronautical meteorological forecasters and observers possess the required skills, knowledge and behaviours prior to the November 2013 deadline. EC-LXII also requested the Secretary-General to provide further information regarding the resource impact on developing countries and least developed countries of implementing the recommendations from the EC Panel Task Team on Aviation Forecaster Qualifications (refer to agenda item 4.2 of this session) and to make allowance for these resource impacts in the budget preparations for the next financial period.

The Commission for Aeronautical Meteorology has created a Task Team to develop a competency assessment toolkit for Members to use in this process and a separate CAeM Expert Team is refining the lower level competencies for implementation by Members.

The funds indicated for this task will be used to run training events and roving seminars to assist Members tailor the generic competencies to their national needs and then assist them to document and assess the competencies of their personnel. The majority of the funds will be required in 2012 and 2013 (to meet the deadline) but some funds will also be required in 2013 and 2014 to assist Members who were unable to meet the deadline or re-assess personnel who were not rated as competent in the first round.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 36 months

Resource requirements: CHF 2.0 million

Mandate: Report of EC-LXI, paragraph 6.15

Project 3.6.3.34: Increased long-term fellowship opportunities

Expected Result: 6; **Key Outcome:** 6.3

Department: Development and Regional Activities Department

Project abstract:

The demand for fellowships for long-term training is far in excess of the ability of the funds allocated under the regular budget. This will be further accentuated as the profiles of the NMHSs increase with activities such as the GFCS. Whilst the increased visibility should eventually lead to increased funding from Members themselves, initially there will be increased demand for WMO support. Least Developed Countries and Small Island Developing States will be the main focus for the additional fellowships.

Following the recommendation from EC-LXII up to 40 of these fellowships would be linked to the main priorities for DRR, GFCS, WIS/WIGOS and aviation with the rest recognized as contributions to the capacity building priority. To support the high priority aviation initiative Members will require long-term training through fellowships leading up to the November 2016 deadline requirement for all aeronautical meteorological forecasters to be WMO Meteorologists. The support for GFCS will be phased in over more than 10 years and will require a mix of training, short-term secondments and long-term education. This bid only covers the short-term secondments and longer term education. To service the increased number of fellowship awards it will be necessary to hire additional staff in the Fellowships Division.

The project is an extension of the activities implemented with limited regular budget resources and limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 3.0 million

Mandate: Report of EC-LXII, paragraph 6.14

Project 3.6.3.35: Increased support to RTCs to develop and deliver programmes

Expected Result: 6; **Key Outcome:** 6.3

Department: Development and Regional Activities Department

Project abstract:

WMO Regional Training Centres have a key role to play in the development and delivery of the specialist education and training courses required by Members. Whilst a number of the RTCs are connected to large universities with significant resources many of them are not. This project will enable WMO to provide much needed assistance to a number of the RTCs in the terms of equipment, books and journals and staff development. The goal will be to increase the capacity of the RTCs so that they are more sustainable and provide better services and support to their Members.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.0 million

Mandate: Strengthened role of RTCs is part of the GFCS strategy as well as the overall capacity development strategy.

Project 3.6.3.36: Increased support for short- and very short-term fellowships

Expected Result: 6; **Key Outcome:** 6.3

Department: Development and Regional Activities Department

Project abstract:

WMO offers a range of education and training opportunities to Members from very short-term training courses (usually one to two weeks) to long-term fellowships (typically multi-year). This project aims to fill the gap between the very short-term training courses and the longer term fellowships. This will be through the secondment of experts from LDC and developing countries to NMHSs and other institutions (or vice-versa) to consolidate their training and build upon their basic education. It is in this type of activity (particularly if it takes place in the LDCs and DCs) that real capacity building and networking occurs. One target will be to update and improve the skills and knowledge of the staff in the WMO Regional Training Centres to better enable them to undertake their key role in capacity building. Recent examples of short-term (3 to 4 month) secondments have led to developments of new services in the NMHSs upon return of the seconded fellows and increased output from Expert Teams on Heat Health issues.

EC-LXII listed short-term and very short-term fellowships as one of the VCP priority areas.

The project is an extension of the activities implemented with limited regular budget resources and limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 2.0 million

Mandate: Report of EC-LXII, paragraph 6.21

Key Outcome 6.4: Capacities of NMHSs are enhanced through cooperation and partnerships with other national and regional organizations

Project 3.6.4.37: Delivery of Country Profile Data Base and development of inter linkages between databases at programme level for planning, monitoring and reporting purposes

Expected Result: 6; **Key Outcome:** 6.4

Department: Development and Regional Activities Department

Project abstract:

The project is aimed at the delivery of the Country Profile Data Base and the development of relational interlinking among WMO databases at program level to be used for planning, monitoring and reporting purposes.

Cg-XV urged the Secretary-General to take immediate action to operationalize a country profile database, gathering all information collected by individual WMO Programmes/Departments, optimizing and reducing the number of questionnaires sent to the Members.

Using limited regular and surplus funding, Phase I of the Country Profile Database was implemented. Phase I included purchase of collaborative and survey software, the updating and integration of WMO Publication No. 5 as the basic source of geopolitical and organizational information for the database, an operational module based on the new Pub 5, and the development of a project plan for the next phase. This project would allow WMO to benefit from better integration of the surveys, the addition of linkages to program database information, capacity building and for the development of tools for monitoring and reporting of Expected Results.

A project coordinator will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.0 million

Mandate: Report of Cg-XV, paragraphs 3.8.2.9 and 7.3.12

<p>Project 3.6.4.38: Increased Resource Mobilization</p> <p>Expected Result: 6; Key Outcome: 6.4</p> <p>Department: Development and Regional Activities Department</p>
<p>Project abstract:</p> <p>The Resource Mobilization Office (RMO) was established in 2007 in the WMO Secretariat and since that time has expanded the number of non-WMO Member donors to the Organization as well as increasing Member support to Regional Development Programmes. RMO has focused in this financial period on targeting traditional development partners for the most part (Development Banks, European Commission, Aid Agencies and WMO Members including their NMHSs) and mostly focused on NMHS development projects. WMO needs to expand its extrabudgetary base in other areas including research and technical programme funding and also private sector partnerships and developing case studies on socio-economic benefits of NMHS products and services (EC Working Group on Capacity Building at its meeting on margins of EC requested consideration of securing an in-house economist for this purpose). WMO needs additional human resources to explore these and other more specialized areas of funding if the targets that are currently being set for voluntary contributions in the 2012-2015 financial period are to be met.</p> <p>WMO has addressed the staffing constraints through a JPO and a secondment from Members, but continued support of this nature is not guaranteed in the next financial period and more secure staffing will be essential.</p> <p>The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of project: 48 months</p>
<p>Resource requirements: CHF 1.05 million</p>
<p>Mandate: Report of EC-LX, paragraphs 8.1.1 to 8.1.10</p>

Expected Result 7: New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategic issues.

Key Outcome 7.1: WMO leadership and contribution in relevant UN system and other international partners' initiatives and programmes is improved

Project 3.7.1.39: Provision of expert services to developing countries, LDCs and SIDS

Expected Result: 6; **Key Outcome:** 6.1

Department: Development and Regional Activities Department

Project abstract:

Specific efforts are critical to meet the special needs of LDCs and SIDS, particularly in technology transfer and in post-crisis situation.

Based upon requests from developing countries, including LDCs and SIDS, expert services should be delivered, including technical support and specialized training in applications.

The expected outcome includes urgent operational problems resolved, new technologies implemented and NMHS image improved at national and regional level.

The project is an extension of the activities implemented with limited regular budget resources and limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 200,000

Mandate: Report of EC-LXII, paragraph 6.21 – annex to paragraph 6.21

Key Outcome 7.3: Public, decision-makers and other stakeholders are increasingly aware of key WMO and NMHSs issues, activities and priorities through enhanced communication

<p>Project 3.7.3.40: Film materials for public outreach related to GFCS</p> <p>Expected Result: 7; Key Outcome: 7.3</p> <p>Department: Cabinet and External Relations Department</p>
<p>Project abstract:</p> <p>Fifteenth Congress stressed the need for increased support of the Information and Public Affairs Programme to raise awareness of the importance of climate services, as well as their benefits for socio-economic development, and called on Members to provide in-kind support and additional extrabudgetary resources. Based on this mandate, it is proposed to produce four films, one film per year, in order to illustrate each of the themes of the World Meteorological Days during the sixteenth financial period. In addition, a one-time short film will be produced, presenting WMO and explaining the benefits for all of cooperation among NMHSs under the auspices of WMO. Those film materials should be made available in the six official languages of WMO, and could be used also for a video news release (VNR).</p> <p>Project staff will be required.</p> <p>The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of project: three months every year (twelve months in total for the financial period)</p>
<p>Resource requirements: CHF 600,000</p>
<p>Mandate: Report of Cg-XV, Appendix 3, paragraph 5.14</p>

Project 3.7.3.41: Public information materials for children and youth aimed at their education and awareness-raising on meteorological and hydrological issues

Expected Result: 7; Key Outcome: 7.3

Department: Cabinet and External Relations Department

Project abstract:

Public information materials for children and youth is of critical importance for their education and awareness-raising on meteorological and hydrological issues at national, regional and global level, in particular in developing and least developed countries. NMHSs will greatly benefit from the publication of such materials that are concrete and easy to understand, containing simple examples of the impact of their work on the economy and on people's daily life. Interactive educational tools for kids and students are also needed to sensitize the drivers of the future to the relevance of weather-, water- and climate-related services. Fifteenth Congress encouraged the development of state-of-the-art educational products for the general public, including specific materials for children and the youth. WMO previously published a cartoon books "We care for our climate" that was widely distributed and achieved a great success in terms of awareness-raising of climate-related issues. Similar cartoon books will be published.

Project staff will be required.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 24 months

Resource requirements: CHF 550,000

Mandate: Report of Cg-XV, Appendix 3, paragraph 5.12

Project 3.7.3.42: Training courses for Regional IPA Focal Points aimed at strengthening public outreach at the regional level

Expected Result: 7; **Key Outcome:** 7.3

Department: Cabinet and External Relations Department

Project abstract:

Due to an increasing number of politically sensitive socio-economic issues related to climate variability and change and other meteorological and hydrological issues, it became important for NMHSs to develop or strengthen communication activities at the national and regional level. Fifteenth Congress also requested Regional and Sub-regional Offices to play a more active role regarding public information activities.

It would be useful for Regional IPA Focal Points to gain experience through training courses that will be coordinated by the WMO Communication and Public Affairs Office. The Regional IPA Focal Points, in particular from developing and least developed countries, will familiarize themselves with WMO outreach activities and interaction with Communication and Public Affairs Office, and Programme Departments at Headquarters and WMO Field Offices on communication matters. Regional IPA Focal Points will also benefit from a three-day meeting at the WMO Headquarters that will extensively deal with communication and public reach issues.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 500,000

Mandate: Report of Cg-XV, Appendix 3, paragraph 5.2

Project 3.7.3.43: Beyond the scientific community: Training courses for Permanent Representatives of WMO and Senior NMHSs staff in media communication skills

Expected Result: 7; **Key Outcome:** 7.3

Department: Cabinet and External Relations Department

Project abstract:

Fifteenth Congress requested the Secretary-General, in collaboration with interested partners, to endeavour, to conduct more training activities in the field of communication for NHMS personnel, primarily, but not exclusively, those in contact with the mass media and website networks, as well as directors. Permanent Representatives of WMO and NMHSs, especially in the developing and least developed countries, will benefit from training courses both in media communication skills, and international diplomacy. A 3-day workshop could be organized, in collaboration with UNITAR and other partners.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 8 months (two months per year)

Resource requirements: CHF 600,000

Mandate: Report of Cg-XV, Appendix 3, paragraph 5.4

Project 3.7.3.44: Media workshops at international conferences

Expected Result: 7; **Key Outcome:** 7.3

Department: Cabinet and External Relations Department

Project abstract:

WMO and media organization jointly organized media workshops at various international events and conferences. These workshops were successful and improved media coverage of the international events and conferences, as well as such media workshops organized by WMO. The GFCS/HLT has expressed the need for communications to be a fully integrated component of the GFCS activities.

A workshop will be organized on the occasion of the launch of the report of the High-level Task Force for a Global Framework for Climate Services. A training workshop will also be organized for weather presenters from developing and least developed countries that will need to convey climate predictions to the public in clear and understandable language.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 12 months (three months per year)

Resource requirements: CHF 400,000

Mandate: New initiative

Project 3.7.3.45: Exhibit travel kit for GFCS activities

Expected Result: 7; **Key Outcome:** 7.3

Department: Cabinet and External Relations Department

Project abstract:

Fifteenth Congress urged the Secretary-General, to continue to take advantage of major international events, international fairs and exhibitions to promote the image of WMO and NMHSs. In order to enhance visibility of WMO and NMHSs at relevant regional and global events in the context of GFCS activities, it would be very valuable for WMO to have a portable “kiosk” that could be used also by departments on the occasion of seminars and workshops. The kiosk should be designed in a way that it can be adapted to specific needs and topics.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 6 months

Resource requirements: CHF 100,000

Mandate: Report of Cg-XV, Appendix 3, paragraph 5.13

E. Priority 4: Implementation of the WMO Integrated Observing System and WMO Information Systems

17. An amount of CHF 22.4 million will be allocated to address all the aspect of WIGOS and WIS in the sixteenth financial period. Due to the limited availability of regular resources, the voluntary resources are critical to implement these foundational programmes in a timely, effective and affordable manner. Lack of voluntary resources might jeopardize the full implementation of the foundational programmes.

Table 1.4: Priority-funded voluntary resources 4: Implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS)
(in thousands of Swiss francs)

	Staff resources	Non-staff resources	Total voluntary
Expected Result 4			
KO 4.1	5,350.0	11,600.0	16,950.0
KO 4.2	-	2,450.0	2,450.0
KO 4.3	-	1,000.0	1,000.0
Sub Total	5,350.0	15,050.0	20,400.0
Expected Result 5			
KO 5.3	1,000.0	1,000.0	2,000.0
Sub Total	1,000.0	1,000.0	2,000.0
TOTAL	6,350.0	16,050.0	22,400.0

Expected Result 4: Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO.

Key Outcome 4.1: WMO Integrated Global Observing System is implemented

Project 4.4.1.46: Development of WMO Space Weather Activities

Expected Result: 4; **Key Outcome:** 4.1

Department: Observing and Information Systems Department

Project abstract:

The severe impact of Space Weather on key meteorological space-based observations and services, and telecommunications infrastructure, and its anticipated increase in the upcoming solar cycle has been acknowledged by EC-LXII who supported funding Space Weather coordination activities in the sixteenth financial period. Results of a recent analysis showed either cost savings, or cost avoidance accruing to commercial aviation, geophysical exploration, space operations and electrical power grid sectors from more coordinated and timely Space Weather predictions. Cost savings to one airline alone of two million USD per year were estimated. Development of WMO's activities in Space Weather has been described in WMO Technical Document No. 1482 and would include advisory services for improved quality, coverage, sustainability and interoperability of space-based observations. Initial efforts would focus on identifying observational requirements, ensuring comparability of measurements made by NMHSs, supporting data distribution efforts consistent with WIS, harmonizing service delivery and increasing outreach and user interaction.

A project coordinator will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 24 months

Resource requirements: CHF 1.2 million

Mandate: Report of EC-LXII, paragraph 3.4.41

Project 4.4.1.47: Implementation of Aircraft Observation Activities

Expected Result: 4; Key Outcome: 4.1

Department: Observing and Information Systems Department

Project abstract:

Aircraft observations are now regarded as a well-developed, mature and cost-effective operational observing system of the WMO Integrated Global Observing System (WIGOS) with aircraft observations contributing significantly to the improvement of short- to medium-term forecasting applications, such as global and regional NWP. The effective use of aircraft observations also has the potential to reduce the overall cost of the global upper-air observing programmes operated by WMO Members by providing cost-effective profiles of the vertical structure of the atmosphere in the vicinity of regional and international airports. In view of this, a provision should be made to coordinate Aircraft Observation Activities from the WMO Secretariat.

Proposed activities include the further integration of AMDAR into WIGOS, with a particular focus on the continued improvement of practices, standards and regulatory material impacting on AMDAR data collection, processing, archiving and dissemination consistent with both WIGOS and WMO Information System (WIS). In addition, efforts would continue with working on developing new methods and procedures required in preparation for the deployment of new operational aircraft based instruments, such as water vapour, turbulence and icing sensor technologies. This would include working towards the development of a universal AMDAR software package suitable for any aircraft make or model.

A major objective would include increasing regional capacity building, outreach and user interaction. Ongoing activities would also include the vital coordination role provided between active and potential AMDAR Programmes, with a focus on maintaining regional and national AMDAR Programme development activities as well as maintaining vital links with aviation regulating bodies such as ICAO and the airline industry.

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 4.8 million

Mandate: Report of Cg-XV, paragraph 3.4.3.10; Report of EC-LXII, paragraph 3.4.9

Project 4.4.1.48: Rolling Review of Requirements Database

Expected Result: 4; Key Outcome: 4.1

Department: Observing and Information Systems Department

Project abstract:

As part of the Rolling Review of Requirements (RRR), WMO is maintaining a database on user requirements and observing system capabilities. Its primary aim is to conduct critical reviews and address the extent to which in situ and space-based observing system capabilities meet user requirements for observations with a view to conduct appropriate gap analysis and feed into statements of guidance for the 12 identified application areas. The statements of guidance are then used to elaborate the Implementation Plan for the Evolution of the global observing systems in response to the Vision of the GOS for 2025 and WIGOS needs. The goal of this project is to modernize and rationalize the management of the RRR database with a view to permit its regular updating as appropriate, and to make its content available on-line to Members. The plan is to establish a distributed system whereby the observational user requirements part is implemented within the WMO Secretariat, and the observing system capabilities part implemented at a space agency for the satellite performances part, and at some other agency for the surface-based capabilities part. The WMO Secretariat will be ensuring the coordinating role for the overall management of the database. The expected outcome will be to have an operational database in place with up-to-date content and appropriate user friendly tools for its updating and consultation. RRR database will be in support to all WMO high priority areas.

Additional staff is required essentially to draft required documentation, coordinate the developments, monitor initial database content, and seek input from appropriate experts.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 36 months

Resource requirements: CHF 1.0 million

Mandate: Report of EC-LXII, paragraphs 3.4.54 and 3.4.55

Project 4.4.1.49: Improvement of CIMO Guide and the development of CIMO Manual

Expected Result: 4; **Key Outcome:** 4.1

Department: Observing and Information Systems Department

Project abstract:

Most WMO activities are based on observations that need to meet their requirements. To achieve this, it is crucial that network managers and technicians working in the field, that are responsible for establishing and maintaining observing networks, have access to the appropriate information to ensure the standardization of their observing networks and guarantee the quality of NMHSs products and services to users as well as to meet the requirements of priority activities, such as WIGOS, GFCS and DRR. As recognized by Fifteenth Congress, the CIMO Guide is providing this information. However, to meet the needs of Members, the following improvement/additions are needed: (i) the Guide must be translated in all WMO languages; (ii) it requires a constant updating process to account for evolving technologies; (iii) major updates will have to be prepared by consultants; and (iv) an interactive web-based access to the CIMO Guide/Manual and other WMO regulatory documents would considerably ease the access to the relevant information and simplify the use of the numerous WMO documents. The CIMO Guide and Manual will be in support to all WMO high priority areas.

A project coordinator will be required essentially to draft required documentation, coordinate the developments, monitor initial database content, and seek input from appropriate experts.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.25 million

Mandate: Report of EC-LXII, paragraph 3.4.49

Project 4.4.1.50: Implementation of activities of the EC Panel on Polar Observations, Research and Services (EC-PORS)

Expected Result: 4; **Key Outcome:** 4.1

Department: Observing and Information Systems Department

Project abstract:

The EC Panel of Experts on Polar Observations, Research and Services (EC-PORS) is responsible for WMO polar activities and this project provides support for EC-PORS and its activities assigned by EC and Congress. This is the entry point to all WMO Programmes and to external partners seeking to collaborate with WMO on polar activities. The aim is to bring observations, research and services together allowing WMO to maximize the value of its and its partners' investments in Polar regions. An example is the successful implementation of the IPY 2007-2008. WMO Polar activities should result in a legacy of enhanced polar observing systems and research of the polar environment, including implementation of the WMO Global Cryosphere Watch (GCW), a component of WIGOS. This project will also focus on Polar Prediction Services as a way to integrate and synthesize the IPY observational efforts and to communicate and maximize the impact of IPY science. An important task of this project is to improve the quality, coverage sustainability and interoperability of polar observations which are so critical for WMO to improve its forecasts and services in weather, climate and water, both within the region and beyond.

The project shall deliver the operational dimension of WMO's Antarctic activities, including update of standard regulatory material relevant to the Antarctic. It would implement the tasks defined by the EC-PORS task teams' work plans developed for observations, research and services, including the further development and implementation of the Global Cryosphere Watch (GCW). Sustaining polar observing networks is critical, and at the request of EC, it is necessary to acquire information on deficiencies in the implementation and operation of these networks and define possible measures to close gaps. It would support leadership of EC-PORS in the development of a Polar Prediction System to ensure that the entire value-chain from research and observations through to highly tailored user-services should be considered simultaneously in the development of new polar services. It will provide support to EC-PORS activities associated with a potential International Polar Decade (IPD) and will work with external partners to develop Science and Implementation Plans. All these activities require active collaboration with polar partners to maximize investment in polar activities.

A major activity shall be to implement GCW. A Scientific Steering Committee would be established to develop/finalize the GCW Implementation Plan and Concept of Operations. Expert teams would implement high priority tasks through GCW pilot projects, including: establishment of a comprehensive, coordinated and sustainable system of global cryospheric observations and information; implementation of recommendations of the IGOS Cryosphere Theme (CryOS); implementation of a GCW reference network (CryoNet); and, establishment of a GCW portal and virtual network to access authoritative data, information and products.

Polar Observations, Research and Services are in support to all WMO high priorities. A project coordinator will be required to coordinate, within WMO and with external partners, activities of EC-PORS, WMO polar activities related to observations, research and services, implementation of tasks identified by EC-PORS GCW Task Team; implementation of GCW strategy, and, development of WMO contribution to IPD.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 2.4 million

Mandate: Report of EC-LXII, paragraphs 3.4.31 to 3.4.35

Project 4.4.1.51: Implementation of WIGOS

Expected Result: 4; Key Outcome: 4.1

Department: Observing and Information Systems Department

Project abstract:

WIGOS will establish an integrated, comprehensive and coordinated observing system to satisfy in a cost-effective and sustained manner the evolving observing requirements of WMO Members and will enhance coordination of WMO observing systems with those of partner organizations for the benefit of society and to meet the increased needs of Members to provide weather, climate (including the Global Framework for Climate Services (GFCS)), hydrological and related environmental services to their users.

Project aim: To develop and implement a framework for improved governance, management, integration and optimization of the multiple observing systems coordinated by WMO and its partner organizations. Once this framework is established, WIGOS constituent observing systems and networks will continue to evolve to improve service delivery and support decision making in response to the evolving needs of users and technological opportunities.

Benefits: WIGOS is expected to provide timely, quality-assured, quality-controlled and well-documented long-term observations. Implementation of Quality Management procedures will be required to enable enhanced utilization of both existing and emerging observational capabilities. WIGOS will also enable resources to be used more efficiently and effectively to overcome existing deficiencies and gaps. It will enable WMO Members to meet expanding national mandates which are calling for increasing coordination and integration to help them better respond to natural hazards, improve weather, water, climate and related environmental monitoring, and adapt to climate change and other human-induced environmental impacts.

Key implementation components are as follows: (i) integrated governance and data policy; (ii) data delivery and information services through WIS; (iii) quality management and standardization; (iv) planning, optimization and monitoring of observing systems; (v) capacity building; and (vi) communications and outreach. Basic infrastructure must be in place to allow improved data acquisition systems, data management systems, and QMS to function effectively.

Following Cg-XVI, a complete WIGOS Implementation Plan (WIP) will be developed including a detailed risk assessment and management plan.

Substantial investment of resources and expertise are needed to support WIGOS development and implementation.

A project coordinator will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 3.6 million

Mandate: Report of EC-LXII, paragraphs 3.4.72, 3.4.81-82; EC-LXII/INF. 3.4(3)

Project 4.4.1.52: Development of technical standards and guidance on methods of observation for modern remote-sensing technologies

Expected Result: 4; **Key Outcome:** 4.1

Department: Observing and Information Systems Department

Project abstract:

Standards on observing practices would be developed to ensure interoperability of systems and homogeneity of observations. This is particularly relevant for complex new observing technologies that are now being used operationally by NMHSs, such as meteorological radars, wind profilers, lidars, GPS-Met. Uniform methods of data treatment, pre-processing algorithms and calibration procedures must be developed and published to make best use of these systems and their integration into WIGOS in the future. As it is an emerging field, various procedures have been used by different entities until now. It is time to address this matter in a more global manner while such practices are still susceptible to evolve and would allow drawing the highest benefits from these technologies. This will not only require the development of the standards relative to the methods of observation and calibration, but will also require the development of standards addressing appropriate data representation and data sharing procedures, including relevant metadata.

A particular focus will be given to meteorological radars and wind profilers which are used operationally by Members, but which data use and quality could be significantly improved through appropriate standards and guidance on calibration, maintenance, quality control algorithms, scanning strategies, data sharing and networking issues. This should ultimately allow specifying the quality of weather radar and wind profiler products.

These new technologies are not only very important to improve forecasting and warnings, such as flash flood forecasting and severe storm tracking, but also provide crucial information for climate monitoring which require upper-air observations to meet the same standards of accuracy and homogeneity that have always been required of terrestrial observations like conformity and traceability of remotely-sensed data to international (SI) standards.

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.3 million

Mandate: Report of EC-LXI, paragraph 3.1.9; Report of CIMO-XV, paragraphs 5.15, 5.17, 5.18 and 5.20

Project 4.4.1.53: Improved quality, coverage, sustainability and interoperability of space-based observations

Expected Result: 4; **Key Outcome:** 4.1

Department: Observing and Information Systems Department

Project abstract:

As the Global Framework for Climate Services (GFCS) and the WMO Integrated Global Observing System (WIGOS) develop, there is an increasing need for satellite data in these programmes. Additionally, the global uptake and utilization of these space-based data and products remains a challenge in many parts of the world, but particularly in the Least Developed Countries (LDCs) and Small Island Developing States (SIDS). With the increased volume of satellite data and information, and the improvements in data distribution mechanisms, more time and energy needs to be focused on ensuring these data and information are fully used and incorporated into existing WMO Programmes, including WMO's training and capacity building programmes. The purpose of this project, therefore, is twofold – to extend the uptake and utilization of satellite data and products in the application areas of weather, climate, water and natural disasters, and to better leverage the resources, both internal and external, that are devoted to training and capacity building efforts in this area.

Project staff will be required.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.4 million

Mandate: CBS and EC guidance to redouble efforts to ensure space-based observations are reaching all users, particularly in LDCs and SIDS

Key Outcome 4.2: WMO Information System is developed and implemented

Project 4.4.2.54: Increased interoperability of the WMO Information System (WIS) with other information systems, including extended use of internationally recognized standards, leading to cost-effective systems for the implementation of the WIS

Expected Result: 4; **Key Outcome:** 4.2

Department: Observing and Information Systems Department

Project abstract:

In implementing WIS, WMO is exploiting the trend toward greater interoperability among systems. Telecommunications interoperability is exploited in WIS Part A; information discovery and access interoperability is exploited in WIS Part B; and data processing service interoperability is exploited by otherwise standardizing system interfaces and harmonizing key specifications across technological areas and environmental science domains. By thus increasing the flexibility and scalability of its systems, WMO becomes better positioned to exploit new opportunities as they become available with technology innovation.

WMO Members are implementing WIS to improve the collection of critical data needed to monitor and predict aspects of the environment, including forecasting of weather, water, or climate conditions and mitigating of disasters. "WIS will provide, in an affordable and effective way, the interoperability and information exchange components and management of all WMO activities" (Key Outcome 4.2). The accessibility and comparability of data and products will be enhanced, ensuring the effective provision of services to their populations and economies. By January 2012, many WIS Centres will be operational, with key standards and practices ready to be leveraged.

Voluntary contributions are needed to extend the use of internationally recognized standards, leading to more cost-effective systems for the benefit of WMO Members and programmes. Specific outcomes will be targeted for investment in particular focused workshops, with contracted experts in support. These would follow the example of successful work in 2009 on interoperability of WIS with the European initiative known as Global Monitoring for Environment and Security (GMES).

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 600,000

Mandate: Report of Cg-XV paragraph 3.1.2.7; Report of EC-LXI, paragraph 3.5.1.2; Report of EC-LXII, paragraph 3.5.1.24

Project 4.4.2.55: Effective and affordable implementation and operation of the GTS (Part A of WIS), including its rehabilitation in case of deterioration during disasters, with a view to ensuring the exchange of WMO data products

Expected Result: 4; **Key Outcome:** 4.2

Department: Observing and Information Systems Department

Project abstract:

Recent technology advances have focused attention on opportunities for improving the WMO telecommunications infrastructure. WIS Part A is realizing efficiencies in the shared data collection and product delivery networks across WMO, both the public Internet where appropriate and WMO dedicated networks for critical communications where required. Existing telecommunications networks will be opened to other types of environmental data, providing stronger infrastructure support to all WMO Programmes and all WMO Members.

Data and information services delivered collaboratively across WMO are crucial to monitoring and forecasting weather, water, and climate conditions and mitigating disasters. WMO Members are improving the efficiency and effectiveness of their data and information services by implementing WIS: "WIS will provide, in an affordable and effective way, the interoperability and information exchange components and management of all WMO activities" (Key Outcome 4.2). The availability of time-critical data and products will be enhanced at centres in all nations, ensuring the effective provision of services to their populations and economies. By January 2012, many WIS Centres will be operational, with key standards and practices ready to be leveraged.

Voluntary contributions are needed to repair, maintain, and enhance the WMO GTS. The recent earthquake in Haiti is a prime example where rehabilitation of telecommunications infrastructure is needed. Routine communication failures can impair WMO data exchange and so impact the quality and timeliness of analysis and forecast products. Contracted expert consulting and training through regional workshops will help WMO Members take advantage of advances in telecommunication technology and complex services. In some cases, immediate investments to modernize equipment are needed to help WMO Members leverage new technologies and reap substantial future savings.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 650,000

Mandate: Report of Cg-XV paragraph 3.1.2.7; Report of EC-LXI, paragraph 3.5.1.2; Report of EC-LXII, paragraphs 3.5.1.1 to 3.5.1.13

Project 4.4.2.56: Effective and affordable implementation and operation of the Data Access and Retrieval service (Part B of WIS), with a view to facilitating the discovery and exchange of WMO data products

Expected Result: 4; **Key Outcome:** 4.2

Department: Observing and Information Systems Department

Project abstract:

WIS enables the first comprehensive means to discover and access data and products across all WMO Programmes. WIS Part B introduces a comprehensive catalogue serving searchers worldwide, from experts in WMO mission disciplines to anyone using public libraries or Internet search facilities. Cataloguing of the full range of data and products simplifies search, and also assures equitable access per WMO policies for all WMO Programmes and all WMO Members.

Behind almost every weather, water, or climate condition forecasted, disaster mitigated, or prediction debated, are data and information services delivered collaboratively across WMO. WMO Members are improving the efficiency and effectiveness of their data and information services by implementing WIS: "WIS will provide, in an affordable and effective way, the interoperability and information exchange components and management of all WMO activities" (Key Outcome 4.2). Accessibility of data and products will be enhanced at centres in all nations, ensuring the effective provision of services to their populations and economies. By January 2012, many WIS Centres will be operational, with key standards and practices ready to be leveraged.

Voluntary contributions are needed to leverage the interoperable search standard adopted in WIS. This includes not only facilitating the discovery and exchange of WMO data and products, but making accessible to WIS those critical external resources not yet discoverable with standard search interfaces. General outcomes such as broad education on current techniques and freeware solutions will be realized by contracting experts to develop technical documentation and having the documents translated. Specific outcomes will be realized from investment in particular regional workshops and workshops among global WIS Centres, with contracted experts in support. These would follow the example of successful "WIS Jump Start" consulting visits conducted in 2009.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.2 million

Mandate: Report of Cg-XV, paragraph 3.1.2.7; Report of EC-LXI, paragraph 3.5.1.2; Report of EC-LXII, paragraphs. 3.5.1.14 to 3.5.1.24

Key Outcome 4.3: Accessible climate observations and climate data archives at the NMHSs and global data centres are increased

<p>Project 4.4.3.57: Implementation of WIGOS Pilot Project</p> <p>Expected Result: 4; Key Outcome: 4.3</p> <p>Department: Observing and Information Systems Department</p>
<p>Project abstract:</p> <p>The Global Climate Observing System (GCOS) Reference Upper-Air Network (GRUAN) is an incipient network of ground-based upper-air monitoring stations called for in the 2004 GCOS Implementation Plan. Its over-arching aim is to create an unimpeachable record of changes in atmospheric column characteristics on multi-decadal timescales to support climate monitoring activities and climate dataset development.</p> <p>Implementation of the network has started, involving the identification of eligible measurement sites, development of a data policy and dissemination scheme and the quest for a common mode of operations. Currently, the network comprises 15 initial sites. The first GRUAN-quality data will be made available in 2010, and the network is planned to be fully operational by 2013. The 2nd GRUAN Implementation-Coordination Meeting (March 2011) led to the establishment of task specific teams to work on the following key aspects of the emerging network: (i) radiosondes; (ii) GPS-Precipitable Water; (iii) measurement schedules and associated site requirements; (iv) site assessment, expansion and certification; and (v) the value of ancillary measurements.</p> <p>It is recognized that for GRUAN to be scientifically- and cost-effective, it will be necessary to optimally interface with other networks and activities in a manner consistent with WIGOS principles.</p> <p>The GRUAN WIGOS Pilot Project is expected to: (i) undertake preparation of regulatory material for GRUAN; (ii) partake in assessments of best instrumentation by means of major intercomparison campaigns; (iii) ensure the availability of high-quality consistent atmospheric profile data; and (iv) provide an interface for GRUAN to the implementation of WIGOS, to WMO in general, and to other WPPs, the GSICS WPP in particular.</p> <p>The activities to be implemented are as follows: (i) support to annual Implementation-Coordination Meetings (~50-60 pers.) and meetings of the five GRUAN Task Teams (~5 pers.) (100K CHF per year; (ii) support for instrument intercomparison (e.g. CIMO intercomparison campaigns) and round robin exercises (e.g. for the establishment of calibration standards) (non-staff costs of ~50K CHF per year); (iii) support in establishing a comprehensive data management system, including the integration of state-of-the-art remote sensing observations and fulfilling WIS requirements (Seconded Expert and non-staff costs of 50K CHF per year); and (iv) implementation of the GRUAN Guide of Operations, including monitoring and evaluation (50K CHF).</p> <p>The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of project: 24 months</p>
<p>Resource requirements: CHF 1.0 million</p>
<p>Mandate: Report of EC-LXII, paragraph 3.4.71</p>

Expected Result 5: Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development.

Key Outcome 5.3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments

Project 4.5.3.58: Enhancement of WMO GAW observational network coverage and quality for improved reliability of climate, ozone depletion and air quality scientific assessment information

Expected Result: 5; Key Outcome: 5.3

Department: Research Department

Project abstract:

There are several issues which are directly connected with the chemical composition of the atmosphere including climate change (via greenhouse gases and aerosols), depletion of the ozone layer and health risks (via reactive gases and aerosols). Many GAW stations are located in developing countries and are lacking basic infrastructure, such as stable electric power and adequate communication. There are also large regions in the world where there is no measurement capability at all. Critical areas include Siberia, South America (Andes and Amazon Basin) and regions in Africa. Especially tropical forests in all regions lack measurements. Contributions to the global greenhouse gas budget from wetlands and potential emissions from melting permafrost in the north of Russia are very uncertain. Lack of measurements limits atmospheric models in precise prediction of the effect of greenhouse gas emissions on future climate. Finally, GAW stations are needed in routine verification and calibration of satellites.

So far, global atmospheric composition measurements have been performed at GAW stations and have been required to be of known and good quality in order to be of value in providing sound advice to policymakers and the public. The objective of the project is to enhance atmospheric chemistry observations of critical and policy relevant GAW variables in important data sparse regions, and also to enhance the quality of observations from stations in developing countries. The expected outcome of the project will be better data coverage and quality, both through improved uptime at existing stations as well as data from regions that until now have had no measurements. These improvements will lead to better input to models, and thereby resulting in more reliable predictions of future climate and air quality.

Within the framework of the project, WMO implement activities aimed at: (i) establishment of three new GAW stations in data sparse regions; (ii) enhancement of the capacity of the existing network through equipment upgrade, better availability of standards and personnel training; and (iii) enhancement of infrastructure, such as supply of electric power, telecommunications and rapid delivery of data from GAW stations. CAS experts, supported by the WMO Secretariat, will work together to undertake these activities. The recipients of the project include: (i) NMHSs; (ii) scientific community; (iii) regional and global assessments; and (iv) policy makers.

Resources are required to: (i) establish three new stations; (ii) refurbish/purchase relevant equipment at existing GAW observatories; (iii) to implement WMO GAWTEC training activities on measurement and analysis. A project coordinator will be required. The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.6 million

Mandate: Resolution 9 (Cg-X); Resolution 14 (Cg-XV); Resolution 15 (Cg-XV); Report of CAS-XIV, paragraph 6.1.2; Report of CAS-XV, paragraph 3.2.4

Project 4.5.3.59: Healthy megacities resulting from improved capabilities in environmental measurement, modelling, production and delivery of related services

Expected Result: 5; **Key Outcome:** 5.3

Department: Research Department

Project abstract:

Megacities are growing in number and size. It is increasingly recognized that there is a need to tackle the health crisis in urbanizing populations, both in developing and developed countries. Excellent experience gained in the Shanghai MHEWS project that consists of six components with involvement of major WMO technical departments and several technical commissions, serving as an example for other megacities. Within the atmospheric chemistry community several megacity activities, where WMO/GAW/GURME is participating, are taking place: within IGAC, a megacity assessment report is under preparation; the EU project MEGAPOLI is looking at emissions, atmospheric concentrations, air pollution and climate interactions, and mitigation in several megacities. GURME projects have built and are building capacity to deal with air quality problems in several megacities. Through these activities international expert collaboration networks have been established that can be used to implement this project successfully.

The objectives of the project are: (i) to improve the capabilities of NMHSs to provide environmental services in megacities; (ii) to enable air quality modelling; production, dissemination and delivery of air quality forecasts and related products and services; (iii) and to help manage chronic disease burden associated with poor air quality and to create opportunities for healthy and active lifestyles.

The expected outcome include: (i) improved environmental and air quality products and their dissemination; (ii) establishment of institutional partnerships among key stakeholders at national and local levels; (iii) economical and health benefits and improved living conditions for healthier urban populations.

Within the framework of the project, WMO implement activities aimed at: (i) development of strategies for megacities to deal with weather, climate and environmental problems and improvement in the production, dissemination and delivery of related products and services; (ii) enhancement of environmental monitoring and modelling capabilities; and (iii) establishment of case studies for understanding air pollution and health connections in different types of megacities. Main recipients of the project include: (i) NMHSs; (ii) city governments; (iii) local and health authorities; and (iv) the public in developing countries in different WMO Regions. Experts will provide advisory services and training activities will also be organized.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 700,000

Mandate: Report of CAS-XV, sections 6.4 and 6.6; Report of EC-LXII, paragraphs 4.1.2.2, 4.1.10 and 4.2.54; GAW Strategic Plan Section 9; Report of EC-LXII, paragraphs 4.2.14 and 4.2.15

F. Priority 5: Disaster Risk Reduction

18. The voluntary resources of CHF 7,850,000 million will be used to address various aspects of the priority Disaster Risk Reduction. The proposed projects touch upon not only the improved access to seamless weather, climate, water and environmental products and services, but also multi-hazard early warning systems, and research areas.

Table 1.5: Priority-funded voluntary resources 5: Disaster Risk Reduction
(in thousands of Swiss francs)

	Staff resources	Non-staff resources	Total voluntary
Expected Result 1			
KO 1.1	900.0	2,150.0	3,050.0
Sub Total	900.0	2,150.0	3,050.0
Expected Result 2			
KO 2.1	1,400.0	1,900.0	3,300.0
Sub Total	1,400.0	1,900.0	3,300.0
Expected Result 5			
KO 5.2	900.0	150.0	1,050.0
KO 5.3	-	450.0	450.0
Sub Total	900.0	600.0	1,500.0
TOTAL	3,200.0	4,650.0	7,850.0

Expected Result 1: Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by relevant societal sectors.

Key Outcome 1.1: Improved access to seamless weather, climate, water, and related-environmental products and services (e.g., warnings, forecasts and supporting information)

Project 5.1.1.60: Improved Uptake of Weather and Climate Information for the Health Sector

Expected Result: 1; Key Outcome: 1.1

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

Effective decision support systems for public health require the establishment of mechanisms to enhance the coordination and collaboration among the various stakeholders. Prior to the implementation of the project, the following activities have been implemented: (i) creation and strengthening of Climate and Health Working Groups in East and West Africa; and (ii) implementation of Learning Through Doing (LTD) projects in South and Central America, setting up direct collaboration between NMHSs and public health sectors. This proposal aims to put in place a framework for: (i) developing functional institutional coordination and collaboration mechanisms to identify the weather and climate data, information and services needs of the health sector; (ii) providing tailored information to assist NMHSs to generate and disseminate actionable weather and climate information products to assist decision-making in the health sector; (iii) assisting the public health sector to integrate weather and climate information into their decision-support systems; and (iv) developing a feedback mechanism for on-going improvement of this capability.

The objective of the project is to improve the dissemination and uptake of weather and climate information to enhance decision support systems of the public health authorities through the improved use of weather and climate information through strengthening the abilities of NMHSs to provide information, data, products and services required by the public health authorities to develop appropriate strategies. The expected outcomes of the project include: (i) generation and dissemination of weather and climate information, products and services to support decision-making in the health sector; (ii) development of a sustainable framework for operational coordination and collaboration for improved prediction and use of weather and climate information in the management information systems of the public health authorities; and (iii) institutional partnerships among key stakeholders at national to local levels dealing with health issues. The following activities will be implemented: (i) establishment of sustainable operational and collaboration mechanisms between NMHSs and health authorities; (ii) development or customization of specific weather and climate information products and services to respond to the requirement of the public health stakeholders and provision of training of stakeholders in weather and climate information products and services; (iii) integration of weather and climate products into country health information systems; and (iv) provision of expert support for the use of weather and climate products in the decision-making processes. Intended recipients are NMHSs and Public Health sectors in the developing countries and LDCs in West Africa; Eastern and Southern Africa; S.E. Asia; Central America; South America; and S.W. Pacific SIDS. QMS and risk management principles will be applied in the implementation of this project.

A project coordinator will be required. The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.7 million

Mandate: Report of EC-LXII, paragraphs 4.2.14 and 4.2.15

Project 5.1.1.61: Socio-economic Value of Extreme Event-related Weather, Climate and Water Services

Expected Result: 1; **Key Outcome:** 1.1

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

The scope of the project covers all economic sectors that are sensitive to extreme weather and climate events. The expected outcomes include: (i) understanding and characterizing the social and economic impacts of weather, water and climate, and the cost of extreme weather and climate events on society, for better decision making; and (ii) demonstrating in a quantifiable manner the value of NMHSs services to the public and user sectors.

Prior to the implementation of the project, the WMO Forum on Social and Economic Benefits of Weather, Climate and Water Services established by the Secretary-General through the PWS Programme, has been a main contributor to the implementation of the Madrid Action Plan (Madrid Conference 2007) through assisting NMHSs to establish relationships with their user communities, and gathering economic decision support tools and case studies.

The following activities will be implemented within the framework of the project: (i) training management and staff of NMHSs to better understand the impact of extreme metrological and hydrological events on the national economy; (ii) setting up economic decision support tools and case studies; (iii) assessing the societal impact of weather- and climate-related disasters in collaboration with social science experts; and (iv) understanding and improving the utilization of hydrometeorological information in DRR through societal and economic research and application projects

The recipients of the project are developing countries and LDCs in all WMO Regions.

QMS and Risk Management principles will be applied to this project to ensure quality, reliability and traceability of services to different socio-economic sectors.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 400,000

Mandate: Report of Cg-XV, paragraphs 3.4.1.7 and 3.4.1.8; Report of EC-LXI, paragraphs 4.2.30 and 4.2.31; and Report of EC-LXII, paragraph 4.2.19

Project 5.1.1.62: Coordination and Capacity Building for All-hazards, All-media Alerting

Expected Result: 1; **Key Outcome:** 1.1

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

Governments, emergency managers, and information and communications technology are implementing the next generation of "all-media" and "all-hazards" alerting systems which are in compliance with ITU Recommendation X.1303, Common Alerting Protocol (CAP). WMO has joined with ITU in having a lead role in promoting CAP adoption. EUMETNET and several WMO Members have already committed to CAP implementation, including the USA, Canada, South Africa, and Australia.

In 2010, WMO launched its Register of Alerting Authorities to provide a means for WMO Members to identify their officially recognized alerting authorities. The WMO Severe Weather Forecast Demonstration Programme will also promote CAP-based alerting.

Voluntary contributions are needed for international coordination and capacity building to achieve effective implementation of CAP. Funds will support contracted consulting, workshops, and educational outreach to help WMO Members take advantage of CAP-based technology and to partner with organizations such as NGO's and commercial companies willing to donate services.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 1.0 million

Mandate: Report of Cg-XV paragraph 3.1.2.6; Report of EC-LXI paragraph 3.5.2.7

Expected Result 2: Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements.

Key Outcome 2.1: Multi-hazard early warning systems are, implemented

Project 5.2.1.63: Improved Storm Surge Watch and Coast Inundation Forecasting

Expected Result: 2; **Key Outcome:** 2.1

Department: Weather and Disaster Risk Reduction Services Department

Project abstract:

Storm surges and wind-induced waves associated with severe cyclones, and its combined effect with river flooding, leading to coastal inundation, stand out as natural hazards with extreme damaging potential including loss of lives and livelihoods. The Coastal Inundation Forecasting Demonstration Project (CIFDP), an end-to-end integrated and freely-available to Members software package, involving both ocean and hydrological models, will be developed to enable an assessment and forecast of total coastal inundation from combined extreme waves, surges and river flooding events. In the same context, a Storm Surge Watch Scheme (SSWS) is being implemented by the five Tropical Cyclone Programme (TCP) regional bodies to enhance Members capabilities to access and use existing wave and storm surge products worldwide as a basis for operational services.

Prior to the implementation of the project, expert meetings have been held on both the SSW and Coastal Inundation to plan for implementation of these projects.

The expected outcomes of the project include: (i) improved forecasts of tropical cyclone-related storm surges and coast inundation due to extreme waves, storm surges and river flooding; and (ii) building capacity of relevant NMHSs to use those forecasts.

The following activities will be implemented within the framework of the project: (i) organization of storm surge training workshops for experts on storm surge; (ii) software development for coastal inundation integrated modelling and its implementation in regions subject to tropical cyclones; and (iii) organization of training workshops for experts on the use of this software and understand its output products for operational forecasting and warning services.

The recipients of the project are Members in the five WMO TCP regional bodies and those Members with coastlines.

The development and implementation of this project will be carried out in accordance with QMS principles and in collaboration with the IOC of UNESCO.

The project is an extension of the activities implemented with limited regular budget resources during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).

Duration of project: 48 months

Resource requirements: CHF 700,000

Mandate: Report of EC-LXII, paragraphs 3.1.35 and 4.1.20

<p>Project 5.2.1.64: Development of Multi-hazard Early Warning Systems</p> <p>Expected Result: 2; Key Outcome: 2.1</p> <p>Department: Weather and Disaster Risk Reduction Services Department</p>
<p>Project abstract:</p> <p>The aim of the project is to initiate a coordinated regional multi-hazard early warning system (MH-EWS) Programme and develop and implement comprehensive end-to-end national MH-EWS projects with a strong regional cooperation component in two WMO (sub) regions.</p> <p>The expected outcomes of the project include: (i) identification of needs, requirements and priorities of NMHS and their DRM stakeholders at national and regional level; and (ii) development and implementation of MHEWS projects leveraging WMO technical programmes, technical commissions (TC), Members and external partners.</p> <p>The following activities will be implemented within the framework of the project:</p> <ol style="list-style-type: none"> 1) To conduct “Training and Coordination Workshop on MH-EWS with Focus on Institutional Partnerships and Coordination,” engaging directors of NMHSs and disaster risk management (DRM) agencies and other national EWS stakeholders, regional and international organizations as well as development and funding agencies; 2) To develop a MHEWS regional cooperation programme, and Phase I project (with 2-3 year implementation cycle) to address capacity development needs identified through activity in areas; 3) To carry out national policy forums to engage the NMHS in the DRM coordination, planning and budgeting mechanisms; 4) To develop clear resource mobilization strategy with development agencies and donors for coordinated support to the MHEWS regional Programme and Phase I project (defined in Activity 2); 5) To initiate the implementation of Phase I project with WMO budget and external funds raised; 6) To document lesson’s leant at national, regional and coordination level for scaling up within the Region and expansion of the concept to other Regions. <p>This project will be implemented in WMO Regions which have not yet been addressed by the DRR Programme, including South and South East Asia, South America, and Southern Africa (SADC). A project coordinator will be required.</p> <p>The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of project: 48 months</p>
<p>Resource requirements: CHF 2.6 million</p>
<p>Mandate: Report of Cg-XV, paragraphs 3.9.9 and 3.9.10; Report of EC-LXI, paragraphs 4.1.2 and 4.1.4; and Report of EC-LXII, paragraphs 4.1.6, and 4.1.7</p>

Expected Result 5: Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development.

Key outcome 5.2: Research in the prediction of high-impact weather on time scales of hours to seasons is enhanced

<p>Project 5.5.2.65: WWRP contribution towards an improved range of products (DRR)</p> <p>Expected Result: 5; Key Outcome: 5.2</p> <p>Department: Research Department</p>
<p>Abstract of the project:</p> <p>The World Weather Research Programme (WWRP) focuses on research to advance the predictive skill of those hydrometeorological events that have a high impact on society, the economy and the environment. Such events are primarily, but not exclusively disasters. The WWRP also transitions these research advances to the activities of operational NHMSs and users such as disaster and public safety managers. Specific research projects are one of the main strategies to focus research, operational and user activities on disaster risk problems.</p> <p>Support is needed for research and forecast demonstration projects including:</p> <ol style="list-style-type: none"> 1) Warnings of sand and dust storms (SDS-WAS for Asia, Northern Africa, Middle East and Europe); 2) Disaster mitigation in Africa (e.g., THORPEX Africa, AMMA, African High-Impact Weather Information System, Lake Victoria Marine Hazard Project) and India (THORPEX India); 3) Winter Storms Forecast Demonstration Projects (e.g., T-NAWDEX, Sochi 2014); 4) Flash floods, heat waves and droughts in the Mediterranean Basin (HyMeX); 5) Tropical cyclone prediction projects in the NW Pacific Basin, over SE China, SE Africa and the South Pacific and Indian Ocean Basin; 6) Heavy rainfall and flash flood prediction projects for Central Europe and the La Plata River Basin; 7) Product development contributions to the SWFDP sub-regional projects; 8) The Polar Legacy project built upon the THORPEX-IPY cluster; 9) Year of Tropical Convection (YOTC) to improve weather and climate models in the tropics with indirect improvements on higher latitudes. <p>WWRP including THORPEX is in need of an additional staff member to support the growing number of requests for projects undertaken by Members. Currently WWRP has over 20 research projects that are in the planning to analysis stages. Voluntary contributions are also required to finance planning meetings aimed at designing the projects along with smaller workshops to guide the progress of all projects.</p> <p>A project coordinator will be required. The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in the sixteenth financial period (2012-2015).</p>
<p>Duration of the project: 48 months.</p>
<p>Resource requirements: CHF 1.05 million</p>
<p>Mandates: Report of EC-LXI, paragraph 4.1.12; Report of EC-LXII, paragraphs 3.1.26, 3.1.38, 3.1.39, 3.1.41, 3.1.46-48, 3.1.51-52, 3.1.53-59, 3.1.63 and 4.1.10</p>

Key Outcome 5.3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments

Project 5.5.3.66: Improved sand and dust storm forecast and observation products (DRR)

Expected Result: 5; **Key Outcome:** 5.3

Department: Research Department

Project abstract:

EC-LXII and EC-LXI recognized the progress in developing an Implementation Plan for the Sand and Dust Storm Warning, Advisory and Assessment System (SDS-WAS) and the development of regional nodes for northern Africa, the Middle East and Europe, and for Asia. EC-LXI encouraged the cooperation of CAS and CBS so that a rapid transition from research to operational forecasting can occur and real-time exchange of aerosol observations. It encouraged support of workshops and training sessions that serve to involve SDS-WAS countries that are potentially impacted by sand and dust but do not yet have adequate sand and dust forecasting information.

The main goals of the project are to improve current capabilities and products/services being offered by the NMHSs in monitoring and prediction of the sand and dust atmospheric process. This will require the identification of high-priority research topics, the establishment of international demonstration projects, collaborative mechanisms for research on dust predictions; and the transition of relevant elements from research to operational forecasting.

The Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) coordinated by the WWRP and GAW programmes focuses on research to develop, refine and provide products useful in reducing the adverse impacts of sand and dust storms and to assess impacts of the SDS process on society and nature. In collaboration with Global Data-processing and Forecasting System (GDPFS) programme, the SDS-WAS also transitions research activities to the activities of operational NHMSs and users such as disaster and public safety managers. Specific issues focus on research, operational and user activities on disaster risk problems will be addressed. These issues include: (i) dust and health issues (e.g. meningitis, valley fever, asthma, etc); (ii) dust and impacts to agriculture, transport and environment; (iii) assimilation of dust-related observations in dust forecasting systems; (iv) improved dust source specification and parameterization; (v) advanced methods in observing the SDS; (vi) direct and indirect impacts of dust to the atmosphere; implementing the related research in operational weather forecast and climate research systems; (vii) developing ensemble systems for SDS prediction; (viii); SDS reanalysis studies; and (ix) the transition of relevant SDS-WAS elements from research to operational forecasting.

The activities to be implemented within the framework of the project include: (i) organization of international scientific meetings; (ii) the intercomparison of prediction systems and evaluation activities; and (iii) workshops, training and analysis in support of national activities of the two regional SDS-WAS nodes.

The project is a new activity to be implemented with voluntary resources in the sixteenth financial period (2012-2015), and no such activity is implemented during the fifteenth financial period (2008-2011). No specific financial commitments are made by donors at the current stage. The project will require the indicated voluntary resources for its full implementation in sixteenth financial period (2012-2015).

Duration of the project: 48 months

Resource requirements: CHF 200,000

Mandates: Report of EC-LXI, paragraph 3.1.28; Report of EC-LXII, paragraph 3.1.57

Project 5.5.3.67: Global and Regional Ensemble Prediction (DRR)

Expected Result: 5; **Key Outcome:** 5.3

Department: Research Department

Project abstract:

The WWRP/THORPEX programme will advance the skill and utilization of ensemble prediction systems in order to provide probabilistic information on forecasts of disastrous weather while also improving the accuracy and extending the lead-time of early warnings of disasters through a strategy that includes ensemble prediction research and the transition of research advances to operational practice.

The WWRP/THORPEX activities in this area are focused on the multi-model TIGGE (THORPEX Interactive Grand Global Ensemble) project for global prediction and its regional counterpart TIGGE-LAM (Limited Area Model). International TIGGE research collaboration and coordination between NMHSs, research institutes, and the academic community will accelerate predictive skill with early research suggesting that the lead-time for several forecast situations relevant to Disaster Risk Reduction will increase on the order of 1 to 3 days. TIGGE-related research to advance ensemble systems has grown to include nearly 800 researchers worldwide. TIGGE LAM is in an earlier stage of development and will have a greater emphasis on higher resolution simulations that will advance the prediction of the intensity and the location of hydrometeor disasters. Such advances in the ensemble prediction systems utilized for early warnings will benefit WMO Members in every Region and form the foundation to forecast such events.

TIGGE-related research will extend through the entire budget period with a growing emphasis on pilot projects - Forecast Demonstration Projects and contributions to the SWFDP. The high resolution TIGGE LAM research projects will extend through the budget cycle.

While the TIGGE is supported within the WMO by the THORPEX Trust Fund, extrabudgetary voluntary contributions are required to accommodate the unprecedented growth of the TIGGE project and to assist in the development of TIGGE LAM.

The project is an extension of the activities implemented with limited voluntary resources during the fifteenth financial period (2008-2011). Limited voluntary resources are likely to be continuously made available by donors in the sixteenth financial period (2012-2015). However, the project will require further voluntary resources up to the indicated total resource requirement, for its full implementation in the sixteenth financial period (2012-2015).

Duration of the project: 48 months

Resource requirements: CHF 250,000

Mandates: Report of EC-LXI, paragraph 4.1.12f; Report of EC-LXII, paragraph 4.1.10; Report of EC-LXII, paragraph 3.1.39; Report of EC-LXII, paragraphs 3.1.48, 3.1.51-52, 3.1.58 and 3.1.61

G. List of Project Initiatives

Priority 1: Global Framework for Climate Services (GFCS)

Expected Result 3: Enhanced capabilities of Members to produce better weather, climate, water and related environmental information, predictions and warnings to support in particular disaster risk reduction and climate impact and adaptation strategies

Key Outcome 3.1: Improved long-range forecasts and long-term projections

Project 1.3.1.1: Support for the implementation of climate watch system in the Regions

Key Outcome 3.4: Drought information and prediction for risk management is improved

Project 1.3.4.2: Strengthening Drought Early Warning and Integrated Drought Management

Key Outcome 3.5: Provision of improved comprehensive climate observations

Project 1.3.5.3: Strengthening the capacities of Member countries to provide climate services

Project 1.3.5.4: Training aspects related to GPC and RCC infrastructure.....

Project 1.3.5.5: Enhanced capacity of NMHSs to more effectively use GPC and RCC products to develop and deliver climate services at national levels.....

Key Outcome 3.6: Improved and sustained interaction between the research, the operational prediction and product development and the sectoral user communities for putting climate and applied climate research advances into practice under GFCS

Project 1.3.6.6: Establishment of a worldwide system of Regional Climate Centres, with special focus on vulnerable developing regions

Key Outcome 3.7: Improved infrastructure and standardized technical procedures and tools, for development and coordinated flow of GFCS information and products

Project 1.3.7.7: Development of Climate Outlook Forums worldwide, on regional and national scales.....

Key Outcome 3.8: Enhanced and expanded user interface and communications mechanisms and user-driven outlook forums for improved climate services.....

Project 1.3.8.8: Development of user-targeted climate services for agriculture, water, and health sectors for Climate Risk Management and adaptation.....

Expected Result 4: Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO

Key Outcome 4.1: WMO Integrated Global Observing System is implemented

Project 1.4.1.9: Development of marine observations partnership

Project 1.4.1.10: Development of a simple PC-based software tool to assist countries and Regions in designing their national and regional synoptic and climatological networks according to WIGOS and GFCS requirements.....

Expected Result 5: Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development

Key Outcome 5.1: Research in climate prediction/projection to improve the skills of seasonal, decadal, and longer time scales is enhanced

Project 1.5.1.11: Regional and National Climate Information for Decision Makers (GFCS) ..

Key Outcome 5.3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments

Project 1.5.3.12: Polar prediction of weather and climate (GFCS)

Key Outcome 5.4: Seamless forecasts of weather, climate, water and the environment from months to seasons are developed.....

Project 1.5.4.13: Seamless prediction of weather and climate (GFCS)

Expected Result 7: New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategic issues

Key Outcome 7.2: Participation of NMHSs in relevant national and regional partnerships is enhanced

Project 1.7.2.14: Creation of a climate museum to be developed on the basis of the exhibits of the World Expo 2010 CMA/WMO Meteoworld Pavilion.....

Key Outcome 7.3: Public, decision-makers and other stakeholders are increasingly aware of key WMO and NMHSs issues, activities and priorities through enhanced communication

Project 1.7.3.15: Raising awareness of general public on climate issues and WMO services that are related, in particular, to GFCS.....

Priority 2: Aviation meteorological services

Expected Result 1: Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by relevant societal sectors.....

Key Outcome 1.1: Improved access to seamless weather, climate, water, and related-environmental products and services (e.g., warnings, forecasts and supporting information)

Project 2.1.1.16: Development of Aeronautical Meteorological Forecaster Competencies

Project 2.1.1.17: Provision of Meteorological Services for Air Traffic Management, SIGMET advisories

Project 2.1.1.18: Implementation of QMS in support of Aeronautical Meteorology

Priority 3: Capacity Building for the developing and least developed countries

Expected Result 6: Enhanced capabilities of NMHSs, in particular in developing and least developed countries, to fulfil their mandates.....

Key Outcome 6.1: NMHSs and Regional Centres are improved, particularly in developing and least developed countries

Project 3.6.1.19: Improving planning, management and operational framework of NMHSs in developing countries, LDCs and SIDS

Project 3.6.1.20: Implementation of follow-up actions from the First Conference of Ministers responsible for Meteorology in Africa.....

Project 3.6.1.21: Ministerial Conferences in the Americas and Asia Pacific.....

Compendium of project initiatives

- Project 3.6.1.22: Ensuring sustainability and benefits of services provided by NMHSs in developing countries, LDCs and SIDS
- Project 3.6.1.23: Emergency assistance aimed at re-instatement of basic services.....
- Project 3.6.1.24: Enhanced education and training regarding the function of WMO for middle and Senior Managers.....
- Project 3.6.1.25: Support young scientists from developing and least developed countries
- Project 3.6.1.26: Implementation of WMO Policy on Gender Mainstreaming.....
- Key Outcome 6.2: Infrastructure and operational facilities of NMHSs and Regional Centres are improved, particularly in developing and least developed countries.....
- Project 3.6.2.27: Modernization of NMHS at National and Regional Level (improved infrastructure, enhanced institutional frameworks and human capacity)
- Project 3.6.2.28: WWRP contribution to capacity building
- Project 3.6.2.29: Expansion and Implementation of the SWFDP to all WMO Regional Associations
- Project 3.6.2.30: Development of Multi-hazard early warning system in South East Europe .
- Key Outcome 6.3: Education and Training Development activities at national and regional levels are improved, especially in developing and least developed countries.....
- Project 3.6.3.31: Extension of Management by e-learning to French, Spanish, Russian and Arabic
- Project 3.6.3.32: Increased capabilities of Members to deliver and assess education and training activities.....
- Project 3.6.3.33: Support to LDCs and developing countries for short-term training in aviation
- Project 3.6.3.34: Increased long-term fellowship opportunities.....
- Project 3.6.3.35: Increased support to RTCs to develop and deliver programmes
- Project 3.6.3.36: Increased support for short- and very short-term fellowships.....
- Key Outcome 6.4: Capacities of NMHSs are enhanced through cooperation and partnerships with other national and regional organizations.....
- Project 3.6.4.37: Delivery of Country Profile Data Base and development of interlinkages between databases at programme level for planning, monitoring and reporting purposes.....
- Project 3.6.4.38: Increased Resource Mobilization
- Expected Result 7: New and strengthened partnerships and cooperation activities to improve NMHSs' performance in delivering services and to increase the value of the contributions of WMO within the United Nations system, relevant international conventions and national strategic issues**
- Key Outcome 7.1: WMO leadership and contribution in relevant UN system and other international partners' initiatives and programmes is improved.....
- Project 3.7.1.39: Provision of Expert Services to developing countries, LDCs and SIDS.....
- Key Outcome 7.3: Public, decision-makers and other stakeholders are increasingly aware of key WMO and NMHSs issues, activities and priorities though enhanced communication
- Project 3.7.3.40: Film materials for public outreach related to GFCS.....
- Project 3.7.3.41: Public information materials for children and youth aimed at their education and awareness-raising on meteorological and hydrological issues
- Project 3.7.3.42: Training courses for Regional IPA Focal Points aimed at strengthening public outreach at the regional level
- Project 3.7.3.43: Beyond the scientific community: Training Courses for Permanent Representatives of WMO and Senior NMHSs staff in media communication skills.....

Compendium of project initiatives

- Project 3.7.3.44: Media workshops at international conferences.....
- Project 3.7.3.45: Exhibit travel kit for GFCS activities

Priority 4: Implementation of the WMO Integrated Observing System and WMO Information Systems

Expected Result 4: Enhanced capabilities of Members to access, develop, implement and use integrated and interoperable Earth- and space-based observation systems for weather, climate and hydrological observations, as well as related environmental and space weather observations, based on world standards set by WMO

Key Outcome 4.1: WMO Integrated Global Observing System is implemented

Project 4.4.1.46: Development of WMO Space Weather Activities

Project 4.4.1.47: Implementation of Aircraft Observation Activities

Project 4.4.1.48: Rolling Review of Requirements Database

Project 4.4.1.49: Improvement of CIMO Guide and the development of CIMO Manual.....

Project 4.4.1.50: Implementation of activities of the EC Panel on Polar Observations, Research and Services (EC-PORS)

Project 4.4.1.51: Implementation of WIGOS

Project: 4.4.1.52: Development of technical standards and guidance on methods of observation for modern remote-sensing technologies

Project 4.4.1.53: Improved quality, coverage, sustainability and interoperability of space-based observations

Key Outcome 4.2: WMO Information System is developed and implemented.....

Project 4.4.2.54: Increased interoperability of the WMO Information System (WIS) with other information systems, including extended use of internationally recognized standards, leading to cost-effective systems for the implementation of the WIS.....

Project 4.4.2.55: Effective and affordable implementation and operation of the GTS (Part A of WIS), including its rehabilitation in case of deterioration during disasters, with a view to ensuring the exchange of WMO data products

Project 4.4.2.56: Effective and affordable implementation and operation of the Data Access and Retrieval service (Part B of WIS), with a view to facilitating the discovery and exchange of WMO data products

Key Outcome 4.3: Accessible climate observations and climate data archives at the NMHSs and global data centres are increased

Project 4.4.3.57: Implementation of WIGOS Pilot Project.....

Expected Result 5: Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development

Key Outcome 5.3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments

Project 4.5.3.58: Enhancement of WMO GAW observational network coverage and quality for improved reliability of climate, ozone depletion and air quality scientific assessment information.....

Project 4.5.3.59: Healthy megacities resulting from improved capabilities in environmental measurement, modelling, production and delivery of related services.....

Priority 5: Disaster Risk Reduction

Expected Result 1: Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information and services in response to users' needs and to enable their use in decision-making by relevant societal sectors.....

Key Outcome 1.1: Improved access to seamless weather, climate, water, and related-environmental products and services (e.g., warnings, forecasts and supporting information)

Project 5.1.1.60: Improved Uptake of Weather and Climate Information for the Health Sector

Project 5.1.1.61: Socio-economic Value of Extreme Event-related Weather, Climate and Water Services

Project 5.1.1.62: Coordination and Capacity Building for All-hazards, All-media Alerting.....

Expected Result 2: Enhanced capabilities of Members to reduce risks and potential impacts of hazards caused by weather, climate, water and related environmental elements..

Key Outcome 2.1: Multi-hazard early warning systems are, implemented.....

Project 5.2.1.63: : Improved Storm Surge Watch and Coast Inundation Forecasting.....

Project 5.2.1.64: Development of Multi-hazard Early Warning Systems

Expected Result 5: Enhanced capabilities of Members to contribute to and draw benefits from the global research capacity for weather, climate, water and the related environmental science and technology development

Key outcome 5.2: Research in the prediction of high-impact weather on time scales of hours to seasons is enhanced

Project 5.5.2.65: WWRP contribution towards an improved range of products (DRR)

Key Outcome 5.3: Atmospheric chemistry observations and assessment meet needs of environmental conventions and policy assessments

Project 5.5.3.66: Improved sand and dust storm forecast and observation products (DRR) .

Project 5.5.3.67: Global and Regional Ensemble Prediction (DRR)

