

EXPECTED RESULT 3

AGENDA ITEM 4.3: DATA-PROCESSING AND FORECASTING: WEATHER, CLIMATE AND WATER

WEATHER

SUMMARY

DECISIONS/ACTIONS REQUIRED:

- (a) Initiate amendments of the WMO Technical Regulations, Volume I (WMO-No. 49) to reflect the current state of the GDPFS;
- (b) Endorse the establishment of a Severe Weather Forecasting Demonstration Project (SWFDP) Office within the Secretariat to support the effective and sustainable management and coordination of regional projects, which would be supported by voluntary contributions;
- (c) Establish a course of action to support the further implementation of the SWFDP and its expansion into all WMO Regions;
- (d) Endorse the plan for completion of the revision of the WMO Technical Note 170 by 2014, involving relevant WMO Technical Commissions and the IAEA;
- (e) Adopt draft Resolution 4.3/1 – Report of the Fifteenth Session of the Commission for Basic Systems concerning the Global Data-processing and Forecasting System and the Emergency Response Activities;
- (f) Financial implications: regular none; voluntary for SWFDP Office.

CONTENT OF DOCUMENT:

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APPENDIX A: DRAFT TEXT SUPPORTING THE DECISIONS OF EC-65 – FOR INCLUSION IN THE GENERAL SUMMARY

4. IMPLEMENTATION OF THE WMO STRATEGIC PLAN 2012-2015 (AGENDA ITEM 4)

4.3 Data-processing and forecasting: weather, climate and water (agenda item 4.3)

Weather

Evolution of the Global Data-processing and Forecasting System (GDPFS)

4.3.1 The Council recalled that Cg-XVI (2011) adopted the outline for a revised *Manual on the GDPFS* (WMO-No. 485) through Resolution 6 (Cg-XVI), wherein it decided that this Manual is the single source of technical regulations for all operational data-processing and forecasting systems of Members. The Council reinforced that, similarly to the WIGOS and WIS, the GDPFS is an all-encompassing system, including data-processing and forecasting systems coordinated by CBS, jointly with other technical commissions and/or WMO Programmes, as well as with other international organizations. It agreed that the GDPFS is the basis for the operational production of accurate, reliable and timely weather, climate, water and related environmental forecasts and products, and would therefore satisfy, in a cost-effective and sustainable manner, the evolving data-processing and forecasting requirements of WMO Members. Noting that the evolution of the GDPFS goes beyond the data-processing and forecasting systems of the WWW, the Council requested the Secretary-General to develop an amendment for consideration by EC-66 to reflect these aspects in the *WMO Technical Regulations* (WMO-No. 49). The Council approved the amendments to the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485) through [Annex 2 to Resolution 4.3/1 \(EC-65\) – Report of the Fifteenth Session of the Commission for Basic Systems concerning the Global Data-processing and Forecasting System and Emergency Response Activities](#).

Severe Weather Forecasting Demonstration Project (SWFDP)

4.3.2 The Council noted that the SWFDP continues to make steady modest progress through five regional projects, either underway or under development. Recalling the decision by Cg-XVI that SWFDP should be an end-to-end cross-programme collaborative activity that engages all WMO Programmes that concern the real-time prediction of hydrometeorological hazards, through their respective technical commissions, the Council was pleased to note that the five regional projects presently involve several WMO global and regional operational centres (e.g. RSMCs), 41 NMHSs of developing countries (29 of which are LDCs/SIDSs), and engage several WMO Programmes (i.e. GDPFS, PWS, TCP, DRR, MMO, AgM, SP, ETR, CD, LDC, RP, and WWRP) and technical commissions (i.e. CBS, CAgM, CHy, JCOMM, and CAS).

4.3.3 The Council noted the potential benefit of an expanded role for Global Centres in the SWFDP, as demonstrated by the UK Met Office Global Guidance Unit (GGU) in the East Africa SWFDP, in sharing best practices, mentoring, training on forecast guidance and facilitating the establishment of effective severe weather teleconferences between the regional centres and NMHS forecasters.

4.3.4 The Council noted that in preparations for the implementation of the GFCS, there had been close consultation with a wide spectrum of users of hydrometeorological services in support of disaster risk reduction, and adaptation to climate variability and change. These users had, *inter alia*, highlighted the success of services delivered under the umbrella of the SWFDP. In addition to

global NWP centres and RSMCs, the Council acknowledged that GPCs for Long-range Forecasts (LRF), RCCs and RCOFs could also have a role in the SWFDP model in support of developing seamless regional early warning systems. It therefore agreed in principle that the SWFDP model could also be applied to prediction at longer-time scales. It also agreed that SWFDP should broaden its scope to targeted applications (e.g. agriculture, marine, aviation, flood forecasting, etc.) for extending the benefits of the SWFDP to other user sectors in society. In this context, the Council recommended synergy between the frameworks of the SWFDP, the FFGS, and the HYCOS projects to optimize existing structures and enhance the capabilities of NMHSs in flood forecasting; and endorsed the request by RA II to the Secretary-General to further explore opportunities with the Mekong River Commission (MRC).

4.3.5 The Council noted the significant increase of resources (both budgetary and human) required to ensure effective implementation, coordination and management of multiple, simultaneous regional projects, and long-term sustainability of the benefits gained with the SWFDP. Noting the main results of the study on resource requirements (WMO-No. 1101, Annex V), which was carried out following the request by EC-64, the Council approved the establishment of a Severe Weather Forecasting Demonstration Project (SWFDP) Office within the Secretariat to support the effective and sustainable management and coordination of regional projects, which would be supported by voluntary contributions, through [Annex 1 to Resolution 4.3/1 \(EC-65\)](#). The Council also recognized that the resources required to provide a sustainable training programme across the expanding programme of the SWFDP projects already exceeds what can be supported by voluntary contributions from global and regional centres, both in terms of finance and trainer time. The Council therefore requested the Secretary-General to continue to explore and coordinate resource mobilization with external partners to support the further implementation of the SWFDP and its expansion into all WMO Regions.

4.3.6 The Council acknowledged the importance of engaging with regional associations, including groupings of directors of NMHSs within the regional economical bodies (i.e. comprising Heads of Meteorological Services and Ministries in charge of meteorology) from early stages, to ensure regional endorsement, ownership and sustainability (i.e. recognition of SWFDP as a contributing mechanism for the implementation of their regional meteorological development plans and investment strategies). In this regard, the Council urged that the details of results of the SWFDP be shared with the regions that were not yet involved for them to adequately plan for the expansion.

Operational Weather Forecasting Process and Support – Approach towards Sustaining/ Strengthening WMO Operational Centres that Supports NMHSs

4.3.7 The Council noted that the donor agencies also recognize that the primary approach to building climate resilience and mitigating extreme weather hazards is through capacity development and investment in NMHSs to provide more timely and useful early warnings. Specifically, this requires institutional strengthening of NMHSs, reinvestment in national observing networks, improved forecasting, and placing a greater focus on delivering information and prediction services that meet the needs of governments, industry and communities, particularly in developing and least developed countries. Sustaining this investment requires technical training, a favourable continuous learning environment, and access to technical expertise and reliable and quality assured products that can help NMHSs attain increasingly higher levels of forecasting and service delivery skills. The Council recognized that this would largely rely on effective partnerships, as those established through the SWFDP “Cascading Forecasting Process” that provides improved access to and effective use by forecasters of existing and newly developed products and tools made available by advanced operational global and regional centres.

4.3.8 The Council recognized that advances being made in numerical weather and climate prediction by advanced global centres would require downscaling and tailoring their products (e.g.

by regional centres) for practical use by NMHSs. While acknowledging the importance of the continued support from advanced global centres that provide NWP/EPS and satellite-based products, the Council highlighted the backbone roles played by the regional centres in the implementation of the SWFDP. It therefore agreed that strengthening and sustaining WMO operational centres (particularly RSMCs and RCCs, and their linkages to national centres in their respective geographical regions) would sustain and increase the beneficial impacts of the development of much needed capabilities at NMHSs of developing and least developed countries (which typically lack the basic human and financial capacity) for delivering weather, climate and hydrological forecasting and warning services. In this context, the Council acknowledged the planned Workshop on “Sustaining National Meteorological Services – Strengthening WMO Regional and Global Centres”, organized by NOAA/NWS, the World Bank and WMO, to be held in Washington DC, USA, from 18 to 20 June 2013.

4.3.9 The Council also agreed that strengthening the mechanisms established through the SWFDP, and transitioning the SWFDP to become a properly supported activity in the next two to six years would be an important strategic investment in WMO’s plans to more fully address its priorities, and benefit more Members. The Council therefore stressed the need to consolidate the SWFDP into sustainable operational services through an ongoing Programme to Strengthen Operational Centres, particularly RSMCs and RCCs, to provide guidance of hazardous meteorological conditions and meteorological-related hazards (*cross-reference: general summary, item 2.5*). It is expected that this Programme would assist in sustaining the linkages between RSMCs and RCCs and national centres in their geographical regions, and in doing so assist in building upon the lessons learnt through the SWFDP. While focusing on disaster risk reduction, service delivery and capacity development, this broader initiative should be aligned with the evolution of the GDPFS and the WMO Capacity Development Strategy (e.g. Objective 5) (*cross-reference: general summary, item 4.6*), so as to increase and sustain the capacity of NMHSs in developing and least developing countries to deliver relevant weather, climate and hydrological forecasting and warning services. This would also make a contribution towards attracting further external support, which, if successful, would increase the rate of its uptake and its overall effectiveness.

4.3.10 The Council noted that a draft concept paper for a Programme to Strengthen Operational Centres, built upon the lessons learnt through the SWFDP, was under development and would be considered by the 2014 Meeting of the Presidents of Technical Commissions (*cross-reference: general summary, item 2.5*), and thereafter by EC-66.

Operational Predictions from Sub-seasonal to Longer-time Scales, including contributions to GFCS/CSIS

4.3.11 The Council stressed the need for strengthening cooperation and data exchange between Global Producing Centres of Long-Range Forecasts (GPC) and Regional Climate Centres (RCC), and developing a plan of action to realize improved operational practice in support of NMHSs, including through Regional Climate Outlook Forums (RCOF). It therefore endorsed the planned workshop on operational long-range forecasting: GPCs and RCCs, which was being organized by CBS in collaboration with CCI, to be held in Brasilia, Brazil, from 25 to 27 November 2013. The workshop would restrict its scope to improving operational procedures in extended and long-range forecasting as part of the mandatory functions of GPCs and RCCs, and will include issues of capacity building. The Council anticipated that this workshop should facilitate improved implementation and functioning of the GFCS/CSIS and improved long-range forecasting services of WMO Members.

4.3.12 The Council recalled the request by Cg-XVI (2011) to the LC-LRFMME to extend its role to include the operational exchange of extended-range predictions, as a major contribution to the GFCS/CSIS. In order to accelerate the availability of such products to WMO Members, GPCs

running extended-range forecasts are encouraged to display their products on their individual websites, and supply data from their monthly forecast systems on a voluntary basis for generation and display of multi-model extended-range products by the LC-LRFMME, along the same lines as for seasonal range products. Noting that standard procedures for verification of extended-range forecasts would be required to support the operational exchange of forecasts, the Council recommended that this pilot exchange be made in coordination with the WWRP/THORPEX/WCRP research activities on sub-seasonal to seasonal prediction.

Emergency Response Activities (ERA)

4.3.13 The Council recalled that WMO had actively participated within the UN system (in particular with the IAEA, as well as through the Inter-Agency Committee on Radiological and Nuclear Emergencies), following the Fukushima Daiichi NPP accident, to review and assess emergency preparedness and response systems. The Council was pleased to note that the WMO Task Team on Meteorological Analyses for Fukushima-Daiichi Nuclear Power Plant Accident had been completed and the [report is available on the WMO website](#). It noted that this contributes to the post-accident study undertaken by the UN Scientific Committee on Effects of Atomic Radiation (UNSCEAR) on the levels and effects of radiation released from the accident. The Council expressed its appreciation to the experts from several WMO Members, who actively participated in this work.

4.3.14 The Council recalled the request by Cg-XV (2007) with regards to the outdated WMO Technical Note 170, entitled: "Meteorological and Hydrological Aspects of Siting and Operation of Nuclear Power Plants". It endorsed the plan for the completion of the revision of this publication by 2014, involving relevant WMO Technical Commissions and the IAEA. The Council agreed that the revised publication should provide scientific and technical guidance on the access to, and analysis, interpretation and use of, meteorological and hydrological information on hazards, including the relevant aspects of climate variability and change, to support the assessment of the associated impacts on the safety of nuclear installations as well as the planning and risk management efforts concerned, as described in the IAEA Specific Safety Guide: "Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Facilities" (SSG-18, 2011, jointly sponsored with WMO).

APPENDIX B: DRAFT RESOLUTION

Draft Resolution 4.3/1 (EC-65)

REPORT OF THE FIFTEENTH SESSION OF THE COMMISSION FOR BASIC SYSTEMS CONCERNING THE GLOBAL DATA-PROCESSING AND FORECASTING SYSTEM AND THE EMERGENCY RESPONSE ACTIVITIES

THE EXECUTIVE COUNCIL,

Having considered the *Abridged Final Report with Resolutions and Recommendations of the Fifteenth Session of the Commission for Basic Systems* (WMO-No. 1101), concerning the Global Data-processing and Forecasting System (GDPFS) and the Emergency Response Activities (ERA),

Noting Recommendation 12 (CBS-15) – Establishment of the Severe Weather Forecasting Demonstration Project Office; and Recommendation 13 (CBS-15) – Amendments to the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485),

Decides on each of the recommendations as follows:

- (1) Endorses the establishment of the Severe Weather Forecasting Demonstration Project (SWFDP) Office, with Terms of Reference provided in [Annex 1 to this Resolution](#);
- (2) Approves amendments to the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485), as given in [Annex 2 to this Resolution](#), and authorizes the Secretary-General, in consultation with the president of the Commission for Basic Systems, to make any editorial amendments to the *Manual on the Global Data-processing and Forecasting System*;

Requests:

- (1) The Secretary-General:
 - (a) To make the appropriate arrangements for the establishment of the SWFDP Office within the Secretariat, including the Trust Fund for the SWFDP;
 - (b) To incorporate the amendments in the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485);
- (2) Its Working Group on Service Delivery to continue to guide the cross-programmatic integration in SWFDP, including engagement of users, addressing regional needs, and sustainable transition to operations of SWFDP outcomes.

Annex 1 to draft Resolution 4.3/1 (EC-65)

**TERMS OF REFERENCE OF THE SEVERE WEATHER FORECASTING DEMONSTRATION
PROJECT OFFICE**

The Severe Weather Forecasting Demonstration Project (SWFDP) Office should be established under the leadership of the Global Data-processing and Forecasting System (GDPFS), in collaboration with the Public Weather Services Programme, and with the cooperation of other relevant WMO Programmes (such as the Tropical Cyclone Programme, the WMO Satellite Programme and the Education and Training Programme) and technical commissions. At least 1.5 professional and 0.5 administrative staff should be recruited for the SWFDP Office, to work in collaboration with the two full-time professional staff and one full-time administrative assistant provided from the WMO regular budget (2012–2015). The SWFDP Office should have the following functions:

- (a) Work with the WMO Resource Mobilization Office to secure long-term sustainable funding, and to manage the effective use of funds so as to ensure the sustainability of regional projects;
 - (b) Assist where necessary the establishment of funding to enable the regional and global centres to transition their contributions from short-term demonstration to long-term sustainable services;
 - (c) Organize central training-of-trainers workshops to support the regions in providing up-to-date training;
 - (d) Plan and implement specific training and development activities in support of developing countries and least developed countries;
 - (e) Administer, manage and track the implementation of existing and the initiation of new regional projects, and provide such support as is required for regional projects to progress through to Phase 4 (the “Continuing Development Phase”) including full transfer of the regional project management to the regional level;
 - (f) Provide technical support in developing regional and national SWFDP implementation plans;
 - (g) Manage and coordinate the cross-programme links of the SWFDP with other WMO Programmes and technical commissions, including promoting the broadening of the SWFDP model to other timescales in support of developing seamless regional early warning systems;
 - (h) Provide technical support to, and facilitate the activities of, the Steering Group for the Severe Weather Forecasting Demonstration Project and the Regional Project Management Teams of each SWFDP region.
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Annex 2 to draft Resolution 4.3/1 (EC-65)

AMENDMENTS TO THE MANUAL ON THE GLOBAL DATA-PROCESSING AND FORECASTING SYSTEM (WMO-No. 485), VOLUME I

(Updates to the Manual are in shaded text and deleted parts are crossed out)

The proposed amendments to the *Manual on the GDPFS*, relate to:

- (a) New procedures for the designation of Centres related to Atmospheric Sand and Dust storm Forecasts (ASDF): amendments to Volume I, Part I, paragraph 4.1.2.2; Part I, Appendix I-1; Part II, paragraph 1.4.1.2; and new Appendix II-12;
- (b) The standard verification of deterministic NWP products: amendments to Volume I, Part II, Attachment II.7, Table F;
- (c) The designation of RCCs and RCC-Networks: amendments to Volume I, Part I, Appendix I-1; and Volume II, Region VI (Europe), Part I, new paragraph 4.6; and new Attachment IV.

Volume I, PART I

4.1.2.2 *Centres with activity specialization*

The functions of RSMCs with activity specialization shall include, inter alia:

[...]

(c) Providing tailored specialized products to service users in a particular area, including atmospheric sand and dust storm forecasts;

(d) Providing trajectories and atmospheric transport modelling products, including backtracking, in case of environmental emergencies or other incidents;

[...]

Volume I, PART I, APPENDIX I-1

3. The RSMCs with activity specialization are the following:

[...]

RSMC European Centre for Medium-Range Weather Forecasts (RSMC ECMWF)

Provision of Atmospheric Sand and Dust storm Forecasts:
RSMC-ASDF Barcelona

Provision of atmospheric transport modelling (for environmental emergency response and/or backtracking):

[...]

Volume I, PART II

1.4.1.2 *Regional Specialized Meteorological Centres (RSMCs) with activity specialization*

A Regional Specialized Meteorological Centre (RSMC) with activity specialization shall be designated, subject to the formal commitment by a Member or group of cooperating Members, to fulfil the required functions of the centre and meet the requirements for the provision of WWW products and services initiated and endorsed by the relevant WMO constituent body or bodies concerned. The centre should be capable of preparing independently or with the support of WMCs, and where appropriate, other GDPFS centres and disseminating to Members concerned:

[...]

- (e) Atmospheric sand and dust storm forecasts in a particular geographical region;
NOTE: Centres producing regional atmospheric sand and dust storm forecasts and services, which are recognized as such by CBS following the guidance by CAS and at the request of the regional association(s) concerned, are called RSMC for Atmospheric Sand and Dust storm Forecasts (RSMC-ASDF). The definition and the list of designated RSMC-ASDF, mandatory functions of and criteria to be recognized as an RSMC-ASDF are given in Appendix II-12.
- (ef) Regional LRF products, climate monitoring products, climate watches, drought monitoring products, climate data services, and tailored climate products.
[...]

Volume I, PART II, New Attachment II-12

Volume I, APPENDIX II-12

DESIGNATION AND MANDATORY FUNCTIONS OF REGIONAL SPECIALIZED METEOROLOGICAL CENTRES WITH ACTIVITY SPECIALIZATION IN ATMOSPHERIC SAND AND DUST STORM FORECASTS

The mandatory function of the Regional Specialized Meteorological Centre(s) with activity specialization in Atmospheric Sand and Dust storm Forecasts (RSMC-ASDF) include creating, developing and maintaining a web portal to display forecast products as well as additional information, including a system to collect users' feedback. The goal is to provide guidance on the risk of sand and dust storm occurrence within an identified geographical domain of responsibility, and help the NMHSs concerned improve their warning services to the national authorities.

RSMC-ASDF are recognized as such by CBS following the guidance by CAS and at the request of the regional association(s) concerned, including for sensitive areas whose boundaries extend beyond or are outside those of a single regional association.

Designated RSMCs for the provision of Sand and Dust storm Forecasts, including their geographical region of responsibility, are:
RSMC-ASDF 'CITYNAME' (geographical area)

The RSMC-ASDF shall:

Real-time functions

- Prepare regional forecast fields using a dust forecast model continuously throughout the year on a daily basis. The model shall consist of a numerical weather prediction model incorporating on-line parameterizations of all the major phases of the atmospheric dust cycle.
- Generate forecasts, with an appropriate uncertainty information statement, of the following minimum set of variables:
 - o Dust load ($\text{kg}\cdot\text{m}^{-2}$)
 - o Dust concentration at the surface ($\mu\text{g}\cdot\text{m}^{-3}$)
 - o Dust optical depth at 550 nm (-)
 - o 3-hour accumulated dry and wet deposition ($\text{kg}\cdot\text{m}^{-2}$)

Forecasts shall cover the period from the starting forecast time (00 and/or 12 UTC) up to a forecast time of at least 72 hours, with an output frequency of at least 3 hours. They shall cover the whole designated area. The horizontal resolution shall be finer than about 0.5×0.5 degrees.

- Disseminate through the GTS/WIS and provide on its web portal the forecast products in pictorial form not later than 12 hours after the starting forecast time.
- Issue an explanatory note on the web portal when operations are stopped due to technical problems.

Non-real-time functions

- Store the generated products in WMO GRIB format.
- Maintain the web portal built to display forecast products as well as additional information.

- Perform seasonal and annual forecast evaluation based on available observational data.
- Issue annual activity reports.
- Support user training courses.
- Provide information on methodologies and product specifications and the guidance on their use.

Volume I, Part II, Attachment II.7, Table F

I – STANDARDIZED VERIFICATION OF DETERMINISTIC NWP PRODUCTS

[...]

3. Parameters

Extra-tropics

Mandatory

- Mean sea-level pressure (verification against analysis only)
- [...]

[...]

6.2 Areas

[...]

Australia/New Zealand

10°S–55°S 90°E–180°E

Northern polar region

90°N - 60°N, inclusive, all longitudes

Southern polar region

90°S - 60°S, inclusive, all longitudes

Verification against analyses for grid points within each area, including points on the boundary.

7. Verification against observations

7.1 Observations

All parameters listed defined in section 3, except mean sea-level pressure, shall be verified against a common set of radiosondes. [...]

7.3 Areas

[...]

Australia/New Zealand

10°S–55°S 90°E–180°E

Northern polar region

90°N - 60°N, inclusive, all longitudes

Southern polar region

90°S - 60°S, inclusive, all longitudes

[...]

8. Scores

The following scores are to be calculated for all parameters against both analysis (except mean sea-level pressure) and observation.

Wind

Mandatory:

- rms vector wind error
- mean error of wind speed

Other parameters:

Mandatory

- [...]
- S1 score (only for MSLP and only against analysis)

Additional recommended

- mean absolute error
- rms forecast and analysis anomalies (not required for observations)
- standard deviation of forecast and analysis fields (not required for observations)

[...]

Volume I, Part I, Appendix I-1

[...]

Regional Climate Centres providing regional long-range forecasts and other regional climate services:

RCC Beijing (RA II)

RCC Tokyo (RA II)

RCC Moscow (RA II¹)

RCC-Network (RA VI) AE De Bilt Node on Climate Data Services

Offenbach Node on Climate Monitoring

Toulouse and Moscow Node on Long-range Forecasting

Volume I, Part II, Appendix II-10

1. A multifunctional centre that fulfils all the required functions of an RCC for the entire region, or for a sub-region to be defined by the regional association, may be designated by WMO as a WMO Regional Climate Centre (RCC). A group of centres performing climate-related activities that collectively fulfil all the required functions of an RCC may be designated by WMO as a WMO Regional Climate Centre Network (RCC-Network). Each centre(s) in a designated RCC-Network, that is charged with a specific function, will be referred to as a "node". The functions of a node may be shared among several partners. Each node can be supported by contributing centres that provide regional and/or sub-regional products as agreed within their regional association.

[...]

3. Designated Regional Climate Centres and RCC-Networks are as follows:

RCC Beijing (RA II)

RCC Tokyo (RA II)

RCC Moscow (RA II)

RCC-Network (RA VI) AE De Bilt Node on Climate Data Services

Offenbach Node on Climate Monitoring

Toulouse and Moscow Node on Long-range Forecasting

Volume II, Region VI, Part I, New Paragraph 4.6

¹ North Eurasian Climate Centre (NEACC).

[...]

4.6 Regional Long-range Forecasting, Climate Monitoring, and Climate Data Services

The regional structure of the RA VI RCC-Network is given in Attachment IV.

NOTE: The list of mandatory functions of RCC-Networks can be found in Volume I, Part II, Appendix II-10.

Volume II, Region VI, New Attachment IV

STRUCTURE OF THE RA VI RCC-NETWORK

RA VI RCC-Network consists of three nodes: (i) Climate Data Services led by KNMI, Netherlands; (ii) Climate Monitoring led by DWD, Germany; and (iii) Long-range Forecasting jointly led by Météo-France and ROSHYDROMET, Russian Federation. These lead centres have full responsibilities to satisfy the mandatory functions of RCC-Network, with the support of the following contributing NMHSs:

RA VI RCC node on Climate Data Services:

KNMI/ The Netherlands (lead), Météo-France/ France, OMSZ/ Hungary, met.no/ Norway, RHMS/ Serbia, SMHI/ Sweden, TSMS/ Turkey

RA VI RCC node on Climate Monitoring:

DWD/Germany (lead), Armstatehydromet/ Armenia, Météo-France/ France, KNMI/ The Netherlands, RHMS/Serbia, TSMS/ Turkey

RA VI RCC node on Long-range Forecasting:

Météo-France/ France and ROSHYDROMET/ Russian Federation (joint lead), met.no/ Norway, RHMS/ Serbia, TSMS/ Turkey.

Overall coordination:

The DWD/ Germany is responsible for the overall coordination of the WMO RA VI RCC-Network.
