

# Regional Association III (South America)

Abridged Final Report of the Seventeenth Session

Santiago

21–23 November 2018



WORLD  
METEOROLOGICAL  
ORGANIZATION



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**BACKGROUND INFORMATION SUPPORTING THE WORK OF THE SESSION (PART II TO  
THE PRESENT REPORT)**

## GENERAL SUMMARY OF THE WORK OF THE SESSION

1. The president of Regional Association III (South America), Mr Guillermo E. Navarro, opened the seventeenth session of the Association on 21 November 2018 at 9.30 a.m., at the hotel Marina Las Condes in Santiago, Chile. He thanked the participants in the session for their attendance, and quoted Mr Ban Ki-moon, former Secretary-General of the United Nations, referring to the global challenge of climate change. He said that it was fundamental to implement the National Framework for Climate Services in the National Meteorological and Hydrological Services (NMHS) of Regional Association III (RA III), given the effects of climate change in the Region, noting that severe meteorological phenomena were increasingly intense and frequent. He pointed out that whilst the Region had large quantities of water, nonetheless some countries had experienced drought. Given the important contribution of agricultural production to the economies of countries in the Region, he stressed that improved climate services could contribute significantly to reducing climate-related losses. He highlighted the substantial contribution of the Working Group on Infrastructure and Technological Development and of the Working Group on Climate. Finally, he thanked all the services that were involved in the organization of the session.

Mr Petteri Taalas, Secretary-General of the World Meteorological Organization (WMO), expressed his deep gratitude to the Government of Chile for having hosted the session in the city of Santiago and thanked Mr Guillermo Navarro, President of RA III and Permanent Representative of Chile, for his efforts in preparing the session, which was taking place a few months before the next meeting of the World Meteorological Congress, in which important governance decisions would be taken, with the decisive participation of all Members of the Organization. He recalled that the contribution of RA III to the work of the Organization went beyond its borders and underlined the dynamism and efficiency of the Vice-President of WMO, Mrs Celeste Saulo (Argentina), as well as the great contribution of Mr Navarro (Chile) in the WMO Executive Council. Mr Taalas also thanked the Permanent Representatives of all RA III Members for their constant support and participation in the activities and decisions of the Organization. He stated that the provision of effective climate services for decision-making was a priority for WMO. He also stressed the need to expand inter-agency collaboration and public-private partnerships, and to promote the Organization's objective of improving the living conditions of populations facing weather, climate and water-related challenges at the national, regional and global levels. Finally, he thanked Mr Navarro and all the staff of the Chilean Meteorological Service for the excellent organization and support, and wished all participants fruitful discussions and success in the future activities of the Association.

Mr Rafael Carrere, Deputy Director of the Directorate-General of Civil Aviation of Chile, highlighted the great work carried out by the Chilean Meteorological Service and the importance of the services it provided, for example, the production of meteorological data for aeronautics, weather and climate information for services such as agriculture and mining, and forecasts for the national community, to ensure the protection of lives and property and the socio-economic development of the country. He also mentioned that the National Meteorological Service was involved in the implementation of the National Action Plan on Climate Change in support of the Ministry of the Environment. Finally, he thanked the participants for their attendance.

2. The agenda of the session is provided in the [Appendix 1](#).
3. The session adopted 20 Resolutions given in [Appendix 2](#) and 22 Decisions given in [Appendix 3](#).
4. The Association elected Mr Guillermo Navarro (Chile) as president and Ms Madeleine Renom (Uruguay) as vice-president of RA III.
5. The list of participants is given in [Appendix 4](#). Out of a total of 37 participants, 12 were women, i.e. 32%.
6. The Association set a three month deadline to decide the date of its eighteenth session.

7. The seventeenth session of RA III closed at 4.45 p.m. on 23 November 2018.
-



## **APPENDIX 1. AGENDA**

### **1. ORGANIZATION OF THE SESSION**

- 1.1 Opening of the session
- 1.2 Adoption of the agenda
- 1.3 Establishment of committees
- 1.4 Programme of work of the session
- 1.5 Other organizational matters

### **2. REPORTS**

- 2.1 Consolidated summary reports: (a) RA III president; (b) Chairpersons of the Working Groups, and leader of the Task Team on Regional Operating Plan; and (c) Director of the WMO Regional Office for the Americas
- 2.2 Report from the RA III Regional Conference – Summary of recommendations

### **3. REGIONAL ASSOCIATION III STRATEGIC PRIORITIES AND EMERGING ISSUES IN WEATHER, CLIMATE AND WATER**

- 3.1 Improving service delivery – Disaster and climate resilience through impact-based services in support of decision-making
- 3.2 Advancing the Global Data-processing and Forecasting Systems – Preparing for future technology
- 3.3 Targeted research in support of services with a focus on integrating research and operation
- 3.4 Enhancing earth system observations and data exchange
- 3.5 Capacity development – Narrowing the performance gap of National Meteorological and Hydrological services in RA III
- 3.6 Partnerships and cooperation

### **4. WORKING SMARTER – REGIONAL ASSOCIATION III FUTURE GOVERNANCE**

- 4.1 RA III inputs to the WMO Strategic and Operating Plans 2020-2023
- 4.2 Internal matters of the Association
- 4.3 The Gender dimension in NMHSs of RA III

### **5. ELECTION OF OFFICERS**

### **6. DATE AND PLACE OF THE EIGHTEENTH SESSION**

### **7. CLOSURE OF THE SESSION**

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## APPENDIX 2. RESOLUTIONS ADOPTED BY THE SESSION

### Resolution 1 (RA III-17)

#### Improvement of early warnings for floods, including flash floods, in Region III

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Noting** the major flood-related disasters in Region III in recent years and the general international agreement about the effectiveness of shifting the emphasis from a policy of response to a policy of prevention, including the advancement of early warning systems in flooding,

**Recalling:**

- (1) [Resolution 21 \(Cg-XV\)](#) – Strategy for the Enhancement of Cooperation between National Meteorological and National Hydrological Services for Improved Flood Forecasting,
- (2) [Resolution 6 \(CHy-15\)](#) – The Flood Forecasting Initiative and the Contribution of the Commission for Hydrology to the Disaster Risk Management Programme,
- (3) The reports of the [thirteenth](#) and [fourteenth](#) sessions of the Regional Association III (RA III) Working Group on Hydrology and Water Resources (WG-HWR), both held in Asunción, in October 2015 and 2017 respectively, as well as the report of the [joint meeting of RA III Working Groups](#), held in Asunción, in October 2017,
- (4) The [report](#) of the initial planning meeting on the establishment of a Flash Flood Guidance System (FFGS) for South America, held in Lima, in August 2016,
- (5) The [report](#) of the consultation meeting on the Plata Basin hydrometeorological forecasting and early warning system, held in Brasilia, in May 2018,

**Noting** that the Commission for Hydrology at its fifteenth session took decisions that have an impact on RA III activities related to flood forecasting, such as the adoption of the Implementation Strategy for the End-to-End Early Warning Systems for flood forecasting, using the community of practice approach (see *Commission for Hydrology, Fifteenth Session, Abridged Final Report with Resolutions and Recommendations* (WMO- No. 1184), Resolution 10 (CHy-15), Annex 1, 1.4 (e)),

**Acknowledging:**

- (1) That one component of the FFGS is currently under development in the Region, notably the Northwest South America FFGS (NWSAFFGS), involving Colombia, Ecuador and Peru, and that a Hydrometeorological Forecasting and Early Warning System in the Plata Basin (PROHMSAT-Plata) is about to be launched with the participation of Argentina, Bolivia, Brazil, Paraguay and Uruguay,
- (2) That more RA III Members could benefit from the application of the FFGS and the further development and application of riverine flood forecasting, urban flash flood forecasting and landslide susceptibility systems,
- (3) The synergy between the Commission for Hydrology workplans related to flood forecasting and the RA III WG-HWR, and the contribution of experts from the Region to the Implementation Strategy for the End-to-End Early Warning Systems,

**Acknowledging with thanks** the offer of Colombia to act as Regional Centre for the NWSAFFGS,

**Invites Members:**

- (1) To share, via their participation in the RA III WG-HWR, their best practices in flood forecasting and to contribute to the development of guidance material on how to best communicate forecasts and uncertainty in forecast products, especially to civil protection and disaster managers;
- (2) To participate in the continual training of staff on use of the FFGS in its regional applications, to validate FFGS products once they become operational, to assess their impacts and provide suggestions on how the FFGS can better respond to emerging needs;
- (3) To take steps to assess the need for enhancing their national flood forecasting capabilities and, in so doing, to strengthen cooperation between meteorological and hydrological communities allowing for the consequent design and implementation of End-to-End Early Warning Systems for flood forecasting;
- (4) To continue participating in and supporting the development of the Implementation Strategy for the End-to-End Early Warning Systems for flood forecasting, using the community of practice approach;

**Decides:**

- (1) To increase the involvement of its Members in the Implementation Strategy for the End-to-End Early Warning Systems for flood forecasting (using the community of practice approach), exploring possible avenues of cooperation to enhance Members' capabilities to provide early warnings of flooding;
- (2) To endorse the [proposal](#) for activities and workplan for PROHMSAT-Plata prepared by hydrological and meteorological forecasting experts representing the five Plata River Basin countries under the leadership of the RA III WG-HWR and Working Group on Infrastructure and Technological Development (WG-ITD), to be submitted to the United States Agency for International Development (USAID), at the same time reiterating their gratitude to USAID/ Office of Foreign Disaster Assistance (OFDA) for its interest in supporting the development of forecasting systems in the basin;
- (3) To participate in the effort of the Flood Forecasting Initiative to assess the flood forecasting capabilities of WMO Members by, for example, beginning to apply in the Region the assessment guidelines, once they are completed.

**Resolution 2 (RA III-17)****Service delivery in marine meteorology in Region III**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Recalling** that the Seventeenth World Meteorological Congress (2015) urged Members to renew their focus on marine services, through the strengthening of their marine meteorological and oceanographic services, in support of safety of life and property at sea, as required under the International Convention for the Safety of Life at Sea (SOLAS),

**Considering** the recommendation that WMO strengthen marine services, as outlined in the Marine Services Assessment Report submitted to the WMO Secretariat in March 2017 (see [EC-70/INF. 5.3\(2\)](#)), prepared by an ad hoc working group following the request by the Seventeenth Congress that WMO improve its role in marine services,

**Having considered** Decision 16 (JCOMM-5) – Approval of the Services and Forecasting Systems Programme Area Vision, new structure and governance,

**Noting** the delivery of the International Maritime Organization (IMO)/WMO Worldwide Met-Ocean Information and Warning Service (WWMIWS) and the setting-up of a committee comprising all METAREA Coordinators to coordinate and improve service delivery in accordance with IMO/WMO service regulations (Resolution 8 (JCOMM-5) and its annex),

**Acknowledging** that marine service provision in the waters of Antarctica is regulated by IMO and WMO and by the IMO International Code for Ships Operating in Polar Waters (IMO Polar Code), and that the WWMIWS METAREA responsibility in the polar waters of Regional Association III (RA III) rests with Argentina and Chile,

**Recalling** Resolution 10 (EC-70) – Report of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology at its fifth session, which approved the updated versions of the *Manual on Marine Meteorological Services* (WMO-No. 558) and *Guide to Marine Meteorological Services* (WMO-No. 471),

**Recalling further** Resolution 26 (EC-70) – Amendments to the *Manual on the Global Data-processing and Forecasting System* (WMO-No. 485), which approved, in particular, the formal designation of Regional Specialized Meteorological Centres (RSMCs) for numerical ocean wave prediction, and for marine meteorological services,

**Noting** the decision by the IMO Maritime Safety Committee (ninety-third session) to mandate the implementation of the IMO Instruments Code for Coastal States from 1 January 2016, as stated in IMO Resolution A.1070 (28), where met-ocean forecasting requirements under SOLAS will be part of the IMO Member State Audit Scheme for every country,

**Recalling:**

- (1) Resolution 6 (Cg-17) – Competence requirements for marine weather forecasters,
- (2) Resolution 11 (EC-70) – Marine and coastal services support for WMO Members, regarding:
  - (a) The target date of 2023 to ensure that all marine forecasters involved in issuing WWMIWS products are competent,
  - (b) The need for the WMO co-president of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) to consult with presidents of regional associations to improve working relationships between JCOMM and regional association working groups on marine services,
  - (c) The Secretary-General enabling improved communication with Members through their National Marine Services focal points,

**Considering** Resolution 12 (EC-70) – Future of the Coastal Inundation Forecasting Demonstration Project, to conduct an independent review of the Coastal Inundation Forecasting Demonstration Project (in tandem with the review of the Flash Flood Guidance System and Severe Weather Forecasting Demonstration Project) to determine their ongoing sustainability and value in reducing risk of disaster, for recommendation to the Eighteenth World Meteorological Congress,

**Decides:**

- (1) To encourage Members to send nominations for the National Marine Services focal points, if they have not already done so;
- (2) To urge Members to participate in service delivery assessments and surveys carried out by the WMO Secretariat to assess the strengths and gaps in marine services for WMO Members;

- (3) To urge Members making operational oceanographic and marine meteorological observations to share such information through the WMO Information System (WIS) as a contribution to the WMO Integrated Global Observing System (WIGOS);
- (4) To encourage Members with wave and ocean modelling capability to apply to become a wave and/or ocean model RSMC;
- (5) To encourage Members interested in accessing the marine-related RSMC standard products to consult the catalogue for the WMO Information System;
- (6) To encourage Members utilizing polar waters to familiarize themselves with the IMO Polar Code;
- (7) To identify Members requiring assistance to prepare for the IMO Member State Audit Scheme on meteocean services for SOLAS, and request assistance from the JCOMM president;
- (8) To align the RA III operational plan with the WMO Key Performance Indicators relevant to marine and coastal services, and the JCOMM Services vision and strategy;
- (9) To develop educational content on marine hazards, and on how to fully utilize the forecast and warning services available from National Meteorological and Hydrological Services (NMHSs) for Members' daily planning and decision-making;
- (10) To prioritize training needs in coastal inundation and marine services (including for ice conditions in Antarctic waters), and advise the WMO Secretariat and JCOMM president;
- (11) To add an item to the RA III operational plan to ensure that Members responsible for issuing products for the IMO/WMO Worldwide Met-Ocean Information and Warning Service (comprising Peru, Brazil, Chile and Argentina in RA III) have all their marine forecasters competent by 2023;
- (12) To form an RA III sub-working group on marine meteorology to ensure communication, as well as the exchange of knowledge and experience, among the Members of the Region. The setting up of this subgroup will help ensure that the points previously agreed are met.

**Requests** the JCOMM co-presidents to ensure that relevant JCOMM activities are conducted by expert teams, or as appropriate, for RA III.

### **Resolution 3 (RA III-17)**

#### **Scientific research and development in aeronautical meteorology**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Noting** the outcomes of the 2017 WMO Aeronautical Meteorology Scientific Conference (AeroMetSci-2017) (Toulouse, France, 6–10 November 2017), led by the Commission for Aeronautical Meteorology, with participants from all WMO Regions including Regional Association III (RA III),

**Noting further** the availability of the conference proceedings ([AeM SERIES No. 2](#)) and a [conference website](#) which collectively provide all of the associated technical materials and outcomes of the conference,

**Having examined** the conference recommendations ([RA III-17/INF. 3.1\(7\)](#)),

**Noting** that Resolution 8 (EC-70) – Scientific research and development in aeronautical meteorology, endorsed the conference recommendations and, inter alia, requested presidents of regional associations to take action in respect of the outcomes of the conference,

**Urges** WMO Members in RA III, with the assistance of the president of the regional association, the RA III Management Group and the president of Commission for Aeronautical Meteorology as necessary, to apply the outcomes of the conference with a view to accelerating the transition from scientific research to meteorological operations through, in particular, community partnerships that already exist or that should be established at a national and/or multi-national level involving public and private enterprise where applicable.

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#### **Resolution 4 (RA III-17)**

##### **Global and regional landscape of aeronautical meteorological service provision**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Noting** the 2016/2017 global survey on aeronautical meteorological service provision conducted by the Commission for Aeronautical Meteorology, with input from all WMO regions including Regional Association III (RA III), and the availability of the report on the outcomes of the global survey ([AeM SERIES No. 1](#)), which provides detailed findings on the global and regional landscape of aeronautical meteorological service provision as well as general findings, trends and recommendations,

**Having examined** the main findings arising from the global survey (see [RA III-17/INF. 3.1\(7\)](#)),

**Noting** that Resolution 9 (EC-70) – Global and regional landscape of aeronautical meteorological service provision, requested, inter alia, presidents of the regional associations, in coordination with the president of CAeM, to take action in respect of the outcomes of the global survey,

**Urges** WMO Members in RA III, with the assistance of the president of the regional association, the Management Group and the president of CAeM as necessary, to:

- (1) Analyse the outcomes of the global survey, particularly in the context of the national legal/regulatory frameworks and issues such as cost recovery, with a view to determining the implications for National Meteorological and Hydrological Services (NMHSs) of WMO Members of identified trends in the provision of aeronautical meteorological services and of applying common practices;
  - (2) Supply updated information on existing national practices to the CAeM by 2020 initially and at regular intervals thereafter.
-

## Resolution 5 (RA III-17)

### Regional hydrological priorities

REGIONAL ASSOCIATION III (SOUTH AMERICA),

#### Recalling:

- (1) The [Abridged Final Report with Resolutions and Recommendations of the fifteenth session of the Commission for Hydrology](#) (WMO-No. 1184),
- (2) The [Conference Statement](#) of the WMO Global Conference: Prosperity through hydrological services (the HydroConference), held in Geneva, from 7 to 9 May 2018,
- (3) The reports of the [thirteenth](#) and [fourteenth](#) session of the Regional Association III (RA III) Working Group on Hydrology and Water Resources (WG-HWR), both held in Asunción, in October 2015 and 2017, respectively, as well as the [report](#) of the Joint Meeting of RA III Working Groups, Asunción, October 2017,
- (4) Various instances of coordination with other actors such as the United Nations Educational, Scientific and Cultural Organization (UNESCO) International Hydrological Programme, and the Memorandum of Understanding between the World Meteorological Organization and UNESCO signed on 25 November 2013,
- (5) Resolution 18 (EC-70) — Outcomes of the special dialogue on water, and Recommendation 25 (EC-70) — WMO technical commissions and other bodies,

**Noting** that the Commission for Hydrology is currently undertaking several initiatives of relevance to RA III activities related to Hydrology and Water Management, including: the implementation of the Global Hydrometry Support Facility (HydroHub) to foster the coordination and innovation in support of hydrological observation and data exchange; the implementation of Phase II of the WMO Hydrological Observing System (WHOS); the establishment of a Global Hydrological Status and Outlook System (HydroSOS) with the aim of developing WMO capability to assess current and future global status of water availability; and the launch of Phase II of the World Water Data Initiative (WWDI), originally developed in the framework of the High-Level Panel on Water (HLPW) under the leadership of Australia, which has been handed over to WMO during the seventieth session of the Executive Council to lead its future implementation,

**Noting further** the increased emphasis being placed on the availability of water resources within a country, basin and region for sustainable development, and the need to have clear and accurate indications of existing and future availability of water resources for planning purposes, as well as the requirement for reliable hydrological data to support the achievement of the Sustainable Development Goals, especially SDG-6 on Water and Sanitation,

**Recognizing** the need to foster cooperation between meteorology and hydrology to improve the quality of the services provided,

**Welcoming** the achievements of the RA III WG-HWR with respect to the development of a dedicated [website](#) for its members and other interested experts (also referred to as virtual hydrological forum); the ongoing implementation of WHOS Phase II in the Plata basin through the WHOS/WMO Integrated Global Observing System (WIGOS)-Plata project; the guidance provided for the implementation of the Flash Flood Guidance System (FFGS) in the region; the preparation of a proposal for a Hydrometeorological Forecasting and Early Warning System in the Plata Basin (PROHMSAT-Plata); and the participation of regional experts in activities related to the Quality Management Framework for Hydrology and as peer reviewers of guidance material on hydroclimatic seasonal predictions prepared by the Commission for Hydrology,

**Decides** to actively contribute to the implementation of the recommendations of the HydroConference in the Region, by designating Mr. Mariano Re (Argentina) as focal point for



enhancing WMO support to NMHSs in the Region by properly addressing the hydrological value chain, starting with measuring physical variables in the field all the way to delivering products that are tailored to the information requirement of final users (RA III HydroConference Follow-up Focal Point). The focal point will coordinate his actions with the WG-HWR as well as with other bodies, such as UNESCO International Hydrological Programme;

**Urges Members:**

- (1) To ensure the participation of representatives from academia and other water-related institutions, in addition to the National Hydrological Services (NHS), and to strengthen their representation in WMO hydrological activities, by continuing to appoint and regularly renew national Hydrological Advisers as well as experts to participate in the WG-HWR and in the RA III virtual hydrological forum;
- (2) To nominate eminent hydrological experts in key positions in their country's water resources management and/or Hydrological Service to participate in the Technical Conference and Extraordinary Session of the Commission on Hydrology, which will be held in Geneva from 11 to 14 February 2019, to lay out the way forward with respect to major WMO developments in hydrology and to propose the necessary organizational arrangements for the hydrological community to deliver the requisite results;

**Invites Members:**

- (1) To identify and communicate, either directly or through the WG-HWR, to the HydroHub Advisory Council needs and gaps in hydrological data collection, measuring technology, data interpretation tools and hydrological information systems that could be addressed by the HydroHub;
- (2) To ensure closer cooperation between meteorological and hydrological communities allowing the consequent design and implementation of end-to-end systems (measured data, models, forecasts, warning dissemination) for water resource assessment and management, as well as forecasting;
- (3) To contribute to the identification and definition of products related to HydroSOS, and to agree on regional provisions to guarantee sustained operability of HydroSOS into the future;

**Requests** the WG-HWR to consolidate and extend in the period 2019–2022 the activities initiated during the current period, and to consider possible new areas of work, such as groundwater monitoring, availability of potable water on the basis of climate conditions and infrastructure management, snow research, sedimentology, spatial hydrometry (virtual stations) and distance learning courses;

**Requests** Congress to consider that the positioning of WMO in the global water agenda, particularly in relation to Sustainable Development Goal 6, as well as the strengthening of hydrology within WMO, require the recognition of WMO unique leading role in operational hydrology, bearing in mind that there is a diversity of actors in water issues both at the country and at the international organization level, which indicates that the structure of WMO should be explicit in relation to hydrology, allowing effective interaction with the various actors involved and offering mandated and competent guidance to Members on the issue of water and hydrology.

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**Resolution 6 (RA III-17)****Implementation of a variant of the Severe Weather Forecasting Demonstration Project**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Recalling** the initial planning meeting on the establishment of a Flash Flood Guidance System (FFGS) for South America, which was held in Lima, from 16 to 19 August 2016, during which the opportunity for implementation of the Severe Weather Forecasting Demonstration Project (SWFDP) in Region III was discussed,

**Recalling further** the recommendations from the meeting to implement SWFDP concurrently with FFGS as presented in Annex 1 to the present resolution,

**Noting** that the recommendation for WMO to conduct an introductory workshop on SWFDP in Regional Association III (RA III) has been fulfilled during the meeting of the Working Group on Infrastructure and Technological Development, held in Asuncion from 2 to 3 October 2017,

**Having examined** the recommendations of the introductory workshops on SWFDP, provided in Annex 2 to the present resolution,

**Decides:**

- (1) To endorse the recommendations of the Workshop on the Implementation of SWFDP in RA III, as presented in Annex 2, in particular the one concerning implementation of a project for the development of a forecasting and alert system for extreme hydrometeorological phenomena in South America, using elements of SWFDP;
- (2) To task the RA III Working Group on Infrastructure and Technological Development to work with the WMO Secretariat on the development of the Implementation Plan;

**Requests** the Secretary-General and Members to mobilize resources for implementation of the project;

**Further requests** Members to offer full support for the project.

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**Annex 1 to Resolution 6 (RA III-17)****Recommendations of the initial Planning Meeting on the establishment of a Flash Flood Guidance System for South America (Lima, 16–18 August 2016)****Conclusions and Recommendations from the Initial Planning Meeting**

*[Note that the Conclusions and Recommendations were drafted and agreed upon in Spanish. The Spanish version, which is available on the WMO website, should be used as the definite text.]*

Participants of the Initial Planning Meeting for the Establishment of a Flash Flood Guidance System (FFGS) for South America. which had representatives from 12 countries of RA III as

experts in meteorological and hydrological forecasting, after having examined the technical characteristics of the system and discussed the various aspects of its application in the region, agreed to make the following recommendations to the Permanent Representatives of RA III:

- It is of interest to the region to implement the Flash Flood Guidance System (FFGS) in South America in order to reduce the loss of human life and economic damages. In addition, after being informed of the objectives of the Severe Weather Forecasting Demonstration Project (SWFDP), it is considered equally important to implement it concurrently with the FFGS, including the co-location of the regional centres, where possible. It also requested that WMO conduct an introductory workshop on the SWFDP in RA III as soon as possible;
- For FFGS, in view of the extent and diversity of meteorological and hydrological phenomena and geophysical characteristics of the region, it [South America] should be divided into four sub-regions. The sub-regions suggested cover (a) the Northwest part, (b) the three Guianas, and (c) and (d) two regions whose final composition would be determined later;
- Based on the technical, economic and human resources capacities, regional centres should be located in some of the following countries: Argentina, Brazil, Chile, Colombia, and Peru; the latter two having also expressed interest in hosting a Regional Centre. It should be noted that the sub-region (b) should be supported by an external Regional Centre, as this has been successfully undertaken in regional projects in other parts of the world;
- The functionalities of each sub-regional system must be developed to reflect the needs of the participating countries. In addition to providing tools for hydrological and meteorological forecasters to develop timely and site-specific alerts for flash floods, the system should include optional items to help forecasters in developing alerts for areas that have available high-resolution radar information, urban areas of selected cities experiencing flash flooding, landslides and riverine floods;
- To consider starting implementation of the system in sub-region (a).

In view of the above, to request WMO, through communication from the President of RA III to the Secretary-General, to take the necessary steps to mobilize the necessary resources to carry out the detailed actions herein described above.

## **Annex 2 to Resolution 6 (RA III-17)**

### **Recommendations of the introductory workshop on the Severe Weather Forecasting Demonstration Project in Regional Association III (Asuncion, 2–3 October 2017)**

"The participants in the Workshop, representing ten RA III countries, in their capability as Chiefs of Weather Forecasting, decided to make the following recommendations to their PRs (Note: these recommendations are available in Spanish in the [meeting report](#)):

- (1) It is of interest for the Region to implement elements of the SWFDP in South America, to improve coordination and communication among the National Met Services in the Region, as well as to share information and knowledge related to NWP, satellite and radar, AMDAR and other tools. The Project in RA III will be called "Project for the Development of a Forecasting and Alert System of Extreme Hydrometeorological Phenomena in South America (RA III)".
- (2) The Project's functionalities should be developed to reflect the needs of participating countries. In addition to sharing forecasting tools available in the Region (through a password protected Web Portal to be used by NMHSs), the Project should include elements

such as EPS, nowcasting tools, verification, capacity building, as well as a mechanism for the NMHSs to share their hydrometeorological alerts and improve communications among the Services, especially in case of extreme events in bordering areas.

- (3) Taking into account that RA III countries use NWP products from DWD, NOAA/NCEP and ECMWF, and that these centres provide a stronger support through the SWFDP, there should be an opportunity to request them to provide high resolution digital data to allow post-processing and calibration, and enhance the capacity of RA III NMHSs in data assimilation. It was suggested to include CPTEC (Brazil) in the Project and strengthen links with Universities in the Region (e.g. Buenos Aires University). Similarly, through the Ibero-American Group, explore the possibility of Spain and Portugal to facilitate the interactions with ECMWF.
- (4) Noting the extension and characteristics of RA III, and the diversity of meteorological phenomena in the Region, it was recommended to plan the Project for the whole Region through sub-regional components to be defined by the Experts.
- (5) To establish a Task Team (with the participation of the experts attending the Workshop) to develop the Implementation Plan in coordination with the RA III Working Groups on Infrastructure and Applications.
- (6) All RA III countries would contribute to the virtual Portal to be developed within the framework of the Project, taking into consideration their knowledge and capacities, whose functions and responsibilities will be described in the Implementation Plan.

Based on the above, it was suggested that the RA III president write to WMO SG asking to mobilize resources required to carry out the above aspects."

### **Resolution 7 (RA III-17)**

#### **Role of Regional Climate Centres in implementation of the Climate Services Information System in Region III**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

#### **Recalling:**

- (1) Resolution 17 (Cg-XVI) – Implementation of the Climate Services Information System,
- (2) Decision 25 (EC-68) – Strengthening WMO climate monitoring and assessment,
- (3) Decision 15 (EC-69) – Strengthening regional- and global-scale Climate Services Information System operations,
- (4) Decision 17 (EC-69) – National implementation of the Climate Services Information System,
- (5) Decision 18 (EC-69) – Sub-seasonal and seasonal forecasting systems,
- (6) Resolution 5 (EC-70) – Recommendations of the Commission for Climatology at its seventeenth session, and its annex on national focal points of the Climate Services Information System,
- (7) Resolution 4 (RA III-16) – Launching the annual Statement on the status of the climate in the South American region,

- (8) Resolution 5 (RA III-16) – Implementation of Regional Climate Centres and networks in Region III (South America),

**Recalling further** the discussions and outcomes of meetings of the presidents of regional associations and presidents of technical commissions held in 2017 and 2018, with a special focus on the mechanism for WMO contributions to the Global Framework for Climate Services (GFCS), and the associated assessments of the status of implementation of climate services in each Region based on checklists completed by Members,

**Noting with appreciation:**

- (1) That the basic entities of the Climate Services Information System (CSIS), such as Global Producing Centres for Long-range Forecasts (GPCLRFs) and Regional Climate Centres (RCCs) (Western South America RCC hosted by the International Research Centre on El Niño (CIIFEN), and Southern South America RCC) are established in Region III providing support to the further development of climate products and services by Members in the Region (see [RA III-17/INF. 3.3\(1\)](#) for more information),
- (2) The ongoing successful and sustained operations of the Western Coast of South America Climate Outlook Forum (WCSACOF) and Southern South America Climate Outlook Forum (SSACOF),
- (3) That a Climate Services Toolkit prototype has been developed based on agreed standards and good practices to support CSIS activities,
- (4) That a CSIS Technical Reference Document that reflects CSIS elements and mechanisms, as well as functions of CSIS entities on global, regional and national levels is being developed by the Commission for Climatology,

**Noting further** the recommendations of the WMO Workshop on the Global Review of Regional Climate Outlook Forums (RCOFs) (Guayaquil, Ecuador, September 2017) including, inter alia, the enhancement of RCOF products and the expansion of the RCOF product portfolio,

**Acknowledging** that regional- and global-scale CSIS operations require compliance with the regulations of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS), and need to be in line with the principles of the seamless Global Data-processing and Forecasting Systems (GDPFS),

**Recognizing** that the focus on CSIS implementation at regional and national levels will help enhance human and technical resources, and institutional capacities of National Meteorological and Hydrological Services (NMHSs) in Regional Association III (RA III), to enable them to provide improved products and services for decision-making in climate-sensitive contexts through an effective and sustained CSIS operational mechanism at the national level,

**Mindful** of the core CSIS functions covering the past, present and future climate and involving data and products related to observations, monitoring, and sub-seasonal to decadal predictions and projections,

**Decides:**

- (1) To adopt regional CSIS implementation as the overarching framework to support the development of climate services in RA III, with the following key elements:
  - (a) Sub-regional focus on three areas, namely Western South America, Southern South America and Northern South America;
  - (b) Western South America RCC, Southern South America RCC Network and Northern South America RCC Network will have an overarching responsibility for assessing the

consistency of regional data and for supporting Members in regionally optimizing/enhancing climate monitoring, prediction and projection products with global inputs, for their respective areas;

- (c) Regular operational exchange among RA III CSIS entities of the necessary data and products;
  - (d) Optimization of seasonal forecasts and empirical bias correction and tailoring processes as a means of providing users with forecasts of variables closely associated with user outcomes, accompanied by information on forecast skills;
  - (e) Members, along with NMHSs and other national stakeholders, to the best of their ability, will prioritize demand identification, continuous observations, data rescue and management, calibration and tailoring of climate products for decision-making, interaction with and feedback from users, and documentation of socio-economic benefits;
- (2) To expand RCOFs and complementary mechanisms, such as virtual fora, in the Region beyond seasonal outlooks and set them out to evolve into Regional Climate Forums (RCFs), focusing on effective coordination at the regional and sub-regional levels for operational delivery to Members of a variety of products, in support of a wider range of country-level services and at the request of different sectors (agriculture and water resources, among others);

**Urges** Members:

- (1) To designate CSIS national focal points so that they become part of the Working Group on Climate;
- (2) To complete and regularly update climate service checklists to enable systematic documentation of baseline capacities, identification of priority needs and monitoring of the effectiveness of ongoing capacity development efforts;
- (3) To develop tangible action plans, both short-term and long-term, for CSIS implementation at a national level, including measures to systematically acquire the capacities identified in the checklist, targeting national adaptation and climate service priorities with tailored products co-designed with stakeholders;
- (4) To operationally exchange data and actively utilize climate products and services provided through the CSIS, in accordance with Resolution 60 (Cg-17) – WMO Policy for the International Exchange of Climate Data and Products to Support the Implementation of the Global Framework for Climate Services;

**Further urges** Members to expedite the implementation of the Northern South America RCC Network;

**Encourages** Members to develop and sustain National Climate Forums (NCF) and other mechanisms in order to ensure more flexibility to deal with national requirements for climate information and to facilitate dialogue for co-designing tailored climate information, including climate data, monitoring, predictions and projections;

**Urges** the RCCs in the Region to provide technical coordination on an ongoing basis for the implementation and operation of the CSIS in their respective areas, including the required liaison with global CSIS entities such as GPCLRFs, the Copernicus Climate Change Service (C3S), WMO Regional Training Centres, RA III Working Groups, and experts from WMO technical commissions and Programmes including co-sponsored programmes;

**Requests** the RA III Working Group on Climate:

- (1) To develop an action plan for the implementation of CSIS at the regional level in close coordination with the relevant bodies of the Commission for Climatology and RCCs, incorporating RCFs as vehicles for organizing operational systems that support national-level delivery of priority climate services;
- (2) To accelerate the issuing of a regular annual Statement on the status of regional climate in close collaboration with, and including input from, RCCs in the Region, targeting the general public and policy makers. The Statement would provide key headline indicators, such as temperature, precipitation, state of the cryosphere, sea level, major droughts and floods, and other high-impact extreme events, including wildfires. An annual climate assessment on a regional scale will thus add value to WMO climate monitoring by providing a coherent synthesis of the behaviour of such indicators across the Region;
- (3) To support Member developing countries in preparing action plans for CSIS implementation at the national level, including through relevant linkages with the concerned RCCs;

**Requests** the Secretary-General to facilitate periodic audits, under the guidance of the Commission for Climatology and the Commission for Basic Systems, of the capacities and operations of climate services, and to promote adherence to the applicable ISO quality management guidelines.

### **Resolution 8 (RA III-17)**

#### **Enhancing provision and exchange of selected climate datasets to support the operations of Regional Climate Centres**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Recalling:**

- (1) Resolution 14 (EC-64) – Submission of World Weather Records on an annual basis,
- (2) Resolution 16 (Cg-17) – Report of the sixteenth session of the Commission for Climatology,
- (3) Resolution 60 (Cg-17) – WMO policy for the international exchange of climate data and products to support the implementation of the Global Framework for Climate Services,

**Noting** the huge potential of global data collection for underpinning Regional Climate Centre (RCC) operations by providing a resource of coarse but consistent data,

**Mindful** of the need to increase the availability of World Weather Record (WWR) datasets for periodic operational climate monitoring, including on monthly and annual time scales,

**Recognizing:**

- (1) The high value of *Globate Climate Normals* (WMO-No. 847), a mandatory WMO publication on climatological standard normals, and the status of this publication as an authoritative source of climate data averages used worldwide for climate monitoring, assessment and other applications,
- (2) That the last version of *Global Climate Normals*, published in 1998, is based on the period 1961–1990, and that there is a need to update it with datasets reflecting current climate conditions, which have significantly changed since the previous publication,

**Noting:**

- (1) The procedural changes for the submission of WWRs from a 10-yearly to a yearly submission (Resolution 14 (EC-64)) and the subsequent annual invitation from the Secretary-General to Members for the submission of WWR updates,
- (2) The amendments to the WMO Technical Regulations reflecting the new approach for the calculation and submission of CLINOs as recommended by the Commission for Climatology and approved by the World Meteorological Congress (Resolution 16 (Cg-17)),
- (3) The letter of the Secretary-General dated 1 August 2018, inviting Members to submit CLINOs for the period 1981–2010,

**Appreciating** the efforts of the World Data Centre for Meteorology, hosted by the National Oceanic and Atmospheric Administration (NOAA), National Centres for Environmental Information (NCEI), United States of America, and of the Commission for Basic Systems Lead Centres for the Global Climate Observing System, in the collection, updating and management of WWRs and CLINOs,

**Welcoming** the excellent collaboration among the Commission for Climatology, the Commission for Basic Systems and the Secretariat in providing guidelines for the submission of WWRs and for the calculation and provision of CLINOs,

**Concerned** about the gaps in the submission of WWRs for South America,

**Urges** Members:

- (1) To enhance their collaboration for submitting WWRs on an annual basis as explained in the guidelines and to complete the missing information from 2011 onwards as appropriate;
- (2) To contribute enthusiastically to the submission and collection of CLINOs for the period 1981–2010;

**Requests** the RA III Working Group on Climate:

- (1) To advise on ways and mechanisms for enhancing communication on the importance of data exchange in general and the provision of WWRs and CLINOs in particular;
- (2) To liaise with the Commission for Basic Systems Lead Centres for the Global Climate Observing System concerning the progress made on the status of WWRs and CLINOs that are submitted from the Region;

**Requests** the Secretary-General to facilitate online access to the Global Database of WWRs and CLINOs, which can be useful for National Meteorological and Hydrological Services and RCCs in their climate activities;

**Requests** special support for data rescue activities in the Region to bridge the gaps mentioned above in relation to the South American database.

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**Resolution 9 (RA III-17)****Regional WMO Integrated Global Observing System  
Implementation Plan 2018–2021**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Recalling:**

- (1) Resolution 6 (RA III-16) – Regional WMO Integrated Global Observing System Implementation Plan,
- (2) Resolution 23 (Cg-17) – Pre-operational phase of the WMO Integrated Global Observing System,
- (3) Resolution 69 (Cg-17) – WMO Strategic Plan 2016–2019,
- (4) Resolution 2 (EC-68) – Plan for the WMO Integrated Global Observing System pre-operational phase 2016–2019,

**Noting:**

- (1) That the WMO Integrated Global Observing System (WIGOS), as a foundational element supporting all WMO priorities, can help to improve the integrated operations of Members and build productive partnerships that will benefit weather, climate, water and relevant environmental services,
- (2) The critical role of WIGOS in the implementation of the Global Framework for Climate Services, weather and disaster risk reduction services and aviation meteorological services; in polar and high-mountain region observations, and in capacity development,

**Adopts** the updated Regional WIGOS Implementation Plan 2018–2021, as contained in the annex to the present resolution;

**Requests** the Management Group:

- (1) To regularly review WIGOS implementation efforts in the Region;
- (2) To oversee, guide and prioritize the activities listed in the Plan; to monitor progress in their implementation, and to submit updates to the Plan to the president of the Association for approval;
- (3) To facilitate and coordinate regional WIGOS projects;
- (4) To coordinate implementation of the Plan with Members of Regional Association III (RA III), to consult with the appropriate technical commissions on technical aspects of the implementation, and to ensure that Members are kept informed;
- (5) To provide regional support to Members in accordance with the Plan and in response to their requests (subject to availability of resources and funds);
- (6) To oversee the establishment of the Regional Basic Observing Network in Region III;
- (7) To oversee the work of Regional WIGOS Centres (pilots) when established;
- (8) To support training on the Observing Systems Capability Analysis and Review tool (OSCAR)/Surface as a matter of great urgency;



**Requests** Members:

- (1) To organize their activities so as to realize WIGOS goals and associated outcomes as described in the Plan;
- (2) To continue to provide resources, including through the WIGOS Trust Fund and/or seconded experts, to support the regional implementation of WIGOS;
- (3) To support the establishment of Regional WIGOS Centres;
- (4) To communicate and promote benefits of WIGOS nationally;
- (5) To actively promote national implementation of WIGOS towards the goal of Earth System observations;
- (6) To share experience and lessons learned from the implementation of WIGOS, and WIGOS-related documentation with other Members in the Region;
- (7) To nominate their national WIGOS and OSCAR/Surface focal points if they have not already done so;
- (8) To encourage the national focal points for WIGOS and OSCAR/Surface to actively support the integration of partner observing networks and stations in WIGOS, including those not owned by National Meteorological and Hydrological Services;
- (9) To provide their progress reports on WIGOS implementation at the request of RA III Management Group;
- (10) To facilitate the implementation of the Regional Basic Observing Network (RBON);

**Requests** the Secretary-General to provide the necessary assistance and Secretariat support for implementation of WIGOS by RA III;

**Invites** partners to participate in relevant implementation activities as specified in the Plan.

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**Note:** This resolution replaces Resolution 6 (RA III-16), which is no longer in force.

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**Annex to Resolution 9 (RA III-17)****Regional WMO Integrated Global Observing System  
Implementation Plan 2018–2021**

**WORLD METEOROLOGICAL ORGANIZATION**

**WMO INTEGRATED GLOBAL OBSERVING SYSTEM  
(WIGOS)**

**REGIONAL WIGOS IMPLEMENTATION PLAN  
FOR  
REGIONAL ASSOCIATION III (SOUTH AMERICA)**

**(R-WIP-III)**

**Version 1.1**

**(21/08/2018)**



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## **REGIONAL WIGOS FRAMEWORK IMPLEMENTATION PLAN FOR RA III**

### **1. INTRODUCTION AND BACKGROUND**

#### **1.1 Purpose of WIGOS and scope of the RA III WIGOS Implementation Plan (WIP)**

The WMO Integrated Global Observing System (WIGOS) provides a ~~new~~ framework for WMO observing systems and the contributions of WMO to co-sponsored observing systems. It is important to recognize that WIGOS is not replacing the existing observing systems, but is rather an over-arching framework for the evolution of these systems which will continue to be owned and operated by a diverse array of organizations and programmes. WIGOS ~~will~~ focuses on the integration of governance and management functions, mechanisms and activities to be accomplished by contributing observing systems, according to the resources allocated on a global, regional and national level.

~~The WIGOS Framework Implementation Plan (WIP) addresses the necessary activities to establish an operational WIGOS by the end of the period 2012–2015, as per the direction of WMO Congress. Yet WIGOS will continue to evolve and improve beyond 2015 through the governance and management mechanisms established by the execution of this plan.~~

~~The WIP also addresses a number of additional activities that would substantially improve the operational capabilities of WIGOS beyond the 2012–2015 implementation; however these activities are dependent on resources in addition to the regular budget. If these activities are not completed, WIGOS can still be considered operational. The resulting system will, however, be less effective in achieving its goals and benefits to Members will be reduced or delayed.~~

~~The WIP provides a basis for the development of the regional WIGOS framework implementation plans (R-WIP). The Members of a Region will adhere to the global WIP and to their regional framework (R-WIP) in the design, operation, maintenance and evolution of their national observing systems.~~

This plan is laid out in several chapters that identify and describe the various activity areas to be addressed within this Region. Specific regional/national activities for each area are included in Table 2 (see Section 4), which identifies deliverables, timelines, responsibilities, ~~costs and~~ risks, and whether the activity requires regional and/or national implementation. Similar activities are grouped under the title corresponding to the respective sub-section of Section 2.

#### **1.2 WIGOS vision and Congress guidance for WIGOS implementation**

~~The Sixteenth World Meteorological Congress decided that enhanced integration of the WMO observing systems should be pursued as a strategic objective of WMO and identified this as a major expected result of the WMO Strategic Plan.<sup>†</sup>~~

~~The WIGOS vision calls for an integrated, coordinated and comprehensive observing system to satisfy, in a cost effective and sustained manner, the evolving observing requirements of Members in delivering their weather, climate, water and related environmental services. WIGOS will enhance the coordination of WMO observing systems with those of partner organizations for the benefit of society. Furthermore, WIGOS will provide a framework for enabling the integration and optimized evolution of WMO observing systems, and of WMO's contribution to co-sponsored systems. Together with the WMO Information System (WIS), this will allow continuous and reliable access to an expanded set of environmental data and products, and associated metadata, resulting in increased knowledge and enhanced services across all WMO Programmes.~~

~~The implementation of WIGOS should build upon and add value to the existing WMO observing systems with emphasis on integration of surface and space-based observations in an evolutionary process to satisfy requirements of WMO and WMO co-sponsored Programmes.~~

~~In implementing WIGOS, it is imperative that the current management, governance and support activities be reviewed and aligned with WMO priorities. This alignment would promote cooperation and coordination at the technical, operational and administrative levels.~~

~~The integrated satellite systems are a unique source of observational data for monitoring of weather, climate and the environment. It is important to further advance instrument intercalibration, data exchange, data management standardization, and user information and training, in order to take full advantage of space-based capabilities in the context of WIGOS.~~

~~WIGOS will be essential for the Global Framework for Climate Services (GFCS), aviation-meteorological services, disaster risk reduction, and capacity development, each of which is a WMO priority. It will also ensure a coordinated WMO contribution to the co-sponsored Global Climate Observing System (GCOS), Global Ocean Observing System (GOOS), Global Terrestrial Observing System (GTOS), and the Global Earth Observation System of Systems (GEOSS).~~

The Seventeenth World Meteorological Congress (Cg-17) decided that the development of WIGOS, supported by WIS, as one of the WMO strategic priorities for 2016-2019, will continue during its pre-operational phase building upon and adding to those key building blocks of the WIGOS Framework that have already been implemented, while gradually shifting the emphasis from the global level toward implementation activities at the regional and national levels. The goal is to have Members and their partners benefit from a fully operational system from 2020 onward.

The highest priorities for the WIGOS Pre-operational Phase are: (1) National WIGOS implementation; (2) WIGOS Regulatory Material complemented with necessary guidance material to assist Members with the implementation of the WIGOS technical regulations; (3) Further development of the WIGOS Information Resource (WIR), with special emphasis on the operational deployment of the Observing Systems Capability Analysis and Review (OSCAR) databases; (4) Development and implementation of the WIGOS Data Quality Monitoring System; and (5) Concept development and initial establishment of Regional WIGOS Centres (RWCs).

Basic functions of the RWC will be regional coordination, guidance, oversight and support of WIGOS implementation and operational activities at the regional and national levels (day-to-day level of activities).

The Plan for the WIGOS Pre-operational Phase (PWPP) adopted by EC-68 guides the development of WIGOS over the coming four years, especially at regional and national levels, and assists in defining priorities and targets.

Based on PWPP, R-WIP-III has been reviewed and updated considering the regional activities, needs, requirements and priorities.

## **2. KEY ACTIVITY AREAS FOR REGIONAL WIGOS IMPLEMENTATION**

To migrate the existing global observing systems (the Global Observing System (GOS), the Global Atmosphere Watch (GAW), the WMO Hydrological ~~Cycle~~ Observing System (WHYEOS) and the Global Cryosphere Watch (GCW), including surface-based and space-based components and all WMO contributions to GFCS, GCOS, GOOS, GTOS and GEOSS), particularly their regional components, into a more integrated single system that is WIGOS, focused effort is required at the regional level in the following key areas, detailed in the sub-chapters to follow:

- (a) Management of WIGOS implementation in RA III;
- (b) Collaboration with the WMO co-sponsored observing systems and international partner organizations and programmes;
- (c) Design, planning and optimized evolution;
- (d) Observing system operation and maintenance;
- (e) Quality management;
- (f) Standardization and interoperability;

- (g) The WIGOS Information Resource;
- (h) Data discovery and availability (of data and metadata);
- (i) Capacity development;
- (j) Communication and outreach.

## 2.1 Management of WIGOS implementation in RA III

WIGOS implementation is an integrating activity for all regional components of the WMO and co-sponsored observing systems: it supports all WMO Programmes and activities.

### **Executive Council**

The WMO Executive Council (EC) ~~will~~ continues to monitor, guide, evaluate and support the overall implementation of WIGOS. Following the guidance of Cg-16, EC-LXIII established the Inter-Commission Coordination Group on WIGOS (ICG-WIGOS) with a view to providing technical guidance and assistance for the planning, implementation and further development of the WIGOS components. Progress on implementation of WIGOS will be reported to subsequent sessions of EC. The Council designated the president of the Commission for Basic Systems (CBS) as chairperson of ICG-WIGOS.

### **Regional associations**

The regional associations ~~s-will~~ plays a key role in WIGOS implementation in the Regions. Regional Association III, through its Working Group on Infrastructure and Technological Development (WG-IDT), will coordinate planning and implementation of WIGOS on the regional level taking into account all WMO future priorities, such as GFCS and disaster risk reduction (DRR). WG-IDT, under guidance from ICG-WIGOS, and with the support, where required, of the WIGOS Project Office in the WMO Secretariat, will be responsible for:

- (a) The further development of the Regional WIGOS Framework Implementation Plan (R-WIP);
- (b) The integration of WIGOS regional network components;
- (c) Contributing to WIGOS regulatory material;
- (d) Developing the regional WIGOS Data Quality Monitoring System;
- (e) Supporting and assisting in the use of OSCAR;
- (f) Assisting in the establishment and operation of Regional WIGOS Centres;
- (g) The coordination of capacity development activities in the Region; and
- (h) The evolution of their regional networks according to the implementation plan for the evolution of global observing systems (EGOS-IP).<sup>1</sup>

R-WIP ~~will~~ also address regional aspects of requirements, standardization, observing system interoperability, data compatibility, data and metadata management, Quality Management System (QMS) procedures including performance monitoring and data quality monitoring, and proposed improvements in observing networks/systems. An important role of the regional association ~~will~~ is to assess and continuously monitor regional requirements, identify regional gaps and identify capacity development projects within the Region to address those gaps.

### **The Members of the Regions**

Members ~~will~~ plan, implement, operate and maintain national networks and observing programmes based on the standards and ~~best~~ recommended practices and procedures stated in

<sup>1</sup> See <http://www.wmo.int/pages/prog/www/OSY/gos-vision.html#egos-ip>.

the WMO Technical Regulations, ~~the WIGOS Manual and the respective manuals of the WIGOS component observing systems (e.g. GOS, GAW, WHYCOS and the Global Cryosphere Watch (GCW))~~. They will be encouraged to adopt a composite network approach to their networks and to include the acquisition, and onward transmission, of data from external sources, including National Meteorological and Hydrological Services (NMHSs) and other government agencies, the commercial sector and members of the public. A particular area of focus for Regional Members under WIGOS will be increased attention to the ~~site~~ protection of observing sites and radio frequency spectrum protection.

Plans should also be developed to strengthen cooperation through partnership with different owners overseeing the WIGOS observing components within their countries. Specifically, these activities aim to enhance cooperation amongst meteorological, hydrological, marine/oceanographic and academic/research institutions/services where they are separated at the national level.

Concerning Radio Frequency Spectrum Protection, RA III Members should maintain close coordination with their national ~~telecommunication~~ authorities to register their frequencies for adequate protection, and to defend the availability of frequencies for Meteorology, Climatology and Earth observations, influencing positively the national delegations to the World Radiocommunication Conferences (WRC).

## 2.2 **Collaboration with the WMO co-sponsored observing systems and international partner organizations and programmes**

WIGOS ~~will be~~ is an integrated, comprehensive, and coordinated system primarily comprising the surface-based and space-based observing components of the GOS, GAW, GCW, and WHYCOS, plus all WMO contributions to GCOS, GOOS and GTOS. It should be noted that in contrast to the primarily NMHS-owned observing systems upon which the WWW was built, the proposed WIGOS component observing systems are owned and operated by a diverse array of organizations, both research and operational. Therefore, the interaction between these various communities at the regional and national levels is important for the implementation of WIGOS within the Region. In particular, strengthening the interaction between research and operational observing communities is important for sustaining and evolving observing systems and practices, in line with new science and technology outcomes.

### ***Partner organizations***

At the regional level, coordination and cooperation ~~will be~~ is supported by a mechanism to be defined by the regional associations ~~s~~ and the respective regional bodies, such as WG-IDT, the Working Group on Climate Services (WGCS), Working Group on Hydrology and Water Resources (WGHWR) and RA III Management Group (MG), in order to solve any problems in data policy, product delivery and other governance issues. This interagency and inter-observing system coordination mechanism ~~will~~ is need to be complemented and supported through similar cooperation and coordination arrangements among NMHSs and through national implementation mechanisms for GFCS, GCOS, GOOS, GTOS, and GEOSS.

The architecture for climate monitoring from space has been defined as an end-to-end system, involving the different stakeholders, including operational satellite operators and R&D space agencies, the Coordination Group for Meteorological Satellites (CGMS), the Committee on Earth Observation Satellites (CEOS), the Global Climate Observing System (GCOS), the World Climate Research Programme (WCRP) and the Group on Earth Observations (GEO). Within the regional context, the architecture is to be part of the space-based component of WIGOS. Therefore, particular emphasis ~~will be~~ is placed on their coordinated contribution to WIGOS, building on the existing coordination mechanisms stated above.



### 2.3 Design, planning and optimized evolution of WIGOS component observing systems

WMO has agreed on a vision for global observing systems in 2025<sup>2</sup> which provides high-level goals to guide the evolution of global observing systems over coming decades. To complement and respond to this Vision, an Implementation Plan for the Evolution of Global Observing Systems (EGOS-IP) has been considered by CBS-15. This EGOS-IP focuses on the long-term evolution of WIGOS observing system components, while the WIP focuses on the integration of these observing system components. Beyond 2015 these plans ~~will~~ provide Members of the Regions with clear and focused guidelines, specifying actions that stimulate the cost-effective evolution of the observing systems to address in an integrated way the requirements of all WMO Programmes and relevant parts of co-sponsored programmes.

Concerning the surface-based sub-system of WIGOS, the current composition of mainly separate networks of observing stations comprises numerous different types of sites. With the implementation of WIGOS, these separate networks will continue to evolve but will also be given a more prominent collective identity as the WIGOS surface-based sub-system and for some purposes may be considered as a single composite system of observing (fixed or mobile) sites/platforms. The regional association ~~will~~ adopts a broader role in coordinating the implementation of relevant elements of the WIGOS surface-based sub-system, evolving from the previous concepts of, mainly, the Regional Synoptic and Climatological Networks into an integrated concept of a WIGOS regional network.

Similarly, the space-based sub-system of WIGOS is composed of many different platforms and types of satellites. There is already partial integration due to the existence of a globally coordinated plan, which is maintained by WMO and CGMS, and which takes into account the needs of a number of application areas. However, it should be further developed and expanded to better support certain application areas that, at present, are not benefiting from the full potential of space-based observations, for example, other components of GAW and WYEOS and new initiatives like GFCS and GCW. In addition, further integration will be pursued in terms of inter-calibration, data and product harmonization, and composite product delivery. The regional associations ~~s-will~~ adopts an active role in compiling the views of Members and maintaining documented requirements and priorities for data and products to be available for the Regions from the WIGOS space-based sub-system.

#### ***Rolling Review of Requirements (RRR)<sup>3</sup>***

Coordinated strategic planning at all levels ~~will-be~~ is based on the RRR process, and ~~will-be~~ is being supported by the WIGOS regulatory material. This activity will be carried out primarily at the **global level** under the guidance of the ICG-WIGOS.

The RRR process involves regularly reviewing the observational data requirements<sup>4</sup> for each of the defined WMO application areas and all required variables (see Table 1). The RRR process also involves reviewing the capabilities of WMO observing systems and co-sponsored systems, and the details of the networks/platforms in existence,<sup>5</sup> for both space-based and surface-based systems, in delivering data on different variables. The comprehensive information collected for the globe on both requirements and capabilities is quantitatively recorded in a database accessible through the Observing Systems Capability Analysis and Review tool (OSCAR<sup>6</sup>) of the WIGOS Information Resource (WIR, see Section 2.7 below). The information on surface-

<sup>2</sup> Available from the WMO website at: <http://www.wmo.int/pages/prog/www/OSY/gos-vision.html>

<sup>3</sup> Currently specified in the *Manual on the Global Observing System* (WMO-No. 544), elaborated in the *Guide to the Global Observing System* (WMO-No. 488), and described further on the WMO website at <http://www.wmo.int/pages/prog/www/OSY/GOS-RRR.html>

<sup>4</sup> The RRR describes data requirements, which are expressed in terms of space/time resolution, uncertainty, timeliness, etc., for each of the required observed variables, and are measures independent of observing technology.

<sup>5</sup> Capabilities are derived from the individual platforms' characteristics submitted by Members to WMO e.g. through WMO-No. 9, Volume A, or its evolution.

<sup>6</sup> The following components are currently available via the WMO website: User Requirements: <http://www.wmo.int/pages/prog/www/OSY/RRR-DB.html>; and space-based capabilities: [http://www.wmo.int/pages/prog/sat/gos-dossier\\_en.php](http://www.wmo.int/pages/prog/sat/gos-dossier_en.php). The surface-based capabilities part is currently under development



based networks and instrumentation details ~~is currently~~ formerly recorded in Volume A, ~~but will ultimately be~~ is available, with additional metadata, through the OSCAR tool. Space-based capabilities are also recorded and made available through the OSCAR tool. OSCAR allows gap analyses to be performed to identify weaknesses in existing observing programmes.

The above steps represent the analysis phase of the RRR, which is as objective as possible. Next is the prioritization and planning phase in which experts from the various application areas interpret the gaps identified, draw conclusions, identify key issues and priorities for action. This input is composed as Statements of Guidance (SoG) from each application area. The technical commissions respond to the SoG by formulating new global observing system requirements and the regulatory and guidance publications to assist Members in addressing the new requirements. Additionally, CBS and other technical commissions draw on the SoGs to develop a vision and an implementation plan for further developments of WIGOS.

**Table 1. The ~~12~~ 14 recognized WMO application areas**

No	Application area	No	Application area
1	<del>Global NWP</del>	7	<del>Ocean applications</del>
2	<del>High-resolution NWP</del>	8	<del>Agricultural meteorology</del>
3	<del>Nowcasting &amp; very short-range forecasting</del>	9	<del>Hydrology<sup>a</sup></del>
4	<del>Seasonal to inter-annual forecasts</del>	10	<del>Climate monitoring</del>
5	<del>Aeronautical meteorology</del>	11	<del>Climate applications</del>
6	<del>Atmospheric chemistry</del>	12	<del>Space weather</del>
1	<u>Global Numerical Weather Prediction</u>	8	<u>Providing Atmospheric Composition information to support services in urban and populated areas</u>
2	<u>High-resolution Numerical Weather Prediction</u>	9	<u>Ocean Applications</u>
3	<u>Nowcasting and Very Short-Range Forecasting</u>	10	<u>Agricultural Meteorology</u>
4	<u>Sub-seasonal to longer predictions</u>	11	<u>Hydrology<sup>a</sup></u>
5	<u>Aeronautical Meteorology</u>	12	<u>Climate Monitoring</u>
6	<u>Forecasting Atmospheric Composition</u>	13	<u>Climate Applications</u>
7	<u>Monitoring Atmospheric Composition</u>	14	<u>Space Weather</u>

<sup>a</sup> Hydrological information only; water-quality monitoring and information is currently excluded

### **Regional Level**

Although the primary coordination of the RRR ~~will~~ lies with CBS for overall WIGOS planning, the regional association, through WG-IDT, will follow the technical guidance of the technical commissions as represented in the EGOS-IP and other observation system implementation plans in order to evolve and implement observing systems in the Region.

The regional association ~~s will~~ examines, and reports back to CBS, their requirements for data, and any issues they identify with the global WIGOS design, taking into account the particular requirements of the Regions ~~s~~ and international river basin authorities. This process will involve, in essence: (1) the use of the global data to prepare regional data requirements; (2) use of these data for detailed planning of observing system components at the regional scale; and then (3) encouragement of Members of the Regions ~~s~~ to implement these components, subject to further review at the national or sub-regional level, where appropriate.

### **National or sub-regional level**

The Members of the Regions ~~s will~~ contribute to the collective regional effort to: (1) assess the regional data requirements and plan the regional observing system components; and (2) implement and evolve observing systems following this plan, the EGOS-IP and other

observation system implementation plans. It is expected that Members of the Region prepare their national WIGOS implementation plans (N-WIP) in accordance with R-WIP-VI by considering their national requirements for the observing systems.

The Members of the Regions ~~will~~ also have available information on the global and regional data requirements ~~information~~ to use as guidance for the preparation of national requirements information which can then be used to assist with the detailed planning for evolution of national observing components of WIGOS.

In some cases, where countries are small and geographically close or already have established multilateral working relationships, there may be more merit in taking a sub-regional, as opposed to national, approach to WIGOS observing infrastructure planning. In this case, it will be necessary for the Members concerned to work in close cooperation to prepare sub-regional reviews of requirements to be used as a basis for detailed planning at that scale.

## 2.4 Observing system operation and maintenance

Observing system owners or custodians are responsible for operating and maintaining their systems and for complying with the regulations of the WMO and co-sponsored observing systems to which they contribute. System owners are generally NMHSs or other organizations within WMO Member countries but are sometimes other entities.

WIGOS on the regional level involves a process for sharing operational experiences, practices and ideas, for sharing expertise and for pooling resources for joint activities. The benefit is to realize synergies and greater efficiencies. These interactions may be between different teams within a single organization (such as an NMHS) or between regional organizations. These may benefit from technical guidance from relevant technical commissions and, while occurring primarily at a national level, there is a regional role to be played. Within Regional Association III, the following regional activities will be important:

- (a) Contribute to WIGOS promotion and outreach;
- (b) Increase the regional interchange of information from automatic weather stations;
- (c) Create a regional weather radar network;
- (d) Strengthen regional and interregional cooperation.

## 2.5 Quality management

The Regions ~~recognizes~~ that meeting the quality requirements and expectations of users ~~will be~~ is critical to the success of WIGOS. This ~~will~~ requires an in-depth examination of current practices used by WMO observing programmes, specific mission-related requirements that are already in place, and available technological opportunities.

The WIGOS quality management approach is ~~to apply the WMO QMF to the WIGOS observing components systems consistent with the framework of ISO 9001:2015 – Quality management systems – Requirements~~ (see *Technical Regulations* WMO-No. 49, ~~Part 4~~). ~~WIGOS quality management will strive for compliance of all components of WIGOS with international standards, such as ISO 9001/9004 and the ISO 17025 standard where appropriate (i.e. with respect to instrument calibration and traceability of data). Compliance with international standards should be pursued in all quality assurance (QA) procedures applied by Members of the Regions to all their national WIGOS observing components. In addition to the WMO QMF document, further guidance to Members will be provided by WMO via the standards and best practices described in the regulatory materials, such as the WIGOS Manual and Guide. Such guidance, for both mandatory and desirable practices, can be referred to for the application and implementation of quality management in national observing systems.~~

In this context, the Regions ~~will~~ pay attention to:

- (a) The examination of current quality management practices being used in the Regions;

- (b) The documentation of the quality of observations from the WIGOS regional networks at all stages of data processing; and
- (c) Ensuring, where possible, the traceability of observations to the International System of Units (SI).

CGMS, in coordination and collaboration with WMO, supports the development of quality assurance standards and formats for satellite observations, multi-satellite and multi-sensor algorithms for estimating retrieved data and products, and advanced atmospheric sounding derivation packages for use by WMO Members. To assist this effort, the Regions ~~s-will~~ ensures that surface-based sites that are needed for calibration/validation of satellite data are specified.

A key aspect of regional quality management that requires particular attention under WIGOS is the systematic and rigorous performance monitoring and evaluation (PM&E) of WIGOS capabilities, in terms of both: (a) the flow of observational data/products to models; and (b) provision of products/information for decision-support tools and services in accordance with requirements specified by end users. Effective PM&E can improve the overall performance of WIGOS and its ability to effectively interact with its user community and to meet community needs and requirements.

Members of the Regions ~~s-will-be~~ are responsible for ensuring compliance with the WIGOS quality management principles (such as ISO 9001, 9004 and 17025).

The key priority will be the development of a modern and efficient data quality monitoring system. This is essential for measuring the effectiveness and impact of WIGOS and it will lead to improved WIGOS data quality and availability.

The plan is to put in place mechanisms and regional structures to handle incident management actions and support Members in improving the data availability and quality by 2018 (dependent on establishment of RWCs).

## 2.6 **Standardization and interoperability<sup>7</sup>**

~~The WIS has an important role in regional WIGOS implementation, in relation to data exchange and discovery, and the provision of effective standards and practices for data management. Therefore, the Regions will coordinate WIGOS and WIS implementation activities.~~

A key area for WIGOS standardization relates to instruments and methods of observation. Standardization of observations is required to achieve system interoperability (including data compatibility) across all WIGOS component observing systems and these are key to turning observations into effective data/products that meet real needs of all Members.

Taking into account the ongoing rapid progress in technology that will continue to provide a basis for further improvements in the capability, reliability, quality and cost-effectiveness of observations, the Members of the Region will ensure that WIGOS utilizes international standards and best practices set by WMO and partner organizations and described in the WMO Regulatory Materials in the following areas:

- (a) Instruments and methods of observation across all components including surface-based and space-based elements (observations and their metadata);
- (b) WIS information exchange, as well as discovery, access and retrieval (DAR) services; and
- (c) Data management (data processing, quality control, monitoring and archival).

<sup>7</sup> Interoperability is a property referring to the ability of diverse systems to work together (inter-operate).

WIGOS standardization should build on existing WMO and other international standards and best practices, and take into account the ongoing rapid progress in technology that will continue to provide a basis for further improvements in the capability, reliability, quality and cost-effectiveness of observations.

System interoperability and data compatibility also rely on the use of standardized data representation and formats, standardized methods for information exchange, and standardization in data management. The first two lie in the WIS domain and the third is a natural extension of WIS responsibilities. It is important that WIGOS and WIS implementation activities are closely coordinated in this respect, and that WMO agrees on an approach to standardizing data management across Programmes.

All WIGOS related standard and recommended practices and procedures are documented in the *Technical Regulations* (WMO-No. 49), its Annex VIII, the *Manual on WMO Integrated Global Observing System* (WMO-No. 1160) and other relevant Manuals.

The Regions ~~will~~ support<sup>s</sup> all activities leading to the interoperability (including data compatibility) of WIGOS observing components through utilization and application of the same, internationally accepted standards<sup>s</sup> and ~~best recommended~~ practices ~~and procedures~~ (that is, ~~standardization~~). Data compatibility is also supported through the use of standardized data representation and formats.

~~Any regional deviations from the standard practices (documented in the WMO Technical Regulations through the WIGOS Manual and other relevant manuals) will be reported to the WIGOS Project Office.~~

## 2.7 The WIGOS Information Resource

The WIGOS Operational Information Resource (WIR), accessible via a centralized point (web portal), ~~will~~ provide<sup>s</sup> all WIGOS-related operational information, including observational user requirements, a description of the contributing observing networks (instrument/site/platform metadata), and their capabilities, list of standards used in the WIGOS framework, data policies applicable, and information on how to access data. It ~~will~~ also provide<sup>s</sup> general information on WIGOS benefits, and impacts to Members. It ~~will be~~ is a tool for conducting critical reviews as part of the Rolling Review of Requirements, and can assist Members and the regional associations in conducting observing network design studies as appropriate. It ~~will~~ provide<sup>s</sup> guidance on how to develop capacities in developing countries according to WIGOS requirements, and ~~will~~ provide<sup>s</sup> Members of the Regions<sup>s</sup> with a toolbox to be used nationally if and when required. The information collected is intended in particular to identify the gaps in the observational networks, identify areas where existing observing systems could be used, or where their scope could be expanded at limited cost to address the requirements of more application areas. The information provided on standards ~~will~~ support<sup>s</sup> the production of more homogeneous data-sets and makes the observations traceable and of known quality.

The key support tools of WIGOS are: (a) a central web portal (WIGOS Portal); (b) The WIGOS Standardization of Observations Reference Tool (SORT); and (c) the Observing System Capabilities Analysis and Review tool (OSCAR) which includes information on observational user requirements and observing systems' capabilities, and allows the critical review to be performed by comparing the two.

Understanding that sources of the individual components of the WIGOS Operational Information Resource rely on the inputs from its Members, the Regions<sup>s</sup> are committed to providing regular inputs to keep the information resource up-to-date.

## 2.8 Data discovery and availability (of data and metadata)

Within the WIGOS framework, the WMO Information System (WIS<sup>8</sup>) provides exchange of data and interpretation metadata,<sup>9</sup> and management of related discovery metadata.<sup>10</sup> These discovery metadata play an important role in the discovery, access and retrieval of WIGOS observations and products by the entire WMO community.

Submission, management and archival of the data and metadata themselves is generally the responsibility of observing system owners/data custodians. However, several World Data Centres and a number of regional or specialized data centres exist that collect, manage and archive basic observational data that are relevant to WMO applications. Members of the Region are responsible for submitting their data to these regional or specialized data centres. The regional associations ~~s-will~~ encourages their Members to abide by this commitment.

Members of the Region ~~will~~ adopt WIGOS and WIS standards and make their data and metadata available through WIS for delivery or for discovery, access and retrieval services. In this regard, promotion and implementation of DCPCs (Data Collection and Production Centres) as well as National Centres will be supported and encouraged by the regional associations ~~s~~. Guidance ~~will~~ is being developed and provided through the appropriate WIGOS regulatory and technical documents.

RA III is in the process of implementation of one GISC and one DCPC. NCs are naming focal points and subscribing to the GISC and DCPC for metadata and data exchange.

## 2.9 Capacity development

A coordinated capacity development effort at global, regional and national levels is of paramount importance to the developing countries in the implementation of WIGOS. This is especially the case for NMHSs of Least Developed Countries (LDCs) and Small Island Developing States (SIDS), to enable them to develop, improve and sustain national WIGOS observing components. This needs to be complemented by capacity development efforts outside of WIGOS but in closely related areas to improve access to and effective utilization of observations, data and products, and related technologies. The WIGOS capacity development activities at the regional level are focused on:

- (a) Providing assistance to Members of the Region to introduce or improve institutional mandates and policies that enable effective implementation, operation and management of observing systems;
- (b) Filling existing gaps in the design, operation and maintenance of WIGOS observing systems, including both the infrastructure and human capacities development;
- (c) Technological innovation, technology transfer, technical assistance and decision-support tools. In RA III, there ~~will~~ is be a great emphasis on horizontal cooperation, mainly for the exchange of best practices.

Capacity development in satellite applications for developing countries, LDCs and SIDS are also addressed in the Implementation Plan for the Evolution of the GOS (see WMO/TD-No. 1267). The virtual lab (VL) will continue to grow and help all WMO Members realize the benefits of satellite data.

## 2.10 Communication and outreach

The Regions ~~s-will~~ is establishing their communication and outreach strategy through the efforts of WMO Members, programmes, other Regional Associations (RAs) and Technical Commissions (TCs), and co-sponsors. The strategy will provide details on WIGOS benefits, increased

<sup>8</sup> See page: <http://www.wmo.int/wis>.

<sup>9</sup> Interpretation metadata is the information required to interpret the data.

<sup>10</sup> Discovery metadata is the information describing the data-sets, generally using the ISO-19115 standard, and WMO core profile in case of WIS.



effectiveness, and efficiency, and impact on the activities of the Members of the Region<sup>s</sup>, as well as on the socio-economic benefits of WIGOS data. It will take advantage of outreach programmes developed and effectively deployed so far by WMO and its partner organizations within the Region<sup>s</sup>.

The WIGOS portal ~~will~~ provides convenient access to relevant information on regional communication, outreach and capacity development, aimed at complementing, not duplicating, others' efforts. A variety of outreach materials ~~will~~is being developed to educate the Members, funding agencies, policy-makers and the general public, on the importance of WIGOS to society. These will include posters and other educational material for elementary and high school classes, a WIGOS brochure, a semi-annual or annual newsletter, an online photo and video library, and information on the current state of the observing systems. A regional WIGOS portal is planned and under development. The sites of all NMHSs will have links pointing to the regional WIGOS site.

### 3. REGIONAL PROJECT MANAGEMENT

RA III ~~will~~ undertakes the ~~project~~this activity through WG-ITD with the support of the Regional Office for the Americas. It is planned to have a Rapporteur on the Regional Implementation of WIGOS in the structure of WG-ITD.

#### 3.1 Project monitoring, review and reporting mechanism

- (a) The regional association, through its Management Group, ~~will~~ monitor, review, guide and support the overall implementation of WIGOS in the Region;
- (b) The regional association, through the WIGOS focal point appointed by the president of the Region, will report to the ICG-WIGOS and the WIGOS Project Office on the progress in implementation of WIGOS in the Region;
- (c) The president will report at the RA's sessions on WIGOS implementation.

#### 3.2 ~~Project-e~~Evaluation

The evaluation methodology ~~will-be~~is designed against WIGOS implementation activity tables, i.e. with respect to the activities, deliverables, timeline, responsibility and budget allocations. This ~~will~~ includes a schedule of monitoring and evaluation activities and related responsibilities. Mid-term evaluation, interim progress reports and post-implementation reviews are planned as a means of providing early feedback on progress towards success, and as a means of meeting accountability and transparency requirements for the whole implementation phase. RAs and NMHSs will provide progress reports at the request of the ~~WIGOS Project Office~~RA III Management Group.

### 4. IMPLEMENTATION

#### 4.1 Activities, deliverables, milestones, ~~costs~~ and risks

Table 2 presents the key implementation activities that are required for the regional WIGOS implementation within the timeframe 201~~2~~9–20~~5~~22. The table is arranged to correspond to the activity areas presented in Section 2. In the table each implementation activity is presented along with its associated deliverables, timelines, responsibilities, costs and associated risk.

For each activity in Table 2, a detailed activity plan ~~will~~is being developed by the responsible entity or entities, with the support of WG-IDT. WG-IDT has responsibility for tracking the execution of these activities and of the plan itself.

## 4. IMPLEMENTATION

### 4.1 Activities, deliverables, milestones, costs and risks

Table 2 presents the key implementation activities that are required for the regional WIGOS implementation within the timeframe 2012~~9~~<sup>29</sup>–2015~~24~~<sup>24</sup>. The table is arranged to correspond to the activity areas presented in Section 2. In the table each implementation activity is presented along with its associated deliverables, timelines, responsibilities, costs and associated risk.

For each activity in Table 2, a detailed activity plan ~~will~~<sup>is</sup> ~~being~~<sup>being</sup> developed by the responsible entity or entities, with the support of WG-IDT. WG-IDT has responsibility for tracking the execution of these activities and of the plan itself.

**Table 2. WIGOS Implementation Activities~~11~~ in RA III**

Note: Table 2. "WIGOS implementation activities" of the Annex to Resolution 6 (RA III-16) (WMO-No. 1141) is completely replaced by a new version.

No.	Activity	Deliverables	Timeline	Responsibility	Potential risks
1. Management of WIGOS implementation in Regional Association III					
1.1	Regularly update R- WIP-III	R-WIP-III updated	2019 onwards	RA-III MG; WG-IDT	Low
1.2	Maintain close links to relevant TCs and ICG-WIGOS to capture and react to evolving plans	Updated R-WIP-III	Continuing	RA-III MG; WG-IDT; RA III representatives in TCs	Low/ Medium
1.3	Assist Members to develop and implement N-WIPs	N-WIPs developed	2019 onwards	Members; WG-IDT; WIGOS-PO	Medium
1.4	Initiate the process for the establishment of virtual RWC(s)	RWC(s) established	End 2018 onwards	RA-III MG; WG-IDT; RAM	High
1.5	Assess the capabilities of RWC(s) to meet requirements	Assessment report	Upon successful completion of the Pilot phase	RA-III MG	Medium
1.6	Protect radio frequencies used in meteorology, climatology and Earth observations	Registration of radio frequencies used in observations and telecommunications with national telecommunication administrations. Maintaining periodical coordination meetings concerned with protection of such frequencies	2019 onwards	Members	High
2. Collaboration with WMO co-sponsored observing systems and international partner organizations and programmes					

<i>No.</i>	<i>Activity</i>	<i>Deliverables</i>	<i>Timeline</i>	<i>Responsibility</i>	<i>Potential risks</i>
2.1	Identify, involve and enhance collaboration with international partners in the collection of observations on a regional scale. Define mechanisms and practices as needed, clarifying areas of cooperation and governance mechanisms	Increased number of collaborating partners at a regional level and increased collection of observations.	Continuing	RA-III MG; WG-ITD; RAM  WG-ITD with the support of the RA III Working Groups on Climate and Hydrology Services and Water Resources	Low
2.2	Cooperate with sub-regional and national organizations to provide observations required for the early warning systems and numerical weather prediction models	Observations available	2019 onwards	WG-ITD; RAM	Low-Medium
2.3	Enhance collaboration in the collection of observations at the national level. Define mechanisms and practices as needed	More observations available	Continuing	RA-III MG WG-IDT; Members RAM	Medium
2.4	Collaborate with CIMO in developing a feedback mechanism to CIMO on the performance of instruments and systems in Region III. Provide feedback regularly	Mechanism, feedback	Continuing	WG; RIC Buenos Aires	Low
2.5	Enhance the regional AMDAR activities	Increased observations from AMDAR	2019	WG-ITD; RAM	Medium
2.6	Develop mechanisms to integrate observing systems with RA IV	Compatibility of observing systems and data management	Continuing	Presidents of regional associations and Member countries	Medium
3. Design, planning and optimized evolution of WIGOS regional, sub-regional and national observing components					
3.1	Design and plan observing systems in the Region	Redesigned the Regional Observing Network	2019-2021	WG-IDT, RWCs	Low



<u>No.</u>	<u>Activity</u>	<u>Deliverables</u>	<u>Timeline</u>	<u>Responsibility</u>	<u>Potential risks</u>
3.2	Update inventory of national networks, identifying the status and potential for exchange at the regional and international levels.  Identify missing information in line with needs of users and design optimal regional network.  Maintain and update the regional requirements for satellite information.	Status report submitted	2019	WG-ITD observation subgroup, through WIGOS focal points, NMHSs and working groups	Medium
3.3	Validate user requirements documented by the global RRR process against regional user requirements; use the results to update the OSCAR/ Requirements database and to contribute to the update of EGOS-IP and observing system plans	Regional observing systems are responsive to regional user requirements. OSCAR/ Requirements database updated	Continuing	WG-ITD	Low
3.4	Evolve and implement national observing systems	Improved WMO observing systems in the Region	2019 onwards	Members	Medium
3.5	Validate user requirements documented by the global RRR process against national user requirements for WMO systems; use the results to update the OSCAR/ Requirements database and to contribute to the update of EGOS-IP and observing system plans	Regional observing systems are responsive to national user requirements for WMO systems OSCAR/Requirements database updated	Continuing	Members	Low
3.6	Migrate from the existing RBSN/RBCN into RBON	RBON adopted by RA-III Session	2018	RA-III Session; RA-III MG; WG-ITD; Members	High
3.7	Define sub-Regional user requirements for observations	Updated RRR database (OSCAR)	2019-2021	Members	Low
3.8	Prepare a proposal for radar data exchange in RA III	Proposal to be submitted to RA-III MG	2019	WG-ITD	Medium
<b>4. Observing system operation and maintenance</b>					
4.1	Enhance the real-time monitoring and reporting capability of RWC	Introduction of real time monitoring system	2019 onwards	RWC; WG	Medium

<i>No.</i>	<i>Activity</i>	<i>Deliverables</i>	<i>Timeline</i>	<i>Responsibility</i>	<i>Potential risks</i>
4.2	Collect best practices from Members and share them with other Regions	Documented best practices of Region III on the WMO website	Continuing	Members WIGOS-PO	Low
<b>5. Quality management</b>					
5.1	Implement the real-time quality monitoring of basic surface variables (temperature, pressure, humidity, wind and precipitation)	Quality monitoring implemented	2019 onwards	RWC, WG-ITD, in collaboration with NWP centres	Medium
5.2	Improve collaboration among RIC and Members	Increased numbers of calibrated instruments	2019 onwards	RIC Members	Low
5.3	Assess and document the current status of meteorological instrument calibration. Assist Members in implementing technical regulations on calibration and maintenance	Assistance provided	Continuing	RIC	Medium
5.4	Assist Members with maintenance and calibration of the surface-based observing systems	Assistance provided	2019 onwards	WG-ITD, RAM	High
5.5	Obtain as far as possible ISO/IEC 17025:2005 accreditation for calibration laboratories	Increased numbers of accredited calibration laboratories of Members	2019 onwards	Members' national calibration laboratories	Low
<b>6. Standardization and interoperability</b>					
6.1	Implement the WMO Siting Classification Scheme through: <ul style="list-style-type: none"> <li>Provision of information and training to Members,</li> <li>Adoption of new procedures by Members,</li> <li>A tool to classify the sites</li> </ul>	WMO Siting Classification Scheme is implemented in Region III	2019 onwards	Members	Medium
6.2	Develop a process to monitor and report on the level of regional compliance with WIGOS standards	Process developed and implemented; Report provided	2019 onwards	WG-ITD to develop a process; RWC to report to WIGOS-PO	Medium
6.3	Integrate radars observations, and exchange radar data	Increased number of the Members exchanging the radar data	2019 onwards	WG-ITD Members	High
6.4	Complete the migration to TAC/TDCF coding in accordance with the requirements of the Commission for Basic Systems.	Migration completed in the Region	2019	Members	High

<u>No.</u>	<u>Activity</u>	<u>Deliverables</u>	<u>Timeline</u>	<u>Responsibility</u>	<u>Potential risks</u>
<b>7. The WIGOS Information Resource (WIR)</b>					
7.1	Assist Members in providing up-to-date metadata to the OSCAR/Surface and ensure its on-going maintenance	Up-to-date metadata in OSCAR/Surface	Continuing	RWC	High
<b>8. Data discovery and availability (data and metadata)</b>					
8.1	Encourage Members to increase the exchange of observational data and WIS metadata from NMHSs and other organizations	Increased availability and accessibility of observations through the WIS	Continuing	WG-ITD	High
8.2	Expedite the implementation of WIS in the Region	WIS Implemented	2019 onwards	Members; WG-ITD	High
8.3	Share observations through WIS, including those from national organizations other than NMHSs	New sources of observations are available through WIS	2019 onwards	Members; WG-IDT	High
<b>9. Capacity development</b>					
9.1	Assist Members in enhancing their WIGOS related observing capacities	Enhanced observing capabilities	Continuing	WG-ITD; RAM; WIGOS-PO	Low
9.2	Develop a Regional Capacity Development Plan, addressing the needs for: <ul style="list-style-type: none"> <li>• radar data analysis and exchange;</li> <li>• improved availability and utilization of AMDAR data;</li> <li>• satellite data utilization, especially from new generations;</li> <li>• training in methods for quality control, calibration and traceability of meteorological instruments;</li> <li>• training in areas involving implementation of WIGOS/WIS</li> </ul>	Approved Regional Capacity Development Plan	2019 onwards	WG-ITD; RAM; WIGOS-PO; Members	Medium

<i>No.</i>	<i>Activity</i>	<i>Deliverables</i>	<i>Timeline</i>	<i>Responsibility</i>	<i>Potential risks</i>
9.3	Review regional and national technical training requirements and develop training opportunities such as for: <ul style="list-style-type: none"> <li>• Network design</li> <li>• QA/QC procedures</li> <li>• Maintenance of instruments</li> <li>• calibration</li> </ul>	A regional training plan	2019 onwards	WG-ITD, in collaboration with RA III-MG, RAM and ETR Division	Medium
9.4	Assist Members in using WIR Tools for the design and management of national WIGOS networks	Initial steps taken to improve design of national networks	2019 onwards	WG-IDT in collaboration with WIGOS-PO	Low
9.5	Assist Members in implementing WIGOS metadata	Tools and procedures available to assist Members in providing the WIGOS metadata	2019 onwards	WG-ITD	High
<b>10. Communication and outreach</b>					
10.1	Raise awareness and commitment to WIGOS in the Region	Effective communication and outreach	2019 onwards	RWC; WG-ITD; WIGOS-PO	Medium
10.2	Raise awareness and commitment to WIGOS at the national level	Effective communication and outreach	2019 onwards	Members	High
10.3	Develop mechanisms for improving the information sharing on WIGOS among the related entities and Members	RA-III Web (RAM) Paraguay	2019 onwards	WG-ITD; RWC; WIGOS-PO; RAM	Medium

No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K-CHF			Potential risks
					Total	Available regular budget	Short-fall	
1. Management of WIGOS implementation in RA III								
1.1 R	Devise and keep up-to-date the WIGOS Regional Implementation Plan	WIGOS Regional Implementation Plan	2014-2015	RA III Working Group on Infrastructure and Technological Development (WG-ITD)				Low (on-going)
1.2 R	Report progress on implementation to the RA III management group	Annual progress reports	2014-2015	RA III WG-ITD				Low



[illegible]

No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K-CHF			Potential risks
					Total	Available- regular- budget	Short- fall	
4.1 R	Exchange- experience-with- Members-of- the-Region-on- best-practice- for-operating- and-maintaining- observing- systems.	Examples of best practice	2014- 2015	Regional- association,- WMO-Regional- Office-with-the- cooperation-of- the-countries- under-the- leadership-of-a- WG-IDT-expert				Low
<b>5. Quality Management</b>								
5.1 N/R	Assess-and- document-the- current-status-of meteorological- instrument- calibration	Status report	2014- 2015	Regional- Instrument- Centre-with- the-support-of- the-countries- and-CIMO-focal- point-in-the- Region				Medium
5.2 N/R	Maintain- calibration-levels and-gradually- achieve- instrument- traceability-in- accordance-with- international- standards.	More countries- meeting- established- standards	2014- 2015	National- Meteorological- Services				Medium
5.3 N/R	When calibration laboratories are established, efforts should- be made to- implement- a quality- management- system-based on ISO/IEC 17025.	Improve- Members'- capabilities-	2014- 2015	National- Meteorological- Services				High
<b>6. Standardization, system interoperability and data compatibility</b>								
6.1 N/R	Complete the- migration to- TAG/TDCF- coding-in- accordance- with-the- requirements-of- the-Commission- for-Basic- Systems.	Migration- complete-in-the- Region	2014	Telecommunica- tions subgroup- with-the- National- Meteorological- Services				Low

[illegible]



No.	Activity	Deliverables	Timeline	Responsibility	Estimated Costs (2012-2015) K-CHF			Potential risks
					Total	Available-regular-budget	Short-fall	
10.1 R	<del>Contribute to WIGOS outreach by setting up an RA-III website and help to raise the profile of WIGOS by:</del> (a) A link featured on the websites of each Meteorological Service; (b) Using materials to be provided by the WIGOS Project Office; (c) Materials produced in the Region with the support of the WIGOS Project Office.	<del>Greater awareness and visibility of WIGOS in the Region</del>	<del>2014-2015</del>	<del>Paraguay Meteorological Service, in cooperation with other countries and the WMO Secretariat</del>				<del>Low</del>
10.2 R	<del>Contribute to WIGOS/WIS outreach by running a workshop for all Members of the Region.</del>	<del>Greater awareness and visibility of WIGOS/WIS in the Region</del>	<del>2014</del>	<del>WMO</del>				<del>Low</del>
10.3 R	<del>Promote national meetings to identify potential partners.</del>	<del>Effective incorporation of national partners in WIGOS</del>	<del>2014-2015</del>	<del>Permanent Representatives of the Member countries</del>				<del>Low</del>

## 5. RESOURCES

~~The corresponding resources will be identified at a later stage after analysis and discussion at regional level and in coordination with the WIGOS Project Office and the WMO Secretariat. Both, human and financial resources are needed at the regional level for the implementation of many of the activities identified. As WIGOS will ultimately be implemented at the national level, the Members need to use their own resources as much as possible.~~

## 6. RISK ASSESSMENT/MANAGEMENT

The Risk Management Plan (RMP) ~~will~~is being deviseddeveloped for each iactivity or project, including risk mitigation.

The following risk areas have been identified:

- (a) Lack of resources (funds and expertise);
- (b) Lack of understanding of the benefits that WIGOS can bring to the Region and Members;
- (c) Lack of cooperation and collaboration with key partners and other stakeholders;

(d) Lack of commitment by Members.

## **7. OUTLOOK**

~~This document has described the key activities for the period 2014-2015. As determined by Cg XVI, the goal is to have WIGOS operational by 2016. This is a challenging task. The experience gained during the WIGOS test of the concept phase clearly shows that it will be impossible to complete integration of all observing systems on global, regional and national levels in only four years. While WIGOS operations should start in 2016, there will still be a strong need to continue a significant number of implementation activities.~~

## **Annex**

### **LIST OF ACRONYMS**

CBS	Commission for Basic Systems
CEOS	Committee on Earth Observation Satellites
CGMS	Coordination Group for Meteorological Satellites
DCPC	Data Collection and Production Centre
FAO	Food and Agriculture Organization
GAW	Global Atmosphere Watch
GCOS	Global Climate Observing System
GEO	Group on Earth Observations
GEOSS	Global Earth Observation System of Systems
GFCS	Global Framework for Climate Services
GOOS	Global Ocean Observing System
GOS	Global Observing System
GTOS	Global Terrestrial Observing System
ISO	International Organization for Standardization
NMHS	National Meteorological and Hydrological Service
NWP	Numerical weather prediction
OSCAR	WIGOS Observing Systems Capabilities Analysis and Review tool
QMF	Quality Management Framework
RA	Regional Association
SI	International System of Units
SIDS	Small Island Developing States
WCRP	World Climate Research Programme
WHYCOS	World Hydrological Cycle Observation System
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WWW	World Weather Watch

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## **Resolution 10 (RA III-17)**

### **Establishing Regional WIGOS Centres in Region III in pilot mode**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

#### **Recalling:**

- (1) Resolution 23 (Cg-17) – Pre-operational phase of the WMO Integrated Global Observing System,

- (2) Resolution 2 (EC-68) – Plan for the WMO Integrated Global Observing System pre-operational phase 2016–2019,
- (3) Decision 30 (EC-68) – Regional WMO Integrated Global Observing System Centres,
- (4) Decision 30 (EC-69) – Guidance on establishing Regional WMO Integrated Global Observing System Centres in pilot phase,

**Recognizing** the critical role of Regional WIGOS Centres (RWCs) in advancing the operation of WIGOS by providing regional coordination, technical guidance, assistance and advice to Members and the Region,

**Recognizing further** the specificities of Regional Association III (RA III) that need to be taken into account in establishing and operating RWCs to address the specific needs of Members in all parts of the Region,

**Taking into account** the regional experience with the operation of WIGOS and WIS components and in the implementation and operation of joint projects, such as the WIGOS-Southern South America/Plata Basin (WIGOS-SAS/CP) project and the virtual Regional Climate Centre for southern South America (RCC-SSA),

**Noting** that all Members of RA III were informed in advance of the concept, governance and process for the establishment of the RA III RWCs, including the endorsement by the RA III Management Group,

**Having examined** the technical guidance document on the establishment of a Regional WIGOS Centre in pilot mode ([annex to Decision 30 \(EC-69\)](#)),

**Adopts** the technical guidance document on the establishment and implementation of a Regional WIGOS Centre in pilot mode in Region III;

**Decides** to designate Argentina and Brazil as RA III Members hosting Regional WIGOS Centres in pilot mode, taking into account the distribution list of RWC functions as provided in Annex 1 to the present resolution;

**Requests** the Management Group:

- (1) To establish the RA III RWC Coordination Committee, formed by experts designated by Members hosting an RWC (one member and one alternate from each RWC), to work under supervision of the RA III Management Group;
- (2) To formalize the Terms of Reference of the RWCs (distribution of functions) and the governance mechanism, as proposed in Annexes 1 and 2 to the present resolution;
- (3) To coordinate with the Members concerned the transition from pilot mode to a full operational phase;

**Urges** Members:

- (1) To familiarize themselves with the RWC roles and functions;
- (2) To actively participate in the implementation of RWCs in Region III to ensure that their terms of reference are met;

**Authorizes** the president of RA III to follow up implementation of the RWCs in pilot mode and in the operational phase, in consultation with the RA III Management Group, the Working Group on Infrastructure and Applications and the RWC Coordination Committee;

**Requests** the Secretary-General to provide the necessary assistance and support for the establishment of RWCs in Region III;

**Invites** partners to participate in the establishment of RWCs in the Region.

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### **Annex 1 to Resolution 10 (RA III-17)**

#### **Distribution list of functions of Regional WIGOS Centres**

##### **RWC-aaa (Operational aspects)**

- Regional WIGOS metadata management (OSCAR/Surface)
- Regional data monitoring & data quality management (WDQMS)
- Integration with DCPC Buenos Aires and GISC Brasilia
- Support to capacity development and training in the implementation of WIGOS
- Integration with operational networks (Hydrological, AMDAR) and others

##### **RWC-bbb (Technical aspects)**

- Regional network management (network design and coordination), including RBON
- Assistance to national observing network management
- Linking WIGOS to external entities/establishing partnerships
- Assistance to and coordination of regional/sub-regional and national WIGOS projects
- Support to capacity development and training in the implementation of WIGOS

##### **[RWC-ccc (Capacity Building and Governance aspects)]**

- Support to capacity development and training in the implementation of WIGOS
- Act as Regional information resource for Members concerning various aspects of WIGOS implementation
- Collect and document regional experience with WIGOS implementation and its benefits
- Collect and document regional technical issues with WIGOS implementations
- Review of the RWCs governance mechanism and relationship with regional working bodies and partners
- Coordination and cooperation with relevant bodies]

Note: If RA III decides not to create a third centre, RWC-ccc functions will be distributed to the other two.

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## **Annex 2 to Resolution 10 (RA III-17)**

### **Governance of Regional WIGOS Centres**

The proposed governance mechanism for the RA III RWCs is as follows:

- Each RA III RWC will be autonomous, executing the assigned set of functions;
- Mandatory and optional functions will be assigned to each RWC (in accordance with the Technical Guidance), meeting the needs and particularities of the Region;
- The RA III Management Group will designate and coordinate the work of a RWC Coordination Committee to be formed with experts from each Member operating a RWC;
- The RA III Management Group and the Coordination Committee will consolidate the Terms of Reference of each RWC and of the Coordination Committee;

The chair of the Coordination Committee will be selected on a rotation basis for a mandate of two years.

## **Resolution 11 (RA III-17)**

### **Regional Basic Synoptic Network and Regional Basic Climatological Network in Region III**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

#### **Noting:**

- (1) Resolution 7 (RA III-16) – Regional Basic Synoptic Network and Regional Basic Climatological Network in Region III (South America),
- (2) The *Manual on the Global Observing System* (WMO-No. 544), Volume I, Part III, sections 2.1.3.1–2.1.3.5, and the definition of the Regional Basic Synoptic and Climatological Networks,
- (3) The *Manual on Codes* (WMO-No. 306),
- (4) The *Manual on the Global Telecommunication System* (WMO-No. 386),
- (5) Resolution 60 (Cg-17) – WMO policy for the international exchange of climate data and products to support the implementation of the Global Framework for Climate Services,

#### **Noting further:**

- (1) That the establishment and maintenance of a Regional Basic Synoptic Network (RBSN) of surface and upper-air synoptic stations, capable of meeting the requirements of Members and of the World Weather Watch, constitutes one of the most important obligations of Members under Article 2 of the WMO Convention,
- (2) That historical climate time series from Regional Basic Climatological Networks (RBCNs), the Global Climate Observing System (GCOS) Upper-Air Network and GCOS Surface Network, at the temporal and spatial resolution required to resolve the climate record statistics, including trends and extremes, are listed in the annex to Resolution 60 (Cg-17) as part of the relevant data and products that should be exchanged among Members to support the implementation of the Global Framework for Climate Services,

**Decides:**

- (1) That the stations and the observational programmes listed in Annex 1 to the present resolution constitute an update of the RBSN in Region III;
- (2) That the stations listed in Annex 2 to the present resolution constitute an update of the RBCN in Region III;
- (3) That the deadline for the revision of Annexes 1 and 2 to the present Resolution shall be 15 December 2018;

**Urges Members:**

- (1) To secure, at the earliest date possible, full implementation of the networks of Regional Basic Synoptic and Regional Basic Climatological stations, and of the observational programmes set forth in Annexes 1 and 2 to the present resolution;
- (2) To comply fully with the standard times of observation, the global and regional coding procedures and data collection standards as laid down in the *Technical Regulations* (WMO-No. 49), the *Manual on the Global Observing System* (WMO-No. 544), the *Manual on Codes* (WMO-No. 306), and the *Manual on the Global Telecommunication System* (WMO-No. 386);

**Authorizes** the president of the Association to approve, at the request of the Members concerned and in consultation with the Secretary-General, amendments to the list of RBSN and RBCN stations in accordance with the procedures laid down in the *Manual on the Global Observing System* (WMO-No. 544), Volume II – Regional Aspects, Region III – South America, to monitor Members' implementation and address non-compliance in consultation with the Member concerned and the Secretary-General.

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**Annex 1 to Resolution 11 (RA III-17)****Update of the Regional Basic Synoptic Network in Region III<sup>11</sup>**

INDEX	SUB INDEX	STATION NAME	OBSERVATIONS		
			Surface	Radiosonde	Radiowind
<i>(ADDITIONS TO THE RBSN)</i>					
<b>ARGENTINA</b>					
87148	0	PRESIDENCIA ROQUE SAENZ PENA AERO	S		
<b>BOLIVIA (PLURINATIONAL STATE OF)</b>					
85139	0	SANTA ROSA (85139-0)	S		
85196	0	CONCEPCION (85196-0)	S		
85244	0	VIRU-VIRU			W
85312	0	MONTEAGUDO	S		
<b>BRAZIL</b>					
82022	0	BOA VISTA (AERO)	S		
82113	0	BARCELOS (82113-0)	S		
82141	0	SOURE (82141-0)	S		
82143	0	SALINOPOLIS (82143-0)	S		
82145	0	BRAGANCA (82145-0)	S		
82193	0	BELEM (AERO)	S	R	
82198	0	TURIACU (82198-0)	S		
82240	0	PARINTINS (82240-0)	S		
82281	0	SAO LUIZ (AERO)	S		
82287	0	PARNAIBA (82287-0)	S		
82332	0	MANAUS (AERO)	S	R	
82336	0	ITACOATIARA (82336-0)	S		
82361	0	TUCURUI (82361-0)	S		
82392	0	SOBRAL (82392-0)	S		
82397	0	FORTALEZA (82397-0)		R	
82398	0	FORTALEZA (AERO)	S		
82425	0	COARI (82425-0)	S		
82445	0	ITAITUBA (82445-0)	S		
82460	0	BACABAL (82460-0)	S		
82476	0	CAXIAS (82476-0)	S		
82562	0	MARABA (82562-0)	S		
82571	0	BARRA DO CORDA (82571-0)	S		
82579	0	TERESINA (AERO)	S		
82583	0	CRATEUS (82583-0)	S		
82586	0	QUIXERAMOBIM (82586-0)	S		
82594	0	MACAU (82594-0)	S		
82599	0	NATAL (AERO)	S	R	
82683	0	TAUA (82368-0)	S		
82723	0	LABREA (82723-0)	S		
82780	0	PICOS (82780-0)	S		
82784	0	BARBALHA (82784-0)	S		

<sup>11</sup> [Update to](#) Resolution 7 (RA III-16) – Regional Basic Synoptic Network and Regional Basic Climatological Network in Region III (South-America)



INDEX	SUB INDEX	STATION NAME	OBSERVATIONS		
			Surface	Radiosonde	Radiowind
82789	0	TRIUNFO (82789-0)	S		
82791	0	PATOS (82791-0)	S		
82824	0	PORTO VELHO (AERO)	S	R	
82861	0	CONCEICAO DO ARAGUAIA (82861-0)	S		
82863	0	PEDRO AFONSO (82863-0)	S		
82879	0	SAO JOAO DO PIAUI (82879-0)	S		
82899	0	RECIFE (AERO)	S		
82900	0	RECIFE (82900-0)		R	
82917	0	RIO BRANCO (AERO)	S		
82965	0	ALTA FLORESTA (AERO)	S	R	
82979	0	REMANSO (82979-0)	S		
82983	0	PETROLINA (82983-0)	S	R	
82986	0	PAULO AFONSO (82986-0)	S		
82993	0	MACEIO (AERO)	S		
83096	0	ARACAJU (83096-0)	S		
83179	0	BARRA (83179-0)	S		
83182	0	IRECE (83182-0)	S		
83186	0	JACOBINA (83186-0)	S		
83208	0	VILHENA (AERO)	S	R	
83228	0	PEIXE (83228-0)	S		
83229	0	SALVADOR (83229-0)		R	
83236	0	BARREIRAS (83236-0)	S		
83242	0	LENCOIS (83242-0)	S		
83248	0	SALVADOR (AERO)	S		
83288	0	BOM JESUS DA LAPA (83288-0)	S	R	
83332	0	POSSE (83332-0)	S		
83344	0	VITORIA DA CONQUISTA (83344-0)	S		
83349	0	ILHEUS (AERO)	S		
83358	0	POXOREO	S		
83362	0	CUIABA (AERO)	S	R	
83368	0	ARAGARCAS (83368-0)	S		
83374	0	GOIAS (83374-0)	S		
83378	0	BRASILIA (AERO)	S	R	
83405	0	CACERES (83405-0)	S		
83423	0	GOIANIA (83423-0)	S		
83437	0	MONTES CLAROS (83437-0)	S		
83470	0	RIO VERDE (83470-0)	S		
83483	0	PIRAPORA (83483-0)	S		
83492	0	TEOFILO OTONI (83492-0)	S		
83497	0	CARAVELAS (AERO)	S		
83498	0	CARAVELAS (83498-0)		R	
83526	0	CATALAO (83526-0)	S		
83538	0	DIAMANTINA (83538-0)	S		
83550	0	SAO MATEUS (83550-0)	S		
83565	0	PARANAIBA (83565-0)	S		
83566	0	CONFINS (AERO)	S	R	

INDEX	SUB INDEX	STATION NAME	OBSERVATIONS		
			Surface	Radiosonde	Radiowind
83579	0	ARAXA (83579-0)	S		
83592	0	CARATINGA (83592-0)	S		
83595	0	AIMORES (83595-0)	S		
83597	0	LINHARES (83597-0)	S		
83612	0	CAMPO GRANDE (AERO)	S	R	
83623	0	VOTUPORANGA (83623-0)	S		
83630	0	FRANCA (83630-0)	S		
83649	0	VITORIA (AERO)	S		
83692	0	JUIZ DE FORA (83692-0)	S		
83698	0	CAMPOS (83698-0)	S		
83702	0	PONTA PORA (83702-0)	S		
83704	0	IVINHEMA (83704-0)	S		
83716	0	PRESIDENTE PRUDENTE (83716-0)	S		
83726	0	SAO CARLOS (83726-0)	S		
83738	0	RESENDE (83738-0)	S		
83779	0	MARTE (AERO)		R	
83780	0	SAO PAULO (AERO)	S		
83811	0	IVAI (83811-0)	S		
83818	0	SANTOS (AERO)	S		
83821	0	IGUAPE (83821-0)	S		
83827	0	FOZ DO IGUACU (AERO)	S	R	
83840	0	CURITIBA (AERO)	S	R	
83899	0	FLORIANOPOLIS (AERO)	S		
83907	0	SAO LUIZ GONZAGA (83907-0)	S		
83914	0	PASSO FUNDO (83914-0)	S		
83925	0	SANTA MARTA (83925-0)	S		
83927	0	URUGUAIANA (83927-0)	S		
83928	0	URUGUAIANA (AERO)		R	
83936	0	SANTA MARIA (83936-0)	S		
83948	0	TORRES (83948-0)	S		
83970	0	MOSTARDAS (83970-0)	S		
83971	0	PORTO ALEGRE (AERO)	S	R	
83980	0	BAGE (83980-0)	S		
83995	0	RIO GRANDE (83995-0)	S		
<b>CHILE</b>					
85586	0	SANTO DOMINGO (85586-0)	S	R	
85682	0	CONCEPCION (85682-0)	S		
85930	0	FARO EVANGELISTA	S		
<b>ECUADOR</b>					
84008	0	SAN CRISTOBAL RADIOSONDA (GALAPAGOS)	S	R	
84018	0	ESMERALDAS (TACHINA) AEROPUERTO	S		
84132	0	NUEVO ROCAFUERTE (84132-0)	S		
84265	0	TOMO CATAMAYO AEROPUERTO	S		
84270	0	LOJA LA ARGELIA	S		
<b>FRENCH GUIANA</b>					
81401	0	SAINT-LAURENT	S		

INDEX	SUB INDEX	STATION NAME	OBSERVATIONS		
			Surface	Radiosonde	Radiowind
81405	0	CAYENNE MATOURY	S	R	
81408	0	SAINT GEORGES	S		
<b>PARAGUAY</b>					
86065	0	PELAYO PRATS GILL	S		
86134	0	CONCEPCION (86134-0)	S		
86185	0	SAN PEDRO (86185-0)	S		
86218	0	AEROPUERTO SILVIO PETTIROSSI LUQUE	S		
<b>PERU</b>					
84501	0	TRUJILLO (84501-0)	S		
(DELETIONS FROM THE RBSN)					
<b>ARGENTINA</b>					
87148	0	PCIA. ROQUE SAENZ PENA AERO	S		
<b>BOLIVIA (PLURINATIONAL STATE OF)</b>					
85139	0	SANTA ROSA	S		
85196	0	CONCEPCION	S		
85244	0	SANTA CRUZ			W
85312	0	MONTEAGUDA	S		
<b>BRAZIL</b>					
82022	0	BOA VISTA (AEROPORTO)	S		
82113	0	BARCELOS	S		
82141	0	SOURE	S		
82143	0	SALINOPOLIS	S		
82145	0	TRACUATEUA	S		
82193	0	BELEM (AEROPORTO)	S	R	
82198	0	TURIACU	S		
82240	0	PARINTINS	S		
82281	0	SAO LUIZ (AEROPORTO)	S		
82287	0	PARNAIBA	S		
82332	0	MANAUS (AEROPORTO)	S	R	
82336	0	ITACOATIARA	S		
82361	0	TUCURUI	S		
82392	0	SOBRAL	S		
82397	0	FORTALEZA		R	
82398	0	FORTALEZA (AEROPORTO)	S		
82425	0	COARI	S		
82445	0	ITAITUBA	S		
82460	0	BACABAL	S		
82476	0	CAXIAS	S		
82562	0	MARABA	S		
82571	0	BARRA DO CORDA	S		
82579	0	TERESINA (AEROPORTO)	S		
82583	0	CRATEUS	S		
82586	0	QUIXERAMOBIM	S		
82594	0	MACAU	S		
82599	0	NATAL (AEROPORTO)	S	R	

INDEX	SUB INDEX	STATION NAME	OBSERVATIONS		
			Surface	Radiosonde	Radiowind
82683	0	TAUA	S		
82723	0	LABREA	S		
82780	0	PICOS	S		
82784	0	BARBALHA	S		
82789	0	TRIUNFO	S		
82791	0	PATOS	S		
82824	0	PORTO VELHO (AEROPORTO)	S	R	
82861	0	CONCEICAO DO ARAGUAIA	S		
82863	0	PEDRO AFONSO	S		
82879	0	S. JOAO DO PIAUI	S		
82899	0	RECIFE (AEROPORTO)	S		
82900	0	RECIFE		R	
82917	0	RIO BRANCO	S		
82965	0	ALTA FLORESTA (AEROPORTO)	S	R	
82979	0	REMANSO	S		
82983	0	PETROLINA	S	R	
82986	0	PAULO AFONSO	S		
82993	0	MACEIO (AEROPORTO)	S		
83096	0	ARACAJU	S		
83179	0	BARRA	S		
83182	0	IRECE	S		
83186	0	JACOBINA	S		
83208	0	VILHENA (AEROPORTO)	S	R	
83228	0	PEIXE	S		
83229	0	SALVADOR		R	
83236	0	BARREIRAS	S		
83242	0	LENCOIS	S		
83248	0	SALVADOR (AEROPORTO)	S		
83288	0	BOM JESUS DA LAPA	S	R	
83332	0	POSSE	S		
83344	0	VITORIA DA CONQUISTA	S		
83349	0	ILHEUS (AEROPORTO)	S		
83358	0	POXOREU	S		
83362	0	CUIABA (AEROPORTO)	S	R	
83368	0	ARAGARCAS	S		
83374	0	GOIAS	S		
83378	0	BRASILIA (AEROPORTO)	S	R	
83405	0	CACERES	S		
83423	0	GOIANIA	S		
83437	0	MONTES CLAROS	S		
83470	0	RIO VERDE	S		
83483	0	PIRAPORA	S		
83492	0	TEOFILO OTONI	S		
83497	0	CARAVELAS (AEROPORTO)	S		
83498	0	CARAVELAS		R	
83526	0	CATALAO	S		

INDEX	SUB INDEX	STATION NAME	OBSERVATIONS		
			Surface	Radiosonde	Radiowind
83538	0	DIAMANTINA	S		
83550	0	SAO MATEUS	S		
83565	0	PARANAIBA	S		
83566	0	CONFINS (AEROPORTO)	S	R	
83579	0	ARAXA	S		
83592	0	CARATINGA	S		
83595	0	AIMORES	S		
83597	0	LINHARES	S		
83612	0	CAMPO GRANDE (AEROPORTO)	S	R	
83618	0	TRES LAGOAS	S		
83623	0	VOTUPORANGA	S		
83630	0	FRANCA	S		
83649	0	VITORIA (AEROPORTO)	S		
83692	0	JUIZ DE FORA	S		
83698	0	CAMPOS	S		
83702	0	PONTA PORA	S		
83704	0	IVINHEMA	S		
83716	0	PRESIDENTE PRUDENTE	S		
83726	0	SAO CARLOS	S		
83738	0	RESENDE	S		
83779	0	MARTE		R	
83780	0	SAO PAULO (AEROPORTO)	S		
83811	0	IVAI	S		
83818	0	SANTOS	S		
83821	0	IGUAPE	S		
83827	0	FOZ DO IGUACU (AEROPORTO)	S	R	
83840	0	CURITIBA (AEROPORTO)	S	R	
83899	0	FLORIANOPOLIS (AEROPORTO)	S		
83907	0	SAO LUIZ GONZAGA	S		
83914	0	PASSO FUNDO	S		
83925	0	SANTA MARTA	S		
83927	0	URUGUAIANA	S		
83928	0	URUGUAIANA (AEROPORTO)		R	
83936	0	SANTA MARIA	S		
83948	0	TORRES	S		
83970	0	MOSTARDAS	S		
83971	0	PORTO ALEGRE (AEROPORTO)	S	R	
83980	0	BAGE	S		
83995	0	RIO GRANDE	S		
<b>CHILE</b>					
85586	0	SANTO DOMINGO	S	R	
85682	0	CONCEPCION	S		
85930	0	FARO EVANGELISTAS	S		
<b>ECUADOR</b>					
84008	0	SAN CRISTOBAL (GALAPAGOS)	S	R	
84018	0	ESMERALDAS AEROPUERTO (TACHINA)	S		

<i>INDEX</i>	<i>SUB INDEX</i>	<i>STATION NAME</i>	<i>OBSERVATIONS</i>		
			<i>Surface</i>	<i>Radiosonde</i>	<i>Radiowind</i>
84132	0	NUEVO ROCAFUERTE	S		
84265	0	TOMA CATAMAYO AEROPUERTO	S		
84270	0	LOJA ARGELIA	S		
<b>FRENCH GUIANA</b>					
81401	0	SAINT-LAURENT DU MARONI	S		
81405	0	ROCHAMBEAU	S	R	
81408	0	SAINT GEORGES DE L'OYAPOCK	S		
<b>PARAGUAY</b>					
86065	0	PELAYO PRATS GIL	S		
86134	0	CONCEPCION	S		
86185	0	SAN PEDRO	S		
86218	0	ASUNCION/AEROPUERTO	S		
<b>PERU</b>					
84501	0	TRUJILLO	S		

LEGEND: S = Surface; R= Radiosonde; W= Radiowind

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**Annex 2 to Resolution 11 (RA III-17)****Update of the Regional Basic Climatological Network in Region III<sup>12</sup>**

INDEX	SUB-INDEX	STATION NAME	CLIMAT	GCOS*	
				GSN	GUAN
(ADDITIONS TO THE RBCN)					
ARGENTINA					
87148	0	PRESIDENCIA ROQUE SAENZ PENA AERO	X		
87534	0	LABOULAYE AERO	X	X	
87593	0	LA PLATA AERO	X	X	
BRAZIL					
82024	0	BOA VISTA (82024-0)	X	X	
82113	0	BARCELOS (82113-0)	X	X	
82191	0	BELEM (82191-0)	X		
82287	0	PARNAIBA (82287-0)	X		
82331	0	MANAUS (82331-0)	X	X	
82336	0	ITACOATIARA (82336-0)	X		
82397	0	FORTALEZA (82397-0)	X		X
82425	0	COARI (82425-0)	X	X	
82445	0	ITAITUBA (82445-0)	X		
82460	0	BACABAL (82460-0)	X		
82562	0	MARABA (82562-0)	X		
82571	0	BARRA DO CORDA (82571-0)	X	X	
82578	0	TERESINA (82578-0)	X		
82583	0	CRATEUS (82583-0)	X		
82586	0	QUIXERAMOBIM (82586-0)	X	X	
82598	0	NATAL (82598-0)	X		
82678	0	FLORIANO (82678-0)	X		
82723	0	LABREA (82723-0)	X		
82765	0	CAROLINA (82765-0)	X		
82784	0	BARBALHA (82784-0)	X		
82791	0	PATOS (82791-0)	X		
82900	0	RECIFE (82900-0)	X		
82915	0	RIO BRANCO (82915-0)	X		
82983	0	PETROLINA (82983-0)	X		
83096	0	ARACAJU (83096-0)	X		
83186	0	JACOBINA (83186-0)	X		
83208	0	VILHENA (AERO)	X		
83229	0	SALVADOR (83229-0)	X	X	
83236	0	BARREIRAS (83236-0)	X	X	
83242	0	LENCOIS (83242-0)	X		
83288	0	BOM JESUS DA LAPA (83288-0)	X		
83332	0	POSSE (83332-0)	X		
83344	0	VITORIA DA CONQUISTA (83344-0)	X		
83358	0	POXOREO	X		

<sup>12</sup> [Update to](#) Resolution 7 (RA III-16) – Regional Basic Synoptic Network and Regional Basic Climatological Network in Region III (South-America)



INDEX	SUB- INDEX	STATION NAME	CLIMAT	GCOS*	
				GSN	GUAN
83361	0	CUIABA (83361-0)	X	X	
83377	0	BRASILIA (83377-0)	X		
83423	0	GOIANIA (83423-0)	X		
83437	0	MONTES CLAROS (83437-0)	X		
83481	0	JOAO PINHEIRO (83481-0)	X	X	
83492	0	TEOFILO OTONI (83492-0)	X		
83498	0	CARAVELAS (83498-0)	X	X	
83550	0	SAO MATEUS (83550-0)	X		
83552	0	CORUMBA (83522-0)	X		
83565	0	PARANAIBA (83565-0)	X		
83579	0	ARAXA (83579-0)	X		
83592	0	CARATINGA (83592-0)	X		
83623	0	VOTUPORANGA (83623-0)	X		
83630	0	FRANCA (83630-0)	X		
83648	0	VITORIA (83648-0)	X		
83698	0	CAMPOS (83698-0)	X		
83702	0	PONTA PORA (83702-0)	X		
83704	0	IVINHEMA (83704-0)	X		
83716	0	PRESIDENTE PRUDENTE (83716-0)	X		
83726	0	SAO CARLOS (83726-0)	X		
83738	0	RESENDE (83738-0)	X		
83842	0	CURITIBA (83842-0)	X	X	
83967	0	PORTO ALEGRE (83967-0)	X		
83980	0	BAGE (83980-0)	X		
<b>CHILE</b>					
85682	0	CONCEPCION (85682-0)	X		
<b>ECUADOR</b>					
84071	0	QUITO AEROPUERTO	X		
<b>FRENCH GUIANA</b>					
81401	0	SAINT-LAURENT	X		
81405	0	CAYENNE MATOURY	X	X	X
81408	0	SAINT GEORGES	X		
<b>ISLANDS (88:800-998)</b>					
88903	0	GRYTVIKEN, SOUTH GEORGIA	X	X	
<b>PARAGUAY</b>					
86065	0	PELAYO PRATS GILL	X		
86134	0	CONCEPCION (86134-0)	X		
86185	0	SAN PEDRO (86185-0)	X		
86218	0	AEROPUERTO SILVIO PETTIROSSI LUQUE	X		
<b>PERU</b>					
84455	0	TARAPOTO	X	X	
84501	0	TRUJILLO (84501-0)	X		
<b>(DELETIONS FROM THE RBCN)</b>					
<b>ARGENTINA</b>					
87148	0	PCIA. ROQUE SAENZ PENA AERO	X		
87534	0	LABOULAYE	X	X	

INDEX	SUB-INDEX	STATION NAME	CLIMAT	GCOS*	
				GSN	GUAN
BRAZIL					
82024	0	BOA VISTA	X	X	
82113	0	BARCELOS	X	X	
82191	0	BELEM	X		
82193	0	BELEM (AEROPORTO)		X	X
82287	0	PARNAIBA	X		
82331	0	MANAUS	X	X	
82332	0	MANAUS (AEROPORTO)			X
82336	0	ITACOATIARA	X		
82353	0	ALTAMIRA	X	X	
82397	0	FORTALEZA	X		X
82400	0	FERNANDO DE NORONHA	X	X	
82425	0	COARI	X	X	
82445	0	ITAITUBA	X		
82460	0	BACABAL	X		
82562	0	MARABA	X		
82571	0	BARRA DO CORDA	X	X	
82578	0	TERESINA	X		
82583	0	CRATEUS	X		
82586	0	QUIXERAMOBIM	X	X	
82598	0	NATAL	X		
82678	0	FLORIANO	X		
82723	0	LABREA	X		
82765	0	CAROLINA	X		
82784	0	BARBALHA	X		
82791	0	PATOS	X		
82825	0	PORTO VELHO	X	X	
82900	0	RECIFE	X		
82915	0	RIO BRANCO	X		
82983	0	PETROLINA	X		
83096	0	ARACAJU	X		
83186	0	JACOBINA	X		
83208	0	VILHENA (AEROPORTO)	X		
83229	0	SALVADOR	X	X	
83236	0	BARREIRAS	X	X	
83242	0	LENCOIS	X		
83288	0	BOM JESUS DA LAPA	X		
83332	0	POSSE	X		
83344	0	VITORIA DA CONQUISTA	X		
83358	0	POXOREO (POXOREU)	X		
83361	0	CUIABA	X	X	
83377	0	BRASILIA	X		
83378	0	BRASILIA (AEROPORTO)			X
83423	0	GOIANIA	X		
83437	0	MONTES CLAROS	X		
83481	0	JOAO PINHEIRO	X	X	
83488	0	ITAMARANDIBA	X	X	

INDEX	SUB-INDEX	STATION NAME	CLIMAT	GCOS*	
				GSN	GUAN
83492	0	TEOFILO OTONI	X		
83498	0	CARAVELAS	X	X	
83550	0	SAO MATEUS	X		
83552	0	CORUMBA	X		
83565	0	PARANAIBA	X		
83566	0	BELO HORIZONTE (CONFINS)	X	X	
83579	0	ARAXA	X		
83592	0	CARATINGA	X		
83618	0	TRES LAGOAS	X	X	
83623	0	VOTUPORANGA	X		
83630	0	FRANCA	X		
83648	0	VITORIA	X		
83650	0	TRINDADE (ILHA)	X	X	
83698	0	CAMPOS	X		
83702	0	PONTA PORÁ	X		
83704	0	IVINHEMA	X		
83716	0	PRESIDENTE PRUDENTE	X		
83726	0	SAO CARLOS	X		
83738	0	RESENDE	X		
83746	0	GALEAO	X	X	
83779	0	MARTE			X
83827	0	FOZ DO IGUAÇU (AEROPORTO)	X	X	
83842	0	CURITIBA BACACHERI	X	X	
83881	0	IRAI	X	X	
83967	0	PORTO ALEGRE	X		
83980	0	BAGE	X		
<b>CHILE</b>					
85586	0	SANTO DOMINGO			X
85682	0	CONCEPCION	X		
<b>ECUADOR</b>					
84036	0	SAN GABRIEL	X		
84050	0	LA CONCORDIA	X		
84132	0	NUEVO ROCAFUERTE	X		
84179	0	PUYO	X		
84226	0	CANAR	X		
<b>FRENCH GUIANA</b>					
80418	0	CARACAS/GACIGALOB			
80418	0	CARACAS/GACIGALOB			
80418	0	CARACAS/GACIGALOB			
<b>PARAGUAY</b>					
86065	0	PELAYO PRATS GIL	X		
86134	0	CONCEPCION	X		
86185	0	SAN PEDRO	X		
86218	0	ASUNCION/AEROPUERTO	X		
<b>PERU</b>					
84378	0	MORONA		X	
84444	0	CHACHAPOYAS	X	X	

INDEX	SUB-INDEX	STATION NAME	CLIMAT	GCOS*	
				GSN	GUAN
84501	0	TRUJILLO	X		
<b>VENEZUELA (BOLIVARIAN REPUBLIC OF)</b>					
80418	0	CARACAS/GACIGAL OBS			

\* GCOS Surface Network (GSN) / GCOS Upper-air Network (GUAN) for reference only

## Resolution 12 (RA III-17)

### Development of the Region III Aircraft Meteorological Data Relay Programme under the collaboration between the International Air Transport Association and the World Meteorological Organization

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Recalling** Decision 60 (EC-69) – Potential future collaboration of WMO and the International Air Transport Association on the operation and development of the WMO Aircraft Meteorological Data Relay Programme, which endorsed the establishment of a Working Arrangement between WMO and the International Air Transport Association (IATA) under which the two organizations would work together to develop the terms of reference and concept of operations for future collaboration on the Data Relay Programme,

**Noting** that a Working Arrangement on the Operation of the Aircraft Meteorological Data Relay (AMDAR) Programme was established between IATA and WMO in July 2017, thus laying the ground for potential future cooperation in matters related to the automated measurement and transmission of meteorological data from an aircraft platform, and that the Programme is currently operational as the WMO AMDAR, recognized as a key component of the WMO Global Observing System,

**Noting further** that Decision 60 (EC-69) requested that the Secretary-General, in coordination with the president of the Commission for Basic Systems, work with IATA to finalize and establish the Working Arrangement between the two organizations, and to subsequently develop the concept of operations for the future possible collaboration between WMO and IATA on the AMDAR Programme,

**Having examined** the draft proposed Concept of Operations for the IATA-WMO collaboration on AMDAR and the IATA-WMO Collaborative AMDAR Programme – Purpose and Principles,

**Having considered** the implications of the Concept of Operations in committing RA III to coordinating the establishment and maintenance of national and regional requirements for AMDAR observations and the resources for their provision and management,

**Having been informed** that IATA will play a leading role in ensuring that the agreed required AMDAR observations are provided efficiently and economically through coordination with its member airlines and the wider aviation industry,

**Convinced** that the collaboration will lead to the expansion and enhancement of the WMO AMDAR observing system globally and, as a result, bring further benefits to meteorological applications and improvement to forecasting skills and services for aviation,

**Endorses** the IATA-WMO collaboration on AMDAR under the proposed Concept of Operations and Purpose and Principles;

**Requests** the Secretary-General, the Executive Council and the Commission for Basic Systems to continue to coordinate the process of informing all regional associations and seeking their endorsement of the Concept of Operations of the IATA-WMO collaboration on AMDAR;

**Decides** that, subject to IATA and WMO entering into a formal collaboration on AMDAR through a resolution of the Eighteenth World Meteorological Congress in 2019, following Recommendation 9 (EC-70) – Establishment of collaboration between the International Air Transport Association and WMO on the operation and development of the WMO Aircraft Meteorological Data Relay Programme, the Association, through its Working Group on Infrastructure and Applications, will aim to compile its requirements for AMDAR observations by July 2019, with a view to beginning development of the Region III AMDAR Programme under the IATA-WMO collaboration in January 2020, and potentially beginning its operation of the Programme in January 2021.

### **Annex to Resolution 12 (RA III-17)**

#### **Background information on the collaboration between the International Air Transport Association and the World Meteorological Organization on the Aircraft Meteorological Data Relay Programme**

**References:** Website of the International Air Transport Association (IATA): <http://www.iata.org/about/pages/index.aspx>

#### **1. Introduction**

1.1 In late 2016, Members of the Secretariat of the International Air Transport Association (IATA), approached WMO to inform that, at the behest of its member airlines, it had undertaken a study on the operation of the WMO AMDAR programme, which had made the following recommendations:

- (a) IATA to work with WMO to expand the AMDAR program across the globe and establish a more equitable cost-recovery mechanism for the participating airlines;
- (b) IATA to set up a global turbulence database with real-time data transmission to airlines during flight operations.

1.2 During an initial meeting between representatives of the secretariats of WMO and IATA, held in Geneva on 12 December 2016, it was agreed that there appeared to be significant advantages and mutual benefits to their respective members, if a formal collaboration on the future operation of the AMDAR programme were to be established.

1.3 Based on further collaboration with IATA and discussion and consideration of the matter by CBS and CIMO Management Groups and the CBS Expert Team on Aircraft-Based Observing Systems (ET-ABO), Decision 60 (EC-69) was made to establish the IATA-WMO Working Arrangement on the Operation of the AMDAR Programme, under which the two organizations would work together to develop the terms of reference and concept of operations, based on which a future collaboration on AMDAR might be defined and later approved by a subsequent decision of the Executive Council and Congress. The Working Arrangement was formally established in July 2017.

1.4 Since then the ET-ABO and the EC Task Team on the IATA-WMO Collaborative AMDAR Programme (TT-IWCA) has been working with IATA to develop the Concept of Operations and the Purpose and Principles for the IATA-WMO Collaborative AMDAR Programme (IWCAP), for which an initial draft is provided in [RA III-17/INF. 3.4\(3\)](#).

1.5 Given the successful operation of the EUMETNET/E-AMDAR programme on a regional collaborative basis, WMO Region VI has decided (Resolution 10 (RA-VI-17)) that, subject to the affirmative decision of Cg-18, it would become the first WMO Regional AMDAR Programme to work towards operation under the IWCAP based on a planning and development period over 2019 with a view to commencing operations at the start of 2020.

## 2. **Key Aspects of the IATA-WMO Collaboration on AMDAR Impacting RA III**

2.1 Under the Concept of Operations for the IATA-WMO Collaborative AMDAR Programme (IWCAP) the following are the key aspects:

- (a) Each RA would be responsible for establishing and maintaining regional requirements for AMDAR observations, primarily based on national member requirements and their contribution of resourcing for observations and support for the programme operation;
- (b) IATA and WMO would develop a financial and cost framework for supporting the operation and development of IWCAP to meet national and regional requirements for observations;
- (c) IATA and WMO would jointly manage funds to support the IWCAP and reimburse airline partners for the costs of the programme development and provision of observations on the WIS;
- (d) RAs would operate and maintain a Regional Data Processing Centre and support planning activities and data and quality management operations through the establishment of regional working groups.

2.2 It is proposed that RA III, through its Working Group on Infrastructure and Technological Development and in collaboration with CBS, will plan and develop under the IWCAP, the Region III AMDAR Programme over 2020, with the aim to commence its operation in January 2021.

### **Resolution 13 (RA III-17)**

#### **Regional Instrument Centres**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

#### **Recalling:**

- (1) The Regional Association III (RA III) WIGOS Implementation Plan, which seeks to progressively achieve traceability to the International System of Units (SI) standards of measurements made throughout RA III, and the role that Regional Instrument Centres (RICs) can play in supporting Members to achieve this goal,
- (2) The current Terms of Reference of RICs and of Regional Marine Instrument Centres (RMICs) published in the WMO *Guide to Meteorological Instruments and Methods of Observation* (WMO-No. 8),
- (3) Decision 34 (EC-70) – Designation of new regional instrument centres, which tasked the Commission for Instruments and Methods of Observation with assessing the capabilities of candidate Regional Instrument Centres,

**Noting** that one RIC (Buenos Aires, Argentina) had been designated to support Members of RA III,

**Appreciating** that Argentina has already positively responded to the invitation to reconfirm its willingness to continue hosting and providing the service of its RIC to Members of RA III,

**Encourages** the RICs of Region III:

- (1) To offer support also to Members of other regional associations, should their resources permit;
- (2) To consider their expansion to offer RMIC capabilities, possibly collaborating with other national organizations;

**Requests** the RICs of Region III:

- (1) To provide support to the Members of RA III and, if possible, also to Members of other Regions;
- (2) To be proactive in promoting traceability throughout the Region, carrying out capacity development activities for Members;
- (3) To do their utmost to continue complying with the RIC Terms of Reference, and to strive to achieve accreditation in accordance with ISO/IEC 17025;
- (4) To reconfirm their willingness to continue providing RIC services to Members of RA III prior to the next session of the Association;

**Requests** its Management Group to:

- (1) To regularly assess the need of RA III Members for support by RICs;
- (2) To collaborate with the Commission for Instruments and Methods of Observation to verify the capabilities and performance of the RA III RICs.

**Resolution 14 (RA III-17)****WMO Information System**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Recalling** [Resolution 23 \(EC-70\) – WMO Information System 2.0, and Decision 18 \(EC-70\) – WMO Information System 2.0 implementation approach](#),

**Noting** that the Commission for Basic Systems has been developing:

- (1) An implementation plan for the WMO Information System (WIS) 2.0 strategy,
- (2) Guidance and standards to support systematic information management practices,
- (3) Procedures for Global Information System Centres (GISC) to monitor the operations of WIS,
- (4) Revised audit schedules and procedures for centres registered in WIS,

**Having been informed:**

- (1) That the WMO Monitoring and Evaluation System ([Mid-Term Performance Assessment Report 2016–2017 – Summary](#)) shows that knowledge of WIS and the level of its implementation nationally indicate that a significant number of Members (31% globally) have insufficient knowledge of WIS and even a greater number (42% globally) have not started implementation of WIS,



- (2) That the practice of transmitting real-time reports through a chain of Regional Telecommunications Hubs (RTHs) has introduced delays that could be avoided,
- (3) That the roles of RTHs within the World Weather Watch entail a number of activities in addition to data transmission,

**Endorses** the training activities identified in the [annex](#) to the present resolution as a priority in order to promote the national uptake of WIS services and facilities in the Region;

**Requests** its Management Group through the appropriate mechanism:

- (1) To identify Members lagging behind in WIS implementation and to assist them in achieving at least some of the new functionality, making use of the web-based services of their principal GISC or supporting Regional Telecommunication Hub;
- (2) To reassess the role of RTHs in the Region, including operational, technical and capacity development aspects;
- (3) To provide regional coordination for implementation of anticipated recommendations of the Commission for Basic Systems on WIS audit schedules and on operational monitoring by GISCs;
- (4) To monitor WIS training and development activities including maintenance of the table in the annex to the present resolution;
- (5) To update the regional [RA III WIS Implementation Plan 2014–2016](#) approved through Resolution 8 (RA III-16) – Regional WMO Information System Implementation Plan, to include those activities and to incorporate information sharing about WIS 2.0 pilot projects and WIS 2.0 implementation progress;
- (6) To provide feedback from its Members on WIS 2.0 implementation to the Commission for Basic Systems;

**Requests** Members:

- (1) To review the status of their knowledge and level of implementation of WIS, in particular by updating their profile in the [Country Profile Database](#);
- (2) To send real-time reports directly to their principal and secondary GISCs;
- (3) To deliver and to participate in the training activities identified in the annex to the present resolution;

**Encourages** Members:

- (1) To offer additional training on WIS and to inform the Secretary-General of their intentions in this respect;
- (2) To undertake pilot projects that inform, develop or validate the concepts and implementation of WIS 2.0, and to share knowledge, technology and expertise from these projects to support adoption of WIS 2.0;

**Requests** the Secretary-General to support the training activities identified in the annex to the present resolution and to facilitate sponsorship where identified.

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**Note:** This resolution replaces Resolution 8 (RA III-16), which is no longer in force.

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**Annex to Resolution 14 (RA III-17)**

**WIS training activities**

<i>Title</i>	<i>Proposed Quarter and Year</i>	<i>Centre(s) providing Training</i>	<i>Targeted WIS competencies</i>	<i>Targeted participants and expected pre-existing capabilities</i>	<i>Supported languages</i>	<i>Justification and expected outcome</i>	<i>Required sponsorship</i>

**Resolution 15 (RA III-17)****Regional Association III Management Group**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Decides:**

- (1) To re-establish the Management Group of Regional Association III (South America) to assist the president and to make recommendations on matters relevant to the Association, with the following terms of reference:
  - (a) To review matters related to the work of the Association, in particular emerging issues or matters requiring action that cannot wait until the next regular session of the Association, in particular resolutions and decisions of the Eighteenth World Meteorological Congress, to be held in 2019, with respect to the WMO reform;
  - (b) To plan and coordinate the work of the Association and its subsidiary bodies, involving regional centres also;
  - (c) To ensure that strategic priorities are addressed and to advise on appropriate mechanisms for achieving results;
  - (d) To establish and review the structure and work of the subsidiary bodies of the Association, including the implementation of their recommendations, and to disband or reorganize these bodies as needed, taking into consideration in particular the outcomes of the Eighteenth Congress with respect to the WMO reform;
  - (e) To implement mechanisms that help Members gather nominations of experts from a wide range of organizations in the Region, including the private sector and academia, taking into account inclusive policies and gender equality;
  - (f) To collaborate with the Secretariat on resource mobilization and to advise on the alignment of resources with regional priorities;
  - (g) To provide the Association's input to the WMO Strategic Plan, and to coordinate and monitor the implementation of the WMO Operating Plan for Regional Association III, on the basis of the discussions held during its seventeenth session and taking into account input from the Members of the Association;
  - (h) To identify RA III focal points to ensure coordination with WMO Programmes and other organizations as appropriate and necessary;
  - (i) To address other issues as they arise, including strengthening of strategic partnerships with regional organizations, development agencies and other partners, ensuring coordination of development efforts, and overseeing disaster risk reduction and service delivery;
- (2) To invite the president to act as chairperson of the Management Group, which is composed of the president, the vice-president, the Permanent Representatives of RA III Members and the Regional Hydrological Adviser. The chairperson shall establish a task team made up of the vice-president, three Permanent Representatives and, as required, the chairpersons of the Working Group on Climate and the Working Group on Infrastructure and Applications;
- (3) To empower the chairperson to create new task teams as needed;

**Requests** the president:

- (1) That the Management Group meet face-to-face annually, or as needed, preferably in conjunction with other meetings or events, and by videoconference bimonthly. Meetings should be scheduled at a time that ensures that a majority of members are able to attend;
- (2) To review the terms of reference, structure and composition of RA III Working Groups at the earliest opportunity, following the Eighteenth Congress, to ensure alignment with the RA III Operating Plan 2020–2023;

**Further requests** the president to report to the Association during the intersessional period, as necessary, and at its next regular session, on the activities of the Management Group and relevant decisions taken on behalf of the Association.

**Authorizes** the president to take the necessary decisions on behalf of the Association, after consultation with the Management Group, on matters of importance to the Region;

**Note:** This resolution replaces Resolution 13 (RA III-16), which is no longer in force.

### **Resolution 16 (RA III-17)**

#### **Regional Association III Working Group on Infrastructure and Applications**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Decides:**

- (1) To establish the Regional Association III Working Group on Infrastructure and Applications with the following terms of reference:
  - (a) To develop, promote and monitor strategies for enhancing the capabilities of Regional Association III (RA III) Members to deliver and improve access to high-quality, fit-for-purpose, cost-effective weather services;
  - (b) To identify and evaluate national and international best practices in the delivery of weather and warning services, and appropriately and proactively communicate these to RA III Members;
  - (c) To develop, promote and monitor strategies for the regional development and sustainable implementation of WIGOS; to provide guidance and propose priority projects for the implementation of WIGOS in the Region;
  - (d) To develop, promote and monitor integrated strategies for regional development and sustainable implementation of the observing systems of WMO and co-sponsored programmes, including the composition of and changes to the Regional Basic Synoptic Network (RBSN) and Regional Basic Climatological Network (RBCN); promotion of traceability of instrument calibrations to international standards, building on the effective operation of Regional Instrument Centres; and adoption of relevant elements of the WMO Implementation Plan for the Evolution of Global Observing Systems;
  - (e) To develop, promote and monitor strategies for the regional development and sustainable implementation of the WMO Information System (WIS). The highest priority remains overcoming the persistent shortcomings of the regional Internet Protocol Virtual Private Network (IP VPN) for time-critical and operation-critical data

exchange. Attention should also be paid to the new functionality of WIS for flexible data discovery, access and retrieval services, and to speed up the migration from Traditional Alphanumeric Codes to Table Driven Formats (BUFR);

- (f) To develop, promote and monitor strategies for regional development and implementation of numerical weather prediction activities. The highest priority remains the exchange of products and experience and the implementation of severe weather warning systems;
  - (g) To develop, promote and monitor strategies for regional development and implementation of public weather services. The highest priority remains the delivery of services to users;
  - (h) To identify means for strengthening links with bodies involved in the development and implementation of relevant observing and information systems and public weather service delivery;
  - (i) To coordinate regional radio-frequency activities, liaising with the Steering Group on Radio-frequency Coordination of the Commission for Basic Systems and following the relevant activities of the Inter-American Telecommunication Commission (CITEL) of the Organization of American States (OAS);
  - (j) To identify education and training requirements for relevant information and communication techniques, observing and forecasting systems, system operations and public weather services;
  - (k) To keep abreast of WMO regulatory material related to observations and information systems, informing Members accordingly;
  - (l) To permanently follow up the measures adopted within the framework of the Regional Strategic Plan (2019–2022) so as to update and continue implementing regional priorities;
  - (m) To define and follow up on the regional needs for exchange of data and products, proposing appropriate measures and procedures to meet such information needs inside and outside the Region, with priority given to the new Automatic Weather Station networks, the extension of the collection and distribution in the Region of data from the Aircraft Meteorological Data Relay Programme, the definition of requirements for satellite data and products from current and new series of polar and geostationary satellites and the regional distribution of meteorological radar data and products;
  - (n) To coordinate the work of the subgroups and to report on advances or problems, advising the RA III president and Management Group;
- (2) That the Working Group should have the following composition:
- (a) a Chair;
  - (b) two Vice-Chairs: (i) a Vice-Chair for infrastructure and (ii) a Vice-Chair for applications;
  - (c) Subgroups to be decided by the Chair and Vice-Chairs of the Working Group and validated by the Management Group;
  - (d) Rapporteurs designated under each subgroup, as needed, for specific tasks;
  - (e) Expert from Members may be invited for specific activities;

- (3) To designate, in accordance with Regulation 33 of the WMO General Regulations, Mr. Gastón Torres (Chile) as Chair of the Working Group, Mr. José Mauro de Rezende (Brazil) as Vice-Chair for infrastructure, and Marcos Saucedo (Argentina) as Vice-Chair for applications;

**Requests** the Chair of the Working Group:

- (1) To submit to the Management Group within three months a work plan for the period 2019–2022, as well as the final version of these terms of reference, with due account of the deliverables outlined in the RA III Operating Plan;
- (2) To provide an annual progress report to the president of the Association and a final report at least three months before the next session of the Association;

**Invites** Members:

- (1) To nominate experts who are committed to serving actively on the Working Group, with due attention to gender balance and expertise, which may lie in other organizations, including academia and the private sector;
- (2) To support the activities of the Working Group;

**Requests** the Secretary-General to support the activities of the Working Group and Task Teams.

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**Note:** This resolution replaces Resolution 14 (RA III-16), which is no longer in force.

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### **Resolution 17 (RA III-17)**

#### **Regional Association III Working Group on Climate**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Decides:**

- (1) To re-establish the Regional Association III (RA III) Working Group on Climate with the following terms of reference:
  - (a) To coordinate observational aspects of climate services including through liaison with the Global Framework for Climate Services, the Global Climate Observing System and the Global Ocean Observing System;
  - (b) To advise on methods for strengthening and improving climate system monitoring, analyses and indices;
  - (c) To keep abreast of the activities of the World Climate Services Programme, the Commission for Climatology, the World Climate Research Programme and its core research projects, the Global Framework for Climate Services, the Intergovernmental Panel on Climate Change, the United Nations Framework Convention on Climate Change and other climate-related bodies; to report on results of meetings and workshops; and to encourage strong regional involvement in these bodies;
  - (d) To advise on and assist in the implementation of various climate information and prediction services for climate-sensitive sectors in the Region such as agriculture, water, renewable energy, urban and building planning, disaster risk reduction, air quality and health;

- (e) To examine, coordinate, report on and encourage the use of Geographical Information Systems in the provision of climate services;
  - (f) To provide advice on, assist in identifying and coordinate attendance at climate-related education and training courses/workshops, including information technology and management courses, on the basis of a survey of training requirements in the Region;
  - (g) To provide further advice and proposals on the role, structure and mechanism of Regional Climate Centres in Region III, and assist them in seeking formal WMO designation;
  - (h) To provide advice and proposals on other important climate-related issues as they develop and evolve;
  - (i) To advise and assist the president of RA III in the implementation of the Global Framework for Climate Services, particularly with regard to the World Climate Services Programme and the Agricultural Meteorology Programme in the Region;
  - (j) To liaise with the relevant regional panels of the World Climate Research Programme, identify and communicate regional climate research requirements and promote uptake of research advances in operational climate services;
  - (k) To promote climate watch systems in the Region and advise on best practices in their implementation;
  - (l) To assess the status of progress in data rescue and digitization of climate records and promote related projects in collaboration with the Commission for Climatology and international projects and mechanisms;
  - (m) To advise on modern tools, specifications and standards for the archiving, management and use of climate information and related applications and services;
  - (n) To advise and assist the president of RA III in all matters concerning the implementation of Regional Climate Centres in Region III;
  - (o) To promote sustained Regional Climate Outlook Forum mechanisms in the Region, including related training and capacity-building activities, and assist Members in their implementation, and to encourage the participation of user groups in the Forums;
  - (p) To assist Members in establishing sustainable climate services at the national level, including through national frameworks for climate services, National Climate Outlook Forums and National Climate Forums;
  - (q) To promote the use of climate information in risk management and adaptation activities in agriculture, including the relevant agrometeorological aspects;
  - (r) To coordinate capacity development efforts in the Region for climate services and agricultural meteorology;
  - (s) To improve and promote climate model verification techniques, and to support climate services, such as drought monitoring and health-related service, and others that can be set up in the Region;
- (2) That the Working Group shall be composed as follows:
- (a) A Chair and a Vice-Chair;
  - (b) A representative of each Regional Climate Centre;

- (c) Task Teams as decided by the Chair of the Working Group and validated by the Management Group, covering both climate and matters related to agricultural meteorology, with the Task Team leaders serving as core members of the Working Group;
  - (d) Other experts as necessary, bearing in mind that, due to funding constraints, the composition of working groups should be kept to a minimum allowing their effective operation during the intersessional period;
- (3) To designate, in accordance with Regulation 33 of the WMO General Regulations, Ms. María de los Milagros Skansi (Argentina) as Chair, and Grinia Jesús Avalos Roldán (Perú) as Vice-Chair of the Working Group on Climate;

**Requests** the Chair of the Working Group on Climate:

- (1) To submit to the Management Group, within three months, a work plan for the period 2019–2022, as well as the final version of these terms of reference, with due account of the deliverables outlined in the RA III Operating Plan;
- (2) To submit to the Management Group proposals for the establishment of Task Teams, including their terms of reference, as necessary, to facilitate successful implementation of the RA III Operating Plan in the area of responsibility of the Working Group;
- (3) To provide annual progress reports to the president of the Association and a final report at least three months before the next session of the Association;

**Invites** Members:

- (1) To nominate experts who are committed to serving actively on the Working Group, with due attention to gender balance;
- (2) To support the activities of the Working Group;

**Requests** the Secretary-General to support the activities of the Working Group and Task Teams.

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**Note:** This resolution replaces Resolution 15 (RA III-16), which is no longer in force.

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## **Resolution 18 (RA III-17)**

### **Regional Association III Working Group on Hydrology and Water Resources**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Decides:**

- (1) To re-establish the Regional Association III (RA III) Working Group on Hydrology and Water Resources with the following terms of reference:
  - (a) To develop, promote and monitor strategies and activities that will enhance the capabilities of RA III Members to improve the quality of hydrological services and to deliver and facilitate access to these services, with an emphasis on improved observation and monitoring systems;



- (b) To coordinate with relevant WMO bodies, particularly the Commission for Hydrology, and other groups to enable improved forecasting capabilities, including the provision of more accurate, timely and reliable forecasts and warnings and enhanced delivery of related information and services;
  - (c) To assist RA III Members in applying a quality management approach that will enable and support sustainable water resources;
  - (d) To establish and coordinate task teams, as required, to complete specific activities related to the objectives, priority areas and planned deliverables of the Working Group;
  - (e) To consolidate the results of activities initiated in the previous intersessional period and to consider possible new areas of work as indicated by the Regional Association;
  - (f) To manage and moderate the online RA III Hydrology Forum in order to fully involve all Working Group members and other stakeholders in its activities, and disseminate information on its outputs and outcomes;
  - (g) To continue being an oversight and coordination body for future regional improvements in service delivery, such as implementation of the Flashflood Guidance System at regional level, data exchange activities based on the WMO Hydrological Observing System (WHOS)-Phase II approach, regional forecasting and early warning hydrometeorological systems such as the Hydrometeorological Forecasting and Early Warning System in the Plata Basin (PROHMSAT-Plata), regional hydrological outlooks based on seasonal predictions, and regional drought warning systems in coordination with the Working Group on Climate;
  - (h) To develop the Working Group into an advisory body to support global-level strategic developments on the basis of regional needs and priorities;
  - (i) To report and provide advice to the RA III Management Group on the above issues;
- (2) That the Working Group should be composed as follows:
- (a) A Chair (who will act as the Regional Hydrological Adviser) and a Vice-Chair;
  - (b) Other experts as necessary, but at least three experts representing the hydrological diversity of RA III, bearing in mind that, due to funding constraints, the participation in face-to-face working group meetings will be limited.

The composition of the Working Group should reflect the cultural and geographical diversity of the Region;

- (3) To designate, in accordance with Regulation 33 of the WMO General Regulations, Ms. Silvana Alcoz (Uruguay) as Chair, and Mr. Fabio Bernal (Colombia) as Vice-Chair of the Working Group;

**Requests the Chair:**

- (1) To submit to the Management Group a proposal for the terms of reference and work plan, as necessary, to facilitate successful implementation of the RA III Operating Plan in the area of responsibility of the Working Group;
- (2) To provide an annual progress report to the president of the Association and a final report at least three months before the next session of the Association;

**Invites** Members:

- (1) To nominate experts who are committed to serving actively on the Working Group, with due attention to gender balance and expertise, which may lie in other organizations, including academia and the private sector;
- (2) To support the activities of the Working Group;

**Requests** the Secretary-General to support the activities of the Working Group and Task Teams.

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**Note:** This resolution replaces Resolution 16 (RA III-16), which is no longer in force.

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### **Resolution 19 (RA III-17)**

#### **Review of previous resolutions and recommendations of the Association**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Noting** the *Abridged Final Report with Resolutions of the Ninth Session of the Executive Council* (WMO-No. 67 RC.14), general summary, paragraph 3.7.1,

**Considering:**

- (1) That a number of resolutions adopted before the seventeenth session have been revised and incorporated in resolutions of the seventeenth session (as per the annex to the present resolution),
- (2) That some of the previous resolutions have been incorporated in appropriate WMO publications or have become obsolete,

**Decides** not to keep in force the resolutions adopted before its seventeenth session.

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**Note:** This resolution replaces Resolution 17 (RA III-16), which is no longer in force.

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### **Resolution 20 (RA III-17)**

#### **Gender equality**

REGIONAL ASSOCIATION III (SOUTH AMERICA),

**Recalling** [Resolution 59 \(Cg-17\)](#) – Gender equality and empowerment of women, and its annex, WMO Gender Equality Policy,

**Recalling further** [Decision 55 \(EC-70\)](#) – Implementation of WMO Gender Equality Policy and Action Plan, and [Decision 77 \(EC-68\)](#) – WMO Gender Action Plan,

**Reaffirming** the goal of achieving gender equality within Regional Association III (RA III) and gender-sensitive weather, hydrological, climate and related environmental services that will contribute to an improved response to the specific needs and social and economic circumstances of women and men,

**Acknowledging** the discussion on gender equality and inclusive leadership at the Regional Conference which preceded the session,

**Recognizing** the need to accelerate regional action on advancing gender equality understood as equal opportunities between women and men,

**Having examined** the statistics on the participation of women and men in structures and activities of the Association as well as in the staff and management of National Meteorological and Hydrological Services (NMHSs),

**Decides** to adopt the Action Plan for Advancing Gender Equality in RA III (thereafter referred to as the Action Plan) developed at the Regional Conference and contained in Annex 1 to the present resolution;

**Requests** the Management Group:

- (1) To facilitate and monitor the implementation of the Action Plan at both regional and national levels;
- (2) To devise strategies and provide guidance to Members on increasing the equal participation of women in the work of the Association, WMO technical structures and NMHS service provision and management;
- (3) To compile regular statistics on gender balance at all levels of NMHS staffing in the Region as well as on female/male representation in the structures and activities of the Association and those of other WMO constituent bodies;
- (4) To designate one of its members to serve as Regional Gender Focal Point and Gender Custodian in accordance with the Terms of Reference provided in Annex 2 to the present resolution;

**Invites** Members:

- (1) To refer to the Action Plan for guidance and to take appropriate action at the national level in accordance with their needs and context;
- (2) To establish and promote weather, hydrological, climate and related environmental services that take gender equality into account;
- (3) To nominate national gender focal points;
- (4) To share good practices on (a) attracting more young people (men and women) and professional women into science, (b) mainstreaming gender in organizational policies and practices, and (c) making weather, hydrological and climate services more gender-sensitive.

**Requests** the Secretary-General to continue assisting Members in their efforts to implement inclusive policies and the Action Plan for Advancing Gender Equality in RA III.

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## **Annex 1 to Resolution 20 (RA III-17)**

### **Action Plan for Advancing Gender Equality in Regional Association III**

#### **At the regional level:**

*With the aim of implementing the WMO Gender Equality Policy and WMO Gender Action Plan:*

1. Seek a progressive increase in the representation of women in all working groups of the Association, with a target of 30% female representation during the next period and parity as a goal in the medium- to long-term.
2. Identify strategies and mechanisms to mainstream gender in the provision of services and have them implemented by NMHS.
3. Collect gender-disaggregated data regarding all aspects of the Association's work, including the participation of women and men in regional activities (trainings, projects, research, events).
4. Facilitate opportunities for young professionals –women and men – to collaborate with established experts in various fields of work and to participate in regional activities.
5. Develop a mentoring programme for professionals with leadership potential, in cooperation with the Regional Training Centres.
6. Promote sessions, workshops and side events dedicated to gender equality in conjunction with events and activities of the Association.
7. Regularly review progress in implementation of the Action Plan and update, as necessary, based on methods that have proven effective.
8. Request WMO RTCs to promote a more equal participation of women in meteorology, hydrology and other careers related to the provision of climate, hydrological and meteorological services.

#### **At NMHS level:**

*With the aim of ensuring that equality, diversity and inclusion in the workplace are considered in a consistent and systematic manner:*

9. Establish policies that guarantee equal opportunities based on clear criteria.
10. Evaluate institutional policies, processes and practices from a gender equality perspective.
11. Build the capacity of staff on unconscious bias, inclusive leadership, gender mainstreaming, etc.
12. Promote an open and inclusive workplace environment with zero tolerance for harassment.

*With the aim of achieving gender equality at all institutional levels of the NMS, including in decision-making and in service provision:*

13. Maintain and regularly review publicly available statistical data on employment and recruitment in the NMHS, broken down by job category, with particular attention to the gender balance in senior management.
14. Present reports on female and male participation in meetings and decision-making processes.
15. Promote a more equal participation of women in managerial positions.

16. Promote a gender perspective in the provision of services, particularly in the implementation processes of the user interface platform.
17. Monitor the processes related to capacity building to ensure the equal participation of women and men, provided that staff policies permit so.
18. Promote practices conducive to equality.

*With the aim of involving more women in international cooperation in meteorology, hydrology, climatology and science in general:*

19. Identify experts from NMS or other national institutions that meet the required profile for WMO technical commissions and their working structures.
20. Nominate more women as experts to WMO technical commissions and their working structures in accordance with item 1 of this Action Plan.
21. Seek equality in the composition of delegations participating in meetings, RA III working groups, the Regional Climate Centres of the Region and in other WMO constituent bodies.
22. Develop and disseminate communication materials highlighting the role of women in meteorology, hydrology and climatology, as well as demonstrating female role models of leaders, scientists, researchers, etc.

## **Annex 2 to Resolution 20 (RA III-17)**

### **Regional Association III Gender Focal Point**

The RA III Gender Focal Point shall be responsible for the following:

- (1) To lead action on implementation of the Action Plan for Advancing Gender Equality in RA III as well as the WMO Gender Equality Policy and Gender Action Plan;
- (2) To serve as a 'gender custodian' ahead of all meetings of the Association's constituent body and subsidiary bodies by screening the agenda and documentation, identifying relevant entry points for gender and diversity aspects, and ensuring their consideration and discussion;
- (3) To gather and analyse details, as required, of the role of women and men in the work of the Region;
- (4) To liaise with the WMO Secretariat Gender Focal Point and to jointly collect and disseminate information including studies and policies on the role of women in areas relevant to the Association;
- (5) To collaborate with focal points on gender issues in NMHSs, other regional associations and WMO structures;
- (6) To explore, document and make recommendations for addressing gender equality in the region, pertinent to the Association;
- (7) To submit reports in accordance with the requirements of the RA III Management Group.

## APPENDIX 3. DECISIONS ADOPTED BY THE SESSION

### Decision 1 (RA III-17)

#### Organization of the session

Regional Association III (South America),

**Having considered** the provisional agenda proposed by the president of RA III,

**Approves** the provisional agenda;

**Approves** the report of the representative of the Secretary-General on credentials in accordance with WMO General Regulations 21 to 24;

**Adopts** the establishment of committees for the duration of the session as:

(1) Coordination Committee:

Chairperson: President

Members: Chairperson of plenary, Secretary-General's representative, Secretariat staff, representative of local organizing committee;

(2) Nomination Committee:

Chairperson: Mr Gualberto Carrasco (Plurinational State of Bolivia)

Members: Mr Francisco de Assis Diniz (Federative Republic of Brazil)

(3) Rapporteur on the previous resolutions:

Mr José Olmedo (Republic of Ecuador)

**Agrees** to the programme of work of the session:

(1) Working hours of the meetings: 9.00 a.m. – 1.00 p.m. and 2.30 p.m. – 5.30 p.m.;

(2) Arrangements and allocation of agenda items for the session;

**Decides** to suspend General Regulation 110 for the whole duration of the session to permit rapid processing of documents in accordance with General Regulation 3;

**Decides** that in conformance with General Regulation 112, summarized minutes are not required for the session.

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### Decision 2 (RA III-17)

#### Regional agricultural meteorology and drought activities

Regional Association III (South America),

**Decides** to encourage Members to:

- (1) Liaise with the Integrated Drought Management Programme (IDMP), co-sponsored by WMO and the Global Water Partnership, on drought monitoring and early warning systems and development of national policies in the region;

- (2) Conduct user interface events with the agricultural community, such as Roving Seminars, and to develop training material for such events;
- (3) Provide expertise on projects on agrometeorology, sustainable agriculture adapted to climate change and climate-variability and drought in the Region in general, and continue to deploy efforts in the design and initial implementation of a Drought Information System in the South of South America;
- (4) To take into account the recommendations of the Conference on Drought Management and Preparedness (Santa Cruz, Bolivia, August 2017) to support national drought policies, information services and drought preparedness networks at local, national and regional levels, as well as drought risk management strategies in agriculture, through continued collaboration among the World Meteorological Organization (WMO), the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Convention to Combat Desertification (UNCCD).

See [RA III-17/INF. 3.1\(2\)](#) for more information.

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**Decision justification:** IDMP has more 35 international, regional and national partner institutions that can provide assistance to countries through its [Help Desk](#) on the three pillars of integrated drought management: Monitoring and Early Warning; Vulnerability and Impact Assessment; and Mitigation, Preparedness and Response. Roving Seminars have been used in the region for several years to increase the interactions between the NMHSs and the agricultural community. There are several agrometeorological and drought related projects in the region that Members could support through the provision of experts.

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### **Decision 3 (RA III-17)**

#### **Disaster risk reduction and service delivery**

#### **Regional Association III (South America) decides:**

- (1) To form, under the RA III Working Group on Infrastructure and Applications (WG-IAA), the WG-IAA Sub-group on Disaster Risk Reduction and Service Delivery to help enhance the implementation of service delivery initiatives in RA III in the areas of impact-based forecast and warning services; urban services; environmental services; multi-hazard early warning services; polar and high mountain area services; health; energy; land transportation etc.;
- (2) To encourage regional coordination in capacity development, exchange of best practices, and the development of regional operational platforms for service delivery;
- (3) To request Members, who have not yet done so, to update and/or nominate their PWS National Focal Points as well as DRR National Focal Points;
- (4) To establish a network of the existing Focal Points for enhancing coordination and harmonization among the DRR, PWS and marine domains in the implementation of service delivery initiatives of RA III;
- (5) To request Members to participate in regional service delivery initiatives and activities and to particularly support the work of the WG-IAA Sub-group on Disaster Risk Reduction and Service Delivery; and
- (6) To request the Secretary-General to provide support to the activities of the WG-IAA Sub-group on Disaster Risk Reduction and Service Delivery.

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**Decision justification:**

1. Resolution 1 (RA III-16), Implementation of the WMO Strategy for Service Delivery in RA III (South America) in which the Association requested the RA III Management Group to ensure a harmonized and synchronized implementation of the WMO Strategy for Service Delivery by Members.
  2. Resolution 2 (Cg-17), Implementation of the WMO Strategy for Service Delivery in which Congress requested Members to implement the WMO Strategy for Service Delivery as provided in its Implementation Plan.
  3. Decision 3 (EC-68) establishing the Member-centred WMO DRR governance consisting in particular of DRR Focal Points of the regional associations, technical commissions and technical programmes (DRR FP RA-TC-TP), under the guidance of the EC WG/DRR.
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**Decision 4 (RA III-17)****Impact-based forecasting and warning services****Regional Association III (South America) decides:**

- (1) To task the Working Group on Infrastructure and Applications (WG-IAA) Sub-group on Disaster Risk Reduction and Service Delivery with the function of enhancing capacities of Members to provide Impact-Based Forecast and Warning Services (IBFWS), following the *WMO Guidelines on Multi-hazard Impact-based Forecast and Warning Services* (WMO-No. 1150), in order to enable impact-based decision support services to the disaster community and to relevant social and economic sectors;
- (2) To encourage linkages between National Meteorological Services and Hydrological Services to enhance IBFWS;
- (3) To encourage the development of coordination protocols and data exchange among neighbouring countries or among countries within the Region in order to better address transboundary hydrometeorological issues related to IBFWS;
- (4) To request the Commission for Basic Systems (CBS) to develop guides and the technical support needed for the design and improvement of multi-hazard early warning services in the Member countries;
- (5) To engage with CBS in encouraging the development of high-resolution, medium range, sub-seasonal and seasonal multi-scale NWP outputs to support IBFWS needs and relevant application sectors;
- (6) To participate at the planned WMO Global Symposium on IBFWS in 2019 (venue to be decided), and to actively share experiences and examples of best practice in IBFWS including those resulting from the outcomes of the Regional Association III (RA III) Capacity Building Workshop on Impact-Based Forecast and Warning Services and the Common Alerting Protocol (CAP) held in Argentina in September 2018;
- (7) To collect and collate requirements for impact-based services for polar regions and high mountain areas;
- (8) To initiate efforts towards building capacities of the NMHSs to assess and demonstrate their socio-economic benefits (SEBs) including those related to the IBFWS, following the guidance provided in the WMO publication, *Valuing Weather and Climate: Economic*



*assessment of Meteorological and Hydrological Services* (WMO-No. 1153) while applying the principles of the *WMO Strategy for Service Delivery and its Implementation Plan* (WMO-No. 1129).

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**Decision justification:**

1. Decision 12 ([EC-70](#)) to organize a global symposium on IBFWS in late 2019.
  2. Decision 4 ([EC-69](#)) to develop training materials on impact-based forecast and warning services and to apply guides prepared by the Regional Specialized Meteorological Centres (RSMCs) and the Public Weather Services Programme.
  3. The Eighth Session of the Executive Council Panel of Experts on Polar and High-mountain Observations, Research and Services (EC-PHORS-8) recognized the need to build capacities of the NMHSs to assess SEBs, and to use the WMO Strategy for Service Delivery to enhance service provision in Polar and High-mountain regions.
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**Decision 5 (RA III-17)**

**Standard interfaces for accessing data and services for public service delivery**

**Regional Association III (South America) decides:**

- (1) To task the Working Group on Infrastructure and Applications (WG-IAA) Sub-group on Disaster Risk Reduction and Service Delivery to consider service delivery needs of RA III with a view to developing standard interfaces (e.g. protocols or Application Programming Interfaces (APIs)) to facilitate easy access of data and services for public service delivery;
  - (2) To provide expertise and to share knowledge and requirements in the area of developing standard interfaces and to be open to provide experts to serve in any mechanism that Commission for Basic Systems (CBS) may form for this purpose;
  - (3) To share best practices on the development and implementation of web-service interfaces for accessing weather and climate information.
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**Decision justification:** Decision 11 ([EC-70](#)) in which EC requested for the establishment of standard interfaces (e.g. protocols or APIs) for accessing data and services for public service delivery, as expressed in the Common Interface for Service Delivery (CISD) concept paper.

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**Decision 6 (RA III-17)**

**Delivery of integrated health and urban services in Region III**

**Regional Association III (South America) decides:**

- (1) To task the Working Group on Infrastructure and Applications (WG-IAA) Sub-group on Disaster Risk Reduction and Service Delivery to focus on developing proposals for urban integrated hydrometeorological, climate and environment services for hazards such as heavy rain, strong winds, extreme heat and cold and volcanic ash, wild fires and their

cascading impacts including flooding, storm surges, tsunamis, landslides and heat and cold waves for improved decision making by Disaster Management and Civil Protection Authorities (DMCPAs) and other sectors including energy and health sectors;

- (2) To support the development of the Guide for Integrated Urban Weather, Environment and Climate Services, and especially Part II of the Guide, namely "Guidelines for the Development of an integrated Operational Platform to Meet Urban Service Delivery Needs" by contributing examples of good practises from RA III, and by providing feedback on the draft of the Guide;
- (3) To focus on strengthening capacities for NMHSs to engage with the health community in providing forecast services based on impacts that affect the health sector and raise concerns in RA III.

See [RA III-17/INF. 3.1\(3\)](#) for more information on the outline for the "Guidelines for the Development of an integrated Operational Platform to Meet Urban Service Delivery Needs" as approved by EC-70.

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#### **Decision justification:**

1. Decision 7 (EC-70) "Integrated Urban services": in which EC endorsed the methodology for building integrated urban services developed as Part I of the draft "Guide for Integrated Urban Weather, Environment and Climate Services" and the outline for the "Guidelines for the Development of an Integrated Operational Platform to Meet Urban Service Delivery Needs" being developed as per Decision 41 (EC-69) under the leadership of the Commission of Atmospheric Sciences (CAS) and CBS by an inter-programme working group;
2. Resolution 3 (EC-70) "Integrated Health services" in which EC requested that, in implementing the WMO Strategy for Service Delivery, the Commission for Climatology, the Commission for Basic Systems, and other relevant commissions (or their future equivalent mechanism), focus on strengthening capacities of NMHSs to engage with the health community to collect and share health related data, serve the health sector through impact-based forecast health services, and provide guidance materials for use by NMHSs in improving service delivery in the area of health.

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### **Decision 7 (RA III-17)**

#### **Enhancing international exchange of weather forecast and warnings**

#### **Regional Association III (South America) decides:**

- (1) To task the Working Group on Infrastructure and Applications (WG-IAA) Sub-group on Disaster Risk Reduction and Service Delivery with the task of developing a proposal for a regional RA III warnings aggregation platform, where warnings are issued by the relevant Member authorities in RA III, as a component of the WMO Global Multi-hazard Alert System (GMAS);
- (2) To request Members to enhance their participation in the mechanisms and standards approved by Congress for international exchange of weather forecasts and warnings and specifically to:
  - (a) Adopt and operationalize the Common Alerting Protocol (CAP) standard for coding alerts, including provision of warning feeds to the Filtered Alert Hub (prototype for

the WMO Alert Hub) the WMO Widget for Live Feed of Alerts/Warnings issued by WMO Members, and the global warnings map of the Severe Weather Information Centre (SWIC) Website all of which underpin the GMAS;

- (b) Nominate national editors to edit, and keep updated, the WMO Register of Alerting Authorities of their national register pages;
- (c) Join the World Weather Information Service (WWIS) initiative, provide city forecasts for at least five days and increase the number of cities for which they provide climate and forecast information thus increasing the utility of WWIS.

See [RA III-17/INF. 3.1\(4\)](#) for more information

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### Decision justification:

1. Decision 4 (EC-70): in which EC encouraged regional associations and Members to continue their efforts in the development of and involvement in MHEWS/GMAS and to share their best practice at national, sub-regional, regional and global levels, such as Meteoalarm of the European Meteorological Services Network (EUMETNET), Meteoalert of the Federal Service for Hydrometeorology and Environmental Monitoring of the Russian Federation (Roshydromet), South-East European Multi-Hazard Early Warning Advisory System (SEE-MHEWS-A) and GMAS-Asia.
  2. Decisions of Cg-17 Geneva (25 May/12 June 2015) – International exchange of public forecasts and warnings. See decisions extracts below:
    - 3.1.55 urged all Members to support the further development of [WWIS](#);
    - 3.1.57 encouraged further improvement [SWIC](#) website;
    - 3.1.58 Requested members to keep the “[International Register of Alerting Authorities](#)”, updated;
    - 3.1.59 encouraged Members to take advantage of the WMO [CAP Jump-Start Offer for training and assistance in implementing the CAP standard](#).
  3. These initiatives underpin the WMO GMAS, which is currently under development.
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## Decision 8 (RA III-17)

### Disaster risk reduction governance in Regional Association III

#### Regional Association III (South America) decides to:

- (1) Align its operating plan and relevant activities with the [WMO Disaster Risk Reduction \(DRR\) Roadmap](#) to support the implementation of the [Sendai Framework for DRR 2015–2030](#) as well as regional strategies and plans on DRR, climate change adaptation (CCA) and resilience building, in particular with respect to multi-hazard early warning systems (MHEWS);
- (2) Strengthen its partnerships with other regional organizations and regional bodies of international organizations and support the WMO Regional Centres to provide early warning information;

- (3) Engage its Members' National Meteorological and Hydrological Services (NMHSs) at the highest level of their national DRR and CCA mechanisms and include representatives of NMHSs in their national delegations to the [Regional Platform for DRR in the Americas](#) (next session planned for 2020) and the Global Platform for DRR ([Sixth Session](#) to take place from 13 to 17 May 2019 in Geneva) subject to available resources;
- (4) Nominate WMO DRR Focal Points of its NMHSs to be recorded in the WMO Country Profile Database (CPDB) for closer cooperation among NMHSs and with the Secretariat.

See [RA III-17/INF. 3.1\(4\)](#) for more information.

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**Decision justification:**

1. EC-70 Decision 3 – Further Implementation of the WMO DRR Roadmap;
  2. Decision 3 (EC-68) – WMO DRR Governance, User-Interface Mechanisms and DRR Roadmap;
  3. Resolution 10 (Cg-17) – Sendai Framework for DRR 2015–2030 and WMO Participation in the International Network for MHEWS;
  4. Resolution 3 (RA III-16) – Implementation of DRR Activities in Region III (South America).
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**Decision 9 (RA III-17)**

**Implementation of the methodology for cataloguing high-impact weather, water and climate events in Regional Association III**

**Regional Association III (South America) decides** to test the methodology for the cataloguing of high-impact weather, water and climate events in Regional Association (RA) III, as recommended by the Seventieth WMO Executive Council (EC-70), and provide feedback on the outcomes to the EC Working Group on Disaster Risk Reduction (EC WG/DRR), benefitting from the pilot phase conducted in RA VI (Europe),

**Requests the President of the Association and the RA III Management Group to:**

- (1) Facilitate and support the implementation of this testing through engaging the relevant working groups and volunteering NMHSs of members of RA III, and regional centres, to support the work of the WMO Inter-Programme Task Team on Cataloguing Extreme Weather, Water and Climate Events (IPTT-CEWWCE);
- (2) Organize a kick-off expert workshop to develop guidance materials for the testing of the proposed approach.

**Requests the Secretary-General** to provide support for conducting the test phase.

See [RA III-17/INF. 3.1\(4\)](#) for more information.

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**Decision justification:**

1. Recommendation 1 (EC-70) – Approach for Cataloguing High-Impact Events,
2. Resolution 9 (Cg-17) – Identifiers for Cataloguing Extreme Weather, Water and Climate Events,

3. When fully implemented, WMO will be able to offer its Members and the international community a standardized, continuously updated and global dataset of hazard and notable or extreme event occurrences (including their attribution to climate change where applicable/possible) and for use in impact-based forecasting, risk-informed warning and monitoring the implementation of international agreements and conventions. Such standardized characterization and unique identification of hazard events will allow for an authoritative and unambiguous reference and thus a better evaluation of the type of loss and damage associated with different types of events (e.g. identification of the most damaging events, thresholds, and trends).

### **Decision 10 (RA III-17)**

#### **Strengthening multi-hazard early warning services, and contribution of Regional Association III to a WMO Global Multi-Hazard Alert System**

##### **Regional Association III (South America) decides to:**

- (1) Enhance the national multi-hazard early warning systems (MHEWS) of Members in Regional Association (RA) III and respective services to their national and regional stakeholders, benefitting from good practices in RA III and from regional and global support mechanisms;
- (2) Support the concept for the WMO Global Multi-hazard Alert System (GMAS) as a driver and vehicle for:
  - (a) Capacity development at national and regional levels,
  - (b) Efficient outreach to and recognition from key national, regional and global users and stakeholders, especially humanitarian organizations and agencies,
  - (c) embracing the harmonization / standardization of procedures to prepare and issue warnings, respecting the sovereignty of Members in this task,
- (3) Explore regional / transboundary multi-hazard early warning mechanisms / platforms as a contribution to a future GMAS.

##### **Requests its Members to:**

- (1) Commit to MHEWS-related capacity-development projects and sustain their results, especially in view of the ability of their National Meteorological and Hydrological Services (NMHSs) to produce multi-hazard, impact-based, risk-informed and actionable warnings that can be regionally and globally aggregated,
- (2) Share their lessons learnt and good practices on early warning with the RA III Management Group and the Secretariat and at events such as the [Second Multi-hazard Early Warning Conference](#) (MHEWC-II, planned for 13–14 May 2019 in Geneva) and at national, regional and global platforms for DRR,

**Invites Members** to share their warning information, particularly using the Common Alerting Protocol (CAP), as well as impact data,

##### **Requests the RA III Management Group, to:**

- (1) Document good practices with MHEWS and DRR activities as well as capacity development projects targeted at NMHSs of Members in RA III,

- (2) Gather, in collaboration with the Secretariat and the Expert Group on GMAS (EG-GMAS) under the guidance of the Executive Council Working Group on Disaster Risk Reduction (EC WG/DRR), RA III Members' expectations from and requirements on a regional warning platform and a GMAS as well as their capacities / readiness for involvement in such mechanisms,

**Requests the Secretary-General** to provide support, mobilize resources and ensure coordination with the technical commissions and other RAs.

See [RA III-17/INF. 3.1\(4\)](#) for more information.

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**Decision justification:**

1. Decision 4 (EC-70) – Development of GMAS as well as EC-70/INF. 3.2 (contained in the [EC-70 Part II – Progress Report](#)),
  2. Reports of the Second Meeting of the EC Working Group DRR (INF) and of the meetings of its Expert Group on GMAS, including the GMAS concept and strategy,
  3. Decision 3 (EC-69) – WMO GMAS.
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**Decision 11(RA III-17)**

**Support to the activities of the United Nations and other humanitarian agencies**

**Regional Association III (South America)** decides to contribute to the development of, and participate in, a WMO Coordination Mechanism that enables easy access to authoritative information and provision of expert advice to the United Nations (UN) and humanitarian agencies (HAs) to respond to their immediate requests in anticipation of, and during or after hydro-meteorological hazardous situations;

**Invites its Members**, to the degree possible, and WMO regional centres in RA III to actively engage with the Secretariat towards this aim by providing data, information, expert advice and further in-kind contributions.

See [RA III-17/INF. 3.1\(4\)](#) for more information.

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**Decision justification:**

Decision 5 (EC-70) – Support to the UN and HAs.

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## **Decision 12 (RA III-17)**

### **Regional activities in aeronautical meteorology**

#### **Regional Association III (South America) decides to:**

- (1) Request the Management Group of RA III to:
  - (a) review the outcomes of the sixteenth session of the Commission for Aeronautical Meteorology (CAeM-16) and Technical Conference (TECO), including the priority themes identified,
  - (b) align the aeronautical meteorology-related activities and priorities in the region with these outcomes,
  - (c) consider the need to establish new or repurpose existing working groups, with appropriate terms of reference, to further promote the implementation of aeronautical meteorology services in the region,
- (2) Request the president of the Regional Association to assist WMO Members in RA III in the designation of experts or to re-confirm the designation of experts to liaise with the CAeM Management Group on regional aspects of aeronautical meteorological service provision.

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#### **Decision justification:**

The CAeM-16 session was held from 24 to 27 July 2018 and was preceded by a one-day TECO on 23 July 2018 entitled "The future is now: Meteorology enabling aviation decision support".

The CAeM-16 decided, *inter alia*, that priority themes for the intersessional period immediately following the session should be:

- (1) Education, training and competency of aeronautical meteorological personnel,
- (2) Aeronautical information service and governance,
- (3) Aeronautical meteorological hazards prediction,
- (4) Impacts of climate change and variability on aviation, and
- (5) Communication and outreach.

All materials pertaining to CAeM-16 and TECO are available at: [meetings.wmo.int/CAeM-16/](https://meetings.wmo.int/CAeM-16/)

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## **Decision 13 (RA III-17)**

### **Implementation and coordination of Regional Climate Centre operations in Regional Association III**

#### **Regional Association III (South America) decides:**

- (1) To establish collaboration and coordination mechanisms to ensure the consistency and harmonization of Regional Climate Centre (RCC) operations within and beyond RA III, through the RA III Working Group on Climate;

- (2) To urge Members to (i) fully exploit products and services of the RCCs, in order to improve provision of climate services at the national level, (ii) actively support the generation of RCC products and services by sharing national data, products and expertise and (iii) provide feedback in order to help further refine its products and services;
- (3) To assess on a regular basis the utilization of RCC products and services by the Members, as well as their usefulness for them, through establishing feedback mechanisms under the auspices of regional and national climate forums, to share the assessment among RCCs, to support further improvement of RCC functions and operations, based on the feedback;
- (4) To invite WMO RCCs and RCOFs serving RA III Members to engage even more closely with the Copernicus Climate Change Service (C3S), and identify their potential roles in assisting the NMHSs to optimally utilize the emerging C3S products and services as complementary to other global/regional inputs;
- (5) To request the RA III Working Group on Climate to facilitate the coordination of the RCC/ RCC-Network operations, including the pursuit of a liaison with C3S operations, in close collaboration with the Commission for Climatology (CCI) and the Commission for Basic Systems (CBS);
- (6) To recognize the support that the Regional Climate Centre for Western South America (RCC-WSA) has given to its Members, as well as the achievements made in consolidating its governance and in developing its strategic plan 2019–2022 (see the RCC-WSA Strategic Plan 2019–2022 and the Rules of Procedure of the RCC-WSA Steering Committee attached).

See [RA III-17/INF. 3.3\(1\)](#) for more information.

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**Decision justification:** This decision is aimed at consolidating and enhancing RCC operations in RA III, including the pursuit of a close liaison with other similar regional initiatives within the region and beyond, to ensure comprehensive and complementary regional support to Members' climate services as well as to promote an optimal utilization of RCC products and services. It also covers other key activities of RCCs such as RCOFs and regional climate monitoring products.

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### **Annex 1 to Decision 13**

#### **Strategic Plan of the Regional Climate Centre for Western South America 2019–2022**





## PLAN ESTRATÉGICO DEL CENTRO REGIONAL DEL CLIMA PARA EL OESTE DE SUDAMÉRICA 2019-2022

### 1. Antecedentes

Luego de su designación oficial, el CRC-OSA inició sus operaciones. En abril de 2014 se realizó la primera reunión del Consejo Directivo del CRC-OSA (CD). En esta primera reunión se estableció como mecanismo de gobernanza que el Consejo Directivo esté integrado por los Directores de los SMHN de Bolivia, Chile, Colombia, Ecuador, Perú y Venezuela, además que el CIIFEN actúe como Secretaría Técnica. Durante las siguientes reuniones se definieron planes de trabajo, prioridades, formas de financiamiento, consolidación de la gobernanza y mecanismos de sostenibilidad con el aporte del CIIFEN. En la IV reunión del Consejo Directivo, celebrada en mayo de 2018, se estableció que el CIIFEN, sea parte del CD con iguales derechos y obligaciones que los SMHN.

Una de las recomendaciones realizadas en la IV reunión del CD, fue la de actualizar el Plan Estratégico del CRC-OSA de tal forma que esté más acorde a los avances logrados en la región en los últimos años, así como el surgimiento de los desafíos que plantea la provisión de servicios climáticos diseñados a la medida de las necesidades de los sectores de desarrollo.

### 2. Principios de funcionamiento y gobernanza del CRC para el Oeste de Sudamérica (CRC-OSA)

- El CRC-OSA pertenece a los SMHNs de la Subregión y está orientado al beneficio y fortalecimiento de sus integrantes.
- El Consejo Directivo del CRC-OSA aprobara las políticas y directrices para el funcionamiento del CRC-OSA.
- El CIIFEN será el responsable de la coordinación del CRC-OSA bajo las políticas y directrices aprobadas por el Consejo Directivo del CRC-OSA.
- El CIIFEN rendirá informes del cumplimiento de las políticas y directrices aprobadas por el Consejo Directivo.
- El CRC-OSA contribuirá a la cooperación horizontal dentro de la subregión de Sudamérica y otras regiones conforme sea requerido por el Consejo Directivo y en beneficio de sus miembros.
- Acoger las resoluciones de la OMM para fortalecer el intercambio de datos entre sus miembros (OMM. Resolución 60 (CG-17)).
- Dar cumplimiento a la Resolución OMM- 5.1/1 (CCI-17) sobre fortalecer las operaciones de los Centros Regionales del Clima revisando la definición de sus funciones mandatorias y la política de la Organización Meteorológica Mundial (OMM) para el intercambio internacional de datos y productos climáticos en apoyo a la ejecución del Marco Mundial para los Servicios Climáticos (MMSC).



- Dar cumplimiento a la Resolución de designación del CRC multifuncional, expresada en el Manual del Sistema Global de Procesamiento de Datos y Pronóstico. Anexo IV de las Regulaciones Técnicas de la OMM, Edición 2017, WMO No.485

### 3. Contexto operacional

Las operaciones del CRC-OSA se enmarcan dentro de las directrices de su Consejo Directivo, las prioridades y necesidades definidas por sus miembros, el Plan Estratégico vigente de la Organización Meteorológica Mundial, el Marco Global de los Servicios Climáticos, su misión y visión y la disponibilidad de recursos financieros.

### 4. Misión

Contribuir al fortalecimiento de las capacidades operacionales de los SMHNs para proveer servicios climáticos en sus países de acuerdo a las normas y estándares internacionales.

### 5. Visión

Un Centro Regional de excelencia que provea servicios de monitoreo y predicción del clima a sus Miembros, en beneficio de la resiliencia y cumplimiento de los Objetivos de Desarrollo Sostenible de Naciones Unidas.

### 6. Objetivos estratégicos

**OE 1.** Fortalecimiento de capacidades en los Miembros para la gestión e intercambio de datos climáticos.

**OE2.** Fortalecimiento de capacidades para la predicción climática.

**OE3.** Fortalecimiento de los servicios climáticos de los Miembros para la agricultura y seguridad alimentaria, la reducción de riesgos de desastres, gestión de recursos hídricos, la salud, el agua, la energía y otros.

**OE4.** Promover la movilización de recursos y cooperación técnica para los Miembros.



## 7. Estrategias

### Objetivo estratégico 1

Fortalecimiento de capacidades en los Miembros para la gestión e intercambio de datos climáticos

#### Estrategias

- Fortalecimiento de sistemas integrados de gestión de datos.
- Fortalecimiento de sistemas de interoperabilidad de datos climáticos.
- Fortalecimiento de capacidades.

### Objetivo estratégico 2

Fortalecimiento de capacidades para la predicción climática

#### Estrategias

- Fortalecimiento de capacidades en predicción estacional y sub-estacional
- Fortalecimiento de capacidades en modelación numérica y asimilación de datos
- Fortalecimiento de los sistemas de verificación y validación.

### Objetivo estratégico 3

Fortalecimiento de los servicios climáticos de los Miembros para la agricultura y seguridad alimentaria, la reducción de riesgos de desastres, gestión de recursos hídricos, la salud, el agua, la energía y otros

#### Estrategias

- Desarrollo de herramientas para la generación de productos sectoriales
- Apoyo a la implementación de los Marcos Nacionales de Servicios Climáticos (NFCS)
- Fortalecer alianzas con FAO, OMS/OPS, UNESCO-PHI y UNISDR en apoyo a los servicios climáticos.



#### Objetivo estratégico 4

Promover la movilización de recursos y cooperación técnica para los Miembros

##### Estrategias

- Promover acciones coordinadas entre los SMHNs de la región para la generación de propuestas regionales orientadas al mejoramiento de los servicios climáticos en apoyo a la gestión de riesgo y la adaptación.
- Contribuir en el posicionamiento y visibilidad de los SMHN.
- Contribuir en el mayor involucramiento de los SMHN en los procesos de cooperación internacional relacionados con la gestión de riesgo y adaptación al cambio climático.

**Anexo:** Análisis FODA



## ANEXO - Análisis FODA

### Fortalezas

- Existencia de considerable información climatológica histórica de largo período., que constituye una potencial fortaleza en la región.
- Existe mayor capacidad tecnológica y computacional para la gestión de datos y predicción numérica y estadística del tiempo y clima.
- Capacidades técnicas y conocimiento del clima regional en los SMHN miembros.
- Positiva cooperación regional desarrollada por el CIIFEN, con los países de la región para estimar riesgo agroclimático (BID), fortalecimiento de servicios climáticos sectoriales (PRASDES), información de cambio climático para definición de políticas de conservación (BID) y fortalecimiento de la resiliencia climática (USAID). Además de 17 foros climáticos regionales desarrollados hasta la fecha junto con los SMHNs de la subregión.
- Red institucional consolidada para el pronóstico estadístico estacional regional.
- Reuniones técnicas, por lo menos cada año, compartiendo información que permita conocer episodios meteorológicos e hidrológicos ocurridos en la región.
- Experiencia en adquirir y gestionar proyectos con financiamiento internacional, integrando a los SMHNs de la subregión como ejecutores y beneficiarios de los desarrollos alcanzados.
- Apoyo sostenido de la OMM para llevar, realizar y coordinar acciones conjuntas en la región.

### Oportunidades

- Marco de Sendai
- Acuerdos de París y muy concretamente el Plan de Nairobi
- Los ODS 2030
- La implementación del Marco Global de los Servicios Climáticos.
- La designación de la OMM como agencia acreditada ante el Fondo de Adaptación y el Fondo Verde Climático.
- La Conferencia de Directores de los SMHNs de Iberoamérica.
- La implementación de proyectos en el marco de los programas: EUROCLIMA PLUS; CLIMANDES PLUS y ENANDES.

### Debilidades

- Reducción de la cantidad y calidad de los datos meteorológicos e hidrológicos generados por los miembros.
- Reducción periódica de recursos económicos, humanos y tecnológicos de los Miembros.



- Escasa disponibilidad de fuentes nacionales para la formación técnica y profesional en meteorología e hidrología.
- Existencia de datos no digitalizados y procesados para el análisis.
- Limitaciones para la provisión de adecuados servicios climáticos para sectores específicos en cada país miembro.
- Alta rotación de expertos y puntos de contacto clave dentro de los SMHN.
- Limitaciones en el conocimiento de los procesos físicos involucrados en la predicción climática en los ANDES.
- Limitaciones en la comprensión de los efectos del cambio climático sobre los procesos físicos en los Andes.
- Asimetrías marcadas en capacidades computacionales, plataformas tecnológicas y personal asignado para la predicción climática regional.
- Limitaciones en los procesos de integración de la información climática a escala regional.
- Limitada visibilidad en algunos SMHNs en el contexto nacional e institucional.
- Limitada interacción entre el sector científico, académico y el operacional.
- No existe una homogenización entre los SMHNs de la OSA para la elaboración de los productos climáticos nacionales que faciliten procesos de integración.
- Limitada interacción y participación de los SMHN en las actividades relacionadas con la UNFCCC.
- Desbalance en la asignación de fondos para adaptación versus mitigación con financiamiento climático.
- Marcada asimetría en el acceso a financiamiento climático entre los países de la subregión y otros de Latinoamérica

### **Amenazas**

- Entidades privadas de asesorías y consultorías que con base en la información pública en la web, compite con los SMHNs.
- Surgimiento de entidades nacionales e internacionales que brindan datos, información y servicios sustentados en otras fuentes que no son las redes de estaciones nacionales.

**Annex 2 to Decision 13****Rules of procedure of the Management Committee of the Regional Climate Centre for  
Western South America**



## **REGLAMENTO INTERNO DEL COMITÉ DIRECTIVO DEL CENTRO REGIONAL DEL CLIMA PARA EL OESTE DE SUDAMÉRICA**

### **Artículo 1: INTEGRANTES DEL COMITÉ DIRECTIVO**

El Comité Directivo (CD) del Centro Regional del Clima para el Oeste de Sudamérica (CRC-OSA) está constituido por los Representantes Permanentes (RP) ante la Organización Meteorológica Mundial (OMM) de Bolivia, Chile, Colombia, Ecuador, Perú, Venezuela y el Director Internacional del Centro Internacional para la Investigación del Fenómeno de El Niño (CIIFEN), organización que actuará como Secretaría Técnica.

### **Artículo 2: GOBERNANZA DEL COMITÉ DIRECTIVO**

- 2.1 El CD será presidido por el RP de uno de los países miembros del CRC-OSA de manera rotativa por un tiempo de 2 años, según orden alfabético (Bolivia, Chile, Colombia, Ecuador, Perú, Venezuela), con el compromiso de ejercer las funciones de la Presidencia activamente por el periodo completo. En el caso de que el RP correspondiente decline asumir el cargo, se considerará al siguiente país miembro de turno.
- 2.2 El Presidente del CD designará un Presidente Alterno perteneciente a su Servicio Meteorológico Nacional, quien asumirá las funciones de la Presidencia cuando el titular esté imposibilitado de ejercerlas o si perdiese el estatus de RP.
- 2.3 El Presidente del CD tiene las siguientes funciones:
  - a. Convocar y presidir las sesiones ordinarias del CD y extraordinarias que fueran requeridas.
  - b. Representar al CD del CRC-OSA en las reuniones de las Asociaciones Regionales, Consejo Ejecutivo y Congreso de la OMM.





- c. Facilitar la coordinación entre los SMHNs y el CIIFEN para el seguimiento y cumplimiento del Plan Estratégico y Planes Operativos conforme a los acuerdos del CD y la naturaleza y funciones de los CRC de la OMM.
  - d. Promover ante la OMM la movilización de recursos que permitan el cumplimiento del Plan Estratégico y Operativo del CRC-OSA.
- 2.4 La Secretaría Técnica del CD, a cargo del Director Internacional del CIIFEN, tendrá las siguientes funciones:
  - a. Llevar el Acta de las Sesiones del CD y mantener el registro de la documentación del CD.
  - b. Organizar las sesiones del CD en coordinación con el Presidente del CD.
  - c. Informar anualmente al CD sobre los avances y actividades desarrolladas por el CRC-OSA.
  - d. Informar al CD sobre nuevos desarrollos internacionales relevantes al funcionamiento del CRC-OSA.
  - e. Presentar al CD el proyecto de Plan Estratégico el que debe actualizarse cada cuatro años y el Plan Operativo Anual del CRC-OSA.
- 2.5 Las sesiones ordinarias del CD serán al menos una vez por año en forma presencial o virtual, dependiendo de la disponibilidad de recursos o reuniones de carácter regional.
- 2.6 Los miembros del CD ante la imposibilidad de asistir a las sesiones pueden delegar a sus representantes con voz y voto, a través de una comunicación oficial dirigida al Presidente del CD, que deberá ser enviada con anterioridad a la sesión.
- 2.7 El quórum mínimo para las sesiones del CD es de cinco de los siete miembros, siendo necesaria la presencia del representante del CIIFEN.
- 2.8 Los acuerdos del CD serán adoptados por consenso de sus miembros y serán recogidos en el Acta de la sesión. En caso de que la sesión sea presencial, el Acta será firmada por los miembros asistentes. Si la sesión es virtual, la Secretaría Técnica comunicará formalmente el proyecto de Acta a los miembros asistentes. La versión final del Acta será aprobada por cada miembro



asistentes mediante comunicación oficial, incluyendo el Acta firmada, dirigida a la Presidencia del CD.

- 2.9 Ante el cambio de RP en un país miembro, la Secretaría Técnica remitirá al RP entrante los documentos operativos del CRC-OSA, así como el Acta de la última sesión de CD vigente y los documentos asociados.

### **Artículo 3: FUNCIONES DEL COMITÉ DIRECTIVO**

Son funciones del Comité Directivo:

- a. Aprobar el Plan estratégico y el Plan Operativo del CRC-OSA.
- b. Aprobar el informe anual del CRC-OSA.
- c. Aprobar las propuestas de proyectos en los que participe el CRC-OSA.
- d. Formular recomendaciones para un mejor funcionamiento del CRC-OSA según el cumplimiento de los acuerdos previos del CD, la naturaleza y funciones básicas de los CRC de la OMM, y de las necesidades o prioridades de los países.
- e. Mantener una sesión ordinaria presencial o virtual al año, para evaluar el desarrollo de las actividades relacionadas al Plan Estratégico y el Plan Operativo del CRC-OSA.
- f. Contribuir en la promoción y difusión de las actividades del CRC-OSA, a nivel internacional.

## Decision 14 (RA III-17)

### Implementation of the seamless Global Data-processing and Forecasting System

#### Regional Association III (South America) decides:

- (1) To be engaged in the design and definition of pilot projects linking research and operations in the context of the seamless WMO Global Data Processing and Forecasting System (GDPFS)\*;
- (2) To identify and execute pilot projects, linking research and operations and demonstrating the seamless GDPFS capability\*\*. Potential areas for consideration could include but are not limited to advances in hydrological services, regional and urban air quality forecasting, high resolution climate sensitivity assessment, agricultural services and severe weather forecasting;
- (3) To call on Members to ensure the mapping of their centres onto the new types of Centres as identified in the revised Manual on GDPFS (WMO-No. 485) and to communicate the information to the WMO Secretariat (see [RA III-17/INF. 3.3.\(3\)](#));

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#### Decision justification:

- \* Decision 40 (EC-70) – Further development of a seamless Global Data-processing and Forecasting System Implementation Plan, which urges Members to provide their comments on the draft implementation plan and to assist in the definition of future pilot projects, and to contribute to the Trust Fund and support secondments to facilitate the development of the draft implementation plan and establishment of pilot projects.
- \*\* Decision 50 (EC-69) – An integrated research and development approach, endorsed the principles towards better-integrated research and development support to Members, filling the gap between research and operations. Recommendation 1 (CAS-17) – The role of science in serving society, calls for better integrated and more closely coordinated research across weather, climate, water and related environment domains in order to enable to provide the necessary scientific and technical advances which are needed to address the growing need for targeted and societally relevant services.

[RA III-17/INF. 3.3\(2\)](#) WMO Secretariat letter on mapping centres onto new types of centres

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## Decision 15 (RA III-17)

### Pilot Regional Basic Observing Network in Region III

**Regional Association III (South America) decides** to establish a pilot RBON for RA III, comprised initially of the merging of all RBSN and RBCN stations of RA III, and invites Members of RA III to consider proposing the inclusion of additional surface-based observing stations in the pilot RBON for RA III, such as weather radars, wind profiler systems, lightning detection systems, data buoys, voluntary observing ships and aircraft;

**The Association also requests** the RA III working body on WIS and WIGOS to review the candidate RBON stations proposed by Members, and to make a recommendation to the president of the regional association for including them in the pilot RBON for RA III;

**It authorizes** the president of the regional association, in consultation with the Secretary-General, to approve amendments to the list of the pilot RBON stations (recorded in OSCAR/

Surface) for RA III proposed by the RA III working body in WIS and WIGOS, in accordance with the RBON Concept, and to monitor the Members' implementation of the network in compliance with the RBON Concept.

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**Decision justification:** This Decision is taking note of Decision 21 (CBS-16), which defined the Regional Basic Observing Network concept, Resolution 2 (EC-68) – Plan for the WMO Integrated Global Observing System (WIGOS) Pre-operational Phase 2016–2019 and of Recommendation 5 (EC-70) on the Global Basic Observing Network (GBON). The rationale is based on the need to integrate the Regional Basic Synoptic Network (RBSN) and the Regional Basic Climatological Network (RBCN) into the future Regional Basic Observing Network (RBON) and include additional observing stations into the RBON in order to reflect its multi-disciplinary nature in support of all WMO application areas. RBON will lead to improved services by delivering more and improved observations to stakeholders, and enable the full benefit of regional observing capabilities to be realized. It is foreseen that RBON will be established by Cg-18, and the standards and recommendations for implementation of the RBON will be incorporated into a new edition of the Manual on the WMO Integrated Global Observing System (WMO-No. 1160) in 2019. Pending the formal establishment of RBON, this Decision is meant to facilitate the transition from RBSN and RBCN to the future RBON through a pilot project. The stations/platforms currently comprising the RBSN and RBCN are the primary candidates for the RBON, and are expected to constitute the backbone of the RBON.

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### **Decision 16 (RA III-17)**

#### **Polar and high-mountain regions, Global Cryosphere Watch, Antarctic Regional Climate Network and Polar Space Task Group**

#### **Regional Association III (South America) decides:**

- (1) To request Members with observing activities in the mountain and Antarctic regions where a cryosphere is present (snow, ice, permafrost, seasonally frozen ground), to propose additional stations to the Global Cryosphere Watch (GCW) Surface Observing Network(\*);
- (2) To request Members in the mountain and Antarctic regions where snow depth and snow water equivalent are measured, to exchange these data internationally using existing BUFR formats, and to report snow depth as zero, when snow is not present during cold season periods defined according to regional guidelines (\*\*);
- (3) To organize in collaboration with GCW and the Commission for Hydrology (CHy), in 2020, and their partners, e.g. UNESCO International Hydrological Programme (IHP), a workshop to address the availability and exchange of cryosphere observations, data and information, including training, outreach, and capacity development;
- (4) To invite Members to contribute to the preparation of the High Mountain Summit, organized by WMO and with key partners, by identifying areas of interest for improving hydro-meteorological and climate services, including the need for specific climate and hydrological products (\*\*\*);
- (5) To welcome the initiatives to implement a Regional Climate Centre (RCC) in the Antarctic, and invite concerned Members of RA III to actively support the associated scoping process and further development of the Antarctic Regional Climate Centre (AntRCC) Network (\*\*\*\*);
- (6) To encourage Members to work with their space agencies, to ensure that their requirements for the acquisition and distribution of fundamental satellite datasets, and the development of specific derived products for cryospheric polar and high-mountain scientific

research and applications, are well represented and reflected, to support the scientific activities that may lead to improved numerical weather and climate forecasting, or the development of improved operational polar products and services, to the extent that these activities fall within each Agency's mandate (\*\*\*\*\*).

See [RA III-17/INF. 3.4\(5\)](#) for more information.

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**Decision justification:**

(\*) Resolution 29 (EC-70) decided to establish the Global Cryosphere Watch (GCW) Surface Observing Network, as one of the four components of the WMO Integrated Global Observing System (WIGOS). It asked Members to further contribute to it, especially in cryosphere data-sparse regions, and requested regional associations to collaborate with the GCW Steering Group, and to encourage Members to contribute to GCW activities, in order to address the gaps in data and information on the cryosphere.

(\*\*) Resolution 15 (EC-69) on the International exchange of snow data, requested Members to exchange in situ snow measurements in real time, in BUFR format, through the Global Telecommunication System/the WMO Information system (WIS), in accordance with the Manual on the Global Observing System, and to contribute to the derivation of regional cryosphere products, for example, regional snow trackers. Members shall report values of zero snow depth (0 cm) from the above-mentioned stations when snow is not present for the entire period during which snow can be expected and where the capability to do so exists, and as defined by the relevant Region.

(\*\*\*) Decision 42 (EC-70) decided to organize a WMO High Mountain Summit in 2019, in Geneva, with the goal of framing the WMO High Mountain agenda covering all 2030 long-term goals, and the relevant strategic objectives for the next financial period, in view of making recommendations to the eighteenth World Meteorological Congress, through the Executive Council Panel of Experts on Polar and High Mountain Observations (EC-PHORS).

(\*\*\*\*) Decision 47 (EC-70) endorsed the initiatives to develop an AntRCC-Network and invited the support of concerned Members and other relevant stakeholders, for example the Antarctic Treaty and its Committee for Environmental Protection. EC-PHORS, at its eighth session in March 2018, agreed on a survey to determine the capacity for a RCC implementation in the Antarctic, and a scoping workshop to determine the suitable structure for an AntRCC-Network.

(\*\*\*\*\* ) Decision 45 (EC-70) on the Polar Space Task Group (PSTG) endorsed the undertaking of a gap analysis of the availability and the requirements for observing critical Earth System parameters in polar and high-mountain regions, and other relevant cryospheric ecosystems, including in-situ and remotely sensed observations, as a collaborative effort of PSTG, GCW, and technical commissions, in particular the Commission for Basic Systems (CBS) and The Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM), with a view to reflecting the needs of Members as they emerge.

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### Decision 17(RA III-17)

#### Radio frequency matters

**Regional Association III (South America) decides** to support the work of the CBS Steering Group on Radio Frequency Coordination (SG-RFC) in order to ensure all RA III spectrum issues related to observation and communication systems are addressed by SG-RFC;

**Invites** Members of RA III:

- (1) to facilitate the participation of experts to represent WMO matters in their national and regional spectrum management bodies, including the Inter-American Telecommunication Commission (CITEL);
- (2) to propose the participation of national experts in the work of the SG-RFC;

**Requests** the RA III Management Group through its relevant working body:

- (1) to monitor radio frequency matters, in particular those relating to the upcoming World Radiocommunications Conference 2019 (WRC-19) and future World Radiocommunications Conferences;
- (2) to liaise with RA IV Management Group to ensure matters being addressed through the Inter-American Telecommunication Commission (CITEL) are coordinated;

Requests the Secretary-General to continue to facilitate the participation and representation of RA III NMHS experts in radio frequency coordination matters, including the SG-RFC.

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**Decision justification:** The importance of participation in radio frequency coordination within WMO and the International Telecommunications Union Radio Regulations process is defined in Resolution 29 (Cg-17), Decision 36 (EC-68) and Decision 22 (CBS-16) – Preserving the radio-frequency spectrum for meteorological and related environmental activities at the World Radiocommunication Conference 2019. Guidance on how to participate effectively in radio frequency coordination is available in [WMO-No 1159 "Guide to participation in Radio Frequency Coordination"](#). WMO RA III and IV lie within ITU-R Region 2. The Inter-American Telecommunication Commission (CITEL) coordinate and develop common proposals related to different aspects of spectrum management including proposals on worldwide and regional allocations for consideration at World Radiocommunication Conferences. WMO is normally represented in CITEL by RA III and IV experts from the CBS Steering Group on Radio Frequency Coordination (SG-RFC). SG-RFC also coordinates on behalf of RA III in other organizations such as the Space Frequency Coordination Group (SFCG) and Coordination

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### Decision 18 (RA III-17)

#### WMO Regional Training Centres and collaboration on education and training activities

**Regional Association III (South America) decides:**

- (1) That upon determination of regional training priorities for the next inter-sessional period, these will be shared with RA III Regional Training Centres (RTCs) and RTCs in other regions, as well as with the WMO Secretariat, and collaboration mechanisms and collaborative projects to address them will be defined,

- (2) To request Permanent Representatives of Members and Directors of WMO RTCs in the region to collaborate on education and training activities with the aim of ensuring that the items listed in the annex to this decision are taken into account in operations of the RTCs.

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**Decision justification:** The general terms of reference of WMO regional associations (Basic Documents No. 1, Annex II to the General Regulations) include the responsibility to determine technical and institutional capacity-building needs of its Members and subregions, and to collaborate to address deficiencies.

The training priorities identified by the Conference of Directors of the Iberoamerican Meteorological and Hydrological Services (CIMHET) Willemstad, Curaçao, 7 to 9 March 2018.

Outcomes of the Thirteenth WMO Symposium on Education and Training (SYMET-XIII) and the Meeting of Heads of WMO Regional Training Centres Barbados 29 October to 2 November 2017, and the twenty-eighth Session of the EC Panel of Experts on Education and Training (28th EC Panel) Nairobi, Kenya 17 to 19 April 2018.

In addition to existing RTCs and components hosted in Argentina, Brazil, Peru, and the Bolivarian Republic of Venezuela, EC-70 Resolution 31 designated two new components in Argentina and Peru, the "Facultad de Ingeniería y Ciencias Hídricas" (FICH) of the "Universidad Nacional del Litoral" (UNL) as the third component of the WMO RTC in Argentina; and "Servicio Nacional de Meteorología e Hidrología" (SENAMHI) as the second component of the WMO RTCs in Peru.

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### **Annex to Decision 18 (RA III-17)**

#### **WMO Regional Training Centres and collaboration on education and training activities**

Permanent Representatives of Members and Directors of RTCs are strongly encouraged to take into account the following in the running of the Centres:

- Alignment of their programmes to support the WMO competency and qualification frameworks and to provide the participants with documentation (certificates) that could be used in their home services to show what sections of the various competency frameworks had been addressed in the training intervention;
- Creation of a directory of national/regional/institutional specialities in all WMO priority areas according to the needs of the Region, with a view to utilizing the information to promote delivery of WMO activities in the Region;
- Incorporate the focus of gender equality ensuring a strong focus on targeting inclusion of women in all training and education programmes;
- Sharing, using and promoting educational and training resources and encouraging collaboration through WMO Global Campus mechanisms;
- Participation in fundraising and resource mobilization to support the Fellowships Programme and other education and training activities;
- Running leadership and management development courses for NMHSs;
- Taking into account the effects of the rapid changes in technology and user-orientated services whilst developing and revising their education and training programmes and curricula;



- Implementing the approaches and principles described in the WMO 1169 “Management and Operation of WMO Regional Training Centres and Other Training Institutions” and other related WMO publications.

### **Decision 19 (RA III-17)**

#### **WMO Policy Framework for Public-Private Engagement**

##### **Regional Association III (South America),**

**Noting** Resolution 33 (EC-70), Public-Private Engagement,

**Recognizing** that several Sustainable Development Goals (SDG), in particular SDGs 2, 6, 13 and 15, are closely related to weather, climate and water issues, as well as disaster risk management, and these issues are high on the main global agendas, notably the 2030 Agenda for sustainable development, the Sendai Framework for disaster risk reduction and the Paris Agreement,

**Noting** that these require a holistic and collaborative approach, inter alia through strengthened public-private collaboration, as well as improved collaboration across the public sectors,

**Decides** to encourage all Members in RA III to use the WMO Policy Framework for Public-Private Engagement as the main guidance in establishing partnerships between the public, private and academic sectors following the agreed principles for successful public-private partnerships that enhance socio-economic benefits to society,

**Decides further** to encourage RA III Members to share practices and lessons learnt with regard to the engagement of private sector and academia in the various parts of the service value chain and to contribute to the on-going dialogue in the global weather enterprise,

**Requests** the president assisted by the Management Group to consider mechanisms for a greater engagement of experts from the private sector and academia from the RA III Members in the WMO processes of developing standard and recommended practices and guidance

See [RA III-17/INF. 3.6\(1\)](#) for more information

Decision justification: The WMO Policy Framework for Public-Private Engagement adopted by the EC-70 is the first WMO formal guidance on the issue of public-private engagement (PPE) in the so-called Global Weather Enterprise (GWE). It defines general principles of successful engagements/partnerships and elaborates on the roles of GWE stakeholders in the new landscape of the service delivery value chain. To that end, there is a need to raise awareness among WMO Members of the new realm of the GWE as a multi-sector, multi-stakeholder environment which brings risks but also opportunities for the NMHSs including innovation in all areas – from observations to end-user services. It is recognized that national circumstances vary greatly in terms of institutional arrangements and partnership culture from country to country, therefore, Members should be encouraged to share national cases and practices, as well as experiences, both good and bad, in order to build a common awareness of those risks and opportunities. The proposed RA III decision is aimed at bringing the PPE and GWE subject to the fore for the regional association since this new GWE realm will determine the future agenda, resources and approaches to the provision of meteorological, hydrological and climatological services at all levels – national, regional and global.



## Decision 20 (RA III-17)

### Scaling up effective partnerships

**Recognizing** that several Sustainable Development Goals (in particular SDGs 2, 6, 13 and 15) are closely related to weather, climate and water issues, as well as disaster risk management, and these issues are high on the main global agendas, notably the 2030 Agenda for sustainable development, the Sendai Framework for disaster risk reduction and the Paris Agreement,

**Noting** that these require a holistic and collaborative approach, inter alia through strengthened public-private collaboration as well as improved collaboration across the public sectors, for example, for promoting integrated land and water management at watershed or river basin scale for effective climate adaptation, drought and flood risk management and related policy development,

**Highlighting** in this regard the need for WMO to strengthen and expand partnerships to respond to the increasing demand for robust weather and climate services in the face of climate change and the need to coordinate and integrate efforts, notably building on ongoing collaboration with WB, FAO WHO, UNFCCC and UNCCD, as well as of a wider and more effective public-private partnerships and south-south collaboration among countries,

**Regional Association III (South America) decides** to request the Secretary-General to scale up WMO support to strengthen the National Meteorological and Hydrological Services (NMHSs) infrastructure, research, capacity, and service delivery through:

- (1) Establishment of effective partnerships, including with the Green Climate Fund (GCF), The World Bank (WB), the Inter-American Development Bank (IADB) and other funding institutions, such as the Inter-American Institute for Global Change;
- (2) Increased efforts in diversifying WMO country support mechanisms, including the planned Country Support Initiative.

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**Decision justification:** The growing flow of resources for hydromet services – including from the GCF, Multilateral Development Banks, and bilateral partners – requires a more systematic and complementary approach for sustainable investments. The objective of the WMO Secretariat is to substantially scale up its support to developing countries in implementing the WMO 2020-2023 Strategic Plan.

The Country Support Initiative is a cornerstone of WMO commitment to scale-up partnerships beyond business as usual and to step up its role in supporting developing countries to close the capacity gap. The Country Support Initiative aims at mobilizing financing from bilateral partners to provide rapid, gap filling and tailored support to developing country NMHSs and their development partners, harnessing the best available science, expertise and products from WMO institutional network (Secretariat, NMHSs, technical commissions, global and regional centres, programmes/mechanisms/initiatives, and consultants). Through this approach, the Initiative seeks to connect and align projects and approaches thereby contributing to reduce fragmentation and enabling greater impact and development effectiveness of hydromet investments

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## **Decision 21 (RA III-17)**

### **Priorities for WMO Strategic and Operating Plans and the WMO constituent body reform**

#### **Regional Association III (South America) decides:**

- (1) To task the Management Group to develop the Regional Operating Plan in consultation with the Members and with the support of the working groups and the Secretariat, based on the priorities set out in the Annex, and which is aligned with WMO Strategic and Operating Plans 2020-2023 as a matter of priority following Cg-18;
- (2) To task the Management Group, in full consultation with the membership, the EC Working Group on Strategic and Operational Planning and its Task Team on Constituent Body Reform, to guide the region to a better understanding of the proposed WMO Constituent Body Reform and provide advice to the Members on the implications of this for the working processes of the regional association and its Members and their future interaction with the other Constituent Bodies of WMO;
- (3) To request the President of RA III to provide input and direction to the Working Group on Strategic and Operational Planning, and the PRA-PTC meeting around the region's requirement on reform;
- (4) That, in preparation for the detailed deliberations that will occur at Congress next year, all RA III Members review the Constituent Body Reform Transition Plan and Communications Plan and transmit their views to the President of the Regional Association and the Management Group.

See the Annex to the present decision and [RA III-17/INF. 4.1\(1\)](#) for more information.

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**Decision justification:** The WMO Constituent Body Reform process is currently underway, including the rationale and drivers for the reform, and the latest proposals from EC-70 that will be presented to Congress next year for consideration. Delegates reflected on the implications of the reform on Members, the Regional Association and Technical Commissions and discussed ways to contribute to the process going forward. Participants noted that the reforms have the potential to improve the efficiency and effectiveness of WMO by reducing the complexity and duplication of activities. It was also agreed that it will be very important that the work cycles of the various constituent bodies be properly aligned in terms of work programmes and the timing of key sessions.

**Recommendation 24 (EC-70) – [Executive Council – Final Report of the Seventieth Session](#)** – amended the General terms of reference of the Regional Associations; Regional Associations should be encouraged to influence and fully align with the relevant structures of the technical commissions and with the strategic goals of the WMO Strategic Plan. Furthermore, pursuing harmonized structures among all regional associations should promote common approaches and better cross-regional cooperation.

The regional priorities identified by the Regional Association are contained in the Annex to this decision.

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## **Annex to Decision 21 (RA III-17)**

### **Identification of regional priorities**

#### **1. Purpose**

The 17th session of RA III (21–23 November 2018) offered an opportunity for RA III Members to discuss the issues of the region and to identify and record an agreed set of priorities upon which to focus the future work of the Regional Association and to help inform decisions regarding appropriate regional working structures.

#### **2. Background**

The Regional Conference (RECO) held over the 2 days prior to the RA III session was planned as an open space for reflection and debate in which Permanent Representatives, together with invited experts, could identify challenges faced by the region and identify regional priorities. During the months prior to the RECO, the Management Group met monthly and discussed, among other issues, the topics to be deliberated during the RECO, taking into account the current regional priorities identified during the process of preparation of the Regional Association III Operating Plan for 2016–2019.

The discussions held during each of the sessions of the RECO gave useful guidance on what the current regional challenges and priorities are. This guidance was later expanded with the recommendations of the Committee on Regional Priorities, which met on 21 and 22 November 2018, at a time after the sessions.

As a reference for preparing the RECO prior to the RA III session, the 2016–2019 regional priorities from the RA III Operating Plan were taken into account, which are:

- (a) WMO Integrated Global Observing System (WIGOS) and the WMO Information System (WIS);
- (b) Disaster Risk Reduction (DRR), Impact-based Forecasts and Multi-hazard Early Warnings;
- (c) Capacity Development of NMHSs;
- (d) Global Framework for Climate Services (GFCS).

#### **3. Regional Priorities Identified for the period 2019–2022**

- (a) Implement the national WIGOS implementation plans, the Regional Basic Observing Network (RBON) meeting the full requirements of RA III and the regional WIGOS centres in their pilot phase;
- (b) Within the framework of WIS, improve the functioning of the current system and actively participate in the development of the WIS 2.0 platform;
- (c) Strengthen capacities for the improvement of early warnings of extreme meteorological, hydrological and climatic events taking into account the CAP protocol system and the WMO Global Multi-hazard Alert System (GMAS);
- (d) To work in coordination with National Hydrological Services and other water-related institutions to ensure the provision of hydrological services;
- (e) Continue developing actions to comply with the GFCS guidelines through the development of climate services in the Region, through the implementation at the national level of the respective National Climate Services Frameworks (NFCS);
- (f) To increase training courses on strategic topics, considering a greater participation of experts from the Region as instructors;

- (g) To reduce the gap between NMHSs in the Region, enhancing their individual capacities, sharing good practices, and promoting inclusive work and gender policies within each NMHS and at the regional level;
  - (h) Strengthen the technical-scientific positioning of NMHSs vis-à-vis the authorities, the citizenship and other institutions in the countries, taking into account the growing link between the public and private sectors;
  - (i) To contribute to the development of atmospheric, hydrological and related sciences and to strive for greater involvement of experts from the Region in WMO activities, particularly through research in NMHSs and new partnerships with academia;
  - (j) Initiate relevant actions for the implementation of a Geostationary Meteorological Satellite of the Region that would meet the specific needs of its Members, particularly for the monitoring of extreme events, within the framework of strengthening the observational capacities of RA III.
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### **Decision 22 (RA III-17)**

#### **Country profile database and monitoring and evaluation**

#### **Regional Association III (South America) requests Members:**

- (1) to regularly update their profiles on the Country Profile Database (CPDB) and provide Monitoring and Evaluation (M&E) data, as needed,
- (2) to review and, if not already assigned, designate M&E Focal Points, authorising them to
  - (a) serve as liaison with the Secretariat on related issues;
  - (b) facilitate the collection of monitoring data;
  - (c) ensure timely, accurate, reliable and comprehensive performance information; and
  - (d) participate in the continued development and improvement of CPDB.

See [RA III-17/INF. 4.1\(2\)](#) for more information.

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**Decision justification:** Monitoring and evaluation is an essential activity within any business and benefits from being able to compare one's own national profile with other organizations for benchmarking and for prioritizing internal activities and resources.

The WMO M&E System is contingent upon Members' provision of timely and accurate monitoring data. Just as within any NMHS, comprehensive monitoring information is required to measure performance in the implementation of the WMO Strategic and Operating Plans both for WMO and WMO's development partners. Complete and reliable monitoring data facilitates decision-making, informs strategic planning, and assists in resource mobilization. The new data collection process will be more efficient and the data more accurate being based on M&E Focal Points at the national level. In addition to reducing the number of surveys and data collection requests to Members, NMHSs will be able to use this information as an internal tool comparing national status with the regional and global community.

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## APPENDIX 4. LIST OF PARTICIPANTS

### 1. Officers of the session

Guillermo NAVARRO	President of RA III
Julián BAÉZ BENÍTEZ	WMO Regional Office for the Americas

### 2. WMO Members within RA III

#### Argentina

Andrea Celeste SAULO (Ms)	Principal Delegate
Mariano RE	Alternate
Dora GONIADZKI (Ms)	Delegate

#### Bolivia, Plurinational State of

Gualberto CARRASCO	Principal Delegate
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#### Brazil

Francisco DE ASSIS DINIZ	Principal Delegate
Antonio Divino MOURA	Alternate
José Arimatea DE SOUZA BRITO	Delegate
Isabel SOARES DA COSTA (Ms)	Delegate

#### Chile

Guillermo NAVARRO	Principal Delegate
Enrique GARRIDO	Delegate
Reinaldo GUTIERREZ	Delegate
Barbara TAPIA (Ms)	Delegate
Gaston TORRES	Delegate

#### Ecuador

JOSE OLMEDO	Principal Delegate
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#### Guyana

Garvin CUMMINGS	Principal Delegate
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#### Peru

Ken TAKAHASHI	Principal Delegate
Grinia AVALOS (Ms)	Delegate
Jorge CHIRA	Delegate
Jorge YERRÉN	Delegate

#### Suriname

Sukarni MITRO SALLONS (Ms)	Principal Delegate
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#### Uruguay

Madeleine RENOM (Ms)	Principal Delegate
Lucía CHIPPONELLI (Ms)	Delegate
Julieta FALERO (Ms)	Delegate

### 3. WMO Members outside RA III

#### Spain

Jorge TAMAYO CARMONA	Observer
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#### United States of America

Angelica GUTIERREZ-MAGNESS (Ms)	Observer
Jim NELSON	Observer
James PERONTO	Observer

### 4. Invited experts

Marcella OHIRA (Ms)	Observer
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Jesús René ORTEGA HERNANDEZ	Observer
Jean – Marc TERRISSE	Observer

**World Bank**

Vladimir TSIRKUNOV

**5. Representatives of international organizations****International Research Centre on El Niño (CIIFEN)**

Rodney MARTINEZ

**Food and Agriculture Organization of the United Nations (FAO)**

Sally BUNNING (Ms)

**Association of Hydro-Meteorological Equipment Industry (HMEI)**

Martino FANTATO

**International Civil Aviation Organization (ICAO)**

Jorge Concepcion ARMOA CANETE

**United Nations Educational, Scientific and Cultural Organization (UNESCO)**

Jorge ELLIS

**6. Presidents of constituent bodies and Chairs of other bodies**

Juan Carlos FALLAS	President of RA IV
Mr Óscar Arango	WMO Representative, Office for North America, Central America and the Caribbean

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