WMO OMM

World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

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Ref.: 19065/2019-L9 CLW/WCAS

Our ref.: 19065/2019/CLW/CLPA/WCAS/AntRCC-Network 22 July 2019

Annexes: 2 (available in English only)

Subject: Implementation of WMO Regional Climate Centre (RCC) in Antarctic region

Actions required: (1) To note the information provided below, and

(2) To provide responses in the attached survey form on requirements and capabilities of RCC services for the Antarctic region by **15 August 2019**

Dear Sir/Madam,

The WMO Executive Council agreed at its sixty-fifth session (EC-65) that the WMO Executive Council Panel of Experts on Polar Observations, Research and Services (EC-PORS), the Global Cryosphere Watch (GCW), the WMO Commission for Climatology (CCl) and the Commission for Basic Systems (CBS), and the concerned regional associations need to work in close collaboration to develop Polar Regional Climate Centres (RCCs) for both Arctic and Antarctic regions, and whenever possible to engage with the relevant priority projects.

Furthermore, the seventieth session of the Executive Council (EC-70) through its Decision 47 endorsed the initiative to establish an Antarctic RCC-Network (AntRCC-Network) via a survey and scoping process, building on lessons learnt during the implementation of RCC in the Arctic Region (ArcRCC-Network), and invited the support of the concerned Member States and other relevant stakeholders, including the Antarctic Treaty and its Committee for Environmental Protection.

WMO RCCs are centres of excellence that create regional climate products in support of regional and national climate activities and thereby strengthen the capacity of WMO Members in a given region to deliver better climate services to national users. Functions of WMO RCCs, the relevant designation criteria and other related information are available at: http://www.wmo.int/pages/prog/wcp/wcasp/rcc/rcc.php. The concept of WMO RCCs provides adequate flexibility to accommodate specific regional climate service needs and limitations.

A list of potential RCC functions relevant to Polar Regions is herewith attached in the form of a brief survey (Annex 1), based on the descriptions provided in the *Manual on the Global Data Processing and Forecasting System (GDPFS*) (WMO-No. 485), and discussions with the Services Task Team of EC-PHORS.

To: Permanent Representatives of Members of WMO who are signatories to the Antarctic Treaty (limited distribution)

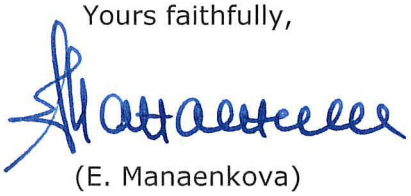
cc: Hydrological Advisers to Permanent Representatives

I kindly request you to complete the attached survey form and send it back **by 15 August 2019**, indicating your country's interest and capacities in delivering/using RCC-related services, or carrying out research to develop relevant capacities for the Antarctic Region in coordination with an institution(s) in your country involved in the Antarctic Treaty. I would also encourage you to consider the potential roles of your National Meteorological and Hydrological Service (NMHS), and other relevant national and international institutions hosted by your country, in contributing to RCC operations. WMO Members in the Antarctic Region that have indicated an interest, via survey, in contributing to the Antarctic RCC-Network operation, either as a node lead or as a consortium member, will be invited to participate in the Scoping Workshop: Towards Implementing an Antarctic RCC-Network, which is planned to be held in Bologna, Italy, in October 2019 (see Annex 2 for the Concept Note). As one of these Members, I now invite you to nominate a focal point to deal with RCC related matters, and reflect your country's viewpoint at the Workshop.

For more information and to return the completed survey responses, please contact Mr Wilfran Moufouma Okia (wmokia@wmo.int), Chief, World Climate Applications and Services Division (WCAS), with copy to Ms Anahit Hovsepyan (ahovsepyan@wmo.int), Scientific Officer, WCAS, and Mr Peer Hechler (phechler@wmo.int), Scientific Officer, Data Management Applications division (DMA) of the WMO Secretariat.

I take this opportunity to thank you for your cooperation and continuous support to WMO Programmes and activities.

Yours faithfully,



(E. Manaenkova)
for the Secretary-General

WORLD METEOROLOGICAL ORGANIZATION

SURVEY OF MEMBERS ON NEEDS AND CAPACITIES FOR REGIONAL CLIMATE CENTRE IMPLEMENTATION OVER ANTARCTIC REGION

PART A: Mandatory Functions for designation as WMO RCC/ RCC Network

MANDATORY **Requirement/Function**	***Does your country require this activity to be performed or coordinated by an RCC?*** ***(Yes/No)***	***Does your country already provide relevant services or carry out research to enable such services for Antarctica?*** ***(Yes/No)***	***Is your country interested in contributing to this function of an RCC for Antarctic?*** ***(Yes/No)***
Operational Activities for Long Range Forecasts (LRF)			
Interpret and assess relevant LRF products from Global Producing Centres (GPCs), distribute relevant information to RCC Users; and provide feedback to GPCs;			
Generate regional and sub-regional tailored products, relevant to RCC User needs, including seasonal outlooks etc.;			
Generate consensus statement on regional or sub-regional forecasts;			
Perform verification of RCC quantitative LRF products, including the exchange of basic forecasts and hindcast data;			
Provide on-line access to RCC products/services to RCC Users;			
Assess use of RCC products and services through feedback from RCC Users.			

MANDATORY **Requirement / Function**	***Does your country require this activity to be performed or coordinated by an RCC?*** ***(Yes / No)***	***Does your country already provide relevant services or carry out research to enable such services for Antarctica?*** ***(Yes / No)***	***Is your country interested in contributing to this function of an RCC for Antarctic?*** ***(Yes / No)***
Operational Activities for Climate Monitoring			
Perform climate diagnostics including analysis of climate variability and extremes, at regional and sub-regional scales;			
Establish an historical reference climatology for the region and/or sub-regions;			
Implement a Regional Climate Watch.			
Operational Data Services, to support operational LRF and climate monitoring			
Develop quality controlled regional climate datasets, gridded where applicable;			
Provide climate database and archiving services, at the request of Members.			
Training in the use of operational RCC products and services			
Provide information on methodologies and product specifications for mandatory RCC products, and provide guidance on their use;			
Coordinate training for RCC Users in interpretation and use of mandatory RCC products.			

NOTE: Reflect true capacity to deliver the function, in consideration of the required human resources, computing and telecommunications capacities including equipment, power, hardware, software, etc., and other infrastructure requirements, and also mandate of the organization.

PART B: Highly recommended Functions for RCCs and RCC-Networks

HIGHLY RECOMMENDED **Requirement/Function**	***Does your country require this activity be performed or coordinated by an Antarctic RCC?*** ***(Yes/No)***	***Does your country provide relevant services or carry out research to enable such services for the Antarctic?*** ***(Yes/No)***	***What Is your country's interest level in contributing to this highly recommended RCC function?*** ***(High, moderate, low or not at all)***
Climate Prediction and Climate Projection			
Assist RCC Users in the access and use of WCRP-CMIP climate model simulations;			
Perform downscaling of climate change scenarios;			
Provide information to RCC Users for use in development of climate adaptation strategies;			
Generate, along with warnings of caution on accuracy, seasonal forecasts for specific parameters where relevant, such as sea ice concentration;			
Perform verification on consensus statements for forecasts;			
Perform assessment of other GPC products such as SSTs, winds, etc.			
Non-operational data services			
Keep abreast of activities and documentation related to WMO WIS, and work towards WIS compliance and DCPC designation;			
Assist Members in the rescue of climate data from outmoded storage media;			
Assist Members to develop and maintain historical climate datasets;			
Assist RCC Users in the development and maintenance of software modules for standard applications;			

HIGHLY RECOMMENDED **Requirement/Function**	***Does your country require this activity be performed or coordinated by an Antarctic RCC?*** ***(Yes/No)***	***Does your country provide relevant services or carry out research to enable such services for the Antarctic?*** ***(Yes/No)***	***What Is your country's interest level in contributing to this highly recommended RCC function?*** ***(High, moderate, low or not at all)***
Advise RCC Users on data quality management;			
Conduct data homogenization, and advise RCC Users on homogeneity assessment and development and use of homogeneous data sets;			
Develop and manage databases, and generate indices, of climate extremes;			
Perform Quality Assurance/Quality Control on national datasets, on request of an Members;			
Provide expertise on interpolation techniques;			
Facilitate data/metadata exchange amongst Members, including on-line access, through an agreed regional mechanism;			
Perform Quality Assurance, Quality Control on regional datasets.			
Coordination Functions			
Strengthen collaboration between Members on related observing, communication and computing networks including data collection and exchange;			
Develop systems to facilitate harmonization and assistance in the use of LRF products and other climate services;			
Assist Members in user liaison, including the organization of climate and of multidisciplinary workshops and other forums on user needs;			

HIGHLY RECOMMENDED **Requirement/Function**	***Does your country require this activity be performed or coordinated by an Antarctic RCC?*** ***(Yes/No)***	***Does your country provide relevant services or carry out research to enable such services for the Antarctic?*** ***(Yes/No)***	***What Is your country's interest level in contributing to this highly recommended RCC function?*** ***(High, moderate, low or not at all)***
Assist Members in the development of a media and public awareness strategy on climate service.			
Training and Capacity building			
Assist Members in the training of users on the application and on implications of LRF products on users;			
Assist in the introduction of appropriate decision models for end-users, especially as related to probability forecasts;			
Promote technical capacity building on country level (e.g. acquisition of hardware, software, etc.), as required for implementation of climate services;			
Assist in professional capacity building (training) of climate experts for generating user-targeted products.			
Research and Development			
Develop a climate Research and Development agenda and coordinate it with other relevant RCCs;			
Promote studies of regional climate variability and change, predictability and impact in the Region;			
Develop consensus practices to handle divergent climate information for the Region;			
Develop and validate regional models, methods of downscaling and interpretation of global output products;			

HIGHLY RECOMMENDED **Requirement/Function**	***Does your country require this activity be performed or coordinated by an Antarctic RCC?*** ***(Yes/No)***	***Does your country provide relevant services or carry out research to enable such services for the Antarctic?*** ***(Yes/No)***	***What Is your country's interest level in contributing to this highly recommended RCC function?*** ***(High, moderate, low or not at all)***
Promote the use of proxy climate data in long-term analyses of climate variability and change;			
Promote application research, and assist in the specification and development of sector specific products;			
Promote studies of the economic value of climate information.			

NOTE: Reflect true capacity to deliver the function, in consideration of the required human resources, computing and telecommunications capacities including equipment, power, hardware, software, etc., and other infrastructure requirements, and also mandate of the organization.

If the country is interested, please indicate contact details of a national focal point for Antarctic RCC Network implementation and for contributing to the scoping workshop planning/participation:

Name:

Institution:

Position:

Email:

Phone:

_____

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World Meteorological Organization
Weather · Climate · Water

Climate Services for Polar Regions: Establishing a Regional Climate Centre Network for Antarctica Towards Implementing an Arctic PRCC-Network

CONCEPT NOTE

Scoping Workshop: Towards Implementing an Antarctic RCC-Network

Bologna, Italy

October 2019 (TBD)

Background

The World Meteorological Organization (WMO) Executive Council (EC), through its Panel of Experts on Polar and High Mountain Observations, Research and Services (EC-PHORS), is fostering the establishment of Regional Climate Centres (RCCs) for the Polar Regions.

The WMO EC, at its 65th Session (2013), agreed that EC-PHORS, the Global Cryosphere Watch (GCW), the Commission for Climatology (CCl), the Commission for Basic Systems (CBS) and the concerned regional associations should work in close cooperation to develop Polar RCCs (PRCCs). Other relevant initiatives also launched include those by the International Ice Charting Working group (IICWG), the World Weather Research Programme (WWRP), the World Climate Research Programme (WCRP) and the Arctic-HYCOS project led by the WMO Commission for Hydrology.

Following the fifth session of EC-PHORS in 2014, its Services Task Team (STT) began consultations on the implementation strategy for PRCCs, including definition of their priority functions based on user requirements in the Polar Regions. In this respect significant progress has been achieved in the Arctic region, where an Arctic RCC-Network (ArcRCC-Network) commenced the demonstration phase in May 2018 (https://arctic-rcc.org/). Furthermore, the WMO EC-70 through its Decision 47 endorsed the initiatives to establish an Antarctic RCC-Network (AntRCC-Network) through a survey and scoping process, and invited the support of the concerned Members, in particular the Antarctic Treaty and its Committee for Environmental Protection, and other relevant stakeholders. In view of aforesaid decision, a "Scoping Workshop on Climate Services for Polar Regions: Towards Implementing an Antarctic RCC-Network" is being organized in October 2019, in Bologna, Italy under the guidance of the EC-PHORS STT. This scoping workshop will be built on lessons learnt during the implementation of RCC in Arctic Region (ArcRCC- Network).

WMO RCC Concept

WMO Regional Climate Centres (RCCs) are centres of excellence that operationally generate and provide regional climate products, including climate data, monitoring and prediction, in support of regional and national climate activities. RCCs thereby strengthen the capacity of WMO Members in a given region to deliver better climate services to national users. While all WMO RCCs are required to fulfill certain mandatory functions, the RCC concept accommodates specific regional needs, capabilities and limitations. The RCC concept also provides options to implement a single multi-functional RCC entity or to put in place a distributed-function RCC-Network that is collaboratively implemented by a number of interested institutions. RCC responsibilities are regional in nature and designed to support national institutions, and service delivery to national users remains in the purview of national institutions.

WMO RCCs mandatory and highly recommended functions, and the relevant designation criteria are part of the Manual on the Global Data-processing and Forecasting System (WMO-No. 485) annex to WMO Technical Regulations. This and other related information are also described at http://www.wmo.int/pages/prog/wcp/wcasp/rcc/rcc.php

Based on the descriptions of formally designated RCCs provided in WMO Technical Regulations, the potential PRCC functions under consideration would be based on:

Mandatory Functions

- operational activities for long range forecasts (LRF);
- operational activities for climate monitoring;
- operational data services to support LRF and climate monitoring; and
- training in the use of operational RCC products and services.

Highly Recommended Functions

- climate prediction and climate projection;
- non-operational data services;
- coordination functions;
- training and capacity development; and
- research and development.

The above generic functions allow PRCCs to facilitate, *inter alia* :

- strengthened collaboration among NMHS on polar matters;
- specific regional products such as sub-seasonal forecasts because seasonal prediction skill may be low in the polar region;
- development of sector-specific products;
- stereographic projections including improved imagery (e.g. satellite);
- activities for user engagement such as regional and national climate outlook forums, during which users can learn about the RCC products.

Regional Approach to Climate Services

Climate experts agree that the sensitivity of the Polar Regions is an issue of global significance. Rates of melting have the potential to dramatically affect sea levels, with implications for Small Island Developing States (SIDS) and low-lying coastal areas, including heavily populated deltas inhabited by hundreds of millions of people. Monitoring and long-range projections of these phenomena are making a significant contribution to policy formulation and implementation at national, regional and global levels. Polar climate monitoring and projections inform the adequacy of the current goal of the United Nations Framework Convention on Climate Change (UNFCCC) to limit warming to less than 2 degrees Celsius over pre-industrial levels; and these climate data also inform the establishment of national commitments in support of climate agreements.

Scoping Workshop on Climate Services for Polar Regions: Towards Implementing an Antarctic RCC-Network

A "Scoping Workshop on Climate Services for Polar Regions: Towards Implementing an Antarctic RCC-Network" will be held in October 2019 in Bologna, Italy.

As an essential pre-requisite to determine the way forward for the implementation of an Antarctic RCC-Network, the WMO Secretariat conducts a survey to define WMO Members interest in climate services for the Polar Regions. A similar survey was sent to COMNAP (Council of Managers of National Antarctic Programs). The results of these surveys will be analyzed to ascertain the activities, services and products Members and other stakeholders would consider being mandatory or highly recommended functions of the proposed Antarctic RCC-Network. As part of the survey, the concerned WMO Members are also invited to indicate their interest and capacities in contributing to RCC-related functions, or in carrying out research and developing capacities applicable to the Antarctic region. The surveys also elicit existing mechanisms for interaction with users. The survey responses received by the WMO Secretariat will serve as the starting point for discussion at the Scoping Workshop.

Objectives of the Workshop

This Scoping Workshop will facilitate the engagement of WMO Members interested in climate services for Antarctic Region, including representatives from operational, research and user communities to take the first steps towards development of an implementation strategy for an Antarctic RCC-Network, including the possibility of it taking the form of an internationally implemented collaborative network by;

1) Exploring opportunities and challenges relating to Antarctic polar climate monitoring and prediction services and the underpinning data inputs; and
2) Building on the Survey results to hone the Antarctic RCC-Network concept, including the priority functions of the Antarctic RCC-Network and the implementation strategy.

Participants

Participants in the Workshop will include various stakeholders in Antarctic climate matters, representatives of Antarctic Treaty members that are involved in the operational activities on the development and delivery of products and services, and are interested to contribute to Antarctic RCC implementation. The workshop will also include experts from research community, and selected representatives of user sectors and policy domains. A list of potential participants will be developed in consultation with relevant WMO Constituent Bodies, partners, to include a variety of stakeholders and ensure the right mix of expertise with interests in the Polar Regions is present, including;

- Subject matter experts on Polar regions;
- representatives of Antarctic Treaty members that are involved in the operational activities;
- WMO Members with and interest in Antarctica;
- relevant scientific bodies, international and intergovernmental organizations;
- relevant experts from WMO Technical Commissions, Regional Associations and Secretariat; and
- a selected number of user representatives.

Expected outcomes

1. Appraisal of opportunities and challenges including governance aspects relating to development and delivery of climate services in the Antarctic Region, including climate data, monitoring and prediction aspects, and in identifying the associated user needs;
2. Scoping of the Antarctic RCC-Network concept, provisional structure, and implementation:
   a. List of Antarctic RCC Network priority functions;
   b. Description of the Antarctic RCC-Network implementation strategy;
3. Identification of Member capacities to engage users at national and regional levels and to deliver Antarctic RCC-Network services for their benefit;
4. Recommendations on the next steps towards the establishment of an Antarctic RCC-Network.

Scoping workshop: Towards Implementing an Antarctic RCC-Network

Agenda outline

Ref.: 19068/2019-L3 CLW/WCAS

Day 1: Polar Regional Climate Centre overview

- Consider opportunities and challenges relating to Antarctic polar climate monitoring and prediction services and underpinning data, in the context of the GFCS;
- Discuss potential contributions of Global Cryosphere Watch (GCW) and the Global Integrated Polar Prediction System (GIPPS);
- Review RCC functions;
- Review user perspectives;
- Review the outcomes of the survey conducted by the WMO Secretariat, including Members' needs and capabilities;
- Consider the Arctic RCC-Network implementation experience; and
- Identify entities/institutions hosting the nodes of the Antarctic RCC-Network.

Day 2: Product development and service delivery

- Define the priority Antarctic-RCC functions;
- Define the activities, services and products required to support service delivery mechanisms;
- Discuss an implementation strategy for Antarctic RCC-Network;
- Discuss potential products that may be of particular interest, to address users' requirements in this region;
- Mapping requirements and capacities; and
- Review formal procedures for WMO designation.

Day 3: The way forward: establishment of the pilot Antarctic RCC-Network

- Identify the entities that will participate in the Antarctic RCC-Network and identify gaps;
- Determine the next steps in implementing the Antarctic RCC-Network, including:
  - establishing a Task Team or governance structure;
  - defining the role of each of the entities and coordination mechanisms if the Antarctic RCC-Network is pursued;
  - considering the resource implications (both human and financial) and a resource mobilization strategy; determining means of co-producing and delivering services and products to users;
  - addressing capacity development for uptake of products at national levels;
  - developing a communication strategy for implementation and;
  - identifying specific issues to be brought to the attention of EC-PHORS.

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