



Pacific Islands Climate Services (PICS) Panel

WMO Regional Climate Centres (RCCs): Key Concepts

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Introduction

The presentation to PMC-3 by the chair of the PICS Panel entitled “Climate Services in the Pacific Region” (Agenda Item 6.4, presented by Andrew Tait, 21/7/2015) included an update of the work done to establish a WMO Regional Climate Centre (RCC) for the Pacific Islands region. The ensuing discussion called for more clarity on the key concepts of an RCC. In particular, the following questions were raised:

1. How are RCCs structured?
2. What are the mandatory functions of an RCC?
3. How are RCCs implemented?

This report provides this clarification. We have drawn heavily from the document “Definitions and mandatory functions of WMO RCCs and RCC-Networks: From the Manual on the GDPFS, Part II, Appendix II-10 (as of EC-LXI 2009)”.

Further to this clarification report, the PICS Panel will continue to explore the potential mechanisms for establishing a Regional Climate Centre (RCC) for the Pacific Islands region, and report to PMC before the end 2015.

RCC Structures

There are two possible ways of structuring an RCC. These are:

1. A single centre that **fulfils all the required functions** of an RCC for the entire region, or for a sub-region to be defined by the Regional Association may be designated by WMO as a ‘WMO Regional Climate Centre’ (WMO RCC). An example of such an RCC is the Beijing Climate Centre (<http://www.rccra2.org/channel.php?channelId=2>).
2. A group of centres performing climate-related activities that in a cooperative effort **collectively fulfil all the required functions** of an RCC may be designated by WMO as a ‘WMO Regional Climate Centre Network’ (WMO RCC-Network). Each centre in a designated WMO RCC-Network will be referred to as a ‘Node’. Typically, there are three or four nodes, with each node being responsible (or the ‘lead’) for one of the RCC mandatory functions. Additional centres supporting the nodes are welcomed, and are referred to as members of a ‘Consortia’. An example of such an RCC-Network is for Europe (WMO RA-2; <http://www.rccra6.org/>).

RCC Mandatory Functions

An RCC or RCC-Network shall fulfil the following four mandatory functions:

1. Operational Activities for Long Range Forecasting (LRF):
 - a. Interpret and assess relevant LRF products from Global Producing Centres (GPCs), make use of the Lead Centre for Standard Verification System on LRF, distribute relevant information to RCC Users (see Summary); and provide feedback to GPCs;
 - b. Generate regional and sub-regional tailored products, relevant to RCC User needs, including seasonal outlooks etc.;

- c. Perform verification of RCC quantitative LRF products, including the exchange of basic forecasts and hindcast data;
 - d. Generate 'consensus' statement on regional or sub-regional forecasts;
 - e. Provide on-line access to RCC products/services to RCC Users; and
 - f. Assess use of RCC products and services through feedback from RCC Users.
2. Operational Activities for Climate Monitoring:
 - a. Perform climate diagnostics including analysis of climate variability and extremes, at regional and sub-regional scales;
 - b. Establish an historical reference climatology for the region and/or sub-regions; and
 - c. Implement a regional Climate Watch.
3. Operational Data Services, to support operational LRF and climate monitoring:
 - a. Develop regional climate datasets, gridded where applicable; and
 - b. Provide climate database and archiving services, at the request of NMHSs.
4. Training in the use of operational RCC products and services:
 - a. Provide information on methodologies and product specifications for mandatory RCC products, and provide guidance on their use; and
 - b. Coordinate training for RCC Users in interpretation and use of mandatory RCC products.

WMO also suggest a set of 'Highly Recommended Functions' that an RCC might perform. These functions are:

- Climate Prediction and Climate Projection (beyond 2 years' timeframe);
- Non-operational data services;
- Coordination Functions;
- Training and Capacity building; and
- Research and Development.

RCC Implementation

The implementation and designation of WMO RCCs typically include the following general steps:

- Survey on regional needs for, and capacity to deliver, WMO RCC services leading to a statement of requirements of the regional association;
- Implementation plan for WMO RCCs in the regional association including identification of potential hosts;
- Pilot or 'demonstration' phase (1 to 4 years) in order to implement, demonstrate and consolidate the RCC-related products and services;
- Initiation of the official designation process through the president of the regional association according to the designation procedure defined in the WMO Manual on the Global Data-processing and Forecasting System (WMO-No. 485);

- Designation process overseen by the WMO Commission for Climatology and WMO Commission for Basic Systems, including a demonstration of the applicants' capabilities regarding the WMO RCC services required; and
- Official designation by the WMO Executive Council and the WMO Congress

Summary

Nodes and consortia members of an RCC-Network may (and often will) perform multiple functions, some overlapping, thus a collaborative approach is required.

Recipients of RCC products and services are NMHSs, other RCCs and international institutions recognized by the Regional Association and will be referred to as 'RCC Users'. WMO RCCs and RCC-Networks shall follow Guidance published by the Commission for Climatology on technical, climate-related matters.

For the Pacific Islands region, a capacities survey has been sent to several regional providers (the first implementation step, above) and some responses have been received. From a preliminary analysis of these responses, it is highly likely that the RCC-Network structure is most appropriate for the region. Potential (unconfirmed) node/consortia members are NOAA, BoM, USP, NIWA, APCC, Meteo France, SPREP and SPC. The next implementation step will involve identifying and seeking commitment from the node/consortia centres, and developing an implementation plan.