



World Meteorological Organization
Working together in weather, climate and water

REGIONAL CLIMATE CENTRES

Mandatory and Recommended Functions

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Purpose of RCCs

- Many societal and economic systems are vulnerable to the impacts of climate variability and change;
- Decision-makers require high-quality, reliable, timely information on current, predicted and projected conditions for safety and security, and for adaptation strategies and measures



Purpose of RCCs

- Development and delivery of effective climate services for the benefit of all WMO Members requires:
 - Regional cooperation for capacity-building and infrastructure development;
 - Operational implementation of the progress made in WMO's climate monitoring, prediction and research initiatives;
 - A regional mechanism for interpretation and interface to NMHSs of global climate information





WMO RCCs and the GDPFS (1/2)

WMO's Global Data Processing and Forecasting System (GDPFS) is organised as a three-level system of
World Meteorological Centres (WMCs),
Regional Specialised Meteorological Centres (RSMCs) and
National Meteorological Centres (NMCs)
which carry out a variety of GDPFS functions at global, regional and national levels.

WMO Regional Climate Centres are RSMCs by definition and, therefore, part of the GDPFS and, hence, shall follow respective *standard* practices and procedures



WMO RCCs and the GDPFS (2/2)

- WMO RCCs are part of WMO's baseline infrastructure, practices and procedures of which shall be followed or implemented by Members.
- This explains the importance of WMO RCCs from a **technical** point of view as well as the **formalities** attached to its establishment and operations.
- Whilst CBS has the overall coordinating responsibility for running the GDPFS, close CCI-CBS interaction is required and realised for climate-related GDPFS aspects (e.g., CCI/CBS Expert Team on RCCs; CBS/CCI Expert Team on Operational Prediction on Sub-seasonal to Longer-time Scales)



Regional Climate Centres (RCCs)

- RCCs are Centres of Excellence, designated through a CBS-CCI process, to perform regional-scale climate functions, including:
 - Operational LRF and Climate Monitoring
 - Coordination between RCCs, GPCs and NMHSs in the region
 - Data services
 - Climate Applications
 - Training and capacity building
 - Research and Development
 - RCCs are complementary to and supportive of NMHSs, who will deliver all Warnings and national-scale products
 - Establishment of RCCs will be initiated by Regional Associations, based on regional needs and priorities
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WMO RCC: Definitions

- WMO-RCC
 - A multifunctional centre that fulfils all the required functions of an RCC for the entire region, or for a sub-region to be defined by the regional association
 - WMO RCC-Network
 - A group of centres performing climate-related activities that collectively fulfil all the required functions of an RCC
 - WMO RCC-Network Node
 - a centre in a designated WMO RCC-Network
 - a node will perform, for the region or sub-region defined by the regional association, one or several of the mandatory RCC activities (e.g. long-range forecasting (LRF), climate monitoring, climate data services, training).
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Flexibility built into RCC concept in GDPFS

- WMO RCCs or WMO RCC-Networks might be established, by request of the Members of the Regional Associations concerned, for climate-sensitive areas whose boundaries extend beyond or are outside those of a single Regional Association.
 - In order for a centre or a group of centres in a cooperative effort to be designated as an RCC or RCC-Network, it shall perform the minimum set of functions, criteria and products defined in the Manual on GDPFS.
 - Additional requirements for RCC functions may vary in detail from Region to Region. A list of highly recommended, but not mandatory, functions is also given.
 - An RCC is not necessarily an NMHS, but a non-NMHS candidate for RCC designation must be nominated by the Permanent Representative of the Member concerned.
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More on the RCC concept

- Who can use the title?
 - Only centres or groups of centres designated by WMO will carry the title 'WMO RCC' or 'WMO RCC-Network' respectively.
 - Recipients of RCC products and services (RCC Users):
 - NMHSs,
 - other RCCs and
 - international institutions recognized by the regional association.
 - Guidance for RCCs and RCC-Networks:
 - Guidance published by the Commission for Climatology on technical, climate-related matters
 - Functions and criteria identified in the Manual on the GDPFS
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Minimum Functions for RCC Designation (1/2)

- Operational Activities for LRF*:
 - Interpret and assess relevant LRF products from 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.;
 - Perform verification of RCC quantitative LRF products, including the necessary exchange of basic forecasts and hindcast data;
 - Generate 'consensus' statement on regional or sub-regional forecasts;
 - Provide on-line access to RCC products/services to RCC Users;
 - Assess use of RCC products and services through feedback from RCC Users.

* Both dynamical and statistical, within the range of 1 month to 2 year timescale, based on regional needs



Minimum Functions for RCC Designation (2/2)

- 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 regional climate datasets, gridded where applicable;
 - Provide climate database and archiving services, at the request of NMHSs;
 - 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.
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RCC 'Highly Recommended' Functions

- Climate prediction and projection
 - Use of model simulations, downscaling of scenarios, adaptation strategies, verification
 - Non-operational data services
 - WIS; DARE; metadata; assist Members in archiving, datasets, QM, QA/QC; homogenization; DBM;
 - Coordination functions
 - Collaboration; assist members with user liaison, media, public awareness strategies
 - Training and capacity building
 - Promote technical, assist in professional, capacity building
 - Research and development
 - CV and CC, regional models, proxy data, economic value of climate information
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Steps for designation of a WMO RCC or RCC-Network

- RA considers Member requirements and agrees on an implementation plan
- RA invites expressions of interest from Members/potential RCC applicants
- The interested Member/org contacts P/RA re intent
- P/RA considers criteria for designation, regional capabilities and needs; provides information; establishes contact with relevant experts in CCI and CBS
- The candidate RCC or RCC node prepares – Pilot phase
- When the candidate is deemed ready, P/RA informs P/CCI of steps followed and capability to meet requirements
- On successful completion of pilot phase, P/RA contacts WMO SG to request formal designation of the candidate, who will then consult with P/CCI
- Upon endorsement by P/CCI, WMO SG forwards request to P/CBS for action and demonstration of capability
- CBS evaluates the application against designation criteria
- Following CBS agreement, WMO EC or Congress will be asked to approve; the manual will be amended, and the member/org informed.



RCC Establishment Status (1/2)

- Designation Criteria approved by WMO EC (June 2009)
 - RA I (Africa)
 - 6 potential RCCs identified covering East, South, Central, West and North Africa (plus the continental scale),
 - ACMAD designated RCC-Africa in 2015,
 - Demonstration phase running for 2 (East: ICPAC and North African RCC-Network).
 - RA II (Asia)
 - 3 RCCs designated ; BCC and TCC in 2009, NEACC in 2013,
 - India started demonstration phase in 2013,
 - Iran, Saudi Arabia and Kazakhstan have formally expressed interest.
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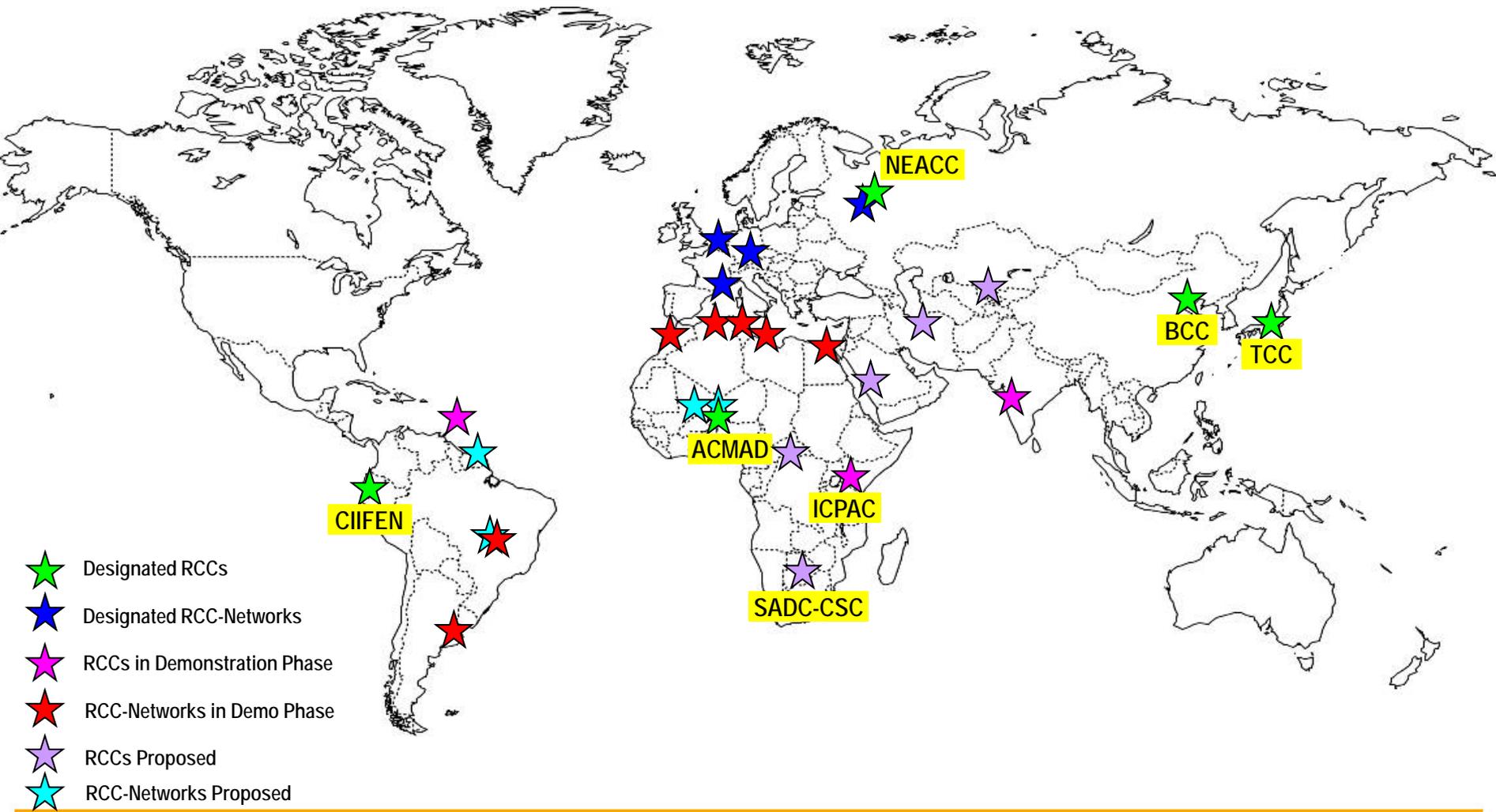


RCC Establishment Status (2/2)

- RA III (South America)
 - 3 potential RCCs identified covering Western Coast of SA (WCSA), Northern SA, and Southern SA.
 - CIIFEN designated as RCC-WCSA in 2015
 - RCC-Network Southern SA in demonstration phase since 2014
 - RA IV (North America, Central America and the Caribbean)
 - CIMH (Caribbean) started the demonstration phase in 2013
 - RCC/RCC-Networks under discussion (Northern and Central America)
 - RA V (Southwest Pacific)
 - 2 RCC-Networks (South-East Asia and Pacific Island Countries) identified by RA V in 2014. Implementation consultations in progress
 - RA VI (Europe)
 - RCC-Network designated in 2013 (3 Nodes : Data: De Bilt; Monitoring: Offenbach; LRF: Toulouse+Moscow)
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WMO RCC Status Worldwide





World Meteorological Organization
Working together in weather, climate and water

Thank You

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