



World Meteorological Organization  
Working together in weather, climate and water

# Climate Services Information System

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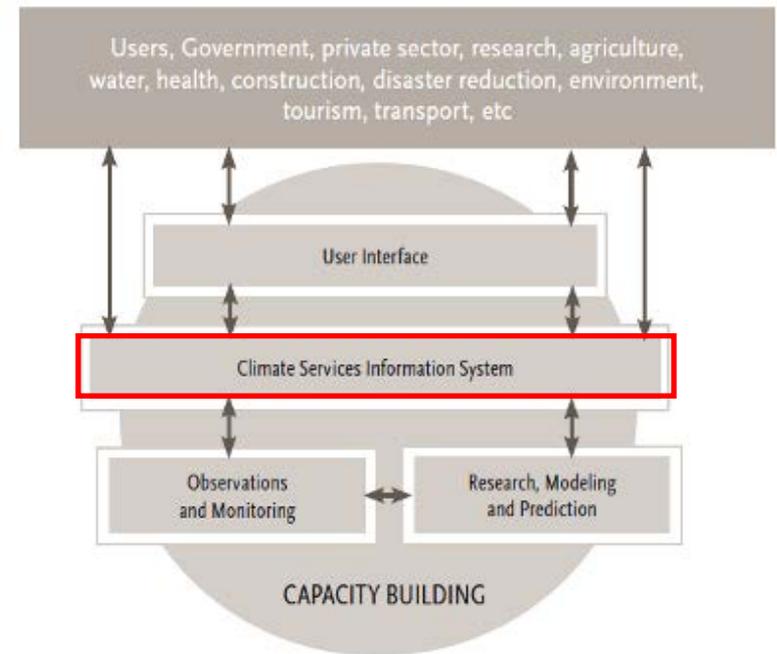
# Climate Service Information System (CSIS)

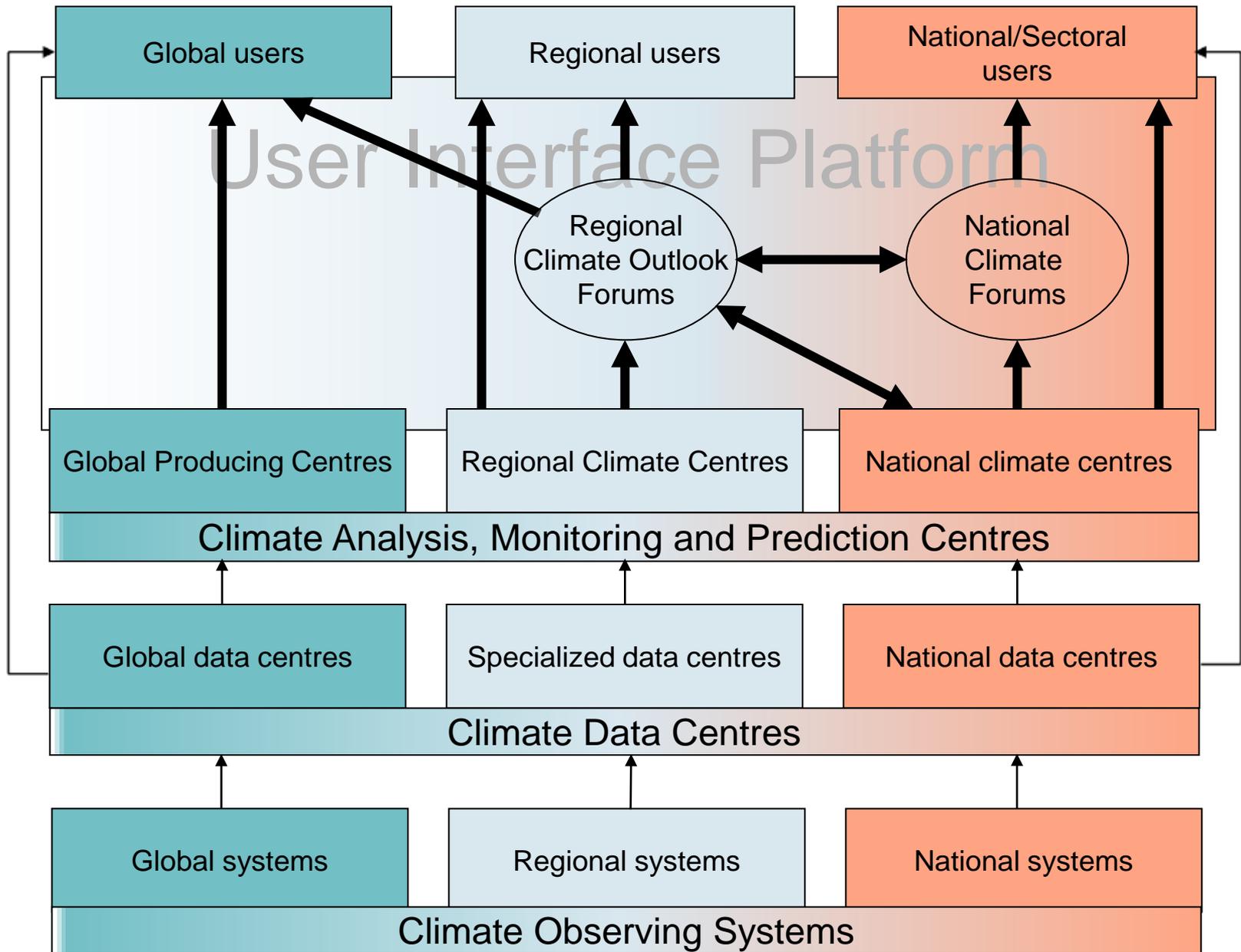
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- The CSIS is the component of the GFCS most concerned with the generation and dissemination of climate information.
- It is the 'operational centre' of the GFCS. It will include climate data, monitoring, prediction (monthly, seasonal, decadal) and projection (centennial) activities.
- HLT report: 'The Climate Services Information System is the system needed to collect, process and distribute climate data and information according to the needs of users and according to the procedures agreed by governments and other data providers.'

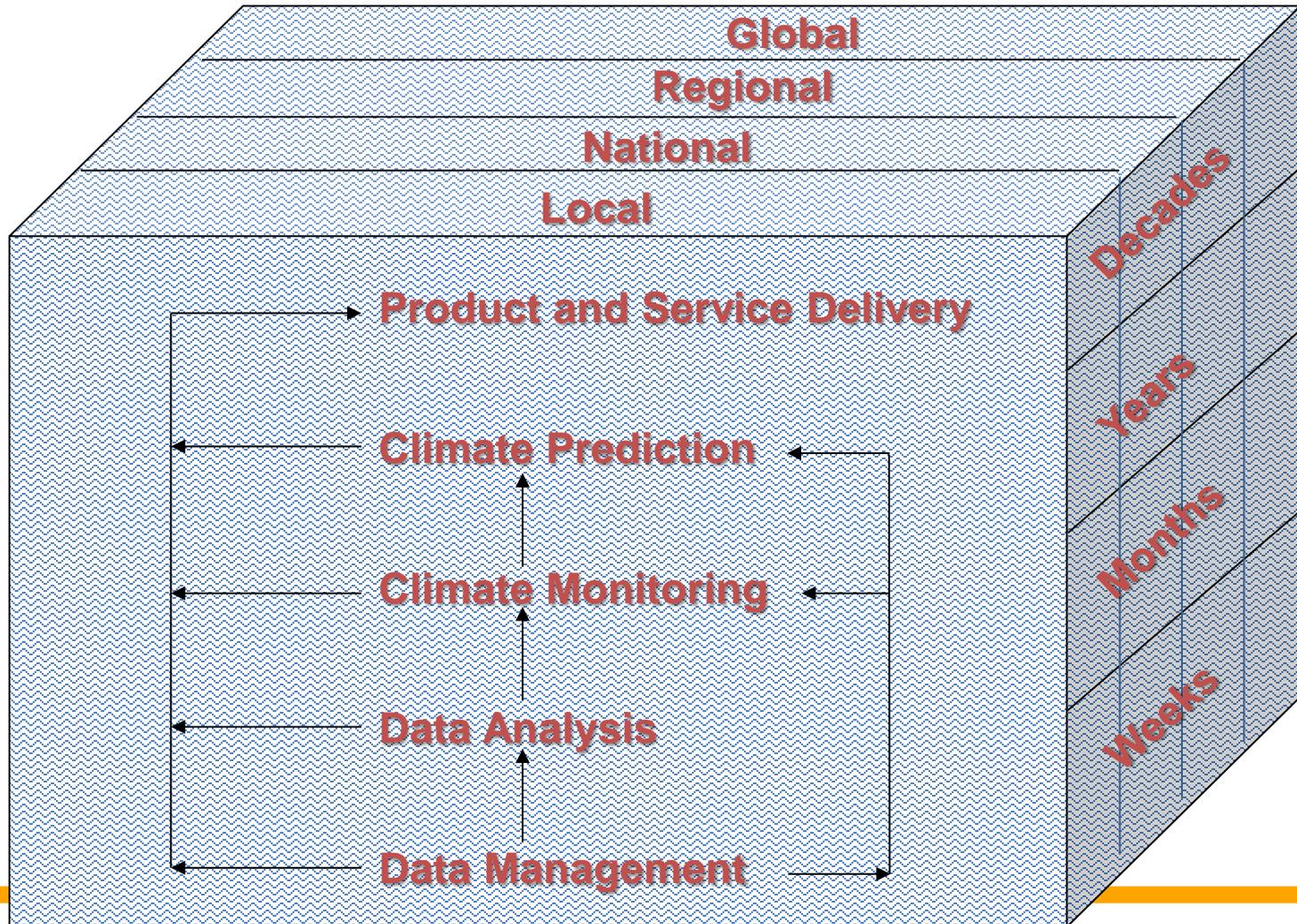
# Role of CSIS within the GFCS

- The CSIS is the means of delivery of climate data and products.
- It comprises global, regional and national centres and entities that generate/process climate information (observations and predictions), and the exchange of data and products to agreed standards and protocols.
- It must be supported by observation and research programmes (e.g. GCOS, WCRP). With 'pull through' facilitated by strong links.
- Capacity building initiatives will increase 'conductivity' of data flow
- Part of the CSIS is in place, but new infrastructure is needed to fulfil the GFCS vision.





# Product-space-time dimensions of CSIS





# Global Producing Centres of LRF

- In 2006, WMO set up a process to designate centres making global seasonal forecasts as WMO Global Producing Centres of Long Range Forecasts (GPCLRFs)
- GPCLRFs adhere to commonly defined standards – aiding consistency and usability of output:
  - a fixed forecast production cycle
  - a standard set of forecast products
  - WMO-defined verification standards
- A comprehensive set of standard verification measures, with which to communicate the skill of forecasts, has been defined (the WMO Standard Verification System for Long-Range Forecasts – SVSLRF)
- 12 GPCLRFs designated so far
- Two Lead Centres: LC-LRFMME and LC-SVSLRF

# Currently Designated GPCLRFs





# Regional Climate Centres (RCC)

- WMO Regional Climate Centres are centres of excellence that create regional climate products including long-range forecasts in support of regional and national climate activities and thereby strengthen capacity of WMO Members in a given region to deliver better climate services to national users.
- RCC users: NMHSs, other RCCs, etc.
- WMO RCC responsibilities shall be regional in nature and shall not duplicate or replace national responsibilities.
- Establishment of RCCs is initiated by WMO Regional Associations, based on regional needs and priorities.
- Formal designation through WMO Technical Regulations
- Two modes of Implementation: fully self-contained RCCs or distributed-function RCC-Networks

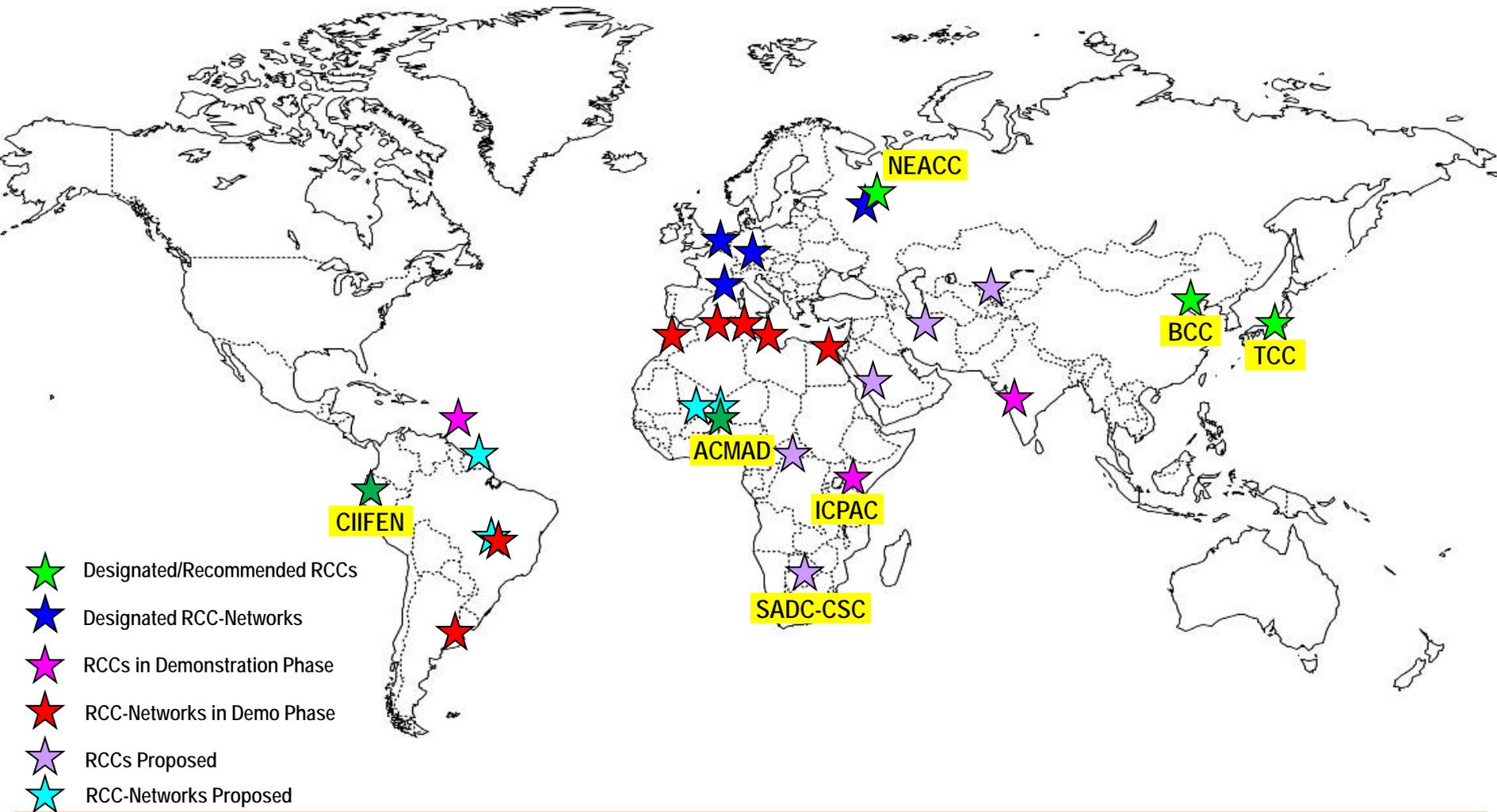


# RCC Functions

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- Mandatory Functions:
  - Operational Activities for LRF
  - Operational Activities for Climate Monitoring
  - Operational Data Services, to support operational LRF and climate monitoring
  - Training in the use of operational RCC products and services
- Highly Recommended Functions:
  - Climate prediction and projection
  - Non-operational data services
  - Coordination functions
  - Training and capacity building
  - Research and development

# WMO RCC Status Worldwide





# WMO Mechanisms for Guiding GPCLRFs and RCCs

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- World Climate Services Programme (WCSP)
- Global Data Processing and Forecasting System (GDPFS)
- Commission for Basic Systems (CBS)
- Commission for Climatology (CCI)
  - Implementation Coordination Team on CSIS
- CBS/CCI Expert Team on Operational Predictions from Sub-seasonal to Longer-time Scales (ET-OPSLS)
- CCI/CBS Expert Team on RCCs
- Interactions with WCRP and Commission for Atmospheric Sciences (CAS)



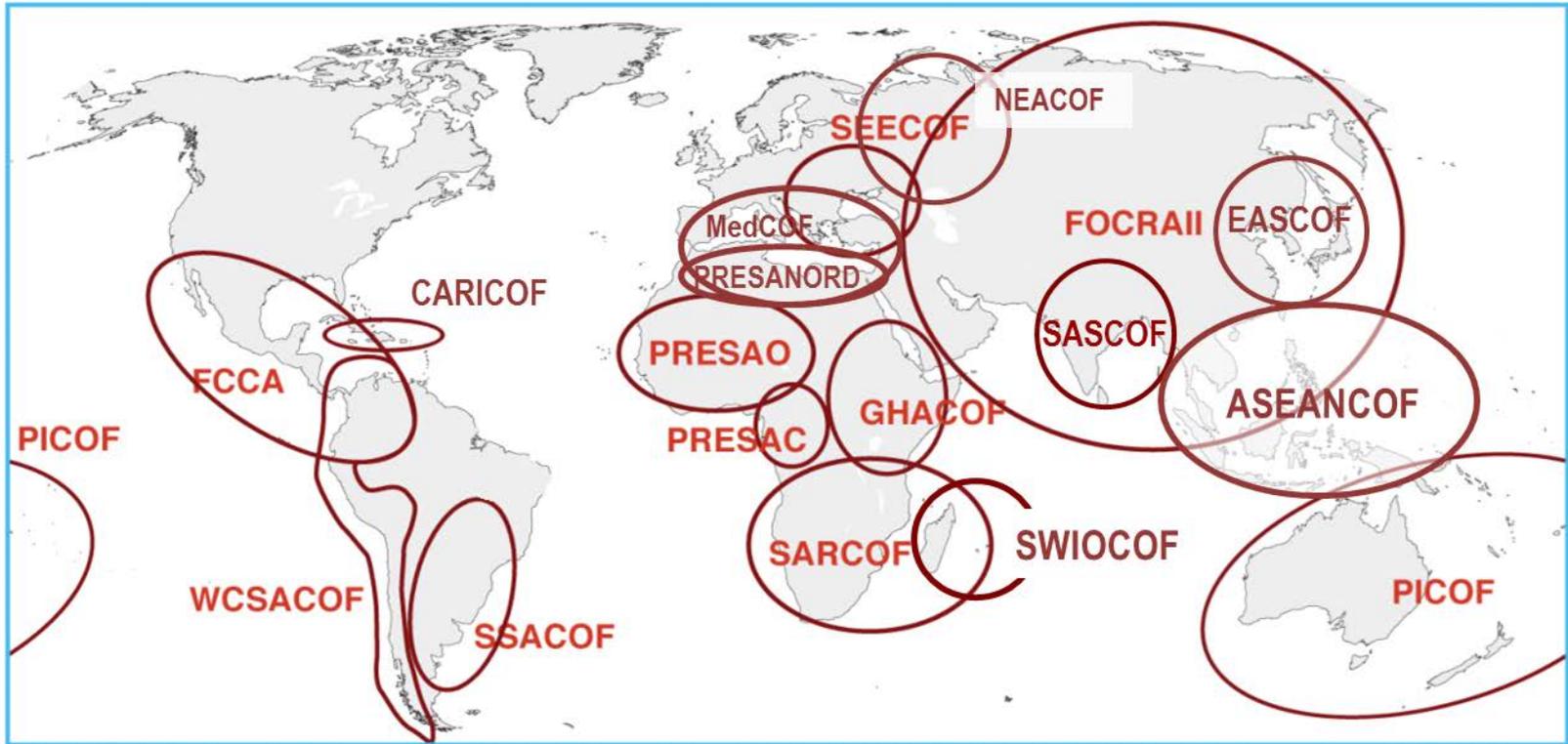
# Regional Climate Outlook Forums (RCOFs)

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- RCOFs provide platforms for Climate experts and climate information users to:
  - Discuss current climate status
  - Exchange views on scientific developments in climate prediction
  - Develop consensus-based regional climate outlooks that can feed into national climate outlooks produced by NMHSs
  - Engage in user-provider dialogue
- An important aspect of RCOFs is the facility to bring together experts in various fields, at regular intervals, operational climate providers and end users of forecasts in an environment that encourages interaction and learning.



# Regional Climate Outlook Forums worldwide





# Potential National Mechanisms

- **Framework for Climate Services at the national level**
  - Similar to GFCS structure but involves practicalities and specifics for delivery of climate services at the national level.
  - Some countries may establish coordination mechanisms appropriate to their national context, largely as integral components of the NMHSs, to support/facilitate GFCS implementation at the national level
- **National Climate Outlook Forums (NCOFs)**
  - Adapting the Large and Regional scale forecasts to the national context
  - Tailoring products and translating key messages for users (Multidisciplinary Working Groups)
  - Evaluating the impact of expected conditions (with existing vulnerabilities)
- **Coordination mechanisms at National level**
  - Tailored to specific National context
  - Positioning of NMHS within the Framework at the national level
  - Strong and sustained users liaison
  - Research focus on national needs
  - Wide access to climate data and knowledge base



# Resolution 17 (Cg-16), 2011

- (1) To establish a **Climate Services Information System** with global, regional and national entities providing operational climate information, including data, monitoring and prediction products within the GFCS;
- (3) That CSIS operations shall adhere to the **WMO Technical Regulations** and should generate, as needed, new Technical Regulations pertinent to the advancement of operational climate services;
- (5) That the core operational CSIS products should be **standardized** in terms of production, presentation, delivery and verification ...

# WORKSHOP ON STRATEGY FOR IMPLEMENTATION OF CSIS

5-7 April 2011, Geneva, Switzerland

- Towards an efficient uptake of global and regional information at national level
- Prospects of extending WMO RCC and RCOF concepts to national levels
- Towards an overall WMO infrastructure for climate information





# WORKSHOP ON STRATEGY FOR IMPLEMENTATION OF CSIS

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- A set of **top-level functions of CSIS** to be defined on the lines of the operational functions identified for GPCs LRF and RCCs, such as (i) climate data management, (ii) climate monitoring, (iii) climate prediction and (iv) climate projection.
- **Formalized structures** for CSIS elements and mechanisms are essential for standardization, sustainability, reliability, adherence to policies etc.
- Knowledge of **user requirements** and understanding of how users apply climate information are fundamental to the successful generation and delivery of climate services.
- NMHSs require a suite of **tools**, including guidelines on their use and respective training programmes, to enable them to efficiently apply global and regional products for generating tailored products for national climate services.



# Task Team on CLIPS evolution

## October 2011

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- National Frameworks on Climate Services
  - Basic, intermediate and advanced functions and national climate centres
- Climate services toolkit
  - Definition, need, scope, standards, certification, candidates:



# Commission for Climatology ET on CSIS

4-6 Dec 2012, Toowoomba

- Elements of a minimum set of climate information outputs expected from CSIS (national, regional, global)
- Elements of a minimum set of climate services expected from NMHSs (and relevant toolkit candidates)
- Climate services toolkit requirements and potential candidate tools
- Aspects of operations including standardisation and CSIS Technical Reference Manual needs and contents





# CCI Implementation Coordination Team on CSIS

First Meeting, 3-5 November 2015, Geneva

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- Action Plan agreed
  - Development of Climate Services Toolkit
  - Development of an initial draft for a CSIS Technical Reference Manual
    - White paper on CSIS operations, mandate, standards, design, partnerships
  - International Workshop on CSIS Development
    - 2<sup>nd</sup> half of 2016
    - Climate Services Toolkit a major focus
  - Active engagement with all stakeholders
  - Development of the Help Desk concept



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Meteorological  
Organization**

Weather • Climate • Water

**Thank you for your attention**

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