



World Meteorological Organization

Weather • Climate • Water

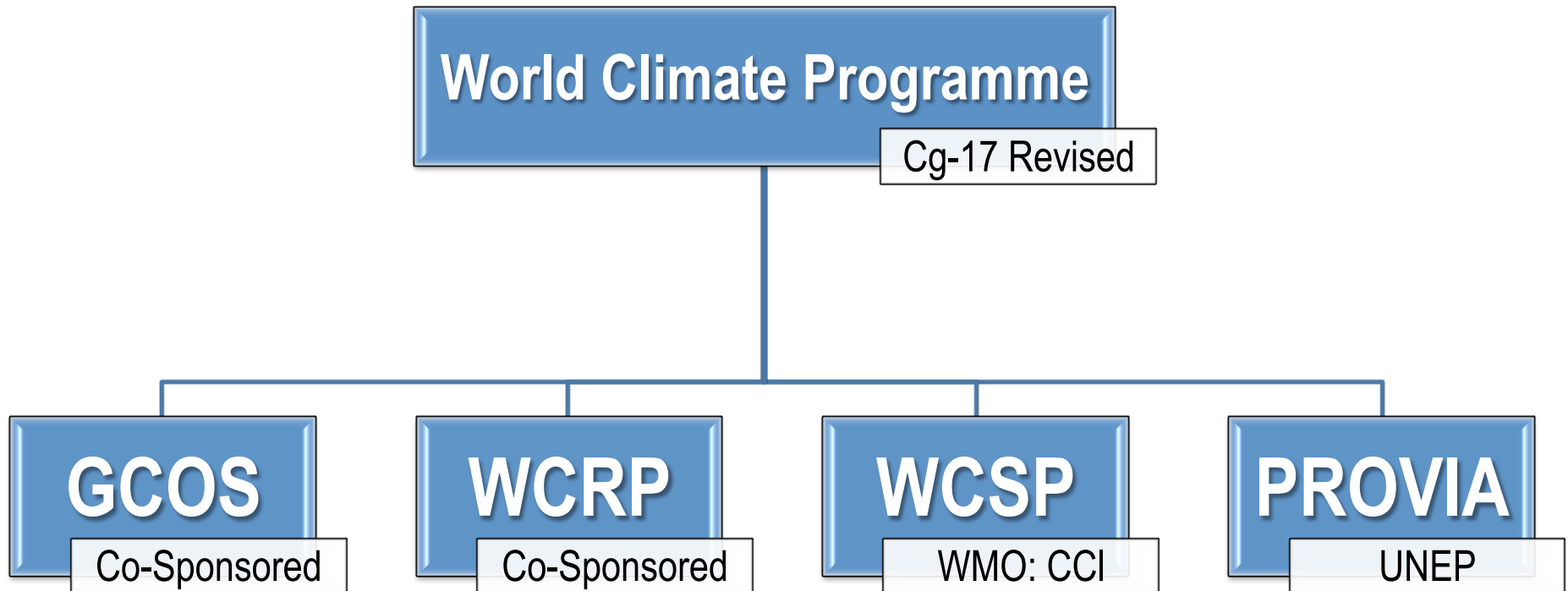
# Commission for Climatology (CCI), Commission for Hydrology (CHy) and Global Framework for Climate Services (GFCS)

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WMO

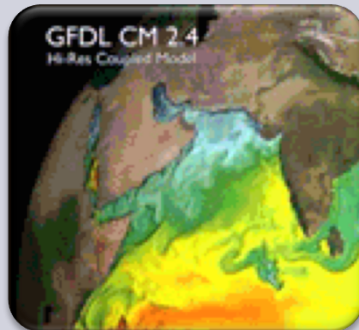
# WCP Structure



# WMO Commission for Climatology (CCI)

OPACEs: Open PAnels of CCI Experts

**Five Panels**  
**28 Teams**



## **OPACE 1: Climate Data Management**

ET-CDMS  
ET-DARE  
Rapp. COI  
IPET-CDMP  
TT-SOGCON  
Rapp. VON

## **OPACE 2: Climate Monitoring & Assessment**

ET-NCMP  
TT-DEWCE  
ET-CCDI  
TT-HOM  
Rapp. WW CER  
TT-URSDCM

## **OPACE 3: Climate Prediction, Projection & Delivery Mechanisms**

CCI/CBS ET-RCCs  
CBS/CCI ET-OPSLs  
TT-GSCU  
TT-RCOFs  
TT-TCI

## **OPACE 4: User Interface for Climate Adaptation & Risk Management**

ET-SCI  
ET-UICS  
ET-CRM

## **OPACE 5: Capacity Development**

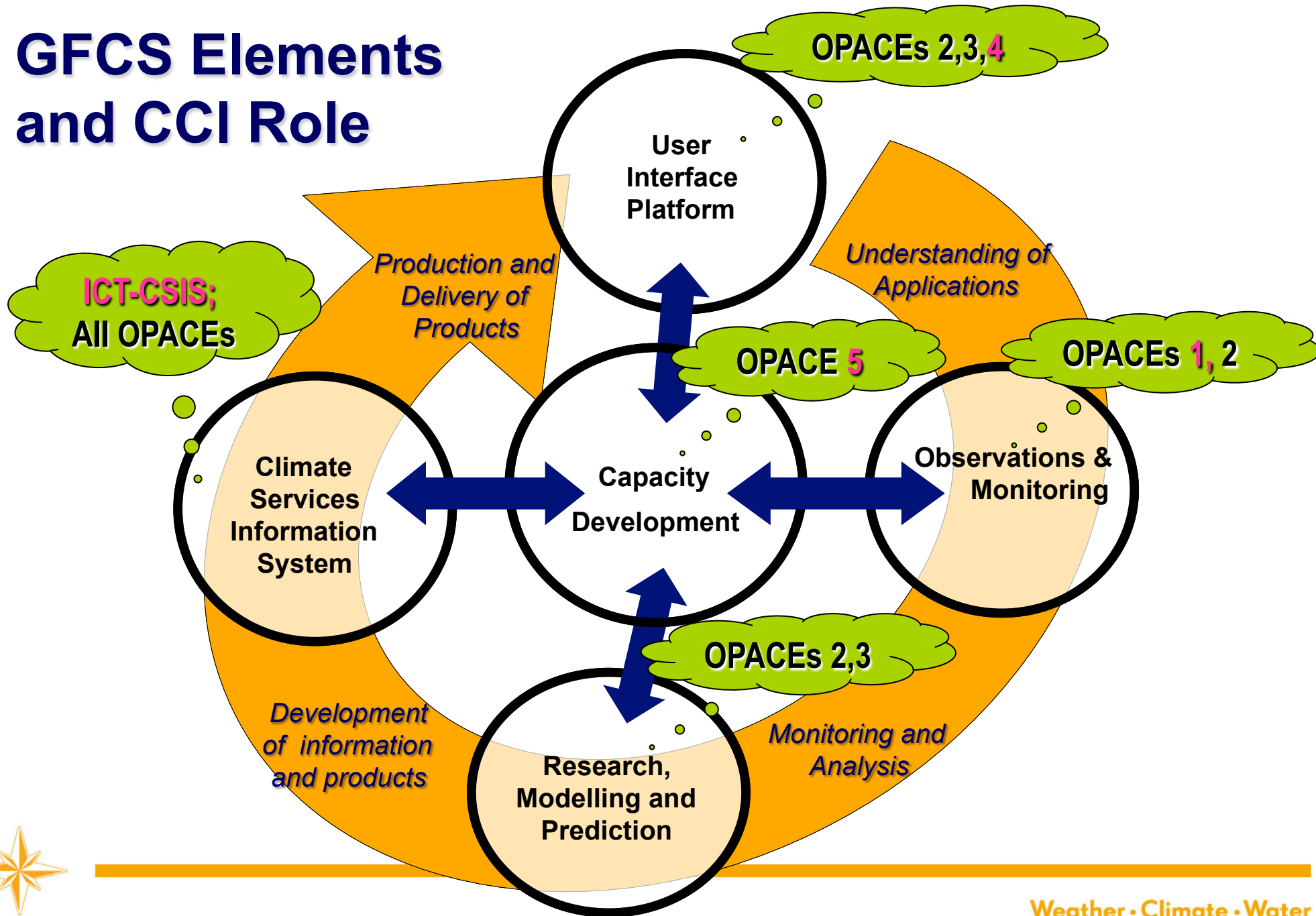
ET-ETR  
ET-QM  
TT-GCP  
ET-IIC  
Adv. Social Media

**Implementation Coordination Team on Climate Services Information System (ICT-CSIS)**

**High-level GFCS Advisor • Communication Advisors • PROVIA Contact Point**

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# GFCS Elements and CCI Role



# Observations and Monitoring Pillar (1/2)

- OPACE 1: Climate Data Management
  - ET on Climate Data Base Management Systems
  - ET on Data Rescue
  - Rapporteurs on Climate Observational Issues
    - Includes JCOMM volunteers
  - Inter-Programme ET on Climate Data Modernization Programme
  - Task Team on Statement of Guidance on CCI Observational Needs
  - Rapporteurs on Volunteer Observing Networks



# Observations and Monitoring Pillar (2/2)

- OPACE 2: Climate Monitoring and Assessment
  - Task Team on Definition of Extreme Weather and Climate Events
  - Joint CCI/WCRP/JCOMM ET on Climate Change Detection and Indices
  - Task Team on Homogenization
  - Rapporteurs on World Weather and Climate Extreme Records
  - Task Team on Use of Remote Sensing Data for Climate Monitoring
  - ET on National Climate Monitoring Products



# Research, Modeling and Prediction Pillar

- Linkages pursued through OPACEs 2 and 3 as well as ICT-CSIS



# Climate Services Information System Pillar (1/2)

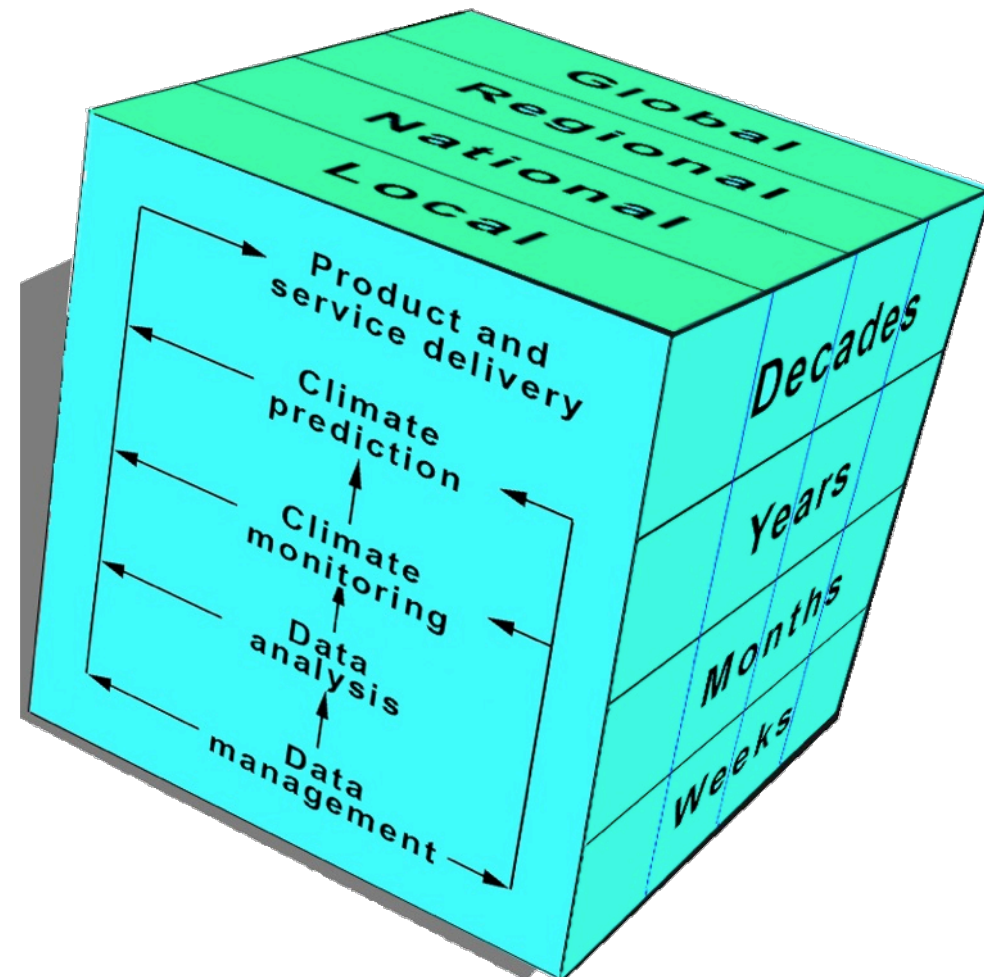
- OPACE 3: Climate Prediction, Projection, and Delivery Mechanism
  - Joint CCI/CBS ET on Regional Climate Centers
  - Joint CBS/CCI ET on Operational Predictions from Sub-seasonal to Longer-time Scales
  - Task Team on Tailored Climate Information
  - Task Team on Global Seasonal Climate Update
  - Task Team on Regional Climate Outlook Forums





# Climate Services Information System Pillar (2/2)

- Implementation Coordination Team on CSIS
  - Coordinate and manage a suite of proposed activities
  - Closely aligned with Operations and Resource Planning of GFCS
  - Climate Services Toolkit
  - CSIS Technical Reference Manual
  - CSIS workshop in 2016
  - Linkages across all OPACEs as well as WCRP, CBS, CHy, CAgM



# User Interface Platform Pillar

- OPACE 4: User Interface for Climate Adaptation and Risk Management
  - ET on Sector-specific Climate Indices
  - ET on Climate Risk Management
  - Focal Points for Disaster Risk Management
  - ET on User Interface for Climate Services

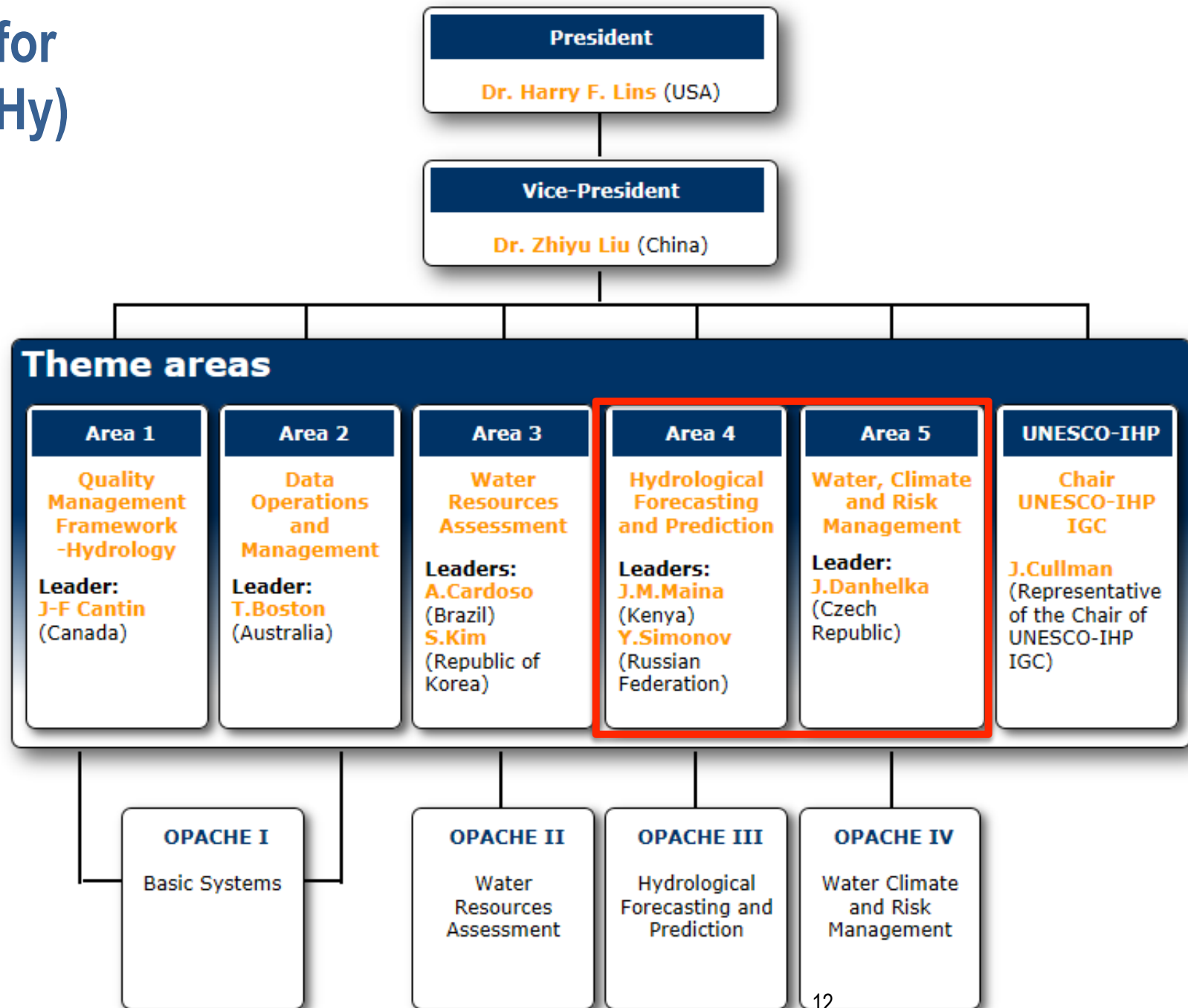


# Capacity Development Pillar

- All OPACEs contribute to capacity development, but CCI decided to have a more focused approach to upscale these efforts
- OPACE 5: Capacity Development
  - ET on Education and Training
  - ET on Quality Management
  - TT on the Guide to Climatological Practices
  - Advisors on Social Media
  - ET on Infrastructure and Institutional Capabilities



# Commission for Hydrology (CHy) Structure



# Hydrological Forecasting and Prediction

- Focus on short to medium-term forecasting (0 to 10 day forecast lead time)
- Use of:
  - Hydrological modelling linked to numerical weather prediction
  - Meteorological and climatological observations for hydrological purposes
    - Includes ground-based in situ observations
    - Satellite estimations
  - Ensembles



# Water, Climate and Risk Management

- Prepare guidance material on how to use regional climate modelling (i.e., long-term climate scenarios) in strategic hydrological management;
- Prepare a comprehensive report on downscaling approaches for hydrological applications and their associated uncertainties, including commenting on existing case studies.
- Provide guidance on extended hydrological prediction for water resources management including compilation of case studies.



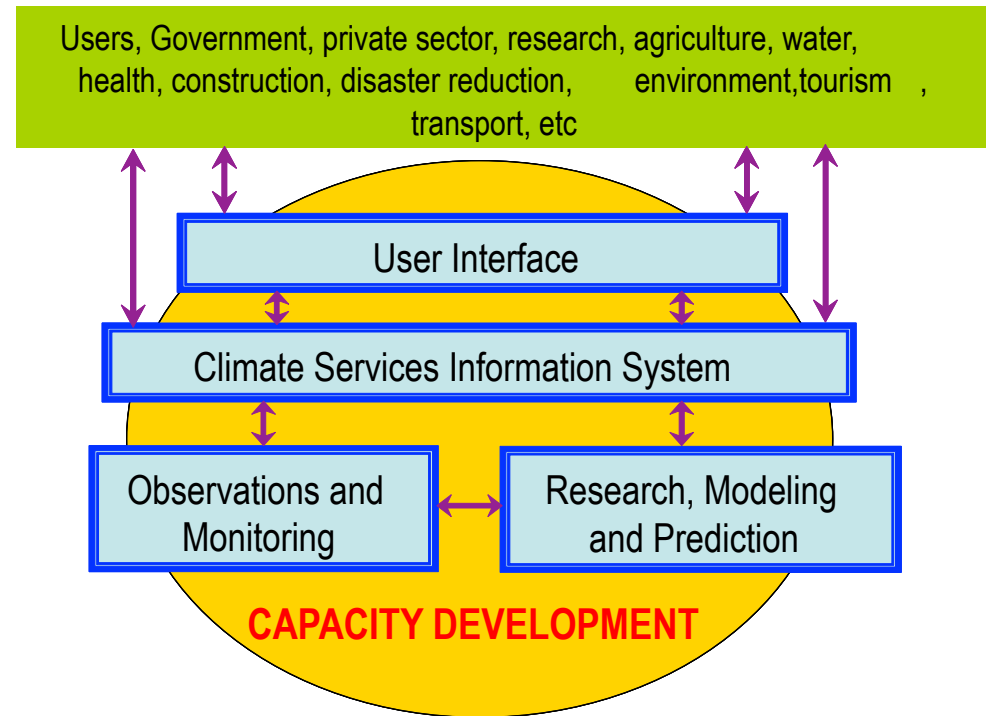
# Project initiatives under GFCS

- South Asian Climate Outlook Forum (SASCOF)
  - Regular sessions of Climate Services User Forum (CSUF) for Water sector in conjunction with SASCOF
  - Case studies to illustrate the utility of long range (extended hydrological) forecasting in Water Resources Management.
  - Two river basins proposed for potential demonstration:
    - Tungabhadra, India
    - Brahmaputra, Bangladesh
- Strong focus on seasonal to sub-seasonal (S2S) forecasting for Water Resources Management



# Components of GFCS

- **User Interface Platform** - to provide a means for users, user representatives, climate researchers and climate service providers to interact
- **Climate Services Information System** - 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
- **Observations and Monitoring** - to ensure that the climate observations necessary to meet the needs of climate services are generated.
- **Research, Modelling and Prediction** - to assess and promote the needs of climate services within research agendas
- **Capacity Development** - to support systematic development of the necessary institutions, infrastructure and human resources to provide effective climate services.





# GFCS Sectoral Priorities

All sectors to be tackled but in the first four years the GFCS is proposing giving priority to:

- Agriculture and Food Security
- Disaster risk reduction
- Water
- Human Health
- **Energy\***

*\*Recommended by IBCS-2/Approved by Cg-17*



# GFCS Governance

- Intergovernmental Board on Climate Services (IBCS)
  - Established by Extraordinary Session of World Meteorological Congress in 2012
- IBCS-1: 1-5 July 2013, Geneva
  - Adopted the GFCS Implementation Plan
- IBCS-2: 10-14 November 2014, Geneva
- IBCS Management Committee (Re-established in IBCS-2)
  - Chair: Dr Jens Sunde (Norway)
  - Co-Vice-Chairs: Dr L.S. Rathore (India) and Dr L. Makuleni (South Africa)
  - 28-Member Management Committee
- Partnership Advisory Committee
- GFCS Trust Fund
- GFCS Office (as part of WMO Secretariat)





# GFCS Partnership Advisory Committee (PAC) Members



# Early Implementation of GFCS

- National Consultations/Pilot Projects on frameworks for climate services at national level
  - Burkina Faso, Chad, Mali, Niger, Senegal, South Africa, Belize, Dominica, Trinidad and Tobago, Papua New Guinea, Bhutan, etc.
- Regional Consultations
  - LDCs in Asia, Bangkok, October 2012
  - SIDS Caribbean, Port of Spain, May 2013
  - SIDS Pacific, Cook Islands, 31 March-4 April 2014
  - Latin America, 28 July – 1 August 2014
  - Southeastern Europe, November 2014
- Establishment of joint project offices
  - WHO/WMO Climate and Health
  - GWP/WMO IDMP TSU
  - WFP/WMO



# Lessons learned from regional workshops and national consultations

## Regional

- Importance of research and science
- Role of Regional Climate Outlook Forums
- Maximization of limited resources through regional approach
- Exploring gaps, capacity development, and strategies for engaging stakeholders

## National

- Systematic dialogue with users
- Understanding in-country capabilities
- Identification of data and observation requirements
- Identification of priority research questions
- Building sector-specific capacities
- Leveraging enabling factors



# Results Based Framework for GFCS

- Resolution 64 (Cg-17) requests the Secretary General:
  - To develop a results-based framework identifying the specific WMO contributions to GFCS implementation and associated expected outputs over the seventeenth financial period in line with the WMO Strategic Plan 2016–2019
  - To focus the framework on achieving coordination and synergies across the commissions, regional associations and co-sponsored programmes for supporting GFCS implementation at the regional and country levels
  - To ensure it is driven by country-level implementation support requirements, including through a focus on specific illustrative countries, to make certain it addresses identified needs in particular contexts with broad applicability



# Framework narrative

- Linkages to GFCS Implementation Plan
- Informed by
  - Sept 2014 GFCS Meeting on Implementation and Coordination (leveraging)
  - Partners Advisory Committee agreement to focus collective efforts in selected countries to provide comprehensive, coordinated support
- Focus countries
  - Burkina Faso, Tanzania, Bhutan, Papua New Guinea, Dominica, Moldova (PAC)
  - Colombia and Peru (WMO, RA III)
- Upscaling via wider applicability of tools and methods, PAC, regional and global centers
- Support through WMO programmes and GFCS Operational and Resources Plan



# Framework Results: Overarching Goals

- Climate services initiated or strengthened in selected countries at a scale and scope sufficient to significantly improve climate related outcomes in priority climate-sensitive sectors
  - Target: 6-7 countries
- Demonstration of enabling and facilitation mechanisms for developing and/or strengthening knowledge, tools, methods, systems, institutional infrastructure, operating principles, policies, partnerships and resources in place for sustaining GFCS implementation on a wide scale





# Framework Results: Logically Connected through 5 Objectives

- 1) **Country level** – Institutional, technical, financial and human resources mobilized for climate services planning, implementation and results monitoring targeting climate-sensitive national priorities
- 2) **Practice support** – Human resources, tools, methodologies, guidelines and capacity development materials needed to support and quality assure country-level implementation available
- 3) **Institutional architecture** – Institutional delivery systems in place and engaged at regional and global level for country-level implementation support and upscaling, including capacity development support services, and for provision of "surrogate" services as necessary to complement national (and regional) capabilities
- 4) **Policy support** – International policy environment, including as related to funding, aligned with, and supportive of, GFCS and framework implementation
- 5) **Management** – Management and coordination arrangements and resources in place to support framework implementation and link it to complementary partner efforts



# Systematic approach for supporting countries

Step 1: Conduct Comprehensive Country Baseline Capacity Assessment for the Development of Climate Services

Step 2: Support NMHS to Engage in a National Consultation process for Climate Services & Develop Action Plan

Step 3: Develop National Action Plan  
Map needs against existing initiatives at national/regional level

Step 4: Organize Action Plan endorsement by government and partners

Step 5: Begin Implementation of Action Plan; Launch National Framework for Climate Services; Monitor & Evaluate Impact



# Programme for Implementing GFCS at Regional and National Scales

- Focus Regions
  - **Small Island Developing States**
    - Pacific Island Countries
    - Caribbean
    - Indian Ocean Islands
  - **South Asia**
    - 9 countries in South Asia
    - Special Focus on Third Pole region
  - **Polar Region (Arctic)**
- Also supporting
  - Global Action on Integrated Drought Management
  - Capacity Development for Climate Sciences
- **Total budget - 6.2m USD**



Environment  
Canada

Environnement  
Canada



WMO



Working together towards strengthened Research and  
Operations Linkages for Enhancing Climate Services

**Joint Session of WMO Commission for Climatology (CCI) and  
Joint Scientific Committee for the World Climate Research  
Programme (WCRP)**

## **JOINT CCL-WCRP STATEMENT**

**Heidelberg, Germany, 02 July 2014**

We, the experts representing the World Climate Research Programme<sup>1</sup> (WCRP) and the World Meteorological Organization (WMO) Commission for Climatology (CCI), having met in a Joint Session on 02 July 2014 at Heidelberg, Germany, have deliberated on a number of issues of common interest and agree that our joint efforts are critical to comprehensively address the rapidly emerging societal needs for climate services for adaptation and risk management.

<http://www.wcrp-climate.org/images/documents/jsc/Joint%20CCI-WCRP%20Statement%202014.pdf>





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Meteorological  
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**Thank You**

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