

**WCRP**

World Climate Research Programme



ICSU

International Council for Science

# World Climate Research Programme

Outcomes from 33<sup>rd</sup> Session Joint Scientific Committee  
Grand Challenges and Discussion

Kick Off Meeting of the WCRP LA & C Conference Scientific Steering Committee  
MinCyT, Buenos Aires, Argentina, 4-5 March, 2013

Carolina Vera ,  
Former JSC Officer Member

The World Climate Research Programme (WCRP), was established at the first World Climate Conference in 1979, and it is sponsored jointly by the World Meteorological Organization (WMO), the International Council for Science (ICSU), and the Intergovernmental Oceanographic Commission (IOC) of UNESCO

## **The major objectives of the WCRP are to:**

- **Determine the predictability of climate, and**
- **Determine the effect of human activities on climate**
- **Facilitate analysis and prediction of Earth system variability and change for use in an increasing range of practical applications of direct relevance, benefit and value to society**

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# Future Directions: Actionable Science

**Defined as: data, analysis, and forecasts that are sufficiently predictive, accepted and understandable to support decision-making, including capital investment decision-making.**



World Climate Conference-3, OceanObs '09, ICSU Review and Visioning, acknowledge WCRP past contributions and identify future challenges and opportunities.



Need for more flexibility/agility to respond to expanding users needs, that includes information:

- At regional scale
- For key sectors of global economy
- For adaptation, mitigation and risk management

# World Climate Conference-3

Better Climate Information for a Better Future

## *A Global Framework for Climate Services*



World  
Meteorological  
Organization  
Weather • Climate • Water

Geneva, Switzerland

31 August–4 September 2009



UN SYSTEM  
DELIVERING AS ONE ON  
CLIMATE KNOWLEDGE

**WCRP**

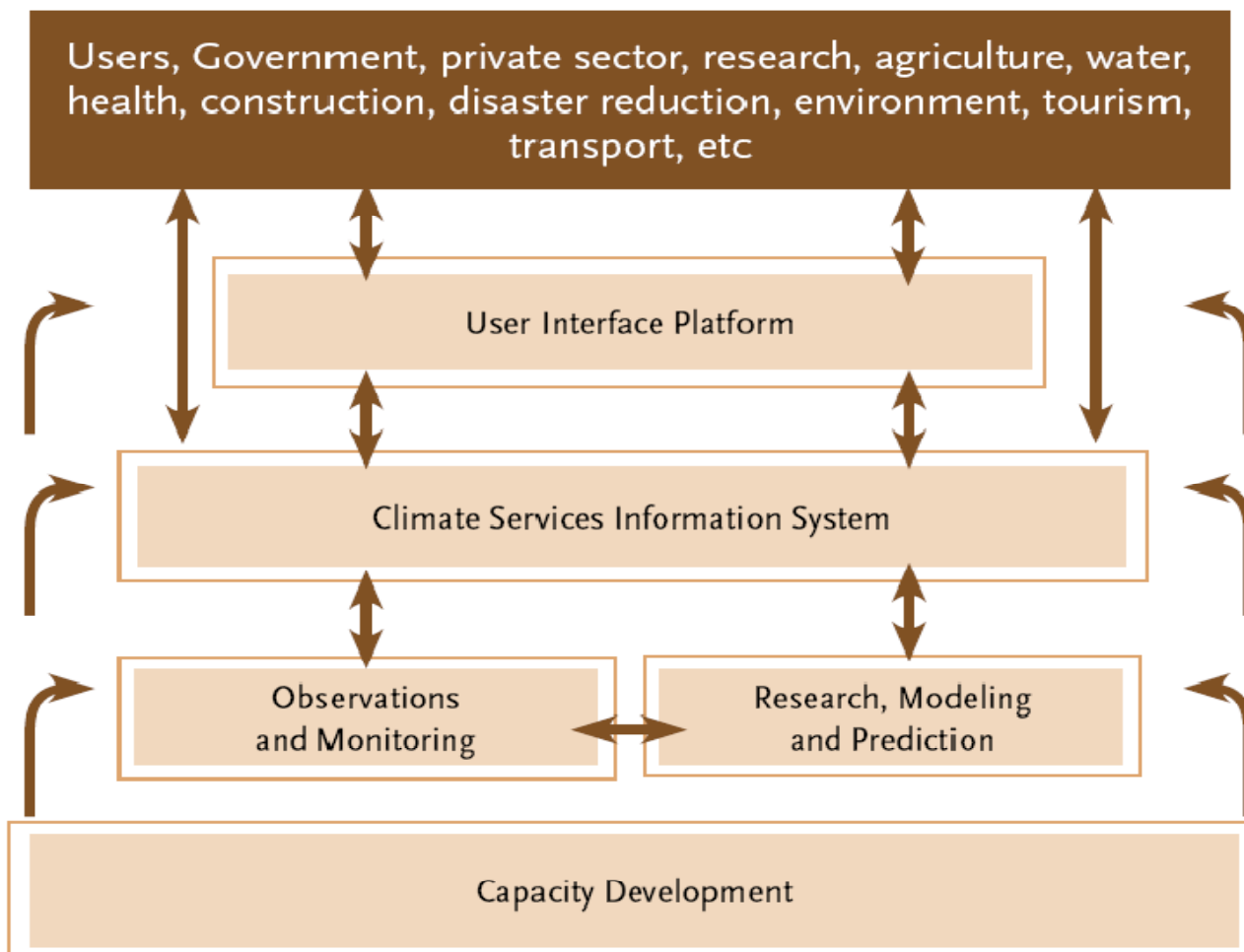
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## Global Framework for Climate Services (GFCS)



# WCC3 – Expert Segment



**Called for major strengthening of the essential elements of a global framework for climate services:**

- The **Global Climate Observing System** and all its components and associated activities; and provision of free and unrestricted exchange and access to climate data;
- The **World Climate Research Programme**, underpinned by adequate computing resources and increased interaction with other global climate relevant research initiatives.
- **Climate services information systems** taking advantage of enhanced existing national and international climate service arrangements in the delivery of products, including sector-oriented information to support adaptation activities;
- **Climate user interface** mechanisms focussed on building linkages and integrating information, at all levels, between the providers and users of climate services; and
- Efficient and enduring **capacity building** through education, training, and strengthened outreach and communication.



# WCRP Open Science Conference

24-28 October 2011

Denver, Colorado, USA

<http://conference2011.wcrp-climate.org>

**Climate Research in Service to Society**

## **Registered Participants:**

- **1907 from 86 countries**
- **541 Early Career Scientists & Students**
- **332 from Developing Countries**



# WCRP Open Science Conference

## Daily Conference Themes:

Emphasizing the integrative aspects of WCRP

**Monday:** Climate Research in Service to Society

**Monday:** The Climate System Components and their Interactions

**Tuesday:** Observation and Analysis of the Climate System

**Wednesday:** Assessing and Improving Model and Predictive Capabilities

**Thursday:** Climate Assessments and Future Challenges

**Friday:** Strengthening Policy Relevance of Scientific Assessments

**Friday:** The Future of WCRP





# Stakeholders and User Perspective

- Urgent need for **actionable climate information** based on sound science
- The need for “**symbiotic**” **relationship between providers and users of climate information** to ensure climate information is timely, accessible, easy to understand
- Urgent need for **training and development of next generation of scientists and decision makers** who pursue and promote the use of actionable climate/environmental information



# Emerging structure Post-2013

- The WCRP will be based on four fundamental *interactions* of the Earth/climate system:
  - Ocean-atmosphere
  - Land-atmosphere
  - Stratosphere-troposphere
  - Cryosphere

## WCRP Overarching/Unifying themes:

Observation and Analysis

Process understanding

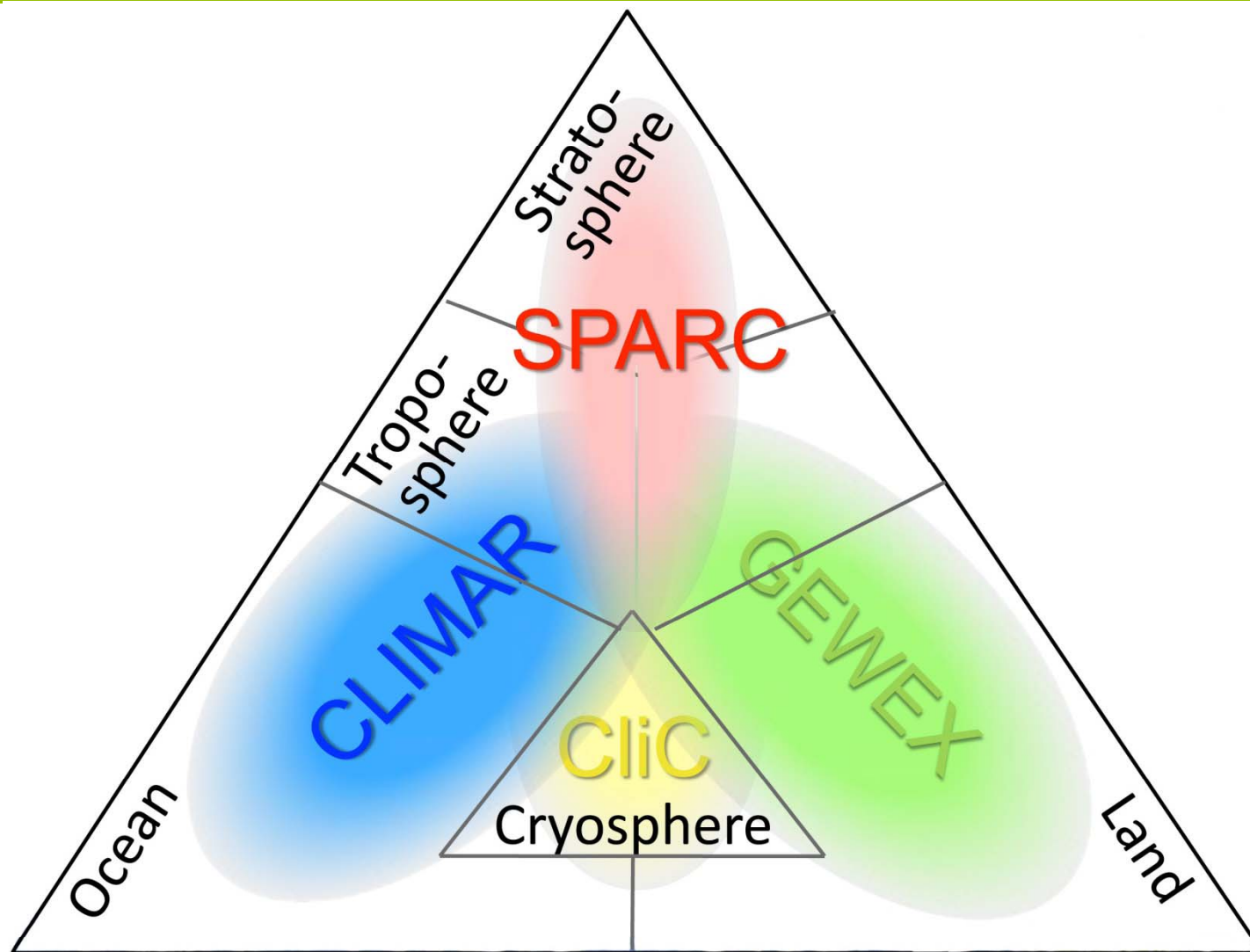
Modeling development, projections and prediction

Climate Information and Application



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## WCRP Organization

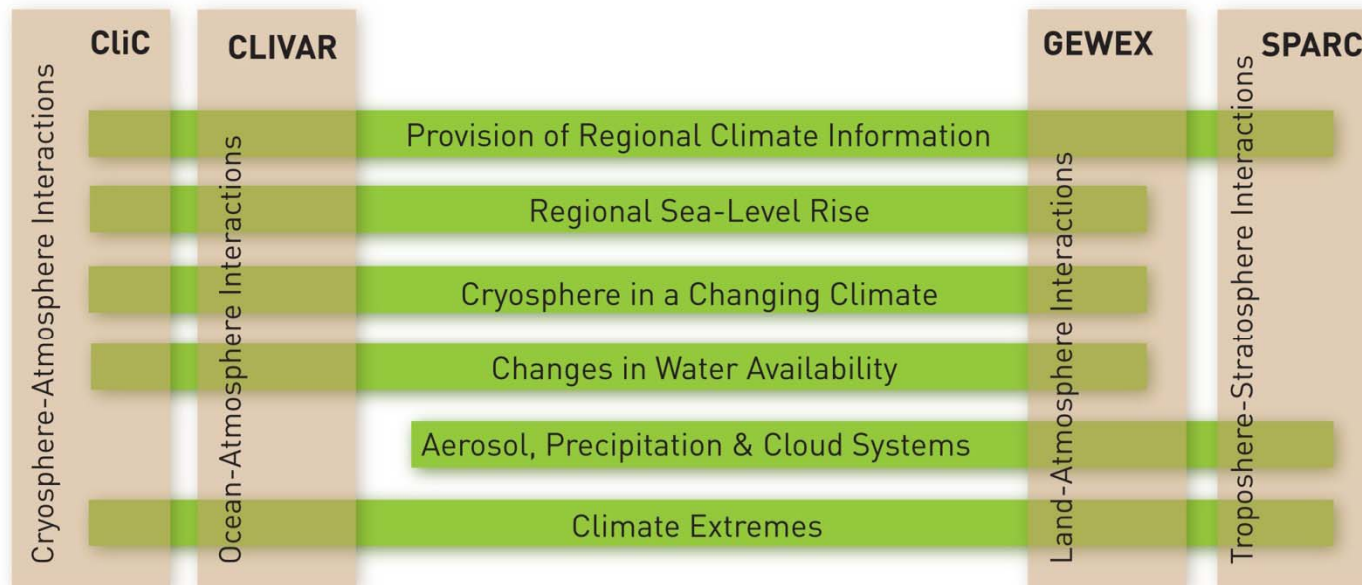
Joint Scientific Committee

Joint Planning Staff

Modeling Advisory Council

Data Advisory Council

**Working Groups on:** Coupled Modelling (WGCM), Regional Climate (WGRC), Seasonal to Interannual Prediction (WGSIP), Numerical Experimentation (WGNE)



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## WCRP Working Group on Regional Climate (2-way Communication: Science-User)

- coordination of WCRP research on regional climate information & services
- communication between WCRP, GFCS and Future Earth, point of contact to regional climate information/service entities
- prioritization of WCRP regional climate research and prediction
- advice for impact assessment, decision making and climate services, especially on water, health, food and disaster risk reduction
- oversee regional climate research initiatives such as CORDEX
- visibility of WCRP regional science and communication of advances to climate service institutions (through web, reports, workshops, etc.)
- liaison with other programmes, communication of science priorities to funding agencies, NGOs and development agencies



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## WCRP Grand Challenges

- A Grand Challenge is both **highly specific and highly focused** identifying a specific barrier preventing progress in a critical area of climate science.
- This focus enables the development of **targeted research efforts** with the likelihood of significant progress over 5-10 years, even if its ultimate success is uncertain.
- It should thus enable the implementation of effective and **measurable performance metrics**.
- By being transformative, a Grand Challenge should bring the **best minds** to the table (voluntarily), **building and strengthening communities of innovators that are collaborative**, perhaps also extending beyond “in-house expertise”.
- It can **capture the public’s imagination**: teams of world-leading scientists working to solve pressing challenges can offer compelling storylines to capture the interest of media and the public.

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## WCRP Grand Challenges

- **Provision of skillful future climate information on regional scales**
- **Sea-Level Rise and Regional Impacts**
- **Cryosphere in a Changing Climate**
- **Clouds, Circulation and Climate Sensitivity**
- **Changes in Water Availability**
- **Science underpinning the prediction and attribution of extreme events**

<http://www.wcrp-climate.org/>

## Some of the scientific frontiers of relevance for the LA &C region

- **F1. Intra-seasonal and seasonal predictability and prediction** Identify and understand phenomena that offer some degree of intra-seasonal to inter-annual predictability, skillfully predict these climate fluctuations and trends
- **F2. Decadal variability, predictability and prediction** Identify and understand phenomena that offer some degree of decadal predictability and skillfully predict these climate fluctuations and trends
- **F3. Reliability and value of long term regional climate projections** Provide reliable regional climate projections for the 21<sup>st</sup> century and beyond for use in IAV studies
- **F4. Definition of usefulness: Informing the risk management and decision making space** Provide information that constitutes a solid and targeted basis for decision making concerning risk management and response options in specific sectors and contexts.

*(From White paper on **WCRP GC: Provision of skillful future climate information on regional** Filippo Giorgi, Carolina Vera, Fred Semazzi, CLIVAR, SPARC, WMAC, GEWEX, WGSIP)*



## Challenge for the WCRP future programs in the LA&C

- RESEARCH
  - balance between basic and oriented research
  - Interdisciplinary (within and beyond WCRP)
- Chain of experts or actors / chain of information
- Ways of access to data (models & observations)
- Capacity building