

World Climate Research Programme

Moving Towards Future Horizons

WCRP Developments/Response Post Review



World Climate Research Programme supports climate-related decision making and planning adaptation to climate change by developing science required to improve

- (1) climate predictions and
- (2) our understanding of human influence on climate

“for use in an increasing range of practical applications of direct relevance, benefit and value to society” (WCRP Strategic Framework 2005-2015).

 **World Climate Conference-3**

 **OceanObs'09**

 **ICSU Review and Visioning**

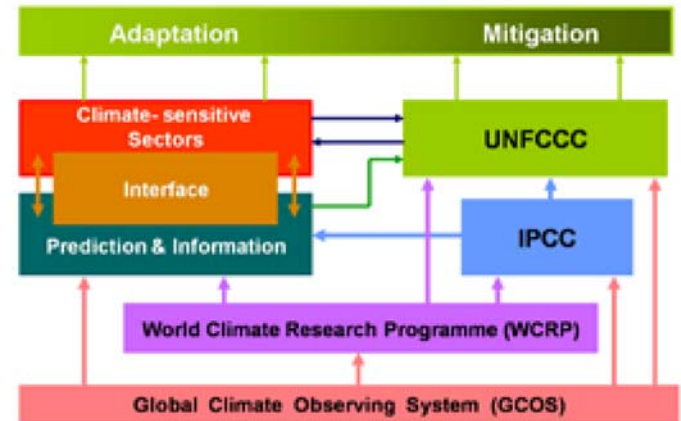
WCC-3 Conference Statement

Great recognition of scientific progress made through WCRP and its associated activities

Call for major strengthening of observations and research

**Support the development
of the Global Framework
for Climate Services**

Global Framework for Climate Services



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.

WCC3 – High-Level Segment

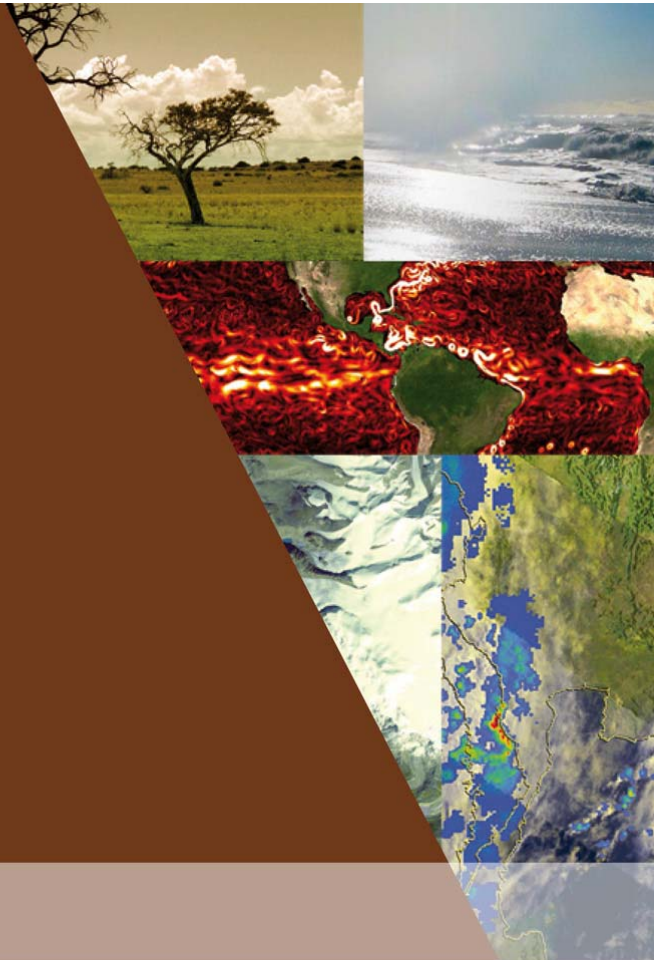
Decided to establish a **Global Framework for Climate Services**

- WMO took the lead in putting together a task-force of high-level independent advisors
- The task-force will make recommendations on the elements of the Framework and the steps for its development and implementation
- WMO congress in 2011 will review the recommendations with a view to adopt the proposed plans

Conference Objective

“Ocean Information for society: sustaining the benefits, realizing the potential”

Strengthen and enhance the international framework under GCOS, GOOS, WCRP, IGBP and supporting regional and national frameworks for sustained world ocean observing and information systems supporting the needs of society about ocean weather, climate, ecosystems, carbon and chemistry



ICSU-WMO-IOC-IGFA

Review of WCRP

Published in February 2009

Electronic version
available at:

<http://www.icsu.org/>

Review of the World Climate Research Programme (WCRP)

Report from an ICSU-WMO-IOC-IGFA Review Panel

Review of WCRP

- WCRP should develop an **implementation plan** for its activities, taking into account **new initiatives** that have emerged since COPEs was completed in 2005 as well as the **observations of accelerated climate change** which place new demands on the science to be relevant
- WCRP should shift its implementation paradigm from one that builds from the parts offered its core projects and other activities to one that has **clear and focused high-level objectives** and **clearly articulated deliverables**
- These should be delivered primarily through **WCRP-wide cross-cutting activities** with the core projects focused on those components of the cross-cutting activities that are unique to their mandate
- In particular, the **modelling and the observing system research** should be predominantly WCRP-wide activities
- The implementation should also encourage development of **process studies** within the broader strategic framework rather than within individual programme components




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



- Need for more flexibility/agility to respond to expanding climate information needs:
 - At regional scale
 - For key sectors of global economy
 - For impacts, vulnerability, adaptation, mitigation and risk assessment

JSC 31: Major Topics

 WCRP Visioning: Long-term functions and structure of the WCRP

 Role of climate research, in particular, WCRP, within the Global Framework for Climate Services

Looking to the future:

The vision post 2015 is strongly influenced by the evolution of climate science, research, and education in the 1980's, 1990's, 2000+ across the atmosphere, ocean, land, and cryosphere.

A major challenge/opportunity is at the intersection of WCRP+IGBP basic and applied research in support of the: ***Prediction of the Earth System.***

- JSC agreed that future WCRP structure should be constructed along four major enabling themes to underpin scientific exploration and climate information delivery and applications:
 - **Ocean-atmosphere**
 - **Land-atmosphere**
 - **Cryosphere**
 - **Stratosphere-troposphere**
- Core Projects or similar structural elements would continue to be the main bodies through which WCRP would carry out its work program
- Discussions and plans are underway for transition from now to mid- next decade

- Within each of the four elements and across them, there would exist a common set of basic themes:
 - Observations and analysis
 - Model development, evaluation and experiments
 - Processes and understanding
 - Climate Information/applications
 - Capacity building
- WCRP selects one or more “grand challenges” to be a major focus over some years (no decision was made on how these could be implemented in practice)

Observations & Analysis

Form Observations & Analysis Council

- Communicate with GCOS, WMO,... on observations requirements for climate research;
- Advocate and advise on standards, ensure data availability, identify data needs
- Catalyze interactions between observation and modelling communities

Maintain existing structures (AOPC, OOPC..) for disciplinary data stewardship

Modelling Research



Formation of a Modelling Council

- Coordination for WCRP modelling groups
- Promote/support seamless approach and Earth system framework (communication platform w/ WWRP, IGBP, etc)
- Reports to JSC

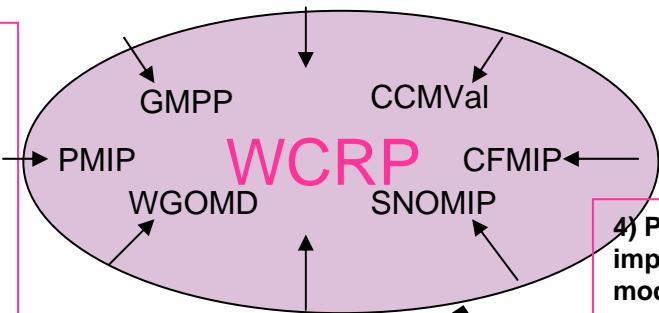


Maintain WGCM, WGSIP, WGNE until further discussion by Modelling Council

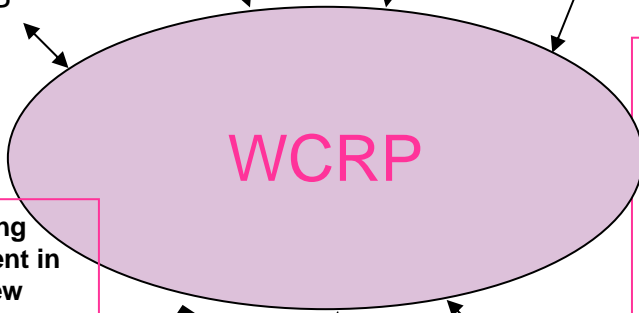
WCRP Modelling Theme

World Climate Research Programme

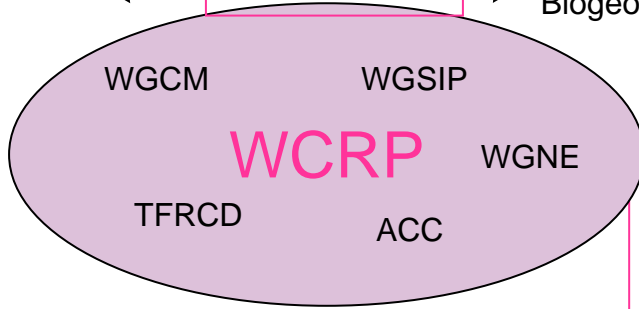
1) Confronting models with obs – ‘inward looking’ – making the most of what is produced by core projects. Connects to observations and diagnostics.



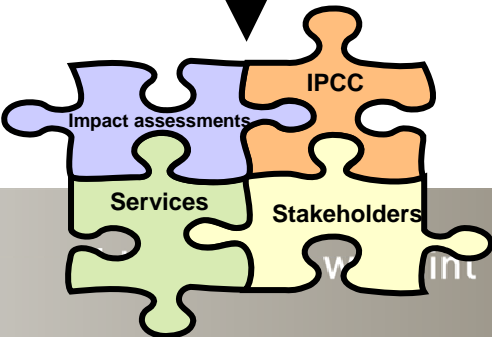
4) Promoting improvement in models; new strategies; renewed effort and investment.



2) Collaborating with others – ‘outward looking’ – insuring that WCRP modelling is informed by and complements activities in related fields.



3) Applications and intercomparisons – applying models for scientific and societal benefit, quantifying errors, multi-model ensembles, analysis and dissemination of results



WCRP Community-Wide Consultation on Model Evaluation and Improvement

Q1: Please state your particular area of interest, e.g. global or regional climate or NWP modeling, seasonal prediction, sea-ice feedbacks, monsoons, troposphere-stratosphere exchanges, etc.

Q2: Given your interest, what would you consider/identify as the KEY uncertainties/deficiencies/problems of current models? What do you think should be evaluated/improved as a priority in models in terms of parameterization and/or interactions among processes? (Give references and/or one key figure where possible)

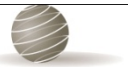
Q3: Do you see a particular gap (in knowledge, in observations or in practice) that would need to be filled, or a particular connection between different modeling communities or between modeling, process studies and observations that should be made a priority?

Q4: Do you see any particular resource or opportunity within the modeling/process study/observational/theoretical community (e.g. new results, new observations) that would be particularly useful and should be exploited to tackle this problem?

Q5: What would best accelerate progress on the topics raised in questions 1-4? Do you have suggestions for new initiatives (new process studies, field campaigns, or new collaborative approaches, eg international Working Groups, Climate Process Teams)?

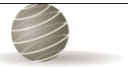
Q6: Any other suggestions/issues to be raised?

Processes Research



Three types of process studies identified

- Model testing
- To study underlying phenomena
- Overarching, often with regional focus



JSC-31 consensus

- Core projects, with JSC oversight, to manage process studies, better coordination across Projects
- Regional issues to be dealt with within Projects

2011 WCRP Open Science Conference

Climate Research in Service to Society

Conference Objective

- The aim of WCRP is to facilitate analysis and prediction of Earth's climate system variability and change for use in an increasing range of practical applications of direct relevance, benefit and value to society.
- The Open Science Conference will thus assemble the scientific community working to advance our ability to understand and predict variability and change of the Earth's climate system on all time and space scales.
- Through this synthesis of research findings and knowledge, WCRP will better inform assessments and prediction science practitioners on the state of climate science research, describe the challenges of the future, and chart pathways forward for WCRP.

2011 WCRP Open Science Conference

Climate Research in Service to Society

- **Monday: The Climate System Components and Their Interactions**
- **Tuesday: Observation and Analysis of the Climate System**
- **Wednesday: Improving Predictive Capabilities**
- **Thursday: Environmental Assessments**
- **Friday (early a.m.): Regional Climate**
Friday (late a.m.): Challenges and the Future

- The JSC requested the current Core Projects to consider the implications of the decisions made on future structure and come back to the next JSC with views on the implications of these decisions on the sub-structure of the Core Projects within the new structure.