

World Climate Research Programme: Future Directions

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Mission & Objectives



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).

A “Word” from our Sponsors

WCRP has made a substantial contribution to the IPCC and has significantly improved our understanding of the climate system. The future challenge to climate change science is to develop a fully integrated view of the Earth system that takes into account the physical, biogeochemical and human dimensions. WCRP is in a good position to lead an Earth system modelling effort that will ultimately deliver tangible benefits to society.

Thomas Rosswall, Executive Director, ICSU



A “Word” from our Sponsors

WCRP's coordinated research activities are making possible better prediction and assessment of the impact of sea-level change, better understanding of modes of climate variability, such as El Niño and the North Atlantic Oscillation phenomena, assessment of the risk of abrupt climate change and predicting changes in the strength and frequency of storms and tropical cyclones. It is also an important programme for UNESCO's contribution to climate strategy and for the IOC to deliver on its high-level objective in predicting climate change and assessment of its impact on the oceans.

*Patricio Bernal, Executive Secretary,
IOC, Assistant Director-General, UNESCO*



WCRP scientists have spearheaded vital research activities in climate science, which, in turn, have enabled WMO Members to provide improved climate information and services to their societies. WCRP has also enabled us to advance our understanding of the way the Earth's climate system works and upgrade continuously the methods and models needed to predict its evolution. In addition, assessments by the WMO/UNEP IPCC would not be possible without significant contributions by many WCRP scientists and groups. WCRP modelling experiments were the basis for many of those assessments, and some of the relevant outputs were the climate projections being used by WMO Members in determining the likely impacts of climate variability and change, in assessing the vulnerability of natural resources as a result of these impacts and in preparing adaptation plans and mitigation strategies to manage emerging risks. WMO considers WCRP to be one of its key programmes and is pleased with the excellent collaboration that has evolved with its WCRP-sponsoring partners over the past few decades.



Michel Jarraud, Secretary-General, WMO



Future Horizons

- JSC-29 reviewed WCRP progress and decided that in order for WCRP to remain relevant/well-funded, there need to be an evolution/transition in its activities which reflect changing science priorities/societal needs.
- Programme development was seen to take place on two time horizons – to 2013 (“the intermediate term”) and beyond (“the longer term”).
- Intermediate term: strategy outlined in the COPEs document is the desirable way forward; crosscuts should be fully integrated in the projects’ work and all aspects of WCRP’s work should be evaluated against their contribution to the COPEs strategy.

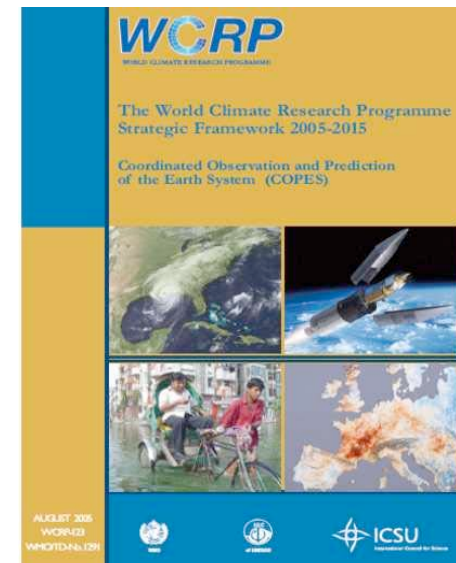
Future Horizons

-  2008-2013: WCRP activities and core projects implement the Strategic Framework **COPES** (Coordinated Observation and Prediction of Earth System)
-  post-2013: to achieve a more effective interfacing with the users of climate informational products a new WCRP structure will be needed (JSC-29, Arcachon, France, April 2008)

WCRP Science Strategy

Strategic Framework 2005-2015: Coordinated Observation and Prediction of the Earth System (COPES)

- Time line: implementation 2005-2015 through WCRP core projects (GEWEX, CLIVAR, SPARC, CliC), WGs and cross-cutting activities
- Objectives (since 1980 and still valid): to determine the predictability of climate and to determine the effect of human activity on climate
- Aim: *“to make new advances in the analysis and prediction of the variability and change of the comprehensive Earth system for use in an increasing range of practical applications of direct relevance, benefit and value to society”*



Implementation



Focus the way forward in terms of the implementation of the COPEs strategy for the intermediate term and lead the way for planning post-COPES: projects and modelling groups to develop a **WCRP** implementation plan for the intermediate term (JSC-29).



In this context, all of the core projects are asked to **assess and identify** what activities need to be further emphasized and which can be de-emphasized in the intermediate term.



The aim is to have first draft of the Implementation plan and accomplishments document prepared in time for the next JSC meeting in **April 2009**.

Future Horizons: Pre-2013 (I)



Intermediate Plan: COPEs implementation

Input sought from WCRP core projects (Chairs/Directors):

Part I: project science objectives

- What have been the key accomplishments to date?
- What will be the key science issues your projects aims to address?
- What do you see as the major limitations or impediments (other than funding) that would limit progress in the near term?
- What elements of this science do you see as needing to be taken forward beyond 2013?
- What new science do you see WCRP needing to address beyond 2013 in the context of your project?

Future Horizons: Pre-2013 (II)



Intermediate Plan: COPEs implementation

Part II: unifying COPEs themes

- How is your project addressing/providing focus to the following unifying themes across WCRP: *Modelling; Observations; Climate system analysis*. What have been the accomplishments?
- What will be the legacy datasets emerging from these activities? How are the data management aspects implemented?
- How are these feeding into operational systems/applications and what legacy will this leave?
- What other legacy contributions will there be from the engagement of your project in these areas, including capacity building/training?

Future Horizons: Pre-2013 (III)



Intermediate Plan: COPEs implementation

Unifying COPEs themes

- Modelling -

Development of Earth system models

Seamless prediction

Predictability and Prediction

- Observations -

Global sustained observations

Enhanced Monitoring

Process study observations

Improved historical data

- Climate system analysis -

Integration of models and data

Reanalysis

Paleoclimate data and modelling

Empirical studies

Highlights (2008):

World Modelling Summit, Reading UK

WOAP-III Mtg., Boulder, CO, USA

3rd WCRP Reanalysis Conf., Tokyo, Japan

Future Horizons: Pre-2013 (IV)



Intermediate Plan: COPEs implementation

Part III: implementing the cross-cutting activities

- For each of the cross-cuts, how is your project addressing these?
- What key science questions are you seeking to address in the context of each of the cross-cuts?
- What are/will be your key contributions in each of those in which you are active?
- What scope is there for rationalization of your overall project programme to bring more emphasis to bear on the cross-cuts?

(cont.)

Future Horizons: Pre-2013 (V)



Intermediate Plan: COPEs implementation

Part III: implementing the cross-cutting activities (cont.)

- What will be your key legacy outputs contributing to the cross-cuts?
- How do you see the overall legacy of each cross-cut in the context of your project including links to applications, capacity building/training?

Part IV: General

- What will be the major key accomplishment of your project by 2013?

Future Horizons: Pre-2013 (VI)



Intermediate Plan: COPEs implementation

Cross-cutting activities

Seasonal to interannual prediction
Monsoons & drought
Decadal prediction
Anthropogenic climate change
Atmospheric chemistry and climate
Climate extremes & risks
Sea-level rise
International Polar Year

Task Group on **Regional Climate Modelling and Downscaling** (ToR):

- Work on the establishment of a framework for evaluation and intercomparison of regional downscaling methods;
- Prepare a long-term vision for WCRP activities vis-à-vis regional modelling;
- Work with WMO to identify mechanisms making regional downscaling models/techniques available to scientists and users.

Future Horizons: Post-2013

Long-Term Strategy: New WCRP themes/structure to

- > promote/facilitate research on frontiers of climate/Earth system
- > promote the need for & use of climate information, products & services.



Three or four Themes/Panels?



Regional climate prediction as a separate theme or fitted better within a processes/modelling theme or an applications/impacts theme?



What's the role, nature, duration of cross-cutting activities?



How to ensure societal needs are met and there is effective engagement with stakeholders?



How to ensure continued engagement/support from sponsors, project offices, etc., to any new theme/structure?

Programme & Project Management

- JSC focus on long-term strategy
- Projects focus on COPES implementation
- Changes in leadership: WCRP core projects



CLIVAR

Jim Hurrell, USA (Co-Chair)
Tim Palmer, UK (Co-Chair)
Martin Visbeck, Germany (Co-Chair)
Howard Cattle, UK (CIPO Director)



SPARC

Ted Shepard, Canada (Co-Chair)
Tom Peter, Switzerland (Co-Chair)
Norm McFarlane, Canada (IPO Director)

GEWEX

Soroosh Sorooshian, USA (Ex-Chair)
Tom Ackermann, USA (Chair)
Peter van Oevelen, NL (IPO Director)

CliC

Barry Goodison, Canada (Ex-Chair)
Konrad Steffen, USA (Chair)
Tony Worby, Australia (Vice-Chair)
Daqing Yang, USA (IPO Director)



Programme & Project Management



Changes in leadership: WCRP-JSC

- JSC -

Antonio Busalacchi, USA (Chair)
Dave J. Griggs, Australia (Vice-Chair)
Jochem Marotzke, Germany (Officer)
V. Ramaswamy, USA (Officer)
Carolina Vera, Argentina (Officer)
Guoxiong Wu, China (Officer)
Kwabena Anaman, Ghana (Member)
Reza Ardakanian, Germany (Member)
Gregory Flato, Canada (Member)

Julia Slingo, UK (Member)
Ilana Wainer, Brazil (Member)
Hervé Le Treut, France (Member)
John Church, Australia (Chair/Member)
Pia Cornejo R. de Grunauer, Ecuador (Member)
Sergey Gulev, Russia (Member)
Laban Ogallo, Kenya (Member)
Jagadish Shukla, USA (Member)
T. Yasunari, Japan (Member)

- New members (as of 1 January 2009) -

Sarah Gille, USA
Filipo Giorgi, Italy
B. Goswami, India

Vladimir Kattsov, Russia
Teruyuki Nakajima, Japan
Fredrick Semazzi, Uganda/USA

Communication



E-zine: quarterly newsletter



News updates to website



Research theme on WMO website



Regular teleconferences: JSC Officers, Chairs & Directors; Projects' leadership



One of the two vacant positions re-classified as Communication/Science Officer; second position depends on WCRP strategy



WCRP Review (draft) (I)

- Society needs the research for mitigation strategies/climate adaptation.
- After 30 years of high achievement, the breadth of WCRP activities has outgrown the ability of society to support all the necessary research, infrastructure, and coordination. Yet the need for WCRP's work is more important than ever.
- WCRP has earned renown for excellence over its 30-year lifetime. This excellence provides a strong foundation for the future.
- At the same time, there must be a strategy for prioritizing WCRP science and related activities and for conversion of WCRP science into future societal benefit. The WCRP Strategic Framework document provides a framework but lacks future priorities and an implementation plan. The absence of a detailed implementation plan will make the required societal and policy relevance more difficult to achieve in the future.
- Yet it is the societal and policy relevance that will sustain WCRP in the long run and make the necessary resources easier to acquire.

WCRP Review (draft) (II)

- 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.

WCRP Review (draft) (III)



Review recommendations:

- Focus and identify future research priorities
- Build scientific and resource capacity
- Enhance collaboration (national, regional, international i.e. developing countries' scientists/institutions); use national networks as 'source for nominations of under-represented groups'
- Enhance visibility and better uptake of WCRP outreach - not only at international but also regional, and national levels
- Develop framework for future joint research (i.e. with GEC programmes and ESSP)

Responses to 2008 Review



WCRP community comments on the review:

- WCRP mandate: basic research; delivery of results should occur through multiple mechanisms/partnerships
- Mention too little role of projects and IPOs
- WCRP/Projects have not been static but continuously evolving
- Projects' research is bottom-up driven at national level by funding agencies (rather than top-down)!
- Projects interface with users on many levels; review needs to better define 'user' groups

Reviews & Partnership



Recent ESSP and IGBP reviews



Considerable WCRP-IGBP interaction:

- SOLAS
- WGCM + AIMES
- SPARC + IGAC: Atmospheric Chemistry & Climate
- CLIVAR + PAGES
- CLIVAR + IMBER
- GEWEX + iLEAPS

World Climate Conference-3

- WCRP scientists are actively involved in planning and organizing the WCC-3: **31 August - 4 September 2009 in Geneva**
- WCRP plans to;
 - showcase its Implementation Plan and Long-term Strategy;
 - promote climate research in the context of '*climate information for decision-making*'
 - Model development & outcome of World Modelling Summit,
 - Climate Information System Framework;
 - plays a major role in the scientific/technical segment;
 - engage in the policy segment which targets head of states, ministers, senior government officials.

World Climate Conference-3 (II)

- The World Climate Conference-3 (WCC-3) has the theme: “*Climate Predictions and Information for Decision-Making: Managing Risk on Seasonal to Multi-Decadal Time Scales.*”
- This theme is, for the most part, directly or very closely based on research outcomes covered by WCRP, particularly CLIVAR.
- WCRP scientists on the WCC-3 Programme Committee (WIOC): Martin Visbeck (CLIVAR SSG Co-Chair), chair WIOC, V. Ramaswamy, JSC member.
- Since the focus of WCC-3 is on strengthening the science of prediction (focusing on the next three decades and the mechanisms to deliver the needs of users), this is an opportunity for WCRP.
- In this regard, WCRP is coordinating closely with the EC-RTT to ensure that an “Enhanced Prediction Framework” is a major outcome of the conference.
- This would contribute to enhanced transfer of WCRP research to services by linking to the WMO initiative to support adaptation to climate variability and change.

Partnerships (I)



Strengthened WCRP-WCP relationship:

- WCP Director and Commission President are now formally invited to WCRP-JSC meetings;
- WCRP-JSC members on the Review Committee for RCOFs;
- WCRP Director is a member of WMO Climate Coordination Task Team together with WCP Director, and Director of the WMO Climate and Water Department (CLW);
- Establishing joint projects to promote end-to-end strategy for climate observation, research, analysis and applications
 - Horn of Africa project (with World Bank)
 - Proposals in preparation to be submitted to EU/EC, APN, etc.

Partnerships (II)



Earth System Science (ESSP):

- WCRP together with IGBP, IHDP and DIVERSITAS founded the Earth System Science Partnership (ESSP) and its four projects on carbon, food, water and health
 - WCRP provides climate science expertise to ESSP;
 - ESSP support is essential for dissemination and delivery of science knowledge generated by WCRP and sister programmes.
- WCRP has been funding annually both the ESSP Program and Project Offices



Conclusions

- WCRP has a great opportunity with attendant challenges to build on its 30 years of *successful legacy* by staying focused on the forefront of climate system research for the rest of this century.
- WCRP must promote and enable the *timely use of climate information and knowledge* it generates for decision-making through its partnerships with providers and users of such information.
- The greatest challenge for WCRP is to *demonstrate the value* of its global and regional scientific coordination and integration efforts to its sponsors/donors, and the participant scientists and organizations that support its Projects and activities.