



## **33<sup>rd</sup> Session of the WCRP Joint Scientific Committee**

*Beijing, China 17-20 July 2012*

### **Write-up from a CLIVAR Perspective**

**August 2012**

## 1 Introduction

The 33<sup>rd</sup> Session of the WCRP<sup>1</sup> Joint Scientific Committee (JSC) took place in Beijing, China, 17-20 July 2012. The meeting was attended by 50 participants, including JSC members, core project chairs and directors, and representatives from WCRP's sponsors, partners, and funding organisations.

An important goal of the meeting was to further refine the WCRP grand challenges first identified at the extraordinary JSC session in Boulder, CO, USA, 29-30 October 2011. Further aims of the JSC meeting were to address the scope and function of the modeling and data councils, to review the activities and structure of the four WCRP core projects – CLIVAR, GEWEX,<sup>2</sup> SPARC,<sup>3</sup> and CliC<sup>4</sup> – and to move towards a decision on project names and future directions within the context of an evolving WCRP.

Finally, WCRP support of the Global Framework for Climate Services, sustained ocean observations, and Future Earth, was discussed.

The sections below provide a high-level overview of the agenda items on WCRP grand challenges (section 2), core project names (section 3), and CLIVAR (section 4). A summary of next steps for CLIVAR can be found in Section 5. Further detail and final decision and action items for CLIVAR will be given in the full JSC report.

## 2 Grand Challenges

### 2.1 White Paper Summaries

Following a recommendation from the extraordinary JSC session in October 2011, white papers had been developed by writing teams for each of the six WCRP grand challenges. These were presented at the Beijing meeting and the following recommendations were made:

#### 2.1.1 *Actionable Regional Climate Information*

The primary objective of this grand challenge is to provide relevant information about proximity to sector thresholds in a risk management framework for a given spatial and temporal scale.

This grand challenge will be populated by a subset of more focused initiatives. These are:

1. Intraseasonal to seasonal to interannual prediction (CLIVAR lead)
2. Decadal prediction (CLIVAR lead)
3. Regional climate information (Working Group on Regional Climate to lead initial planning)

---

<sup>1</sup> World Climate Research Programme

<sup>2</sup> WCRP's Global Energy and Water Cycle Experiment

<sup>3</sup> WCRP's project on Stratospheric Processes and their Role in Climate

<sup>4</sup> WCRP's Climate and Cryosphere project

### 2.1.2 *Regional Sea Level Change*

This grand challenge will focus on regional sea level variability and change – which has been an increasingly relevant issue for impact assessments – and includes global sea level change. CLIVAR will lead this grand challenge, in close collaboration with CliC and GEWEX. Activities of the WCRP-IOC<sup>5</sup> sea-level crosscut will also be integrated.

### 2.1.3 *Cryosphere in a Changing Climate*

The overarching objective of this grand challenge will be to actively promote targeted research activities aimed at substantially improving both understanding of cryospheric processes and feedbacks, and our ability to make quantitative initialized predictions and long-term projections of cryospheric quantities and their interactions with the global climate system.

The grand challenge will be lead by CliC; one of the subthemes will be polar climate predictability, initially lead by SPARC.

### 2.1.4 *Clouds and Climate Sensitivity*

This grand challenge will focus on clouds as the major driver to interlink climate sensitivity, precipitation and aerosol problems.

WGCM will host this grand challenge, and it will be managed by GEWEX. SPARC will lead on the aerosol aspects in close coordination with GEWEX and IGAC.<sup>6</sup>

### 2.1.5 *Changes in Water Availability*

This grand challenge will focus on understanding and predicting precipitation variability and changes, and understanding how changes in land surface and hydrology influence past and future changes in water availability and security.

GEWEX will take the lead with this grand challenge.

### 2.1.6 *Prediction and Attribution of Extreme Events*

This grand challenge will focus on weather and climate-related extreme events, on a range of temporal scales (from minutes to years) and spatial scales (from kilometers to thousands of kilometers), in the context of a changing climate.

GEWEX will lead this grand challenge, with ETCCDI<sup>7</sup> leading certain initiatives.

## 2.2 Implementation Plans

The JSC agreed that the grand challenges should be focused on research efforts that were likely to demonstrate significant progress in the next five years. In some cases sub-“initiatives” would be identified as efforts that would be achievable in the five-year timeframe. The grand challenges should be seen as targeted activities that the projects would organize, and they would depend on/benefit from the solid scientific foundation and network of researchers supporting them through the WCRP core projects.

---

<sup>5</sup> Intergovernmental Oceanographic Commission

<sup>6</sup> International Global Atmospheric Chemistry project

<sup>7</sup> CLIVAR's Expert Team on Climate Change Detection and Indices

The white paper lead authors and project leads were requested to write a short appendix to each paper that would outline an implementation strategy. Each grand challenge would have an associated workshop (or workshops) to garner community input to further refine the key challenges and opportunities. The decision lies with the writing team as to whether the grand challenge in question lends itself to one workshop (with splinter sessions on each of the initiatives) or several workshops on each initiative under the grand challenge.

### **3 Core Project Names**

It was noted that core projects are fundamental capabilities of core climate research. They are quasi-permanent fixtures and, in this respect, should not be required to change their names. But the way in which these capabilities will be applied to meet societal needs will evolve, and therefore internal reorganization of the projects should be focused upon.

The JSC agreed that CliC would not change its name, and that GEWEX and SPARC would keep their acronyms, but change the series of words in line with community consultations that have already taken place.

Consistent with the discussions at SSG-19 CLIVAR will keep its acronym but change the series of words, in consultation with the CLIVAR leadership.

### **4 CLIVAR Specifics**

#### **4.1 CLIVAR Structure**

M. Visbeck and J. Hurrell selected a few highlights from CLIVAR's portfolio of activities to present to the JSC, giving examples under each of CLIVAR's imperatives and scientific frontiers. They then presented CLIVAR's ideas in the context of the WCRP evolution; in particular, they outlined the planning process that was a focus of the recent CLIVAR Scientific Steering Group meeting (SSG-19) in La Paz, Mexico. The JSC encouraged CLIVAR to pursue the new structure based on a matrix of core capabilities on one axis and research challenges on the other to ensure a more integrative approach. It was notable that there was considerable synergy between the main challenges identified by CLIVAR and those of the WCRP as a whole.

CLIVAR research challenges:

1. Intraseasonal, seasonal and interannual variability and predictability of monsoon systems.
  - CLIVAR will lead this aspect within the WCRP Regional Climate Information grand challenge and contribute to the Changes in Water Availability grand challenge.
2. Decadal variability and predictability of ocean and climate variability.
  - CLIVAR will lead this aspect within the WCRP Regional Climate Information grand challenge.
3. Trends, nonlinearities and extreme events.

- CLIVAR will contribute to the Prediction and Attribution of Extreme Events grand challenge.
- 4. Marine biophysical interactions and dynamics of upwelling systems.
  - This will entail strong links with IMBER<sup>8</sup>.
- 5. Dynamics of regional sea level variability.
  - CLIVAR will lead the WCRP Regional Sea Level grand challenge.

#### Core Capabilities:

1. Improving ocean system models.
2. Improving ocean observing systems.
3. Ocean data, synthesis and information systems.
4. Knowledge transfer and stakeholder feedback.
5. Education, capacity building and outreach.

#### 4.2 Regional Activities

CLIVAR and GEWEX are to form a single monsoon panel that would have overall responsibility for monsoon research in all regions. The panel will have appropriate representation from AAMP,<sup>9</sup> VAMOS,<sup>10</sup> VACS,<sup>11</sup> GEWEX, SPARC, and major modeling groups.

The current VAMOS and VACS portfolios would be separated by function; monsoon dynamics would fall under the new monsoon panel, and certain efforts (e.g. VACS atlas, summer schools) would continue under the new CLIVAR panels on knowledge exchange and capacity building. A pan-Latin America and Caribbean workshop is being organized to identify priorities for the region (along the lines of the conference being planned for Africa).

### 5 Follow up for CLIVAR

The grand challenges (particularly where CLIVAR is to lead) will be organized by the core projects as a supplement to their core activities. Project leads are to work with the white paper authors to develop an outline of an implementation strategy by the first week of September.

The proposed CLIVAR research challenges and capabilities shall now be advanced and fleshed out in the context of the JSC discussions and in consultation with CLIVAR panels and working groups, and the wider community, with a view to implementation in 2014. Position papers will be developed for each of these research challenge areas, to be discussed at the next SSG meeting in June 2013, Kiel, Germany.

---

<sup>8</sup> The Integrated Marine Biogeochemistry and Ecosystem Research project

<sup>9</sup> CLIVAR's Asian-Australian Monsoon Panel

<sup>10</sup> CLIVAR's Variability of the American Monsoon Systems panel

<sup>11</sup> CLIVAR's Variability of the African Climate System panel