

# WCRP REPORT

World Climate Research Programme



ICSU

International Council for Science

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# 1. Opening of the Session

## 1.1 Introductory Remarks by the Chair – A. Busalacchi

[http://www.metoffice.gov.uk/media/pdf/c/2/jsc-32\\_Intro\\_ABusalacchi1.pdf](http://www.metoffice.gov.uk/media/pdf/c/2/jsc-32_Intro_ABusalacchi1.pdf)

Prof. Busalacchi convened the session, opening with a moment of remembrance for the late Dr Moustafa Chahine, who served as the first Chair of the GEWEX Scientific Steering Group from 1989-1999. He then thanked all of the participants for their attendance (see ANNEX A for a list of participants) and extended his gratitude to the UK Met Office for making all the local arrangements.

During his presentation, Prof. Busalacchi acknowledged the need for WCRP to be more flexible going forward, responding to expanding user needs, particularly at the regional scale. Whilst WCRP remains at the cutting edge of research and scientific support, there is a growing need for the use of climate information products and services. The 33<sup>rd</sup> JSC meeting that will follow the upcoming Open Science Conference in Denver intends to help finalize the future directions for WCRP.

The expectations and outcomes for JSC-32 were to define the transition/evolution of the WCRP core projects over the next 12 months, and to define the role of the OSC and the subsequent JSC in finalizing the future directions and structure of WCRP.

## 1.2 WCRP Director's Report – G. Asrar

Dr Asrar opened his talk by reviewing the Joint Planning Staff members and the International Project Office staff. He also presented an overview of the income and expenditures for the programme.

In terms of WCRP activities, highlights include a focus on regional efforts over the past year, for example the activities of the CORDEX regional climate downscaling and capacity development. A series of pilot projects are underway, designed to illuminate what it takes for WCRP to facilitate/coordinate the transfer of scientific understanding to decision makers at the regional and local level. WCRP's involvement in UNFCCC/COP16 was also noted.

## 2. WCRP Open Science Conference – J. Hurrell

[http://www.metoffice.gov.uk/media/pdf/d/r/OSC\\_Presentation1.pdf](http://www.metoffice.gov.uk/media/pdf/d/r/OSC_Presentation1.pdf)

Dr Hurrell provided the JSC with an overview of the WCRP Open Science Conference (OSC). He called for the core projects to circulate another announcement regarding the OSC in view of the impending abstract deadline and suggested that a timeline of accompanying events should be developed as there are various side-meetings taking place alongside the OSC.

### *DISCUSSION*

A lengthy discussion followed, covering OSC communications, students/early career researchers and abstract submissions. There were several calls for a continued, concerted effort to advertise the OSC; there was a suggestion that the Project Offices should follow the example set by SPARC, whereby the Project Office identified relevant themes and sessions and brought these to the attention of its community.

There were also specific suggestions for communicating the main focus of the OSC to the community at large. JSC members stated that the main OSC message(s) should communicate what an individual's role in the OSC could be, in addition to what they stand to gain from attending, whilst also emphasizing the unique opportunity provided by the OSC to bring scientific communities together to tackle the challenges at the interfaces of the traditional disciplines. This discussion prompted a review of the text communicating the key reasons for attending the OSC, which was presented to the JSC at the close of the day (see ANNEX D for the final version).

**ACTION:** A timeline of events to be developed, incorporating all meetings / events taking place alongside the OSC. Chairs and Directors to send relevant information to Jim Hurrell.

**ACTION:** OSC message to be refined for the webpage and for circulating by email, focusing on why individuals should attend.

**ACTION:** Continued advertisement of the OSC to take place, taking into account the evolution of the form of the OSC.

**ACTION:** Conveners of the OSC sessions to receive information about abstract numbers before the deadline, in order to assist with contingency planning.

## **3. Sponsor Highlights**

### **3.1 ICSU Visioning – L. Goldfarb**

[http://www.metoffice.gov.uk/media/pdf/j/n/ICSU\\_IESRGS\\_WCRP.pdf](http://www.metoffice.gov.uk/media/pdf/j/n/ICSU_IESRGS_WCRP.pdf)

Dr Goldfarb gave a presentation on ICSU's new Initiative on Earth System Research for Global Sustainability. She described the steps of the Earth System Visioning Process, including design criteria and governance, noting the three main goals of the Initiative: (1) to deliver knowledge to respond to global change; (2) to address the grand challenges; and (3) to engage a new generation of researchers.

In terms of interaction with WCRP, the programme is in position to contribute to each of the five grand challenges, with particular emphasis on the first two dealing with forecasting and observation. Dr Goldfarb suggested that the Initiative could be presented to the WCRP community at the Open Science Conference.

### **3.2 WMO – Status Report on Global Framework for Climate Services – J. Lengoasa, DSG**

[http://www.metoffice.gov.uk/media/pdf/e/3/GFCS\\_JLengoasa.pdf](http://www.metoffice.gov.uk/media/pdf/e/3/GFCS_JLengoasa.pdf)

Mr Lengoasa, Deputy Secretary General of the WMO, began his talk with some of the key outcomes of the World Climate Conference-3, including the decision to establish a Global Framework for Climate Services (GFCS). An intergovernmental meeting (January 2010) was convened to approve the terms of reference for the GFCS and to endorse the composition of a High Level Task Force, to develop the components of the GFCS and define roles, responsibilities, and capabilities of the elements of the GFCS, illustrate how it will assist integration of climate information and services into national planning, policy and programmes. The findings/recommendations of the task force are detailed within a progress report, which has now been released. The key recommendation was that the UN should establish an ad hoc technical group to develop a detailed implementation plan for the GFCS, to be endorsed through an intergovernmental process. Governance options were also proposed. A decision on the recommendations of the task force will be reached by the 16<sup>th</sup> WMO Congress (16 May – 3 June 2011). This presentation helped guide subsequent JSC discussions regarding the role of WCRP within the GFCS.

### **3.3 IOC Integrated Framework for Sustained Ocean Observations Task Team (IFS00-TT) – W. Watson-Wright**

[http://www.metoffice.gov.uk/media/pdf/j/3/Lindstrom\\_FOO\\_WCRP\\_JSC\\_April2011\\_V2.pdf](http://www.metoffice.gov.uk/media/pdf/j/3/Lindstrom_FOO_WCRP_JSC_April2011_V2.pdf)

Dr Watson-Wright, Executive Secretary of the IOC, provided an introduction on the IOC Integrated Framework for Sustained Ocean Observations Task Team, which was a product of the OceanObs'09 Conference. The overall goal of the framework is to better connect the observing systems to the information outcomes needed for science and society. It will provide guidance to the design and implementation of the growing Global Ocean Observing System (GOOS), which is coordinated by the IOC. Dr Watson-Wright then introduced Dr Lindstrom, who chairs the Task Team to provide an update on their progress.

Dr Lindstrom presented the Framework for Ocean Observing to the JSC and introduced the report on Integrated Framework for Sustained Ocean Observations. The Framework was presented as a mechanism to facilitate improved connectivity between the (mandated) requirements for and the delivery of global to regional ocean information. Its fundamental 'currency' is essential ocean variables (EOVs), which are observable by a mix of networks that all contribute to appropriate data integration activities to produce

information products. The system design approach also facilitates implementing best practices, enables better communication and transferring of lessons learned.

**ACTION:** The JSC look forward to Dr Lindstrom's report on Integrated Framework for Sustained Ocean Observations Task Team and to identify where and how WCRP can best support its recommendations.

## 4. Sponsor Presentations

The aim of this session was to inform the JSC on what is required of WCRP to support sponsor programme goals with respect to climate science, services and sustainability.

### 4.1 WMO – DSG, J. Lengoasa

Mr Lengoasa urged for greater collaboration between WCRP and existing WMO bodies, noting CCI, WWRP, UNEP, WMO Disaster Risk Reduction Programme, and regional climate outlook fora (RCOFs) as examples. In terms of the Global Framework for Climate Services, it is important that WCRP works closely with GCOS and plays a role in the research effort with respect to climate services. Mr Lengoasa listed elements that should be prevalent in WCRP from WMO's perspective, including: strengthen research and observations; develop climate prediction systems; ensure development of reliable high resolution information products for adaptation and risk management, promote interdisciplinary research (e.g. how to climate-proof the green economy); foster close interaction with regional institutions (e.g. regional climate centres); and address critical issues of rapidly emerging societal needs.

### 4.2 IOC – W. Watson-Wright

[http://www.metoffice.gov.uk/media/pdf/i/1/WWatson-Wright\\_IOC\\_WCRP\\_JSC2011\\_Final.pdf](http://www.metoffice.gov.uk/media/pdf/i/1/WWatson-Wright_IOC_WCRP_JSC2011_Final.pdf)

Dr Watson-Wright opened her talk with IOC's mission and high-level objectives (HLO) for the medium term strategy (2008-2013), noting that the link with WCRP falls under HLO 2 (mitigation of the impacts of and adaptation to climate change and variability). She then reviewed WCRP-IOC joint activities, including large oceanographic programmes (e.g. CLIVAR), projects, working groups, and various publications, meetings and conferences.

Dr Watson-Wright also listed IOC expectations for WCRP in the future, stressing that capacity building and outreach, beyond the science, is one of the most important expectations for WCRP from IOC's perspective.

### 4.3 ICSU – L. Goldfarb

[http://www.metoffice.gov.uk/media/pdf/k/a/ICSU\\_Rio\\_20-WCRP\\_SC.pdf](http://www.metoffice.gov.uk/media/pdf/k/a/ICSU_Rio_20-WCRP_SC.pdf)

Dr Goldfarb began by introducing the United Nations Conference on Sustainable Development 2012 (UNCSD 2012 or Rio+20), which is scheduled to take place 4-6 June 2012 in Rio de Janeiro, Brazil, and then communicated ICSU's objectives for the meeting and involvement in the process. ICSU is the co-organizing partner of the Science and Technology Major Group, therefore the issue of how to bring science and technology to the Rio+20 meeting was raised.

ICSU are in strong support of the ambition to strengthen ties to the user community (which emerged from the WCRP review), and that strategic outreach to the wider community is of great importance.

#### *DISCUSSION*

The ensuing discussion revolved around how and to what extent WCRP can influence international delegations such as UNCSD 2012. One participant stressed the importance of having scientists on international delegations but another pointed out that being a member of a political delegation might compromise the question of impartiality. It was felt, however, that if policy makers do not have the appropriate support and scientific background then the right decisions would not be made. From a programmatic viewpoint, WCRP cannot speak to any one particular option or alternative, but can and should provide the best scientific knowledge and information available about options under consideration by the decision makers. An individual can do so if they wish but the programme's role is to advise/assess, rather than to advocate.



**ACTION:** WCRP Chairs and Directors to determine how to become involved in Rio+20, developing the WCRP position and participation.

## 5. Partner Presentations

The aim of this session was to inform the JSC on what is required of WCRP to support partner programme goals and to identify potential new areas of partnership, with respect to climate science, services and sustainability.

### 5.1 IGBP – S. Seitzinger

Prof. Seitzinger stated that Earth system modeling is a priority for IGBP and noted that a new task team with WCRP on this issue has been discussed. She called for more interaction with WCRP on the synthesis activities, which includes peer review journals and summaries for policy makers. There should also be a representative of WCRP to join the working group on the ICSU restructuring process. IGBP intends to accomplish its vision in partnership with other organizations. It is hoped that the key outcomes from the WCRP Open Science Conference will be highlighted at Planet Under Pressure (there will be a specific section on the ocean at this event).

**ACTION:** JSC Chairs and Directors to seek opportunities, as appropriate, to work with IGBP synthesis activities.

**ACTION:** Modeling Council to address the proposed task team between WCRP and IGBP on prediction of the Earth System. Modeling Council to determine where and how regional climate modeling should be coordinated (reside) within WCRP future structure.

### 5.2 GCOS – A. Simmons

[http://www.metoffice.gov.uk/media/pdf/s/4/GCOS\\_JSC32\\_input\\_ASimmons.pdf](http://www.metoffice.gov.uk/media/pdf/s/4/GCOS_JSC32_input_ASimmons.pdf)

Prof. Simmons gave an overview of GCOS. During the talk, Prof. Simmons referred to the Updated Satellite Supplement to the Implementation Plan, which is now out for review, and urged the JSC to respond to the document. He also felt that the JSC decision regarding the evolution of WOAP should be presented to the GCOS Steering Committee. A specific partnership between GCOS and WCRP is foreseen in the structure for the World Climate Programme proposed by WMO.

**ACTION:** JSC to respond to the GCOS Updated Satellite Supplement to Implementation Plan, which is out for review.

### 5.3 WOAP – M. Manton

[http://www.metoffice.gov.uk/media/pdf/1/e/woapReport\\_110328.pdf](http://www.metoffice.gov.uk/media/pdf/1/e/woapReport_110328.pdf)

Prof. Manton structured his talk around the activities emerging from WOAP-4 (Hamburg, March 2010): the Essential Climate Variable (ECV) dataset workshop; the WCRP Task Group on Data Management; the Reanalysis Conference; surface fluxes activities; and WOAP governance. With regards to the WCRP Task Group on Data Management, two of the objectives of this group were to coordinate a sub-program on data stewardship and to develop an inventory of WCRP datasets. Prof. Manton called for input from WCRP representatives (e.g. IPO Directors) to the inventory activity and to help establish the terms of reference for the data stewardship sub-program.

In terms of interaction, Prof. Manton noted the importance of continued GSOP representation at WOAP meetings, to provide input on issues relevant to CLIVAR.

## 5.4 WWRP – G. Brunet

[http://www.metoffice.gov.uk/media/pdf/m/9/Brunet\\_2011\\_04\\_WCRP\\_V4.pdf](http://www.metoffice.gov.uk/media/pdf/m/9/Brunet_2011_04_WCRP_V4.pdf)

Dr Brunet presented two WWRP research initiatives to the JSC – Sub-seasonal to Seasonal Prediction and Polar Prediction. Dr Brunet discussed the two workshops that were co-organized with WCRP under each initiative, highlighting the main recommendations that emerged from each. On the former, it was recommended that a Panel/Project for Sub-seasonal and seasonal prediction research should be established, which would be tasked with preparing an Implementation Plan for sub-seasonal prediction. On the latter, the recommendations fell under three headings: (1) Verification; (2) Data assimilation and observation; and (3) Predictability, physical and dynamical processes.

WWRP would look to have continued and close interaction with WCRP on these two initiatives. WWRP would want to work with WCRP to bridge the gap between subseasonal and seasonal timescales, drawing on expertise associated with phenomena such as ENSO. In terms of climate services, WWRP does not interact directly with the end-users, rather their Working Group on Societal and Economic Research Applications provides this interface.

## 5.5 SOLAS – D. Wallace

[http://www.metoffice.gov.uk/media/pdf/j/a/Doug\\_WCRP\\_JRC\\_SOLAS\\_2011.pdf](http://www.metoffice.gov.uk/media/pdf/j/a/Doug_WCRP_JRC_SOLAS_2011.pdf)

Dr Wallace provided an introduction to SOLAS, stating the three main foci of the programme, and noting that the primary linkages with WCRP fall under Focus Two<sup>1</sup>. During the presentation, Dr Wallace highlighted the need to reinvigorate the Working Group on Surface Fluxes, bringing together GEWEX, SOLAS and others into one discussion group. It was noted that SOLAS would be willing to support a co-hosted workshop on this.

### *DISCUSSION*

The ensuing discussion focused on the issue of surface fluxes. A forum was suggested as a means to discuss the issues of measuring fluxes and physical/chemical variables, as various activities occur across the different programmes. This was reinforced by the comment that fluxes span across GEWEX, CLIVAR, WOAP and WGNE, but that WOAP should be the main entry point for this activity.

**ACTION:** WOAP to take the lead to develop an outline of surface flux action plan and a timetable for its full development should be prepared with GEWEX, CLIVAR, WOAP and WGNE, to be presented at the SOLAS meeting (May 2011).

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<sup>1</sup> Exchange Processes at the Air-Sea Interface and the Role of Transport and Transformation in the Atmospheric and Oceanic Boundary Layers

## 6. Global Framework for Climate Services and Sustainability

### 6.1 National Perspectives

The aim of this session was to inform the JSC of national perspectives on the research needed to support the Global Framework for Climate Services and Sustainability.

#### 6.1.1 US / NOAA – Dr Koblinsky

Dr Koblinsky provided a brief update on the status of climate services in the US and pointed to the NOAA/Columbia University Cooperative Institute for Climate Application and Research as a key hub for activities on the GFCS. This Institution is supportive of the Global Framework. Current activities in this area include: cooperation with NOAA and other US bodies; a focus on vulnerability research for adaptation and risk management; contributions to capacity building; generation of best practices; and use of climate services for adaptation. Two recent examples were mentioned; indexing for the insurance industry and understanding the impacts and vulnerability for the agriculture industry.

Dr Koblinsky noted that how WCRP efforts can provide support for climate services is an important issue and that there is clearly a need for continued research to feed into climate services. He also stressed the need for more effort on capacity building and training

#### 6.1.2 UK – J. Slingo

Prof. Slingo discussed activities that are being undertaken in the UK, such as the Met Office/NERC Joint Climate Research Programme, which is being developed as a prototype for UK climate services. She listed current key gaps – which include real-time monitoring, decadal forecasts, operational attribution of extreme events, operational super-computing and computing capability – and research priorities, such as model resolution issues, initializing coupled models and integrating climate and impacts assessments (e.g. hydrology, ecosystems, crops, fire). On this last point, Prof. Slingo stressed the importance of natural hazards partnerships with organizations such as the British Geological Survey, the Centre for Ecology and Hydrology, and the Environment Agency; simply releasing climate information will not be sufficient. A focus for the UK at present is also to look at attribution in terms of natural variability, in addition to anthropogenic activity.

#### 6.1.3 EC – A. Tilche

[http://www.metoffice.gov.uk/media/pdf/t/k/Climate\\_services\\_ATilche\\_final.pdf](http://www.metoffice.gov.uk/media/pdf/t/k/Climate_services_ATilche_final.pdf)

Dr Tilche gave an overview of the FP7 Research Programme and the constituent climate research activities and stressed the importance of climate services for the European Union, providing examples of European projects that are contributing to the establishment of climate services: ECLISE (Enabling Climate Information Services for Europe); and CLIM-RUN (Climate local information in the Mediterranean region: responding to user needs). The FP7 Environment Programme aims to identify knowledge gaps on the one hand and the policy needs on the other. From the perspective of the EC, there is a desire to establish more collaboration and exchange with international programmes as it works to establish its research priorities. Going forward the Commission is organizing a workshop to better coordinate European activities on research, innovation and climate services, and possibly a bottom-up initiative on seasonal-to-decadal climate predictions. This initiative is intended to increase resilience of society regarding the impact of climate change and seasonal extremes with special emphasis on climate sensitive economic sectors.

## *DISCUSSION*

During the subsequent discussion, it was asserted that WCRP would welcome fostering a stronger relationship with the EC and other research funding organizations to help in framing future research priorities.

**ACTION:** WCRP to share grand challenges and strategic plan for the future post OSC as input to the development of the next shared EC framework.

## **6.2 Observational Perspectives**

The aim of this session was to inform the JSC of observational perspectives on the research needed to support the Global Framework for Climate Services and Sustainability.

### *6.2.1 GCOS – A. Simmons*

Prof. Simmons made a key point during his presentation, that the focus is Climate Services (as opposed to Climate Change Services) that has three elements: (1) characterization of past and present climate; (2) characterization and interpretation of anomalies; and (3) identification of trends. Prof. Simmons expressed concern that advocacy for satellite missions (in addition to advocacy of the sustained ocean observing system) has not been adequately addressed.

### *6.2.2 ESA – M. Doherty*

[http://www.metoffice.gov.uk/media/pdf/m/5/JSC\\_Doherty\\_ESA.pdf](http://www.metoffice.gov.uk/media/pdf/m/5/JSC_Doherty_ESA.pdf)

Dr Doherty spoke to the JSC about the ESA EO Programme, including an overview of the Climate Change Initiative. He made the point that Government agencies had to be engaged to fund this programme.

Dr Doherty also made the point that scientists have a key role to play in advocating that such data be made freely available. He felt that this message is not being communicated publicly and clearly enough.

### *6.2.3 NASA – E. Lindstrom*

In terms of sustained ocean observations, Dr Lindstrom stated that in order to engage the science dimensions in NASA, it would be beneficial to have the grand challenges posed by WCRP. He also asserted that NASA priorities are assessed and established on the basis of both feasibility – in terms of the technology – and the impact.

Dr Lindstrom also pointed out that NASA, NOAA, NSF and US Navy have supported process studies through CLIVAR but the resulting successes have not been trumpeted. He held the opinion that a lot more positive press could emerge from these activities.

### *6.2.4 EUMETSAT – J. Schulz*

[http://www.metoffice.gov.uk/media/pdf/i/3/EUMETSAT\\_JS.pdf](http://www.metoffice.gov.uk/media/pdf/i/3/EUMETSAT_JS.pdf)

Dr Schulz provided a review of EUMETSAT. He made the point that prediction should be just as much a priority as monitoring of the climate system. He also pointed to a possible opportunity for collaboration with WCRP as EUMETSAT embarks on building the ocean component into its mission.

## *DISCUSSION*

During the subsequent discussion, the group expressed willingness to help the position of EUMETSAT, and pointed to the model developed by WOAP and GEWEX as an area where there is room for expansion and further engagement from the WCRP standpoint.

**ACTION:** CLIVAR to initiate/develop a working relationship with ESA and EUMETSAT as GEWEX, SPARC and CliC have done.

## 7. WCRP Visioning

### 7.1 Task team on Role of WCRP Research in Climate Services – G. Flato

[http://www.metoffice.gov.uk/media/pdf/0/c/Flato\\_climate\\_services\\_white\\_paper.pdf](http://www.metoffice.gov.uk/media/pdf/0/c/Flato_climate_services_white_paper.pdf)

Dr Flato spoke to the JSC about the Climate Services White Paper, developed by the Task Group on Climate Services. The key suggestion emerging from the Task Group is a pan-WCRP Working Group on Climate Services, which would serve as an information conduit, provide a single point of entry to WCRP, identify climate information needs, help coordinate and prioritize efforts across WCRP and promote best practices. Dr Flato clarified that in terms of involvement with the end-user interface, the Working Group should play a role in defining and guiding the process but should not take ownership of it. The Group should be aware of all existing relationships with the user community (e.g. GEWEX, particularly water and hydrology). The main rationale behind the Working Group on Climate Services is the fact that, as prescribed by WMO, links with end-users need to be established but it would not be efficient for each of the core projects to establish these separately.

**ACTION:** A small team (lead by Greg Flato) to define the role of the new working group on regional climate science and information drawing on the White paper developed by Flato *et al.* and the TFRCD report to JSC, and what the activities of the group might be. The group should keep other potential partners involved in the conversation. The CORDEX and task force on regional climate downscaling to be transitioned to this new working group, and the working group to decide how best to support CORDEX.

### 7.2 Task Team to Develop the Transition Plan from WOAP to a WCRP Climate Observations, Analysis and Information Council – S. Gille

[http://www.metoffice.gov.uk/media/pdf/1/0/woap\\_task\\_force\\_report.pdf](http://www.metoffice.gov.uk/media/pdf/1/0/woap_task_force_report.pdf)

Prof. Gille presented an overview of the process undertaken to develop the transition plan, concluding with the draft terms of reference for the WCRP Climate Observations, Analysis and Information Council and the main deviations relative to WOAP. These changes are that the Council should: (1) Add support for Earth System Modeling; (2) Requirement to interface with modelers and Modeling Council; and (3) Advocate providing sufficient resources (for staff support, workshop funding, and project support). Some suggested areas of activity include support for archiving ‘orphan data’, regional/thematic test bed for data exchange, and coordination of data intercomparison projects (e.g. surface fluxes).

#### *DISCUSSION*

The subsequent discussion focused largely on the terms of reference of the Council. It was noted in the first instance that the terms of reference were very similar to those of GSOP, and that the interaction with GSOP needs to be addressed. There was a query as to whether the Council should be setting up new activities on the basis of data gaps, or alternatively whether it should be taking a more coordinative role. One participant asserted that it is intended to be a coordination/advisory body, which would make recommendations and bring the existing groups together to form a strategy. Another added that the remit should include identifying cross-cutting issues that are currently not being addressed. In addition, it was asserted that the Council should try to close the loop between requirement setting and fitness for purpose of the resultant products.

In light of these comments, during the discussion it was suggested that the terms of reference be redrafted around the three following principles:

1. Research on the system design for sustained observations;
2. Identify new observational needs of the research community; and
3. Promote greater use of observations in analyses, reanalyses and modeling.

**ACTION:** Data Council terms of reference to be revised, providing examples of what it will do, and addressing the membership.

### **7.3 Modeling Workshop/Council – A. Busalacchi**

<http://www.metoffice.gov.uk/media/pdf/2/k/modelingworkshopsummary.pdf>

Prof. Busalacchi spoke to the JSC on the background and outcomes of the WCRP Modeling Coordination Meeting, which included the formulation of a WCRP Modeling Council. He pointed out that at the meeting there was agreement that a WCRP modeling advisory council is essential. The Modeling Council's role was viewed to be advisory, to inform the JSC where the gaps, redundancies and opportunities lie that need to be addressed. However, there remains much uncertainty surrounding the workings of the group, as it was felt that the group itself should decide upon the best approach once it has been formed (e.g. in terms of reporting requirements, interaction with the data council).

**ACTION:** Modeling Council was approved, final terms of reference to be drafted and chair to be elected by the membership of Council.

### **7.4 What Constitutes a WCRP Grand Challenge? – A. Busalacchi**

#### *DISCUSSION*

Prof. Busalacchi held an open discussion to ascertain the participants' own views as to what criteria a grand challenge should satisfy. The suggested criteria are listed in ANNEX E.

There was considerable discussion regarding the lifetime of a grand challenge, and the number of grand challenges that should be adopted. Views varied on these points; some felt that the grand challenges should work on a shorter timeframe (~5 years) so as to be tractable and provide scope for making a step change given appropriate resources. Others felt that bigger questions, or 'banner' problems should be addressed, with a lifetime of over 10 years. Ultimately, no consensus was reached amongst the participants on what constitutes a WCRP grand challenge. Some JSC members noted that the initial grand challenges of predicting the Earth's climate system across time/space scales, and determining the contribution of human activities are still valid today.

It was also noted that WCRP is good at both bringing the community together and mobilizing a community around a problem for a given period of time. This was part of the rationale behind the grand challenges.

### **7.5 Polar Predictability – T. Shepherd**

[http://www.metoffice.gov.uk/media/pdf/p/8/JSC\\_Polar\\_20111.pdf](http://www.metoffice.gov.uk/media/pdf/p/8/JSC_Polar_20111.pdf)

Prof. Shepherd talked about the WCRP Workshop on Polar Predictability on Seasonal to Multi-Decadal Timescales (October 2010). The conclusion of the workshop was that a cross-cutting WCRP initiative was needed in the area of polar predictability. Its first action would be to hold a focused meeting, to develop a detailed implementation plan. Arguments for a Polar Predictability initiative are that firstly WCRP aims to identify those aspects of climate science that benefit from international coordination, and secondly high-impact initiatives addressing those gaps need to be developed that can rally the community behind them and attract the support of funding agencies.



## *DISCUSSION*

There was some discussion on the overlap between the Polar Predictability Initiative and the WWRP Polar Predictability Workshop. One participant commented that WWRP intends to establish a scientific committee on this issue, but rather than proceeding in isolation, a collaboration with WCRP could be developed through an activity such as a workshop. On this point, there were concerns that funding agencies will see two proposals on polar predictability and would be confused about their distinction. In response, it was stressed that it did not make sense to merge these two activities because of sufficient differences in terms of characteristics and timescales.

Other comments included the statement that the polar community is largely organized outside WCRP, so this effort will help bring the groups together, particularly as the polar community does not have access to global models. IASC and SCAR also wish to engage in this effort, and are willing and ready to energize their communities to participate in this activity and help with the planning process.

**ACTION:** The JSC strongly supports the polar predictability activities, encourages communication with WWRP, and proposes that the name of the Polar Predictability Initiative is changed to reflect the coupled climate nature of the polar prediction problem. The JSC encourages SPARC and JPS to seek resources to staff and support as required.

## **7.6 Other Grand Challenges – All**

### *DISCUSSION*

An open forum was held to gather ideas for grand challenges. A broad range of topics were raised as potential grand challenges. An informal vote then took place (each participant was granted three votes) to gauge which suggestions were the most popular. The results again highlighted that there was little consensus with regards to what the grand challenges should be.

**ACTION:** Tony Busalacchi to group some of the grand challenges/pressing problems suggestions and circulate to the JSC.

## **7.7 Transition Plan to New Structure – D. Griggs**

[http://www.metoffice.gov.uk/media/pdf/r/a/WCRP\\_structure3\\_DGriggs1.pdf](http://www.metoffice.gov.uk/media/pdf/r/a/WCRP_structure3_DGriggs1.pdf)

### *DISCUSSION*

Prof. Griggs lead the discussion on the transition plan to the new structure. Grand Challenges were discussed, as well as cross-cuts and core project names under the new structure.

In terms of grand challenges, it was reiterated that they should address a specific barrier to progress in climate science. There was a suggestion that the OSC should be used as a forum for identifying which areas are inspiring the community.

Prof. Griggs summarized the discussion on cross-cuts as follows: cross-cutting activities need to be science driven and need to excite the community, but the structure needs to remain flexible. Additional project support is needed to inject life into the cross-cuts, as well as a scientific champion.

During the discussion on core project names, it emerged that there were concerns over the top-down approach. The need for scientific and science coordination changes was highlighted, alongside the need for an orientation towards society and climate services, which should become increasingly prevalent across the projects. Whilst it was recommended that the current planned structure not be discarded, it was also suggested that the projects present restructuring ideas at the OSC, so as to optimize the opportunity for change and gather the perspectives across the four core projects and their respective network of scientists. Specific to CLIVAR, it was noted that the mandate of this project is vast and that this broadness of scope needs to be addressed.



**ACTION:** CLIVAR to re-examine the Project substructure at upcoming SSG, including whether elements of CLIVAR may have a better home elsewhere in WCRP, and address the issue of a name change via consultation with early career scientists in CLIVAR.

**ACTION:** The Projects to present restructuring ideas at the JSC meeting following the OSC.

## 8. Core Project Reports

### 8.1 GEWEX – K. Trenberth

<http://www.metoffice.gov.uk/media/pdf/8/j/GEWEX-summary4JSCs.pdf>

Dr Trenberth reviewed the structure of GEWEX and highlighted some important accomplishments in 2010-11. He then presented the vision for GEWEX post-2013, referring to the GEWEX Imperatives document, and invited comments from the JSC on the proposed direction. The key science questions for GEWEX will be centered on the study of flows of water and energy through the atmosphere and the land surface, and the changes in response to climate change.

One issue for the JSC highlighted by Dr Trenberth was the subject of monsoons research. He expressed concern that this might not be adequately addressed in the new WCRP structure.

#### *DISCUSSION*

Following the presentation, and as reflected in the JSC's subsequent comments on the GEWEX Imperatives document, various concerns were expressed regarding the proposed direction of the project inclusive of the present decision to retain the name of GEWEX. Firstly, there was the view that the main science question is not being adequately communicated especially as it pertains to water. Secondly, GEWEX can benefit from greater integration between and among its complementary research and observations activities (although it was pointed out that some aspects such as coordination and integration of multiple data sets may be now done through WCRP data council). Thirdly, there is a need for more interaction between the convection, boundary layer and land surface research communities. GEWEX could provide leadership – bringing together these different elements – which are critical for WCRP and climate/weather science and services. The vision has to be clearer in terms of the critical elements that need to be brought together.

During the discussion one participant suggested that with regards to the monsoon issue, WCRP could learn from the CORDEX experience, in terms of its success in coordinating regional efforts. They also noted that the subject needs scientific focus, as opposed to organizational focus.

**ACTION:** GEWEX to further synthesize and integrate the component parts of its program.

**ACTION:** Comments on the GEWEX document, the imperatives and the proposed name to be sent to Tony Busalacchi by end of April for consolidated presentation to GEWEX.

**ACTION:** CLIVAR and GEWEX Projects to use CORDEX as a framework to develop a strategy on monsoons for Africa.

### 8.2 SPARC – T. Peter, T. Shepherd

[http://www.metoffice.gov.uk/media/pdf/8/1/SPARC\\_JSC\\_Exeter.pdf](http://www.metoffice.gov.uk/media/pdf/8/1/SPARC_JSC_Exeter.pdf)

Prof. Peter and Prof. Shepherd reviewed the objectives and approach of the project and discussed the main activities and accomplishments over the past year, including new and emerging activities, such as the Chemistry-Climate Model Validation Activity (CCMVal), the SPARC Data Initiative, Dynamical Variability (DynVar), Solar Variability (SOLARIS), and the Geoengineering Model Intercomparison Project (GeoMIP). They also addressed the evolution of SPARC under a restructured WCRP. SPARC has focused on stratospheric processes in terms of chemistry to date, but will be moving into tropospheric processes going forward.

## *DISCUSSION*

There was a comment from the floor that there is an issue surrounding atmospheric dynamics, in that it is unclear who will be responsible for this element under the new WCRP structure. Other participants urged stronger links with CLIVAR, notably WGSIP, VAMOS, VACS and AIP.

**ACTION:** The transition to include tropospheric-stratospheric interactions is going very well. Need to reconsider name change in concert with views of early career scientists, need to adopt new Executive Session policies for the SSG, and consider what atmospheric aspects of pan-WCRP may be better suited in the SPARC of future.

### **8.3 CLIVAR – J. Hurrell, M. Visbeck**

[http://www.metoffice.gov.uk/media/pdf/9/4/CLIVAR\\_JSC-32.pdf](http://www.metoffice.gov.uk/media/pdf/9/4/CLIVAR_JSC-32.pdf)

Dr Hurrell reviewed the organizational structure of CLIVAR and highlighted selected activities and accomplishments, relating them to the CLIVAR Imperatives. Prof. Visbeck then addressed the future of CLIVAR.

Dr Hurrell pointed out that whilst predictability will remain the focus of the activities, an underlying theme going forward will be managing expectations (e.g. regarding decadal prediction). Prof. Visbeck pointed out that greater clarity is needed with regards to ownership of the climate user interface mechanisms. One of the issues for the JSC is that much of the science of CLIVAR falls under the ‘ocean-atmosphere’ umbrella, but some activities are broader, including existing critical interactions with GEWEX/SPARC/CliC. The grand challenges will also probably transcend the different core elements of the new WCRP structure.

## *DISCUSSION*

During the subsequent discussion, it was pointed out that there is an opportunity for WCRP to introduce a cross-cutting activity on communication. The Census of Marine Life was mentioned as a successful model on this subject.

CLIVAR communications were also touched on during Dr Lindstrom’s talk on NASA’s engagement with WCRP (see 6.2.3).

**ACTION:** JPS / ICPO to discuss with IOC the possibility of a cross-cutting activity on communication (possibly using Census of Marine Life as a model). Concern that the four ‘Ns’ (NASA, NOAA, NSF, US Navy) have supported process studies through US CLIVAR but successes have not been given appropriate international visibility.

### **8.4 CliC – G. Casassa**

[http://www.metoffice.gov.uk/media/pdf/9/5/GCasassa\\_CliC\\_JSC-32\\_060411.pdf](http://www.metoffice.gov.uk/media/pdf/9/5/GCasassa_CliC_JSC-32_060411.pdf)

Dr Casassa delivered the presentation on CliC, providing an overview of the project and called for feedback from the JSC on the current CliC priorities, including their view on CliC participation in Polar Climate Predictability. The priorities are:

1. Polar Climate Predictability (as part of a WCRP initiative based on the outcomes of the Bergen Workshop, WCRP: SPARC+CliC):
  - a. Explanation of causes and prediction of the sea-ice changes
  - b. Ice sheet dynamics and the role of the major ice sheets in sea level rise
  - c. Regional Arctic climate modeling and improved parameterization of cryospheric processes
2. Cryospheric inputs to the Arctic and Southern Ocean freshwater budgets
3. The role of carbon and permafrost in the climate system
4. Sea-ice: observations, modeling and data products, endorsements of a community sea-ice concentration and ice extent product
5. Changes in mountain cryosphere and water resources, via regional activities

Dr Casassa also asserted that a pan-WCRP initiative addressing all aspects of the Earth System should be the way forward for the Southern Ocean and the Antarctic.

### *DISCUSSION*

Several concerns were expressed during the ensuing discussion regarding the priorities set out during the talk. One participant noted that there is not enough coordination in terms of modeling processes. There was a comment that the first priority seems overloaded and needs disentangling and another questioning the relevance of the second priority. It was felt that discussion is needed regarding what value CliC can add to the third priority and concern that there are no visible elements in CliC focus activity on snow research/modeling.

There was also a suggestion that the Polar Predictability workshop be sponsored by CliC.

**ACTION:** The JSC resonates with the stated priorities but sees the need for significant clarification in each regarding programmatic implementation with particular emphasis on modeling.

## 9. Panel / Working Group / Task Force Reports

### 9.1 WGCM – G. Meehl

[http://www.metoffice.gov.uk/media/pdf/c/0/WGCM\\_JSC\\_Meehl.pdf](http://www.metoffice.gov.uk/media/pdf/c/0/WGCM_JSC_Meehl.pdf)

Dr Meehl introduced WGCM and presented the CMIP5 experiments. The CMIP5 modeling simulations are coordinated by WGCM and its partners (including AIMES, CLIVAR, GEWEX, SPARC, CliC, WGNE, WOAP, IDAG). Dr Meehl highlighted that climate change science is now focused on mitigation and adaptation, and posed the question of what is the regional, time-evolving climate change to which society will have to adapt.

#### *DISCUSSION*

When the discussion was opened up to the floor, concern was expressed that there is no coordinated, devoted analysis effort on analyzing the non-stationarity of modes of climate variability in CMIP5.

**ACTION:** WGCM and WGSIP to engage core projects in analyzing the non-stationarity of modes of climate variability based on CMIP5 results and report back to JSC.

### 9.2 ACC – G. Flato

Dr Flato presented to the JSC a proposal to change the focus of the Paris office from anthropogenic climate change to regional climate information and CORDEX.

#### *DISCUSSION*

It was noted that the ACC cross-cut has succeeded in raising the visibility of WCRP especially through CMIP (e.g. papers citing WCRP). There was a statement of thanks from the JSC to France for the continued support. It was proposed that the Paris office should continue to support the CORDEX and focus on supporting the WCRP efforts on regional climate science information and services.

**ACTION:** The JSC has been pleased with the progress of the ACC Paris office and supports the new direction and proposes a different name for the support office consistent with new WG and GFCS. Therefore the JSC agreed to end the ACC cross-cut.

### 9.3 WGNE – A. Brown

[http://www.metoffice.gov.uk/media/pdf/s/o/WCRP\\_JSC\\_WGNE\\_AndyBrown.pdf](http://www.metoffice.gov.uk/media/pdf/s/o/WCRP_JSC_WGNE_AndyBrown.pdf)

Dr Brown discussed the role of WGNE, its links with other groups and listed activities of the group, including coordinated experiments/projects and meetings/workshops. Dr Brown stressed that model and data analysis development needs to remain a high priority. The integration of modeling activities between GEWEX, WGCM, WGSIP and WGNE was highlighted as the best it has ever been.

### 9.4 WGSIP – A. Scaife

[http://www.metoffice.gov.uk/media/pdf/d/b/WCRP\\_JSC\\_WGSIP1.pdf](http://www.metoffice.gov.uk/media/pdf/d/b/WCRP_JSC_WGSIP1.pdf)

Dr Scaife provided an overview of the Climate Historical Forecast Project (CHFP) and its three constituent experiments: (1) Land Surface: the GLACE experiment, looking at the role of soil moisture in seasonal predictability; (2) Stratosphere: Stratospheric Historical Forecast Project, comparing high top and low top model hind-casts to explore the role of stratospheric dynamics and variability on seasonal predictability at the surface; and (3) Sea Ice: Ice Historical Forecast Project, exploring predictability from initializing sea ice by looking at case studies with/without initial sea-ice data (2007/1996).

CHFP data are now being uploaded and are appearing in the online archive at CIMA in Argentina (c.f. CMIP5).

#### *DISCUSSION*

The dialogue that followed elucidated concern that greater participation by the sea ice community is needed on the third group of WGSIP experiments (Sea Ice: Ice Historical Forecast Project). It was also noted that it is currently not possible to initialize the sea ice thickness, thereby presenting a further link with CliC and the sea ice experiment.

A further comment was made that WGSIP could play a role in analyzing the non-stationarity of modes of climate variability based on these experiments and CMIP5 results.

**ACTION:** Greater participation by the sea ice community is needed on the third group of WGSIP experiments.

**ACTION:** WGCM and WGSIP to engage core projects in analyzing the non-stationarity of modes of climate variability based on CMIP5 results and report back to JSC.

## **9.5 TFRCD/CORDEX – F. Giorgi**

<http://www.metoffice.gov.uk/media/pdf/a/3/jsc32-CORDEX.pdf>

Dr Giorgi addressed both the Task Force on Regional Climate Downscaling (TFRCD) and recent CORDEX activities and progress. The mandate of the Task Force was to design a framework (CORDEX) to evaluate/improve regional climate downscaling (RCD) models/techniques and provide a coordinated set of RCD-based projections for regions worldwide. Much progress has been made to date, including a publication describing the CORDEX framework and PHASE I plan and the databank, which is now operational.

The TFRCD is now recommending the establishment of a Working Group on Regional Climate Science and Information and are proposing a 1-year extension of the TFRCD to formulate the WGRC terms of reference for approval at JSC-33. Dr Giorgi made a call for feedback from the JSC on these two proposals.

#### *DISCUSSION*

Following the presentation, there were several comments regarding regional issues. One participant commented that one of the main issues regarding regional models is that the information is being used in the wrong way, and it is important to communicate what the models are and are not capable of providing. Another participant added that a framework is needed that would address the identification and quantification of uncertainties, in addition to the use of the information. There was concern that regional models are not adding value compared with GCMs. There was also concern that more can be done to coordinate with GEWEX and CLIVAR in CORDEX, given that these two projects have over ten year's worth of experience dealing with climate at the regional scale. One suggestion that followed was that GEWEX could help assemble the observational datasets needed to validate regional models.

**ACTION:** GEWEX and CORDEX to coordinate the assembly of observational datasets needed to validate regional models.

## 10. Cross-cuts

### 10.1 Sea Level – G. Casassa

[http://www.metoffice.gov.uk/media/pdf/n/0/GCasassa\\_SLR\\_WCRP\\_JSC\\_-32\\_gc.pdf](http://www.metoffice.gov.uk/media/pdf/n/0/GCasassa_SLR_WCRP_JSC_-32_gc.pdf)

Dr Casassa introduced the talk with some background on the topic, and then discussed the WCRP/IOC Task Group on Sea-Level Variability and Change, covering the terms of reference, membership and some initial activities and results. The Task Group integrates across all WCRP activities and collaborates with other Programmes and groups as appropriate. Dr Casassa then spoke about the WCRP/IOC Workshop on Regional Sea-Level Change, which was held in Paris in February 2011. This event exposed some new results (e.g. role of modes of atmospheric variability high, regional patterns of sea level variability are mostly steric, gravity changes are essential) and the report will be available soon.

It was noted that the IOC is one of WCRP's three sponsors and has strong interest in sea-level change.

#### *DISCUSSION*

Initiating the discussion, it was pointed out that none of the members on the team have connections with changes to the storage of water on land. This was later followed up with the concern that there are no ice sheet modelers on the steering committee, particularly given that the biggest gap is the lack of ice sheet models.

There was also a query regarding how the cross-cut will interact with CLIVAR activities over the next 1-3 years. In response, Dr Casassa informed the JSC that the publication on the WCRP/IOC Workshop on Regional Sea-Level Change (Feb 2011) will be released, and then the pressing issues will be identified which will inform the next phase of activity.

The importance of this cross-cut in the future WCRP was stressed, given the demands from IOC Member States for regional predictions on sea-level rise.

**ACTION:** Sea Level Task Force to report to the JSC; 1) on the expected time to complete the first phase of the Sea Level Cross-cut activities and then propose the next phase; and 2) on its plan to engage the ice sheet modeling and ground water storage community in its activities.

### 10.2 Extremes – K. Trenberth

<http://www.metoffice.gov.uk/media/pdf/n/g/Extremes.pdf>

Dr Trenberth reported on the activities coordinated under the Extremes cross-cut, including the WCRP Extremes Workshop held in Paris and the WCRP Workshop on Drought Predictability and Prediction in a Changing Climate. He covered the outcomes of the workshops and some background and rationale for the importance of the cross-cut for society. The Paris Extremes Workshop led to five key recommendations, focusing on model resolution, model evaluation, understanding mechanisms responsible for extremes, assessment of extremes using statistical methods, and analysis of extremes using CMIP5 data.

With regards to the drought workshop, three major recommendations emerged: (1) develop a drought catalogue, summarizing the key drivers of global drought events; (2) develop case studies, focusing on large-scale and regional issues in areas prone to drought; and (3) develop a drought early warning system portal.

#### *DISCUSSION*

There were several comments from the floor following Dr Trenberth's presentation, regarding how the JSC could facilitate the drought activity going forward. The links between the drought activities and CORDEX were highlighted. It was suggested that WCRP could work with the user community to take

ownership of the proposed drought catalogue. A further suggestion was that drought could constitute a grand challenge, as has been done in the US.

**ACTION:** With respect to the extremes cross-cut; given the initial success of the drought activity, yet diversity across the extremes topic in general, future ‘extreme topics’ should be staffed and supported on a topic by topic basis (e.g. tropical storms, extratropical heavy rainfall/floods, etc.). The JSC suggests that the extremes task force to be phased out by time of OSC, and ask the Projects to identify a limited number of examples of extreme cross-cuts that are ready for further action.

**ACTION:** The JSC is supportive of the recommendations that came out of the WCRP Drought and Extreme Workshops.

### **10.3 Atmospheric Chemistry and Climate – T. Shepherd, T. Peter**

Prof. Shepherd and Prof. Peter presented the three main Atmospheric Chemistry and Climate (AC+C) activities: (1) Hindcasts; (2) Vertical Distributions; and (3) ACC-MIP (model intercomparison project). Progress on these activities has been slow, apart from the latter, where tropospheric chemistry runs will feed into AR5 and CMIP5. The justification provided for the slow progress on the other two activities was that scientists are busy with various activities, such as the WMO/UNEP Black Carbon assessment project, HTAP 2010 (Hemispheric Transport of Air Pollution), and the SPARC CCMVal Report on the Evaluation of Chemistry-Climate Models. It was also suggested that the plans for model runs appear to have not been sufficiently coordinated. The speakers concluded by saying that there is an agreement between SPARC and IGAC (International Global Atmospheric Chemistry) Co-chairs that a ‘whole atmosphere’ approach requires a goal-oriented coordination of the combined expertise of SPARC (better community buy-in) and IGAC (scientific expertise).

#### *DISCUSSION*

In the ensuing discussion, this partnership with IGBP was addressed from SPARC’s perspective; a bottom-up activity would be needed (i.e. a workshop), with a clear timeline, clear deliverables, and a repository for the data. In response to this, the speakers pointed out that the co-chairs of IGAC (International Global Atmospheric Chemistry) should lead this discussion. Another participant stressed the need for community buy-in (from both IGAC and SPARC), as well as clear leadership of the new reformed group, and suggested that the next step would be to define the action plan.

**ACTION:** Co-chairs of SPARC and IGAC to develop a five-point action plan (including aerosols) for AC+C, including the JSC Members (Terry, Graciela and Hong) at the draft stage to represent WCRP and IGBP. SPARC to inform JSC as to reasonable timeline.



## 11. Executive Session

It was announced that Prof. David Griggs will be stepping down as Vice Chair of the JSC. The JSC expressed their thanks to him for his past service in this role and for his continued JSC membership with particular emphasis on the WCRP engagement with ICSU on the new sustainability initiative.

Prof. Jochem Marotzke was elected as the next Vice Chair of the JSC.

Other topics discussed in the executive session included:

- SSG executive sessions
- Membership renewals and appointments

The following recommendations and actions were agreed:

### *SSG executive sessions*

**ACTION:** JSC requests that all core project SSG executive sessions be convened consistently across the Programme: On topics such as SSG membership deliberation, voting, and nominations only formal members of the SSG (i.e. those elected by the JSC) are to be present and vote. Presence of JPS staff is at the discretion of the SSG chair. Regarding scientific or programmatic matters that do not entail formal SSG voting, then the SSG deliberations can be broadened to include ex-officio members such as panel chairs.

### *Membership renewals and appointments*

**ACTION:** JPS and core projects to firm up membership information before presenting to the JSC (i.e. full names, gender, nationality, initial start date, area of expertise).

**ACTION:** JSC to receive membership information in advance of the JSC meeting.

**ACTION:** For membership, JSC requests, once again, that projects nominate at least two names for consideration for each open slot.

## **12. Next JSC Meeting**

The next JSC session will be held shortly after the Open Science Conference in Denver, October 2011.

A full JSC session is planned for 16-20 July 2012 in Beijing, China.

The meeting closed at 17:00 on Friday 8 April 2011.

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## **ANNEX B JSC-32 Agenda**

### **Sunday, 3 April**

Afternoon JSC Officers meeting

### **Monday, April 4**

08:30 – 09:00 Welcome Remarks – UK MET Host

09:00 – 09:30 Report on WCRP developments, introduction of new JSC members – A. Busalacchi

09:30 – 10:00 Report on JPS developments, program, personnel, budget – G. Asrar

10:00 – 10:30 Open Science Conference planning – J. Hurrell

10:30 – 11:00 Coffee Break

11:00 – 12:00 Open Science Conference planning (cont'd) – J. Hurrell

12:00 – 13:00 Lunch

13:00 – 14:00 Status report on Global Framework for Climate Services – J. Lengoasa, DSG – WMO

14:00 – 15:00 ICSU Visioning – Deliang Chen (TBC)

15:00 – 15:30 IOC Integrated Framework for Sustained Ocean Observations Task Team (IFSOOT-  
TT) – W. Watson-Wright (TBC)

15:30 – 16:00 Coffee Break

16:00 – 17:30 Sponsors (what do you require of the WCRP to support your mission, wrt to climate  
science, services, and sustainability?)  
WMO – DSG, J. Lengoasa  
IOC – W. Watson-Wright (TBC)  
ICSU – D. Chen (TBC)

### **Tuesday, April 4**

08:30 – 10:00 Partners (what do you require of the WCRP to support your programme goals, areas  
of partnership wrt to climate science, services and sustainability?)  
IGBP  
GCOS  
WOAP

10:00 – 10:30 Coffee Break

10:30 – 12:00 Partners (continued)

12:00 – 13:00 Lunch

13:00 – 15:00 Roundtable: National Perspectives on the Research Needed to Support the Global  
Framework for Climate Services and Sustainability (US/NOAA, UK, EC)

15:00 – 15:30 Coffee Break

15:30 – 16:30 Task team on Role of WCRP Research in Climate Services – G. Flato

- 16:30 – 17:30 Task Team to develop the transition plan from WOAP to a WCRP Climate Observations, Analysis and Information Council – S. Gille
- 17:30 – 18:00 Modeling Workshop/Council – A. Busalacchi

### **Wednesday, April 6**

- 08:30 – 10:30 Project Reports (highest level accomplishments of past year, future directions in light of new directions for the WCRP, plans for OSC)  
 GEWEX – K. Trenberth  
 SPARC – T. Peter, T. Shepherd  
 CLIVAR – J. Hurrell  
 CliC – G. Casassa
- 10:30 – 11:00 Coffee Break
- 11:00 – 12:30 Project reports (Continued)
- 12:30 – 14:00 Lunch: Science presentation from host institution Progress in Seasonal to Decadal Forecasting
- 14:00 – 15:30 Panel / Working Group / Task Force Reports  
 WGCM – G. Meehl  
 ACC – G. Flato
- 15:30 – 16:00 Coffee Break
- 16:00 – 17:30 WGSIP – B. Kirman  
 WGNE – A. Brown  
 TFRCD/CORDEX – F. Giorgi

### **Thursday, April 7**

- 08:30 – 10:30 Roundtable: Observational Perspectives on the Research Needed to Support the Global Framework for Climate Services and Sustainability (GCOS, ESA, NASA, Eumetsat)
- 10:30 – 11:00 Coffee Break
- 11:00 – 12:30 Partners (what do you require of the WCRP to support your programme goals, areas of partnership wrt to climate science, services, and sustainability?)  
 SOLAS  
 WWRP (report on subseasonal and polar predictability workshops)
- 12:30 – 14:00 Lunch
- 14:00 – 14:30 What constitutes a WCRP Grand Challenge? – A. Busalacchi
- 14:30 – 15:30 Polar predictability – T. Shepherd
- 15:30 – 16:00 Coffee break
- 16:00 – 17:30 Other grand challenges (e.g. tropical convection) – All

**Friday, April 8**

09:00 – 10:00 Cross-cuts

Sea Level – G. Casassa

Extremes – TBD

10:30 – 11:00 Coffee Break

11:00 – 12:00 Atmospheric Chemistry and Climate – T. Shepherd, T. Peter

12:00 – 13:30 Lunch

13:30 – 15:00 Transition Plan to new structure – D. Griggs

15:00 – 15:30 Coffee break

15:30 – 17:30 Executive Session

## ANNEX C JSC-32 Action List

No.	Action	Responsible	Deadline
Core Projects, WGs, Panel, Council, Task Force			
1	WOAP to take the lead to develop an outline of surface flux action plan and a timetable for its full development should be prepared with GEWEX, CLIVAR, WOAP and WGNE, to be presented at the SOLAS meeting.	WOAP	SOLAS meeting, May 2011
2	Modeling Council to address the proposed task team between WCRP and IGBP on prediction of the Earth System. Modeling Council to determine where and how regional climate modeling should be coordinated (reside) within WCRP future structure.	Modeling Council	Report to JSC-33
3	GEWEX to further synthesize and integrate the component parts of its program.	GEWEX	July 2011
4	JPS / ICPO to discuss with IOC the possibility of a cross-cutting activity on communication (possibly using Census of Marine Life as a model). Concern that the four 'Ns' (NASA, NOAA, NSF, US Navy) have supported process studies through CLIVAR but successes have not been given visibility.	ICPO/ JPS	CLIVAR SSG, May 2011 (Initiate discussion prior to April for Congress)
5	CLIVAR to re-examine the Project substructure at upcoming SSG, including whether elements of CLIVAR may have a better home elsewhere in WCRP, and address the issue of a name change via consultation with early career scientists in CLIVAR.	CLIVAR	Report to JSC-33
6	CLIVAR to initiate/develop a working relationship with ESA and EUMETSAT as GEWEX, SPARC and CliC have done.	CLIVAR	May 2011
7	Greater participation by the sea ice community is needed on the third group of WGSIP experiments.	CliC	July 2011

No.	Action	Responsible	Deadline
8	WGCM and WGSIP to engage core projects in analyzing the non-stationarity of modes of climate variability based on CMIP5 results and report back to JSC.	WGCM, WGSIP	Report to JSC-33
9	GEWEX and CORDEX to coordinate the assembly of observational datasets needed to validate regional models.	GEWEX, CORDEX	June 2011
10	Sea Level Task Force to report to the JSC; 1) on the expected time to complete the first phase of the Sea Level Cross-Cut activities and then propose the next phase; and 2) on its plan to engage the ice sheet modelling and ground water storage community in its activities.	Sea Level Task Force	July 2011
11	Co-chairs of SPARC and IGAC to develop a five-point action plan (including aerosols) for AC+C, including the JSC Members (Terry, Graciela and Hong) at the draft stage to represent WCRP and IGBP. SPARC to inform JSC as to reasonable timeline.	SPARC and IGAC Co- chairs	Report to JSC-33
12	CLIVAR and GEWEX Projects to use CORDEX as a framework to develop a strategy on monsoons for Africa.	CORDEX, CLIVAR, GEWEX	June 2011
13	The JSC look forward to Eric Lindstrom's report on Integrated Framework for Sustained Ocean Observations Task Team and to identify where and how WCRP can best support its recommendations.	D/ICPO	After release of the report
14	The Projects to present restructuring ideas at the JSC meeting following the OSC.	CLIVAR, GEWEX, SPARC & CLIC Chairs	Report to JSC-33
15	The JSC strongly supports the polar predictability activities, encourages communication with WWRP, and proposes that the name is changed to reflect the coupled climate nature of the polar prediction problem. The JSC encourages SPARC and JPS to seek resources to staff and support as required.	SPARC, JPS	Immediate



No.	Action	Responsible	Deadline
16	<p>JPS and core projects to firm up membership information before presenting to the JSC (i.e. full names, gender, nationality, initial start date, area of expertise).</p> <p>JSC to receive membership information in advance of the JSC meeting.</p> <p>For membership, JSC requests, once again, that projects nominate at least two names for consideration for each open slot.</p>	Core Projects/ JPS	August 2011
17	<p>JSC requests that all core project SSG executive sessions be convened consistently across the programme: On topics such as SSG membership deliberation, voting, and nominations only formal members of the SSG (i.e. those elected by the JSC) are to be present and vote. Presence of JPS staff is at the discretion of the SSG chair. Regarding scientific or programmatic matters that do not entail formal SSG voting, then the SSG deliberations can be broadened to include ex-officio members such as panel chairs.</p>	Chairs and Directors of IPOs	Ongoing
18	<p>CliC:</p> <p>The JSC resonates with the stated priorities but sees the need for significant clarification in each regarding programmatic implementation with particular emphasis on modeling.</p> <ul style="list-style-type: none"> <li>• The first priority seems overloaded and needs disentangling.</li> <li>• Question mark over second priority.</li> <li>• Discussion is needed regarding what value CliC can add to the third priority.</li> <li>• JSC concerns that there are no visible elements in CliC focus activity on snow research/modeling.</li> </ul>	CliC SSG Chair and Members	July 2011
19	<p>SPARC:</p> <p>The transition to include tropospheric-stratospheric interactions is going very well. Need to reconsider name change in concert with views of early career scientists, need to adopt new Executive Session policies for the SSG, and consider what atmospheric aspects of pan-WCRP may be better suited in the new SPARC.</p>	SPARC/JSC	Report to JSC- 33

No.	Action	Responsible	Deadline
20	Data Council terms of reference to be revised, providing examples of what it will do, and addressing the membership	Gille, Manton, Koike	DONE
21	With respect to the extremes cross-cut; given the initial success of the drought activity, yet diversity across the extremes topic in general, future 'extreme topics' should be staffed and supported on a topic by topic basis (e.g. tropical storms, extratropical heavy rainfall/floods, etc.). The JSC suggests that the extremes task force to be phased out by time of OSC, and ask the Projects to identify a limited number of examples of extreme cross-cuts that are ready for further action.	Core Projects	Report to JSC-33
Actions for JSC and JPS			
22	JSC to respond to the GCOS Updated Satellite Supplement to Implementation Plan, which is out for review.	JSC	DONE
23	Comments on the GEWEX document, the imperatives and the proposed name to be sent to Tony Busalacchi by end of April for consolidated presentation to GEWEX  JSC Chairs and Directors to seek opportunities, as appropriate, to work with IGBP synthesis activities.	JSC  JSC Chairs & Directors	Immediate  Ongoing
24	Tony Busalacchi to group some of the grand challenges/pressing problems suggestions and circulate to the JSC.	Busalacchi	August 2011
25	The JSC has been pleased with the progress of the ACC Paris office and supports the new direction and proposes a different name for the support office consistent with new WG and GFCS. Therefore the JSC agreed to end the ACC cross-cut.	JSC	DONE
26	A small team (lead by Greg Flato) to define the role of the new working group on regional climate science and information drawing on the White paper developed by Flato <i>et al.</i> and the TFRCD report to JSC, and what the activities of the group might be. The group should keep other potential partners involved in the conversation. The CORDEX and task force on regional climate downscaling to be transitioned to this new working group, and the working group to decide how best to support CORDEX.	Flato, Slingo, Giorgi	Early May 2011

No.	Action	Responsible	Deadline
27	The JSC is supportive of the recommendations that came out of the WCRP Drought and Extremes Workshops.	Drought W/S Conveners	DONE
28	Modeling Council was approved, final terms of reference to be drafted and chair to be elected by the membership of Council	JPS, JSC + Modeling leads	Report to JSC- 33
Cooperation, Communication, Capacity Building			
29	WCRP Chairs and Directors to determine how to become involved in Rio+20, developing the WCRP position and participation.	JPS / JSC Chairs & Directors	Immediate
30	WCRP to share grand challenges and strategic plan for the future post OSC as input to the development of the next shared EC framework.	JSC / JPS	Ongoing
31	OSC message to be refined for the webpage and for circulating by email, focusing on why individuals should attend.	Hurrell, Gille, Marotzke, Slingo	DONE
32	A timeline of events to be developed, incorporating all meetings / events taking place alongside the OSC. Chairs and Directors to send relevant information to Jim Hurrell.	Hurrell / UCAR, Chairs, Directors	Immediate
33	Continued advertisement of the OSC to take place, taking into account the evolution of the form of the OSC.	All	Ongoing
34	Conveners of the OSC sessions to receive information about abstract numbers before the deadline, in order to assist with contingency planning.	Hurrell / UCAR	Ongoing

## **ANNEX D OSC Communication**

### **How is this conference different from other conferences?**

- ✓ It covers all aspects of understanding and predicting climate variability and change.
- ✓ It will deliver a comprehensive and synthesized assessment of climate research.
- ✓ It will bring together diverse research communities that usually meet separately.
- ✓ It will identify the grand challenges facing the climate research community and help establish future priorities for climate research.
- ✓ It is timed to provide strategic input into the IPCC Fifth Assessment Report.

### **Whom will I meet?**

- ✓ You will interact with those in your discipline through focused oral and poster sessions.
- ✓ You will meet face-to-face with experts from other disciplines and create new opportunities for collaboration.
- ✓ If you are an early-career scientist, you will interact with leading climate scientists from around the world through planned focused activities.

### **What will I gain from attending this conference?**

- ✓ You will present your latest research and discuss it with colleagues.
- ✓ You will participate in the “big-picture synthesis” of cutting-edge climate research.
- ✓ You will influence the development of the international research agenda of WCRP.

## ANNEX E Grand Challenges Criteria

- Important for society, modelling or advancing the science;
- Inspirational;
- Interface between science and society, communicating the science needs to provide to society (e.g. sea ice);
- Global;
- Scientific question / focus;
- Something that unites the scientific community in the ability to make progress;
- Something that requires multidisciplinary action;
- Something that cannot be managed within the current frameworks;
- A millennium goal, for the importance of mankind;
- Has involves the broader community (e.g. IGBP, social sciences);
- All grand challenges don't necessarily have to be grand;
- Psychological challenge (e.g. how to arrive with the politicians etc.);
- Something that resonates with the public;
- To inspire young people to get involved;
- Should be what WCRP is going to do and the intended outcome (e.g. NASA asks 'can we get to mars' as a grand challenge, rather than just 'mars');
- Impact on all different disciplines. People in India, QLD, would agree they are 'grand' enough;
- Grand challenges needed in part for good PR. Need to take on something different that done in the past, that has the ability of realising success within a limited time.
- Questions where significant progress can be made; and
- Ripe for progress.

A brief web search found the following criteria for a grand challenge:

- Provides a sharp focus and identifies barriers preventing progress;
- Brings the best minds to the table by engaging world leading scientists;
- Helps to build and engage communities of innovators; and
- Captures the public's imagination.

From a programmatic viewpoint, global programmes have to consider the following:

- Programme has to produce original results and promote scientific excellence.
- Significant outcomes at the international scale.
- Impact many societal themes.
- Provide high value understanding to broad scientific community.
- Approaches shouldn't be addressed by any other research programmes.

- As has to be funded, objectives have to be achievable in short to mid term and results properly communicated.

## **ANNEX F Acronyms**

AC+C	Atmospheric Chemistry and Climate
ACC	Anthropogenic Climate Change
AIMES	Analysis, Integration and Modeling of the Earth System
AIP	Atlantic Implementation Panel
AOPC	Atmospheric Observation Panel for Climate
BGS	British Geological Survey
CCI	Commission for Climatology
CEH	Centre for Ecology and Hydrology
CliC	Climate and Cryosphere
CLIVAR	Climate Variability and Predictability
CMIP	Coupled Model Intercomparison Project
COP16	Conference of the Parties
CORDEX	Coordinated Regional Climate Downscaling Experiment
EA	Environment Agency
EC	European Commission
ESA	European Space Agency
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
GCM	General Circulation Models
GCOS	Global Climate Observing System
GEWEX	Global Energy and Water Cycle Experiment
GFCS	Global Framework for Climate Services
GSOP	Global Synthesis and Observations Panel
IASC	International Arctic Science Committee
ICPO	International CLIVAR Project Office
ICSU	International Council for Science
IGAC	International Global Atmospheric Chemistry
IGBP	International Geosphere-Biosphere Programme
IOC	Intergovernmental Oceanographic Commission
JPS	Joint Planning Staff
JSC	Joint Scientific Committee
NASA	North American Space Agency
NCAR	National Center for Atmospheric Research
NSF	National Science Foundation
NOAA	National Oceanic and Atmospheric Administration
OOPC	Ocean Observations Panel for Climate
OSC	Open Science Conference
SCAR	Scientific Committee on Antarctic Research
SOLAS	Surface Ocean Lower Atmosphere Study
SPARC	Stratospheric Processes and their Role in Climate
SSG	Scientific Steering Group
TFRCD	Task Force on Regional Climate Modelling and Downscaling
UNEP	United Nations Environment Programme

UNFCCC	United Nations Framework Convention on Climate Change
VACS	Variability of the African Climate System
VAMOS	Variability of the American Monsoon System
WCRP	World Climate Research Programme
WGCM	Working Group on Coupled Modelling
WGNE	Working Group on Numerical Experimentation
WGSIP	Working Group on Seasonal to Interannual Prediction
WMO	World Meteorological Organisation
WOAP	WCRP Observation and Assimilation Panel
WWRP	World Weather Research Programme