

Report to CLIVAR SSG-18

Panel or Working Group: Working Group on Seasonal to Interannual Prediction (WGSIP)

1. Contributions to developing CLIVAR science and fit, where appropriate, to the CLIVAR imperatives

Intraseasonal and seasonal variability, predictability and prediction, Improved atmosphere and ocean component models of Earth System Models

The CHFP is a WCRP-wide, multi-model hindcast experiment incorporating all physical elements of the climate system designed to test the hypothesis that maximum predictability has not been reached yet by seasonal forecast systems. The project is exploring additional sources of predictability from initializing the land surface, cryosphere, and stratospheric processes. These experiments provide a baseline assessment of current seasonal prediction capabilities using the best available models of the climate system and data for initialisation, as well as of IPCC class climate models in seasonal prediction mode. They provide a framework for assessing of current and planned observing systems, and a test bed for integrating process studies and field campaigns into model improvements.

The Stratosphere-HFP will be an assessment of the impact on surface forecast skill of raising the atmospheric model lid for a more accurate representation of the stratosphere and its initialization. These experiments will also be comparable to CMIP5 simulations that will have both high and low top models. GLACE-2 is an international project aimed at quantifying the soil moisture impacts on prediction skill and is the GEWEX contribution to the CHFP. The overall goal of GLACE-2 is to determine the degree to which realistic land surface (soil moisture) initialization contributes to forecast skill (rainfall, temperature) at 1-2 month leads, using a wide array of state-of-the-art forecast systems. The results highlight the potential usefulness of improved observational networks for prediction. A preliminary study on the impact of initializing aspects of the cryosphere has been initiated. Some simple sea-ice experiments have been proposed with parallel runs with and without initialization. An analysis of what is being done by groups that are participating in CHFP, together with idealized experiments where the initialization is used or switched off of case study years, for example with high or low Arctic Ocean sea ice area, will provide an evaluation of current initialization capabilities

Decadal variability, predictability and prediction

CLIVAR WGSIP and WGCM share a common interest in the decadal prediction problem. A limited lifetime panel of experts was set up with representatives from both working groups to oversee the CMIP5 decadal prediction experiments: the WGCM-WGSIP Decadal Climate Prediction Panel (DCPP). At the most recent WGCM meeting, it was determined the group would be called the WGCM-WGSIP Decadal Climate Prediction Panel (DCPP). Initial members include: G. Boer (lead), B. Kirtman, R. Stouffer, G. Meehl, K. Taylor, M. Latif, D. Smith and S. Power. The DCPP will act as a point of contact for CMIP5 decadal climate prediction (DCP) for questions on methods, validation, evaluation, scores, etc. The DCPP will also distribute relevant recommendations from WGCM and WGSIP to the broader community. It will aid the coordination of meetings and workshops, including the 2011 Aspen Global Change Institute workshop on decadal prediction, and the analysis of the CMIP5 decadal climate prediction results by fostering the analysis of

DCP results by CLIVAR Working Groups and Panels. It will provide input to the IPCC Chapter 11 on Near-term Climate Change: Projections and Predictability

Data synthesis, analysis, reanalysis and uncertainty, Ocean observing system

Data assimilation systems are a core component of seasonal to interannual forecasting systems. Improvements in data assimilation systems and in the ocean observing system can lead to improvements in seasonal to interannual forecast skill. Work is ongoing to explore the impact of different initialization strategies and of different components of the ocean observing system on forecast skill.

Capacity development

As part of the CHFP, WGSIP is actively engaging with regional CLIVAR panels and research projects (eg VAMOS – S. America, QWECI - Africa) to facilitate the use of the data archive. WGSIP contributed to the Training Institute on the use of seasonal predictions for applications in Latin America, held on 2-13 August 2010 in Buenos Aires, Argentina.

2. Cooperation with other WCRP projects, outside bodies (e.g IGBP) and links to applications

The integration of dynamic disease models with seasonal lead time ensemble prediction systems has been developed over the last 10 years, particularly for malaria. The knowledge of integrating disease and climate models has been transferred to projections of diseases such as blue tongue, and seamless ensemble prediction systems ranging across days to decades are being developed for use with disease models.

As a result of this work, there is more interaction with users than in the past. However more is needed to widen participation through the use of state of the art climate datasets. Many users continue to use older datasets, often supplied through an intermediary. In addition to the challenge of facilitating access to climate data, emphasis should be placed the recommendation that applications models should use multi-model ensembles where possible. These issues are inextricably linked to the development of Climate Services at a national and international level. WGSIP can contribute, sharing good practice recommendations, climate datasets and helping to connect the Climate Services agenda with the impacts community building on experiences learned from operational seasonal prediction services.

3. Workshops/meetings held

The 13th session of the CLIVAR WGSIP was held on 29-31 July 2010, in Buenos Aires, Argentina (<http://www.clivar.org/organization/wgsip/wgsip13/wgsip13.php>). The meeting took place simultaneously with the 13th Session of the CLIVAR Variability of the American Monsoon System (VAMOS) panel, with the two groups meeting for a joint session on the final day. The main topics for discussion were the Climate-system Historical Forecast Project (CHFP) and the coordination of decadal prediction experiments as part of CMIP5, in collaboration with WGCM. The CHFP data set is being hosted by the Centro de Investigaciones del Mar y la Atmósfera (CIMA), Argentina and will be available in 2011. Links to WWRP TIGGE were discussed in relation to the development of 1-90 day prediction capabilities. The use and need for seasonal to interannual data by seasonal applications, RCOFs and climate services were also discussed. The joint WGSIP-VAMOS meeting focused on the implementation of the VAMOS Modeling Plan and on initiating VAMOS-WGSIP collaboration in the analysis of the CHFP over the Americas.

4. New activities being planned, including timeline,

The CHFP experimental protocol is being extended to support the SHFP and the development of a sea-ice predictability project (both projects are on going). Data are now appearing on the CHFP server at CIMA.

Real-time sharing of multi-model decadal forecasts is being developed. Several centres are now contributing real time decadal prediction information to an experimental forecast exchange initiative initiated by Doug Smith and Adam Scaife at UKMO. This experimental activity will help to identify the level of consistency and multimodel spread in decadal predictions. It compliments the CMIP5 initiative described above which deals mainly with hindcast information.

5. Workshops/meetings planned (see ANNEX B also)

14th Session of WGSIP - 12-14 September 2011, ICTP, Trieste, Italy. The meeting will have a joint session with the QWeCI (Quantifying weather and climate impacts on health in developing countries) Project (<http://esp.ictp.it/qweci>) Symposium (12-16 September 2011)

WGSIP is contributing 3 invited talks to the Summer School on Climate Impacts Modeling for Developing Countries: Water, Agriculture and Health (5-18 September 2011)

WGSIP will contribute talks and analysis on the CHFP/SHFP data to a joint workshop with the DynVar project within the CLIVAR-SPARC activity in early 2012.

6. Issues for the SSG

Support for WGSIP data dissemination continues to be a challenge.

Annex B

Proforma for CLIVAR Panel and Working Group requests for SSG approval for meetings

Requests should be made through D/ICPO (Robert.Molinari@noc.soton.ac.uk) against the following headings:

1. Panel or Working Group: **WGSIP**
2. Title of meeting or workshop: **15th Session**
3. Proposed venue: **TBD**
4. Proposed dates: **2012**
5. Proposed attendees, including likely number: **30**
6. Rationale, motivation and justification, including: relevance to CLIVAR themes & JSC cross cutting topics and any cross-panel/working group links and interactions involved:

WGSIP will seek opportunities to hold a joint meeting in 2012 at its forthcoming meeting in September 2011. An option would be to organize a meeting on Decadal Climate Prediction, for example joint with the CLIVAR AAMP or WGCM.

SPARC DynVar is holding a meeting in 2012 that will include results from the Strat-HFP; another potential opportunity to hold a joint meeting.

7. Specific objectives and key agenda items
8. Anticipated outcomes (deliverables):
9. Format:
10. Science Organising Committee (if relevant):
11. Local Organising Committee (if relevant):
12. Proposed funding sources and anticipated funding requested from WCRP:

WCRP – US\$10K – 20K, to be determined depending on whether or not a workshop is organized in addition to the 15th Session of WGSIP.