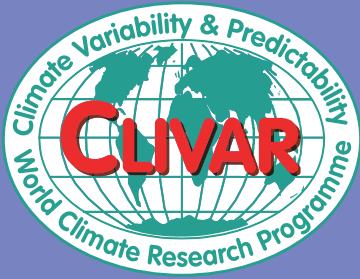


Newsletter of the Climate Variability and Predictability Programme (CLIVAR)



Exchanges

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CLIVAR SPECIAL EDITION

SCIENTIFIC STEERING GROUP MEETING

Consejo Superior de Investigacion Cientifica Royal Botanical Gardens,
Madrid, Spain, from 19-22 May 2009



CLIVAR is an international research programme dealing with climate variability and predictability on time-scales from months to centuries. **CLIVAR** is a component of the World Climate Research Programme (WCRP). WCRP is sponsored by the World Meteorological Organization, the International Council for Science and the Intergovernmental Oceanographic Commission of UNESCO.

WCRP
World Climate Research Programme

There are a number of crosscutting themes that are specific to this working group and areas in which there is substantial room for interaction with other WCRP panels. Specifically, the panel believes that the forward modelling of proxy data whereby the proxy data is explicitly modelled directly by Earth System Models, is of fundamental importance to further improving model-paleo data comparisons. Given the diverse range of available proxies and local climatic influences upon them, it is essential that the researchers most closely involved with proxy development play a major role in the development of suitable forward models that can be either incorporated within climate models directly, or used, in conjunction with downscaling techniques, to translate climate model output.

Secondly, reducing uncertainties in proxy reconstructions (and in data synthesis in general) is very important for improving targets for climate modelling and in better understanding the intrinsic variability and forced response of the climate system.

The working group contributes more widely to the WCRP crosscutting topics and the PAGES Science Plan in the areas of atmospheric chemistry and climate, anthropogenic climate change, decadal prediction, monsoons, extreme events and sea level rise, where paleoclimate data can potentially illuminate past behaviour of these systems and provide a test bed for model predictability.

One of the main responsibilities of the panel is to organise workshops that promote the study of the issues raised above. The proposed schedule for future workshops is as follows:

Workshop 1. Forward Modelling and regional downscaling Fall 2009 AGU (organiser: Nick Graham, Caspar Ammann)

Workshop 2. AMO: Mechanisms and Impacts
3-day workshop, which we will seek to organise jointly

with the CLIVAR Atlantic Panel. Tentatively attached to the International Conference on Paleoceanography (ICP) at Scripps in 2010. (organisers Mike Mann and Eystein Jansen)

Workshop 3. ENSO: Past and future variability

Small workshop attached to a more general meeting on the Tropical Pacific – potentially in association with the CLIVAR Pacific Panel and the PAGES Global Monsoon WG (potential organisers: Julien Emile-Geay, Mike Mann, Axel Timmerman).

Workshop 4. Paleo-data/Model fusion – Data assimilation. Potential organisers Hugues Goosse, Andreas Schmittner, possibly as a special session at an EGU/AGU conference.

Workshop 5. Extreme events (Tropical cyclones, extreme precipitation events, flooding).

Evaluate status after Pages Open Science Meeting in 2009, then decide scope of possible PAGES/CLIVAR activity

The working group recommends that it is vitally important that any future CLIVAR/WCRP framework acknowledge the role that paleoclimate can play, in extending records past the instrumental period, in testing theories of climate change and in providing quantitative targets for climate model experiments. A strong focus is required for coordination of data in terms of the synthesis of existing efforts (satellite, instrumental, paleo), the development of new tools to make much better use of existing data and to encourage the adoption of open science standards.

Relevant Reference

Cobb, K., T. Kiefer, J. Lough, J. Overpeck and S. Tudhope, 2008: Representing and Reducing Uncertainties in High Resolution Proxy Climate Data. Summary report of the PAGES/CLIVAR Workshop: Reducing and Representing Uncertainties in High Resolution Proxy Climate Data, Trieste, Italy, June 2008.

CLIVAR/CCI/JCOMM Expert Team on Climate Change Detection and Indices activity

Francis Zwiers, Albert Klein-Tank, Howard Cattle and members of the ETCCDI
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1. ET meeting and associated workshops

The Expert Team (ET) met for a day in May 2008 at KNMI, the Netherlands, in association with a 2-day Workshop on “Extremes in a Changing Climate” jointly organized by the ET and the EU-FP6 project ENSEMBLES. This was followed the next day by a discussion meeting on “Issues of Scaling” organized by Lisa Alexander (University Of New South Wales) and aimed at how we can adequately compare observed extremes from station data with model output. At its meeting the ET surveyed JCOMM perspectives for the ET including proposals for ocean climate indices and further developments in the ET’s R-software used for ET capacity building workshops.

The key question addressed at the joint workshop¹ was how best to assess the probabilities of occurrence of extremes in a changing climate. Its outcome is a WMO Guideline document on this subject which is currently being finalized. The outcome of the “Issues of scaling” meeting has been a set of guidelines and suggestions for the modelling

1 See http://www.knmi.nl/samenw/ensembles_rt5/etccdi/debiltmeeting/

and observational communities that will hopefully make comparison easier in future, particularly with a view to the timeline of the IPCC’s Fifth Assessment Report (AR5). The guidelines are available on the ETCCDI web pages. Planning for the panels contributions to IPCC AR5 more widely is currently in hand, building on from the ET’s efforts for, and significant impact on, the IPCC WG1 AR4 Report.

2. Other workshops/meetings held since SSG-15

Since CLIVAR SSG-15 (September 2007), the ET has also held/had strong association with two regional workshops as follows:

- Exploring changes in South East Asia temperature and precipitation extreme indices, Hanoi, Viet Nam, December 3-7, 2007. This workshop had 17 participants from 11 countries across the Southeast Asian region.
- Workshop on Detection and Indices of Climate Change in Mexico, Pueblo City, March 23-27, 2009. This workshop, while not formally organized by the ETCCDI, used the ETCCDI format. Also, ET members (specifically Phil Jones) played a very active role in organizing the workshop, which was funded by the Strategic Fund Programme of the British Embassy in Mexico.

Amongst other contributions, the ETCCDI website was translated into Spanish for the workshop. This workshop had 40 participants. See <http://zimbra.ine.gob.mx/tallerIndices/>.

In addition:

- The International Ad-hoc Detection and Attribution Group (IDAG), which includes several ET members and has objectives related to those of the ETCCDI, met in Boulder, January 21-23, 2009. It reviewed advances on detection and attribution on extremes, amongst other topics.
- Working Groups I and II of the IPCC jointly organized a meeting to consider the possibility of an IPCC Special Report on Managing the Risks from Extremes. This meeting was held in Oslo, February 23-26, 2009. The ET co-chairs actively participated in the meeting, Francis Zwiers as a member of the Science Steering Group. A scoping paper proposing a Special Report was produced and the IPCC recently made the decision to proceed with the proposed report at its 30th Session (Antalya, Turkey, April 21-23, 2009). The report will include a chapter on observed and projected changes in extremes, and will provide an early opportunity to assess our current ability to detect and attribute changes in extremes.

3. Publications

A paper advertising the work of the ET ("Monitoring Changes in Extremes – A Tale of International Collaboration" by Thomas Peterson and Mike Manton) has appeared in the September 2008 edition of BAMS. ET members also published a paper in the April 2008 edition of the WMO Bulletin ("The adaptation imperative: is climate science ready?" by Xuebin Zhang, Francis Zwiers and Thomas Peterson) drawing attention to the fact that adaptation must be well informed by climate science.

4. Links to sponsors

The ET's main interactions with outside bodies are through its sponsors, the WMO Commission for Climatology (CCI) and the Joint WMO-IOC Technical Commission on Oceanography and Marine Meteorology (JCOMM). The work of the ET on extreme events and how they are changing is also directly relevant to the WCRP Climate Extremes Cross Cut and its work on extremes in a changing climate is a contribution to the WCRP's Anthropogenic Climate Change (ACC) Cross Cut. The ET will work with the WCRP/CLIVAR Working Group on Coupled Modelling and provide expert advice on indices that should be calculated from coupled model simulations, in particular the planned decadal and long term climate simulations.

5. New activities being planned, including timeline

The ET has a well defined work plan that was developed at its Nov 2006 meeting, and reviewed at the recent meeting at the KNMI mentioned above. Items to which the ET will attend in the current year include a review paper on climate indices and finalization of the approach that will be used to provide indices for assessment in the AR5 from the CMIP5 experiment. Several approaches are currently in discussion by the ETCCDI. It is noted that some modelling groups had difficulty implementing the calculation of indices as part of CMIP3. It is anticipated that high frequency (daily data) will be more widely available from CMIP5, which will facilitate the calculation of indices after the fact rather than at run time.

The ET will have to consider carefully how it should evolve for the next CCI cycle in consultation with CCI, CLIVAR, and JCOMM taking into consideration the WCRP Cross Cuts on Extremes and ACC. The current mode of operation of the ET, which involves indices research and development, implementation into standard supported software, application in standardized workshops, and synthesis into regional and global products is effective, and evidence is emerging that this activity is beginning to be somewhat self sustaining. Nevertheless, it is felt that a more sustainable approach is needed, and also that thought will have to be given as to how the ETCCDI can better serve developing world needs for climatic information to support adaptation. The WMO/World Bank series of workshops for Africa provide a potential model. The planned series of workshops includes an ETCCDI type workshop to develop capacity in monitoring and detecting change, a regional climate modelling workshop to similarly develop capacity to project future change, and an adaptation workshop to develop the capacity to use climatic information for adaptation.

6. Workshops/meetings planned

- Climate change data for the Indian Ocean Region; part of the Climate Change Adaptation Project for the Indian Ocean countries, which is financed by the Indian Ocean Commission, the French GEF, and the French Ministry of Foreign and European Affairs. The workshop is planned for September or October, 2009.
- WMO/World Bank Africa Workshop: The World Bank, GCOS, WCRP, WMO and the Nairobi based IGAD Climate Prediction and Applications Center (ICPAC) are collaborating to develop and implement the programme "Climate Observations and Regional Modeling in Support of Climate Risk Management and Sustainable Development." This programme will initially be implemented through three linked workshops for the ten countries of the Greater Horn of Africa (GHA), with the ultimate goal of implementing the programme in other regions under the sponsorship of the World Bank. A preparatory meeting was held in Geneva on 22-24 June 2009 for the detailed design of the workshop programme by experts in observations, modelling, and user needs. Albert Klein Tank (together with Thomas Peterson) will take the lead in organizing the first workshop in ETCCDI format.
- The International Ad Hoc Detection and Attribution Group (IDAG) will be meeting again in January, 2010.
- The next meeting in the series of International Meetings on Statistical Climatology (see overleaf) will take place July 12-16, 2010, at the University of Edinburgh. See <http://cccma.seos.uvic.ca/imsc/>

7. Web sites

The ET maintains websites on both the CLIVAR web pages and at <http://cccma.seos.uvic.ca/ETCCDI/index.shtml> which provides access to both data and indices in particular. The ETCCDI has added additional guidance² on data homogenization to its website in the form of a collection of classic examples of inhomogeneities that can be found in climate data sets.

² See http://cccma.seos.uvic.ca/ETCCDI/docs/Classic_Examples.pdf

International Meetings on Statistical Climatology



11th INTERNATIONAL MEETING OF STATISTICAL CLIMATOLOGY
UNIVERSITY OF EDINBURGH, SCOTLAND
JULY 12-16, 2010



11IMSC will be the next in a series of meetings that have been held at roughly three years intervals since their commencement in late 1979, in Hachioji, Japan. That meeting, and every subsequent IMSC meeting, was designed so that statisticians and climatologists could meet to discuss issues and ideas at the interface of their two disciplines. 11IMSC will continue to promote the interaction between the two disciplines. Its program is being designed around a number of themes that will be explored in a series of thematic sessions on subjects that will include techniques for the analysis of multi-model ensembles of climate simulations; approaches for understanding recent climate change and predicting the near-term future; extreme events; predictions of climate change relevant for impacts; the adjustment and quality control of modern instrumental climate data; and the reconstruction and understanding of climate change over the Holocene from paleo climate data. In addition to these thematic areas, the meeting will also strongly encourage the submission of contributed papers in areas at the interface between statistics and climate. Pre-registration and abstract submission for the meeting will commence in October, 2009. For further information, please consult the IMSC website (http://cccma.seos.uvic.ca/imsc/imsc_home.shtml) or contact Stephanie West at the University of Edinburgh (Stephanie.West@ed.uk.ac).

Coherence between the winter Pacific Decadal Oscillation and the Surface Air Temperature trends in the continental regions adjoining the North Pacific

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It is only in recent years that scientists are starting to recognize the impact of oceanic cycles on changing climate. The Pacific Decadal Oscillation (PDO) Index is defined as the leading principal component (the empirical orthogonal function N 1 (EOF1)) of North Pacific monthly sea surface temperature (SST) variability north of 20° N. Values of the index have been published for the period starting from 1900 (Trenberth, and Hurrell, 1994; Mantua, et al, 1997; Zhang, et al, 1997). Related investigation of the historic (1968-1990) Alaska Gyre dynamic height anomaly EOF1 was carried out by Lagerloef (1995). The PDO is a pattern of Pacific climate variability that transits from maximum to minimum on at least inter-decadal time scales typically of about 20 to 30 years (Hare and Mantua, 2000). The PDO is manifested as warm or cool surface waters in the Pacific Ocean. During a “warm”, or “positive”, phase, the west Pacific becomes cool and part of the eastern ocean warms; during a “cool” or “negative” phase, the opposite pattern occurs. In the

“warm” or “positive” phase, which appears most recently to have lasted from the middle seventies to nineties of the last century, the west Pacific Ocean became cool and a wedge in the east warmed (Hare and Mantua, 2000). The mechanism by which the pattern lasts over several years has not been identified; one suggestion is that a thin layer of warm water during summer may shield deeper cold waters (Overland, et al, 1999).

The oceanic influence on land surface atmospheric temperature occurs through hydrodynamic-radiative teleconnections, primarily by moistening and warming the air over land and increasing the downward longwave radiation at the surface (Bond and Harrison 2000). The oceans may themselves have warmed from a combination of natural and anthropogenic influences. The mechanisms giving rise to the PDO will determine whether skillful decades-long PDO climate predictions are possible. For example, if the PDO arises from air-sea interactions that