

CLIVAR National Reports 2012 – Australia

This report documents 2012 participation of Australian climate scientists in the various panels and working groups of WCRP/CLIVAR. We are grateful to CLIVAR/SSG for the opportunity to report our activities.

Asian-Australian Monsoon Panel (AAMP) - Harry Hendon

Summary of involvement:

- 1) Hendon was co-chair of AAMP 2008-2013 and member of WWRP/WCRP S2S Panel
- 2) Co-chaired AAMP annual meeting in Nanjing 2012
- 3) Participated in AAMP-sponsored international workshop on Monsoon Decadal Variability Nanjing 2012
- 4) Contributed POAMA intraseasonal hindcasts to the AAMP Intraseasonal Variability Hindcast Experiment (ISVHE)
- 5) Led development of white-paper on Proposal to Re-organize Monsoon Panels in CLIVAR/WCRP
- 6) Attended GEWEX annual meeting in Sydney to represent CLIVAR and AAMP (volunteered to be on organizing committee for GEWEX Science Meeting in 2014)
- 7) Participated in ongoing MJO Task Force activities (ad hoc)
- 8) Member of WWRP-WCRP S2S advisory committee and is leading effort to coordinate a subproject on monsoon intraseasonal predictions with AAMP
- 9) Contributed to formulation of AAMP contributions to the new CLIVAR
- 10) Interacted with MAIRS (Mike Manton) to develop stronger interactions of AAMP and MAIRS
- 11) Member of international organizing committee for WWRP International Workshop on Monsoons in Macau Oct 2013 (AAMP is co-organizer) and participated in planning for joint meetings of AAMP with MJO-TF and S2S.

ETCCDI – Blair Trewin and Lisa Alexander

Blair and Lisa are the Australian representatives on the joint WMO Commission for Climatology (CCL)/CLIVAR/JCOMM Expert Team on Climate Change Detection and Indices (ETCCDI). Under the Terms of Reference (ToR) for ETCCDI, their 2012 Panel activities included:-

ToR 1. Provide international coordination and help organise collaboration on climate change detection and indices relevant to climate change detection.

- Development of a website for the calculation and extraction of ETCCDI climate indices (www.climdex.org). So far this work has contributed to two major publications (ETCCDI members in bold):-

Donat MG, **Alexander LV**, Yang H, Durre I, Vose R, Caesar J. 2013. Global land-based datasets for monitoring climatic extremes. Bulletin of the American Meteorological Society, in press.

Donat MG, **LV Alexander**, H Yang, I Durre, R Vose, R Dunn, K Willett, E Aguilar, M. Brunet, J Caesar, B Hewitson, C Jacks, **AMG Klein Tank**, A Kruger, J Marengo, TC Peterson, M Renom, C Oria Rojas, **M Rusticucci**, J Salinger, S Sekele, A Srivastava, **B Trewin**, C Villarroel, L Vincent, **P Zhai, X Zhang**, S Kitching. 2013. Updated analyses of temperature and precipitation extreme indices since the beginning of the twentieth century: The HadEX2 dataset. JGR-Atmospheres, in press

- A workshop (attended by BT and LA) was held in New Caledonia in May 2012, in which a number of Pacific region countries analysed climate data and produced time series of indices. Publications from this workshop are in the process of being written.
- A national data set of a range of ETCCDI indices for Australian stations over the 1900-2011 period has been developed. (Trewin BC and Smalley RJ, 2013, Changes in extreme temperatures in Australia, 1910-2011. Aust. Met. Oceanogr. J., submitted).

ToR 6. Submit reports in accordance with timetables established by the OPAG chair and/or Management Group.

- Contributed to the WCRP publication Climate Science for Serving Society: Research, Modeling and Prediction Priorities (ETCCDI members in bold):-

Zwiers FW, **LV Alexander**, **GC Hegerl**, JP Kossin, TR Knutson, P Naveau, N Nicholls, C Schär, SI Seneviratne, **X Zhang** 2013. Climate Extremes: Challenges in Estimating and Understanding Recent Changes in the Frequency and Intensity of Extreme Climate and Weather Events, Climate Science for Serving Society: Research, Modelling and Prediction Priorities. G. R. Asrar and J. W. Hurrell, Eds. Springer, DOI 10.1007/978-94-007-6692-1_13.

GSOP – Catia Domingues

- Summary of involvement:
- 6th Meeting of the Global Synthesis and Observations Panel
Friday, 30 November, 2012 - Saturday, 1 December, 2012
Location: Woods Hole, USA
- Ocean Synthesis and Air-Sea flux evaluation Workshop,
Tuesday, 27 November, 2012 - Friday, 30 November, 2012
Location: Woods Hole, USA

<http://www.clivar.org/organization/gsop/activities>

- Organising Committee - WGOMD/SOP Workshop on Sea Level Rise, Ocean/Ice Shelf Interactions and Ice Sheets, CSIRO, Hobart, Australia, Monday, 18 February, 2013 - Wednesday, 20 February, 2013

<http://www.clivar.org/organization/wgomd/sealevel>

- Organising Committee and Local Committee:
12/06/2013 - 14/06/2013
CLIVAR/GSOP Global Ocean Sub-Surface Climate Data
Hobart, Australia

Indian Ocean Panel – Ming Feng

Summary of involvement:

Participated in the 9th session of the panel meeting in Cape Town South Africa, as well as the IOGOOS meeting during 15 – 18 October 2012;

Participating in the review paper on the decadal climate variability in the Indian Ocean, led by panel members;

Engaged in discussions on continuing the southeast Indian Ocean observing system at the Australia Integrated Marine Observing System (IMOS) annual planning meeting on 4-6 February 2013.

Participated in the Australian Coastal and Oceans Modelling and Observations Workshop (ACOMO) on 3-4 October 2012.

Engaged in discussion of deployment of the Indian Ocean RAMA mooring at 25S, 100E in August 2012.

Pacific Panel (PP) –Wenju Cai (Chair)

- 1) Cai organised “The third CLIVAR workshop on the Evaluation of ENSO Processes in the Climate Models” which was held 21-23 January in CMAR’s Hobart site. Fifty oceanographers from Australia and many countries, including leading ENSO researchers Drs Ed Harrison, Mike McPhaden, Gabe Vecchi from NOAA, Dr Fei-Fei Jin from University of

Hawaii, Mat Collins from Exeter University, Eric Guilyardi from IPSL/LOCEAN and many IPCC Fifth Assessment Coordinating Lead Authors and Lead Authors. The workshop reviewed the latest El Niño-Southern Oscillation paradigms, past, present and future ENSO simulation, and the importance of ocean observations in improving ENSO in climate models. One of the outcomes is to further calibrate the IPCC Fifth Assessment statement on how ENSO may change in a warming climate.

- 2) Interacted with IOP for a joint IOP-PP panel meeting, to be held at Lijiang, China. Cai is a co-chair of the “Second International Symposium on Boundary Current Dynamics” to be held prior to the joint panel meeting.
- 3) Contributed to the on-going discussion of an ENSO task team, and contributed to the ITF task team activities.
- 4) Member of an international organising committee for “The Open Science Symposium on Western Pacific Ocean Circulation and Climate (OSS-2012),” which was jointly organized by Northwestern Pacific Ocean Circulation and Climate Experiment (NPOCE) and Southwestern Pacific Ocean Circulation and Climate Experiment (SPICE). It was held under the auspices of WCRP/CLIVAR with financial support from some Chinese agencies and non-Chinese agencies, like IOC/WESTPAC, and CSIRO. The objectives of OSS-2012 was to provide a forum for oceanographers and meteorologists to exchange their progresses in the study on ocean circulation and climate, marine biogeochemistry and ecosystem in the western Pacific Ocean (WPO), to provide an opportunity for early career young scientists and students to expose their science, and to promote interdisciplinary study in the WPO. The symposium covered a range of areas including western boundary currents (WBCs) dynamics and variability; interaction of WBCs with ambient circulation system (e.g., the South China Sea, ITF, Indian Ocean, extra-tropical ocean); roles of WPO circulation variability in warm pool and ENSO variability; influences of the WPO on regional (e.g., monsoon, typhoon, extreme climatic events) and global climate systems and their predictability; and the WPO’s role in and impacts on carbon cycle, biogeochemical process, acidification, ecosystem, paleo-oceanography.
- 5) Attended on behalf of CLIVAR “the WCRP/CLIVAR Workshop on Decadal Variability in the Pacific and Indian Ocean- The Ocean’s Role in Global Climate Change”, 4-7 Sept. 2012, Qingdao, hosted by The First Institute of Oceanography, and discussed the possibility of State Ocean Administration, China, hosting CLIVAR project office for a post-2014 period.
- 6) Interacted with south pacific regional environment programme on using climate information in the organisation’s climate change action and adaptation plan. Cai led an international effort and published a Nature paper on South Pacific Convergence Zone extreme swings (Cai, W., M.

Lengaigne, S. Borlace, M. Collins, T. Cowan, M. J. McPhaden, A. Timmermann, S. Power, J. Brown, C. Menkes, A. Ngari, E. M. Vincent, and M. J. Widlansky (2012) More extreme swings of the South Pacific Convergence Zone due to greenhouse warming. *Nature*, 488, 365-369. doi:10.1038/nature11358.

- 7) PP is has been in discussion with David Legler, who is program director of the global Ocean Climate Observations within NOAA, on issues of declining report from the the US-sponsored TAO array since the ship was retired last June with others, and on the future of TAO array. The underlying question is "how best to develop a more sustainable and helpful ocean observing system to the tropical Pacific" given the needs, new knowledge, and new technology. An idea is to bring scientists and engineers in a workshop, later this year, to think about this all. An option to explore would be, for instance, to have more international contributions, especially in terms of ship time. Buoys sites may also be optimized.

WGOMD – Simon Marsland

Simon is the Australian representative on the CLIVAR Working Group on Ocean Model Development. His 2012 panel activities included: participating in the 10th session of WGOMD; planning for hosting of the upcoming 11th session of WGOMD; local organiser and a member of the Scientific Organising Committee for the upcoming WGOMD/SOP Workshop on Sea Level Rise, Ocean/Ice Shelf Interactions and Ice Sheets; liaison between WGOMD and the WCRP Climate Model Metrics Panel; and leading the Australian participation in a number of WGOMD Co-ordinated Ocean-ice Reference Experiments.

- Participant – WGOMD 10, ISMAR, Venice, Italy, Wednesday, 11 January, 2012 - Friday, 13 January, 2012
<http://www.clivar.org/organization/wgomd/activities/wgomd10>
- WGOMD Representative on WCRP Climate Model Metrics Panel (WCMMP)
<http://www-metrics-panel.llnl.gov/wiki>
- Organising Committee and Local Host - WGOMD/SOP Workshop on Sea Level Rise, Ocean/Ice Shelf Interactions and Ice Sheets, CSIRO, Hobart, Australia, Monday, 18 February, 2013 - Wednesday, 20 February, 2013
<http://www.clivar.org/organization/wgomd/sealevel>
- Local Host – WGOMD 11, CSIRO, Hobart, Australia, Thursday 21 February – Saturday 23 February 2013
<http://www.clivar.org/organization/wgomd/activities/wgomd11>

- WGOMD Co-ordinated Ocean-ice Reference Experiments
<http://www.clivar.org/wgomd/core>

CORE-I Normal Year Forcing Experiment. This was used as the ocean/sea-ice benchmark experiment for preparation of Australia's ACCESS Climate Model for submission to CMIP5.

Bi, D., S.J. Marsland, P. Uotila, S. O'Farrell, R. Fiedler, A. Sullivan, S.M. Griffies, X. Zhou, and A.C. Hirst, ACCESS OM, the Ocean-Sea Ice Core of the ACCESS Coupled Model, (subm.), Aust. Met. Oceanogr. J., 2012.

CORE-II Interannual Forced Experiments. ACCESS Ocean Model contributions to a variety of CORE-II manuscripts in preparation focussing on Atlantic mean state (Danabasoglu et al., 2012a), and variability (Danabasoglu et al., 2012b); 20th century thermosteric sea-level rise (Griffies et al., 2012); and Southern Ocean variability (Farneti et al, 2012), and watermass exchange (Downes et al., 2012).

CORE-III Ice Sheet Melting Experiment. The ACCESS Ocean Model was used in CORE-III scenario experiments to show rapid response of global sea level to Ice Sheet melting.

Lorbacher, K., S. J. Marsland, J. A. Church, S. M. Griffies, and D. Stammer (2012), Rapid barotropic sea level rise from ice sheet melting, J. Geophys. Res., 117, C06003, doi:10.1029/2011JC007733.