Third CLIVAR Workshop on the Evaluation of ENSO Processes in Climate Models

Organising committee:
Eric Guilyardi, Wenju Cai, Mat Collins,
Mike McPhaden, Andrew Wittenberg

on behalf of the CLIVAR Pacific Panel

CSIRO, Hobart, 21-23 January 2013
Goals of the workshop

• Review recent advances in the understanding of ENSO processes, especially in GCMs
• Recommend strategies for:
  – Continuing progress in our understanding of ENSO dynamics
  – Evaluating of ENSO processes in GCMs
• Provide advice on IPCC AR5 ENSO statements
• Discuss TAO/TRITON array
Sessions:
- Theory and mechanisms
- Low frequency variability and change (natural and forced)
- Predictability, teleconnections and impacts

Keynote Presentations:
- Ashok Karumuri: ENSO diversity
- Matthew Lengainge: Intraseasonal variations and ENSO
- Pascale Brannicot: Paleo-ENSO
- Noel Keenlyside: Remote influences on ENSO
Presentations highlighted:
• Large natural variability in models and observations
• Substantial uncertainty in ability to characterise ENSO changes in past, present or future
• Dynamical model biases, short & incomplete instrumental records, long but sparse paleo-climatic data records
• Multiplicity of ocean-atmosphere feedbacks that are poorly observed, understood, and simulated
• Influences outside the tropical Pacific affect ENSO development
Discussion Topics

• ENSO diversity/continuum debate: focus more on understanding processes rather than on morphology
• BJ index: many studies using slightly different definitions
• OLR definition for ENSO offers new perspectives
• Annual cycle & ENSO
• Nonlinearities & asymmetries in the ENSO cycle
• Mean state – ENSO interactions
• How to translate better understanding into predictive skill
Draft IPCC AR5 Statements

• ENSO is very likely to remain the dominant mode of interannual variability with global implications.
• There is no conclusive evidence that ENSO has changed in the 20th century. There is low confidence in how ENSO properties will change in the future.
• Even if ENSO does not change, there is medium confidence that ENSO teleconnections in the North Pacific and North America will shift eastward. Even if ENSO and its teleconnection do not change, it is very likely that ENSO-induced rainfall variability on regional scales will intensify.
TAO/TRITON

• The TAO/TRITON array is in disarray:
  ➢ Drastic reduction in data return in 2012
  ➢ Lack of institutional commitment

• Research community is concerned about the future:
  TAO/TRITON has been the cornerstone of ENSO research for 25 years

• International CLIVAR, through the CLIVAR Pacific Panel, would like to advise agencies responsible for sustaining the ocean observing system on:
  ➢ Value of TAO/TRITON for research
  ➢ Observing system priorities for ENSO studies
## Two Types of El Niño Workshop

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<th>International CLIVAR (Classical)</th>
<th>US CLIVAR (Modoki)</th>
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<tr>
<td>Quality of Presentations</td>
<td>✔</td>
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<td>General Discussion</td>
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<td>Organization &amp; Support</td>
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<td>Workshop Banquet</td>
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Southern Hemisphere ENSO Teleconnection
CLIVAR ENSO Task Team
Terms of Reference

- To better understand the role of different physical processes that influence ENSO characteristics.
- To identify new observations needed to better constrain ENSO processes, both for the current climate and for past climates (via paleo proxies).
- To promote and coordinate international collaboration between observationists and modelers for studies of ENSO.
- To provide a synthesis of existing ENSO evaluation methods in GCMs.
- To propose ENSO evaluation protocols and develop a strategy for coordinated ENSO analysis of CMIP models, including development and maintenance of an interactive website.
- To provide a better understanding of how ENSO might change in the future.
- To build research capacity by contributing to the development of the next generation of talent dealing with ENSO science.