US CLIVAR Decadal Predictability Working Group (DPWG) Report

US CLIVAR Summit 2010

Co-Chairs:
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Background to the DPWG

- There is considerable low-frequency variability (with societal consequences) in the Earth system, and which
- Can temporarily *mask or enhance* externally forced variability

![Graphs showing PDO Index and AMO Index over time](image-url)
Background to the DPWG

- The “natural” low-frequency variability cannot be captured/predicted as a response to external forcing in coupled integrations (e.g., like CMIP)

Global Land Temperatures (1950–2007 reference mean)
Background to the DPWG

- But may be captured if the near-time trajectory of some of the slowly evolving components of the natural variability (e.g. SST) can be predicted.
Background to the DPWG

• To further the understanding of some of the issues related to the (decadal) prediction of the LF natural variability, e.g.,
  – what is the decomposition of low-frequency variability into the externally forced and natural components?
  – what are the prospects of decadal predictability as an initial value problem?
  – how much skill of initialized decadal predictions may improve on other baseline methods? etc.

• A Decadal Predictability Working Group (DPWG) was approved in January, 2009, under the US CLIVAR
Objectives of the DPWG

• **Objective 1**: Define a framework to distinguish natural variability from anthropogenically forced variability on decadal time scale for the purpose of assessing predictability of decadal-scale climate variations

• **Objective 2**: Develop a set of metrics that can be used to assess and validate initialized decadal climate predictions and simulations
DPWG Progress Report

- **Operating structure**
  - *Monthly telecons that include invited speakers*
  - *Face-to-face meetings*
    - **June 2009** in conjunction with the “Advances in Decadal Climate Predictions” at the CCSM workshop
    - **January 2010** together with the workshop on “Predicting the Climate of the Coming Decades” in Miami
    - **Next meeting**: September 2010 with the “Workshop on Decadal Variability, Predictability, and Prediction: Understanding the Role of the Ocean” in Boulder
DPWG Progress Report

• First paper related to “objective 1” of the DPWG is under review in BAMS: Distinguishing the role of natural and anthropogenically forced decadal climate variability: Implications for predictions” Soloman et al. 2010

• Discussions are under way on synthesizing the framework for “objective 2” of the DPWG, i.e., development of metrics for the assessment of the initialized decadal prediction efforts
DPWG Progress Report

• Participation by the DPWG members in organizing recent meetings on decadal variability and predictability
  – St. Michaels, October 12-15, 2009: Decadal Climate Predictability and Prediction: Are We Ready?
  – Utrecht, November 4-6, 2009: Earth-System Initialization for Decadal Predictions
  – Miami, January 11-14, 2010: Predicting the Climate of Coming Decades

• Participation of DPWG members in recent summary papers on decadal variability and predictability (e.g., Meehl et al., 2009, BAMS)
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• Next steps

– Synthesize a framework for assessing model simulations/predictions of decadal variability. Along this line, the current discussion among the DPWG members includes

• What should the focus for the metrics be?
  – Assessing simulation skill / characteristics of modes of variability of relevance (PDO, AMOC, AMO,...)?
  – Assessment of prediction skill against other baseline measures of skill (e.g., persistence; CMIP simulations)?

• What measures?

• Should the synthesis define best practices for evaluating initialized decadal predictions?
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• Next steps

  – *Continue assembling (and analyzing) relevant databases*

  – *Encourage a small grants program (similar to the CMEP) – DECPREP (DECalad PREdictability Project)?*

  – *Co-ordinate participation in the “WCRP Open Science Conference, 24-28 October, 2011”*
## Membership:

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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Jim Carton</td>
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### Ex-officio Members

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