

**Climate Variability and Predictability (CVP)
FY 2014 Information Sheet**

Competition Name: *Improved Understanding of Tropical Pacific Processes, Biases, and Climatology*

A leading-order issue for improvement of predictions and projections of the El Niño/Southern Oscillation (ENSO), Madden-Julian Oscillation (MJO), Pacific Decadal Oscillation (PDO), and other important climate phenomena is the need for climate models to correctly and consistently produce the seasonally-varying background state. Recent Coupled General Circulation Models (GCMs) have seen improvements in simulations of the tropical climatology, but biases remain: double ITCZ, equatorial Pacific cold/dry bias, warm biases along the eastern boundaries of the Pacific and Atlantic, overly strong trade winds off-equator, and others. To capitalize on recent model improvements, we need to understand the sources and amplifiers of these biases; why some models (e.g., high resolution) show reductions in certain biases; and how other models can take advantage of those improvements (e.g., through parameterizations).

In FY2014, the CVP program invites focused data analysis and/or multi-model experimentation that seek to better understand tropical Pacific processes, biases, and climatology in any of the following areas:

- Intercomparison of model parameterizations (e.g., atmospheric convection and clouds, oceanic vertical mixing) as pertains to large-scale biases (e.g., in SST, fluxes of momentum, heat, and/or water, etc.).
- Reduced-model experiments (e.g., atmosphere-only, ocean-only, flux-adjusted, aquaplanet, regional, or regionally-coupled models) to isolate the sources and amplifiers of biases.
- Intermediate (e.g., Cane-Zebiak-type) and conceptual model studies of bias development.
- Short-term forecast experiments, from weeks to a year, to isolate the time scales of bias development, and isolate the responsible processes.
- Development of metrics for atmospheric, oceanic, and/or coupled GCMs that help to elucidate the main processes contributing to biases.

Use of observations and associated modeling activities from recent NOAA-funded projects such as EPIC, PACS, VOCALS, DYNAMO, and/or NMME is encouraged but not required. Successful principal investigators (PIs) will become members of the NOAA CVP Pacific Task Force. The PIs must budget one domestic trip per year for PI meetings in the second and third year of their award. For planning purposes please use: one trip to Silver Spring, MD, and one trip to Boulder, CO.

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