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## Department of Atmospheric Sciences Seminar Announcement

Department of Atmospheric Sciences, S.O.E.S.T., University of Hawai'i at Mānoa  
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# Tropical Pacific Circulation and SST Patterns in Response to Global Warming

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**Date:** Wednesday, November 25, 2015  
**Seminar Time:** 3:30pm  
**Location:** Marine Sciences Building, MSB 100

### Abstract:

The zonal SST pattern in the tropical Pacific to global warming is determined by the balance between the atmospheric heat flux feedback, the Bjerknes feedback related to the slowdown of the Walker Circulation, and the oceanic upwelling damping, known as the ocean thermostat. The climate models differently considers the relative importance of the mechanisms, therefore, they show a great diversity in the SST warming in the tropical Pacific. So far, many of the studies examined how the each of the mechanism works in global warming through diagnostic approaches or idealized experiments without atmosphere-ocean coupling. Only the ocean thermostat hypothesis is built based on the idealized coupled system, a ZC model forced by uniform warming in the SST tendency equation; however, the strong La Nina-like warming pattern suggested by the ocean thermostat is contradictory to the El Nino-like warming pattern of the climate model simulations. Missing the slowdown of the Walker Circulation, its Bjerknes feedback, and problematic forcing terms in the model could cause this disagreement. Consequently, revisiting the problem using the same idealized model as considering additional dynamical processes is valuable. We develop a new coupled ZC-type model to include the circulation change related to moisture and stratification effect, as well as, to optimize the coupling for the global warming simulation. This presentation mainly focuses on the literature review of tropical Pacific response to global warming and shows preliminary result from the new coupled ZC-type model.