UNIVERSITY of HAWAI'I MĀNOA

**Department of Atmospheric Sciences Seminar Announcement**

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SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY

# Precipitation Associated with ENSO Near Hawaiian Islands

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**Date:** Wednesday, April 19, 2017
**Refreshments:** 3:00pm at MSB courtyard
Free Cookies, Coffee & Tea Provided
(Please Bring Your Own Cup)
**Seminar Time:** 3:30pm
**Location:** Marine Sciences Building, MSB 100

## Abstract:

The El Niño–Southern Oscillation (ENSO) is the dominant mode of interannual climate variability, which originates in the equatorial Pacific. The ENSO events significantly influence the precipitation over many parts of the world. Near the Hawaiian islands, drought usually occurs after an El Niño event. For many regions in the earth, the main source of seasonal climate predictability can be provided by ENSO. However, the traditional Niño 3.4 index only can capture a small portion of precipitation variance throughout the year near the Hawaiian islands. Thus, the precipitation cannot be reconstructed by only Niño 3.4 index. Recent studies have showed that nonlinear interaction between seasonal cycle and interannual ENSO can generate an ENSO/annual cycle combination mode (C-mode). C-mode generates a meridionally asymmetric SST anomaly pattern, which can capture the delayed remote effects of equatorial ENSO SST forcing on the regions outside the equatorial eastern Pacific. And then a new Niño-Asymmetry SST index (Niño-A) has been derived from this meridionally asymmetric SST anomaly pattern. Niño-A can capture two important aspects of ENSO complexity, the meridional and zonal SST asymmetries. This study utilizes Niño -C index derived from C-mode and Niño -A index to reconstruct the precipitation near the Hawaiian islands throughout the year. The results show that, compared with Niño 3.4, Niño -C index and Niño -A index together explain a significant portion of precipitation variance near the Hawaiian islands. Therefore, a robust relationship between ENSO and near Hawaiian islands precipitation can be established by combining Niño-A index and Niño-C index, particularly for negative precipitation anomalies during and after some strong El Niño events. However, it still fails to capture most of strong positive precipitation anomalies and the underlying causes remain to be explored.