UNIVERSITY of HAWAI'I MĀNOA

# 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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SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY

# Hawaiian Winter Rainfall Variability during Two Types of El Niño

**Ms. Xiaoyu Bai**
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## Abstract:

Historically, Hawaiian winter (December through February) rainfall is known to be drier-than-normal due to the southward shift in the subtropical jet stream over the North Pacific during El Niño events. Recent studies suggest that El Niño can be broadly separated into two types: (1) Eastern Pacific (EP) El Niño which has its largest sea surface temperature (SST) anomalies centered in the eastern Pacific, and (2) Central Pacific (CP) El Niño which has its largest SST anomalies centered in the central Pacific. When considering El Niño events in these two types, will Hawaiian winter rainfall still be drier-than-normal? This study compares precipitation records of 21 stations from Kauai, Oahu, Maui and Hawaii during the two types of El Niño winters since 1957. Results show that during EP El Niño winters, the Hawaiian Islands have a drier-than-normal precipitation pattern, while during CP El Niño winters, the Hawaiian Islands have a normal and, for some stations, slightly wetter-than-normal precipitation pattern. To find the mechanisms of these rainfall anomalies during CP and EP winters, further analysis is made on the subtropical jet stream, horizontal wind field, vertical velocity, outgoing longwave radiation, specific humidity, and moisture transport. Although more research needs to be done, the hypothetical contributions to the wetter conditions on the Hawaiian Islands during CP winters are: lower level southwesterly wind anomalies, less southward subtropical jet stream shift, weaker descending motion, and positive tropical specific humidity anomalous.

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# AN INTRODUCTION OF ATTRIBUTION TO CLIMATE CHANGE

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## Abstract:

Abundant evidence show that global warming is truly occurring. A survey shows that more than 95% of active climate scientists attribute recent global warming to human causes. However, only about half of U.S. adults believe that human activity is the predominant cause. Since IPCC first assessment report, there is a growing confidence on the statement that most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations. This is concluded through attribution work, which refers to the process of evaluating the relative contributions of multiple causal factors to a change or event. In my talk, a brief introduction will be given on how attribution studies work. Several important results from attribution studies will be highlighted. Challenges of attribution studies will be summarized. In addition, attribution to extreme events and to regional climate change is addressed to be important in future attribution studies.

**Date:** Wednesday, April 26, 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