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Department of Atmospheric Sciences Ph.D. Dissertation Announcement

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Island-scale Weather and Climate for the Hawaiian Islands with Mountaintops below the Trade Wind Inversion

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Date: Friday, February 21, 2020
Seminar Time: 10:30am
Location: IPRC Conference Room, POST 414

Abstract:

Considerable research on the island-scale weather and climate over the Island of Hawaii and coastal waters has been done after the Hawaiian Rainband Experiment (HaRP) in 1990. This research seeks to improve our basic understanding of island-scale weather and climate over various local communities in Hawai'i, especially for islands with mountain heights below the typical height of the trade wind inversion (e.g., O'ahu and Kaua'i). Specifically, utilizing high-resolution modeling in conjunction with global analyses, surface observations, radar and satellite data, this study focus on the following areas.

1. Wake circulations and cloudiness under different trade wind strengths.
2. Favorable large-scale conditions and initiation of warm season convective storms leading to landslides and flooding over the Central O'ahu Plain.
3. Factors affecting orographic precipitation during the summer months over Kauai using model sensitivity tests.
4. Influences of different El Niño flavors on the regional-scale climate patterns and downscaled island-scale rainfall and climate for the island of O'ahu, which has mountains and ridges with tops below the trade wind inversion, in comparison with the island of Hawai'i, which has high mountains extending well above the trade wind inversion.

The results will be presented and summarized in the dissertation defense. Future work also will be discussed.