



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
2525 Correa Road, HIG 350; Honolulu, HI 96822 ☎956-8775



Island Mesoscale Processes: Convective Initiation & Tropical Storm Interaction

Dr. Alison Nugent

Assistant Professor
Department of Atmospheric Sciences
University of Hawai'i at Mānoa

Date: Wednesday, March 7, 2018
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:

Island terrain provides an obstacle for atmospheric flow, and can interact in many ways, especially at the mesoscale. This presentation will provide two examples of mesoscale island interaction: 1) a theoretical study of convective initiation based on unique upstream observations of temperature and humidity, and 2) interaction of a mesoscale vortex imbedded within a strongly-sheared tropical storm. Both mesoscale studies focus on The Commonwealth of Dominica in the Caribbean.

In the first part, I'll describe a modified version of Woodcock's theory of moist convective initiation. The study uses sub-cloud in-situ aircraft observations and finds that moist patches, which have a lower lifting condensation level, become "seeds" for convection when lifted. This work shows that sub-cloud variations are important for setting the strength and scale of convection.

In the second part, I'll describe the impacts of Tropical Storm Erika on Dominica, and explore the range of observations which record a mesovortex passing over and interacting with the island, leading to half a meter of rainfall in about 5 hours. Understanding the factors leading to heavy rainfall is important for future prediction of tropical storms passing near mountainous islands.