



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



# Exploring the Relationship between Convectively Coupled Equatorial Waves and Tropical Cyclogenesis in Aquaplanet Simulations

## Dr. Rosimar Rios-Berrios

Scientist I

Mesoscale and Microscale Laboratory

National Center for Atmospheric Research (NCAR)

**Date:** **Wednesday, October 28, 2020**  
**Time:** **3:30pm HST**  
**Zoom Meeting:** **<https://hawaii.zoom.us/j/97454168193>**  
Meeting ID: 974 5416 8193  
Passcode: 207183

### Abstract:

Four decades ago, scientists noticed that tropical cyclones form in clusters followed by several weeks of inactivity. This finding was long overlooked until the recent growing interest in subseasonal-to-seasonal prediction of high-impact weather. Research in this area has uncovered that convectively coupled equatorial waves (CCEWs) can partly explain week-to-week tropical cyclone activity through modulations of environmental conditions. However, the physical processes behind that relationship remain unexplored because previous studies have relied on reanalysis datasets, which cannot capture the mesoscale and convective-scale processes that are ultimately necessary for tropical cyclogenesis. That limitation motivates this study, which aims at developing a modeling framework that can capture both planetary-scale waves and tropical cyclones, while using that framework to explore *if* and *how* CCEWs modulate tropical cyclogenesis. In the first part of this talk, I will describe the modeling framework—aquaplanet experiments using the Model for Prediction Across Scales-Atmosphere (MPAS-A). I will demonstrate that the MPAS-A aquaplanet experiments produce a climate and weather systems that are consistent with other models and with the real world. In the second part, I will demonstrate that a relationship exists between CCEWs and TC activity in the aquaplanet experiments, but the relationship is different from that identified using reanalysis datasets and it depends on the horizontal grid spacing of the simulations.