

# FSU Meteorology Seminar Series, Fall 2020



**Dr. Jane W. Baldwin**

Lamont-Doherty Earth Observatory  
Columbia University

## Understanding Tropical Cyclone Risk: from Mountain Drivers to Economic Impacts

### Abstract

Over the past decade, multiple methods to model tropical cyclones have neared maturity. State-of-the-art global climate models (GCMs) now reach resolutions of 25-50 km in the atmosphere, permitting the simulation of realistic tropical cyclone intensities and tracks. Additionally, statistical-dynamical tropical cyclone models now allow the computationally cheap simulation of many physically plausible tropical cyclones. I will describe recent and ongoing research using these methods to both better understand the drivers of tropical cyclones in different ocean basins, and determine the risks to human society from these extreme events. I will first discuss work using the GCM GFDL CM2.5-FLOR to understand the influence of two different orographic features on the regional climatology of tropical cyclones: 1) the Tibetan Plateau (and related mountains) on the western north Pacific, and 2) the topography of Central America on the eastern tropical Pacific. I will demonstrate the importance of rigorously considering atmosphere-ocean coupling in such analyses, and argue that a relatively small orographic feature can have an outsize climatic influence contingent on its placement relative to the larger-scale circulation. Next I will introduce ongoing work in collaboration with World Bank economists to improve disaster risk assessment using Columbia's statistical-dynamical tropical cyclone model. I will highlight both challenges and significant opportunities in such hazard to impact modeling.

### Zoom Link

<https://fsu.zoom.us/j/94856469533?pwd=aWJBaIVhNEUwQ0hCdklGcVRnWGJpUT09>

**Time:** Thursday, Oct. 22, 2020 @ 3:30 PM

**Host:** Dr. Allison Wing

**Note:** Join starting at 3 for pre-seminar informal discussion  
Student Q&A with speaker to be held following the seminar