

ATS/CIRA Colloquium

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Outsize Influence of Central American Orography on Global Climate

Hosted by Eric Maloney

3 p.m. Thursday, March 31
ATS 101 or Microsoft Teams

The Sierra Madre mountain range stretches north to south in Central America. These narrow mountains are important for climate due to their location: they block tropical winds that flow east to west, from the Atlantic to the Pacific, making winds slower and sea surface temperatures warmer in the tropical East Pacific. In this seminar, I will demonstrate the substantial role of these mountains in shaping mean climate, variability, and extremes using state-of-the-art atmosphere-ocean coupled Global Climate Model (GCM) simulations. I will first demonstrate that better resolving these mountains' height improves long-standing GCM biases in tropical sea surface temperatures, precipitation, and variability (i.e. El Niño-Southern Oscillation). Second, I will explore the role of gaps in these mountains in the observed high density of East Pacific tropical cyclones, highlighting critical dependence of results on atmosphere-ocean interactions. I will argue that improved resolution of these and other mountains' height presents a simple, physically-based, and computationally inexpensive method that can improve climate models and projections of future climate.

Colloquia page: atmos.colostate.edu/colloquia