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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



The Rain Is Askew: Changes in the Distributions of Rain and Vertical Velocity

Angeline Pendergrass, Ph.D.

Advanced Studies Program
National Center for Atmospheric Research

Date: Wednesday, October 7, 2015
Refreshments: 3:00pm at MSB Lanai
Seminar Time: 3:30pm
Location: Marine Sciences Building, MSB 100

Abstract:

As the planet warms, climate models predict that rain will become heavier and less frequent, and circulation will weaken. In this talk I'll tell you about my work looking at how the distribution of rain (in terms of intensity and frequency) and the corresponding distribution of vertical velocity with warming.

To quantify the distribution of rain, we focus on daily precipitation accumulation from climate models. These models have a wide range of responses to global warming, especially at the extreme end of the distribution. In order to interpret this range of responses, we introduce shift and increase modes of change of the distribution. These capture the response of the entire distribution well in some models, while other models also have an extreme mode, isolated at the heaviest rain rates.

With two heuristic models, we show how changes in moisture and vertical velocity distributions can affect the distribution of rain. An increase in skewness of the vertical velocity distribution is crucial for explaining the change in the distribution of rain, particularly the decrease in the total number of rain events.