



ATS/CIRA Colloquium

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**Clouds, Kelvin Waves, and Convective Onset in the
Madden-Julian Oscillation**

Hosted by Eric Maloney

Friday, August 26, 2016

**ATS room 101; Discussion will begin at 11:15am
Refreshments will be served at 10:45am in the weather lab**

The Madden-Julian Oscillation (MJO) is a major component of sub-seasonal variability in tropical precipitation, and it also impacts extreme precipitation events in the subtropics and the mid-latitudes. Although it was discovered 45 years ago, the dynamics of its origin have long remained unclear and climate models continue to struggle with simulating realistic MJO events. The Dynamics of the MJO (DYNAMO) field campaign was held in the Indian Ocean in 2011–2012 to investigate the apparent onset of MJO events, and this talk explores observational datasets collected during DYNAMO to demonstrate how the cloud population over the Indian Ocean impacted the dynamics of MJO onset. Specifically, I will show how and over what time scale the cloud population transitioned from suppressed to widespread convectively active conditions. Results confirming that cloud-scale processes were responsible for large-scale moistening of the low- to mid-troposphere will be discussed. Finally, how a wavenumber 1 equatorial Kelvin-like wave drives the convective moistening will be illustrated using observational datasets, reanalysis, and regional modeling simulations of two observed MJO cases.

Link to colloquium videos and announcement page: <http://www.atmos.colostate.edu/dept/colloquia.php>