



Dry MJO

Chidong Zhang and David Zermeno

RSMAS, University of Miami, Miami, FL, United States (czhang@rsmas.miami.edu)

The Madden-Julian Oscillation (MJO) has always been perceived as a phenomenon resulted from coupling between atmospheric convection and circulations. In this presentation, a different perspective of the MJO is introduced. Diagnoses of tropical sounding observations and global reanalysis products have revealed intraseasonal, slow eastward moving signals in temperature, geopotential height or pressure, and wind that exist over the equatorial Indian and eastern Pacific Oceans without any accompanying precipitation or deep convection. Even at locations where MJO convection is vigorous, associated MJO perturbations in these fields cannot be explained by diabatic heating along. These observations lead to a hypothesis that the intrinsic nature of the MJO eastward propagation is dynamically determined and independent of deep convection. Deep convection acts as an effective source of energy for the dynamical signals of the MJO. Other processes, such as lateral and upstream forcing, stochastic convection, may also act to supply energy to the MJO. Other implications of this hypothesis and possible ways to falsify this hypothesis are discussed.