

ATS/CIRA Colloquium

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A Study of the Madden-Julian Oscillation Using a Global Cloud-Resolving Model

April 29, 2008

ATS room 101; Discussion will begin at 3:30pm

Refreshments will be served at 3:00pm in the coffee lounge

As we strive to predict the impacts of particulate matter (PM) reduction strategies on air quality, and the feedbacks between aerosols and a changing climate, we struggle on a more fundamental level with understanding the formation of organic aerosols (OA) in the real atmosphere. It is known that particles are emitted directly to the atmosphere; and formed in the atmosphere via nucleation and absorptive partitioning of oxidized volatile organic compounds. However, there is incomplete knowledge of the suite of compounds that contribute to OA, and the pathways by which organic PM (OPM) is formed. To some extent, it is this incomplete understanding that has precluded our ability to accurately represent atmospheric OPM levels with regional and global climate models. Additionally, there are challenges associated with incorporating our growing understanding of OA into existing model frameworks. Presented here are some of the advancements in our understanding of the pathways that lead to particle formation in the atmosphere and some thermodynamic considerations of those pathways, as well as a more general modeling framework in which such advancements can be considered. Ideally, with advancements in our fundamental understanding of OA, we will be able to predict atmospheric OPM levels more accurately and therefore, make better predictions regarding the interactions between aerosols, air quality, and future climate.