SEMINAR SERIES

PRESENTATION

Monday, August 5th – SPoRT VCL – RM3027 – 10:00a

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Using the WRF-Chem Model to Understand the Impact of Saharan Dust Aerosols on Tropical Cyclones

Genesis of Tropical Cyclones (TCs) in the main development region for Atlantic hurricanes is tied to convection initiated by African easterly waves during Northern hemisphere summer and fall seasons. The main development region is also impacted by dust aerosols transported from the Sahara, which modulate the development of TCs through aerosol-radiation and 10fdaaerosol-cloud interaction processes. The role of horizontal and vertical distribution of dust aerosols on TC development is investigated using the Weather Research and Forecasting model coupled with chemistry (WRF-Chem). This talk discusses the methodology utilized for specifying realistic spatial distribution of dust for case studies of TC development modulated by Saharan dust transport. The horizontal distribution of dust aerosol is specified using the Moderate Resolution Imaging Spectroradiometer (MODIS) derived aerosol products and output from the from Goddard Chemistry Aerosol Radiation and Transport (GOCART) model. The Cloud Aerosol Lidar and Infrared Pathfinder Satellite Observations (CALIPSO) measures the backscatter in the atmosphere which we use to constrain the vertical distribution of dust aerosols. To evaluate the three-dimensional dust aerosol fields we use *in situ* aircraft measurements during the National Aeronautics and Space Administration (NASA) African Monsoon Multidisciplinary Analysis (AMMA) campaign in August and September 2006. The validation exercise shows that specification of realistic three-dimensional dust aerosol distribution in the WRF-Chem model can be achieved through MODIS and CALIPSO satellite observations. The dust aerosol spatial distributions are utilized in simulations of TCs impacted by Saharan dust.

Refreshments will be served.