P53   Observations and modeling of Saharan dust interaction with Hurricane Nadine (2012)

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The Hurricane and Severe Storm Sentinel (HS3) is a multiyear field campaign with the goal of improving understanding of hurricane formation and intensity change. One of HS3's primary science goals is to obtain measurements to help determine the extent to which the Saharan air layer impacts storm intensification. HS3 uses two of NASA's unmanned Global Hawk aircraft equipped with three instruments each to measure characteristics of the storm environment (dropsonde derived profiles of temperature, humidity, wind speed and wind direction; interferometer derived profiles of temperature and humidity in the clear air; and lidar derived profiles of Saharan dust and clouds) and inner-core precipitation and winds (Doppler radar and microwave radiometer) and temperature and relative humidity (microwave sounder). This presentation will focus on environmental observations obtained by the Global Hawk during the early stages of Hurricane Nadine (2012) when it interacted with the Saharan air layer. In addition, the Goddard Space Flight Center version of the Weather Research and Forecasting model (NASA Unified WRF) with interactive aerosol-cloud-radiation physics is used to generate 30-member ensemble simulations of Nadine with and without the aerosol interactions. Preliminary conclusions related to the impact of the Saharan air layer on the evolution of Nadine will be described.