**Aerosols and trace gases modeling in the tropical Atlantic during the summer of 2009**

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 Air quality simulations using the chemistry transport model Weather Research and Forecast Chemistry (WRF-CHEM) were performed to study the behavior of aerosol and chemical trace constituents on the tropical Atlantic during the month of July 2009. Aerosols have been show to be at its peak during the month of July in the tropical Atlantic due in part to mineral aerosols (Saharan dust) that travel across the Atlantic to the Caribbean basin and portions of South and North America primarily during the boreal summer. The aim of this project was to observe how dust aerosols affected the tropospheric chemistry of key trace constituents like ozone during its journey to the Caribbean basin. Results from the simulations were compared with trace gases and aerosols data collected on the NOAA ship Ronald H. Brown during the AEROSE 2009 field campaign and data from air quality stations on the island of Puerto Rico. Sensitivity studies were performed to elucidate the contribution of different processes to the chemistry of the area.