

Environmental Public Health Surveillance for Exposure to
Respiratory Health Hazards: A Joint NASA/CDC Project to Use
Remote Sensing Data for Estimating Airborne Particulate Matter
Over the Atlanta, Georgia Metropolitan Area

**Dale A. Quattrochi¹, Mohammad Al-Hamdan², Maurice Estes, Jr.², William Crosson²,
Ashutosh Limaye², Douglas Rickman¹, Judith Qualters³**

¹*National Aeronautics and Space Administration, Marshall Space Flight Center, Earth Science
Office, Huntsville, AL*

²*National Space Science & Technology Laboratory, Universities Space Research Association,
Huntsville, AL*

³*Centers for Disease Control and Prevention, National Center for Environmental Health, Atlanta,
GA*

As part of the National Environmental Public Health Tracking Network (EPHTN) the National Center for Environmental Health (NCEH) at the Centers for Disease Control and Prevention (CDC) is leading a project called Health and Environment Linked for Information Exchange (HELIX-Atlanta). The goal of developing the National Environmental Public Health Tracking Network is to improve the health of communities. Currently, few systems exist at the state or national level to concurrently track many of the exposures and health effects that might be associated with environmental hazards. An additional challenge is estimating exposure to environmental hazards such as particulate matter whose aerodynamic diameter is less than or equal to 2.5 micrometers (PM_{2.5}). HELIX-Atlanta's goal is to examine the feasibility of building an integrated electronic health and environmental data network in five counties of Metropolitan Atlanta, GA. NASA Marshall Space Flight Center (NASA/MSFC) is collaborating with CDC to combine NASA earth science satellite observations related to air quality and environmental monitoring data to model surface estimates of PM_{2.5} concentrations that can be linked with clinic visits for asthma.

While use of the Air Quality System (AQS) PM_{2.5} data alone could meet HELIX-Atlanta specifications, there are only five AQS sites in the Atlanta area, thus the spatial coverage is not ideal. We are using NASA Moderate Resolution Imaging Spectroradiometer (MODIS) satellite Aerosol Optical Depth (AOD) data for estimating daily ground level PM_{2.5} at 10 km resolution over the metropolitan Atlanta area supplementing the AQS ground observations and filling their spatial and temporal gaps.