USING NASA REMOTELY SENSED DATA TO HELP CHARACTERIZE ENVIRONMENTAL RISK FACTORS FOR NATIONAL PUBLIC HEALTH APPLICATIONS

AL-HAMDAN Mohammad¹, CROSSON William¹, ECONOMOU Sigrid², ESTES JR Maurice¹, ESTES Sue¹, HEMMINGS Sarah¹, KENT Shia³, QUATTROCHI Dale⁴, WADE Gina⁵, MCCLURE Leslie³

¹USRA at NASA Marshall Space Flight Center, Huntsville, Alabama, USA.
²CDC National Center for Public Health Informatics, Atlanta, Georgia, USA.
³University of Alabama at Birmingham, Birmingham, Alabama, USA.
⁴ESO at NASA Marshall Space Flight Center, Huntsville, Alabama, USA.
⁵Von Braun Center for Science and Innovation, Huntsville, AL 35805, USA.

mohammad.alhamdan@nasa.gov
bill.crosson@nasa.gov
sae1@cdc.gov
maury.g.estes@nasa.gov
sue.m.estes@nasa.gov
sarah.n.hemmings@nasa.gov
Shia@uab.edu
dale.quattrochi@nasa.gov
gwade@vcsi.org
LMcClure@ms.soph.uab.edu

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Abstract:

NASA Marshall Space Flight Center is collaborating with the University of Alabama at Birmingham (UAB) School of Public Health and the Centers for Disease Control and Prevention (CDC) National Center for Public Health Informatics to address issues of environmental health and enhance public health decision making by utilizing NASA remotely sensed data and products. The objectives of this study are to develop high-quality spatial data sets of environmental variables, link these with public health data from a national cohort study, and deliver the linked data sets and associated analyses to local, state and federal end-user groups. Three daily environmental data sets will be developed for the conterminous U.S. on different spatial resolutions for the period 2003-2008: (1) spatial surfaces of estimated fine particulate matter (PM$_{2.5}$) exposures on a 10-km grid utilizing the US Environmental Protection Agency (EPA) ground observations and NASA’s MODerate-resolution Imaging Spectroradiometer (MODIS) data; (2) a 1-km grid of Land Surface Temperature (LST) using MODIS data; and (3) a 12-km grid of daily Solar Insolation (SI) using the North American Land Data Assimilation System (NLDAS) forcing data. These environmental data sets will be linked with public health data from the UAB REasons for Geographic And Racial Differences in Stroke (REGARDS) national cohort study to determine whether exposures to these environmental risk factors are related to cognitive decline and other health outcomes. These environmental datasets and public health linkage analyses will be disseminated to end-users for decision making through the CDC Wide-ranging Online Data for Epidemiologic Research (WONDER) system.