

2nd International Conference on

GIS AND REMOTE SENSING

October 02-03, 2017 Vienna, Austria

Developing US regional statistical models for estimating ground-level fine particulate matter using remotely-sensed aerosols and meteorological data

Ching An Yang¹, Muhammad G Barik², Mohammad Z Al Hamdan², William L Crosson² and Shane R Coffield³¹San Jose State University, USA²Universities Space Research Association at NASA Marshall Space Flight Center, USA³University of California, Irvine, USA

Began in summer 2016, this Air Quality Project evaluates the correlation between ground-level fine particulate matter (PM_{2.5}) and satellite measurements of the Aerosol Optical Depth (AOD) through the development of regression models. Initially, as part of this project, only eight cities were selected as the target areas for developing both single variable (including only AOD) and multi-variable (including AOD and meteorological variables) models for PM_{2.5} estimation. Building upon the initial project, algorithms for regression models were modified in this project to increase the efficiency and the area coverage. These improved algorithms were applied at the national scale to estimate and evaluate modeled PM_{2.5} for different U.S. regions. High-resolution MODIS AOD data and Boundary Layer Height from a numerical meteorological model were tested in these regions to improve the accuracy and overall performance of the models. These enhanced models helped scientists to estimate the ground-level PM_{2.5} in the United States using satellite data even when ground-based measurements are not available.

mohammad.alhamdan@nasa.gov