

Session: 2C A World of Important Applications (Poster-Based Talks)

Talk: 2C [RSAD42]

Exploring the possibility of using MODIS image data for PM_{2.5} monitoring

Abstract: Traditional station-based PM_{2.5} monitoring is costly and has limited spatial coverage. Satellite-based remote sensing could serve as an alternative because of large spatial coverage and reliable repeated measurements. While some studies have shown the high potential of utilizing MODIS Aerosol Optical Depth (AOD) data in PM_{2.5} monitoring at regional scale, poor MODIS AOD-ground PM_{2.5} relationships were still reported in some parts of United States. The purpose of this study was to examine the correlation between MODIS AOD and ground-level PM_{2.5} in the state of North Carolina in order to develop a cost-effective method to measure PM_{2.5} using satellite-based remote sensing. In this study, hourly PM_{2.5} data for all AirNow stations in NC and MODIS AOD data were acquired from AirNow network and USGS web site respectively for the year 2011 and 2012. Their spatial correlations were examined at different levels: daily and monthly after correspondent daily and monthly averages were calculated. Our preliminary analysis suggested that there is no statistically significant relationship between MODIS AOD value and ground mass concentration of PM_{2.5} in NC for 2011 and 2012. The poorer correlation presents a significant challenge for air quality monitoring using remote sensing techniques in the state of North Carolina.