

A53A-1418: PM2.5 variation related to AOD and meteorological conditions on diurnal scale in Beijing, China

Friday, 15 December 2017

13:40 - 18:00

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PM2.5 (particulate matter with diameter less than 2.5 μ m) is one of the major air pollutants in many regions around the globe. Column integrated aerosol optical depth (AOD) measurement provides a potential way to estimate surface PM2.5 concentration from the remote sensing technics. In this analysis, we compiled hourly measurements of surface PM2.5 and AOD made in Beijing, China and meteorological conditions provided by NASA Global Modeling and Assimilation Office's Modern-Era Retrospective Analysis for Research and Applications (MERRA) product in recent years. On daily basis, hourly PM2.5 and AOD show positive correlation, i.e. correlation coefficient (R) is higher than 0.5 on about 50% of days. We apply multi-variant analysis to this dataset and estimate the magnitude of AOD variance that can be explained by or related to PM2.5 and relevant meteorological conditions changes

Plain Language Summary

To improve public health, air pollution monitor need to be expanded to broader human habitat in many regions around the globe. Satellite, both polar-orbiting and geostationary ones, is the platform that has the most complete spatial coverage of the planet earth. Its measurements provide great potential to derive the surface air pollution magnitude. Many factors influence the translation from column integrated satellite measurement to air pollution concentration at our nose level. In this research, we explore those factors on fine temporal scales, since planned NASA future satellite instruments on geostationary orbit can provide multiple measurements during the day to study the evolution of air pollutants on diurnal scale.

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