

A study of the 2016 post-monsoon air pollution event over India using the GMAO GEOS system

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The countries in South Asia are particularly vulnerable to air pollution. With population of over 1.3 billion people (and high population density) India for example can be severely impacted by air pollution episodes amplified by the combination of the regional topography and winds, abundant natural aerosols and increased industrial growth and urbanization. In October-November 2016 a large scale pollution event that coincided with the post-monsoon burning of crop residue was observed from space over India. Predominantly clear sky conditions allowed the MODIS and CALIPSO instruments on board of NASA EOS satellites to reveal the scale and the duration of length of this air pollution episode and make aerosol retrievals. Characterization of the air pollution and the impact on the air quality and population was however impeded by the sparse PM and other air-pollutants observations.

The goal of this study was to analyze the post-monsoon air pollution episode by using observations from NASA satellites in conjunction with the GMAO GEOS system with emphasis on near real-time analysis and short term prediction capabilities. We examined and identified the major causes that lead and contributed to this event. Our analysis showed a clear link between the agricultural fires and the air pollution levels in India. In addition, we assessed the population affected by unhealthy pollution levels by using the air quality index derived from the standard model output.

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