

# Improving Air Quality Decision-Making Activity in Indian Subcontinent

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## Abstract

Air pollution has become one of the most important environmental concerns in India. For timely alerting the public of forthcoming air pollution episodes and implementing temporary emission control measures to reduce the magnitude of predicted air pollution events, the National Science Foundation (NSF) National Center for Atmospheric Research (NCAR) in collaboration with the Indian Institute of Tropical Meteorology (IITM) and the Indian Meteorological Department (IMD) of the Ministry of Earth Sciences have developed an air quality early warning systems (AQEWS) for entire India. The system currently assimilates the Moderate Resolution Imaging Spectroradiometer (MODIS) aerosol optical depth (AOD) retrievals to improve initialization of aerosol chemical composition but we are in the process of transitioning to the assimilation of Visible Infrared Imaging Spectroradiometer (VIIRS) AOD retrievals to ensure AQEWS continues to benefit from space-borne observations of AOD. We find that that VIIRS AOD assimilation provides the same benefits as MODIS AOD does with improvements in the accuracy of fine particulate matter forecasts in Delhi ranging from 70% to 86% during the crop-residue burning season. We also find large improvement in particulate matter forecasts due to MODIS AOD assimilation during a dust event that affected western India. A decision support system has also been developed to help policy makers make informed decisions about temporary emission controls to reduce the amount of predicted pollution in New Delhi. Decision-makers from the Commission for Air Quality Management (CAQM) regularly use these air quality forecasts to impose and/or lift-off temporary restrictions on targeted emission sources to improve air quality particularly in Delhi. Different capabilities of the AQEWS will be discussed in detail during the presentation along with the challenges resulting from implementation of implement of temporary emission control measures.

## Early Career Scientist

NO, I am not an early career scientist.

## IGAC Activities

MAP-AQ: Monitoring, Analysis and Prediction of Air Quality