Estimation of Air Quality over India using CHIMERE Chemical Transport Model

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Knowledge about gaseous pollutants is important to assess their impact on health and that of particulate matter is important for assessment of health effects as well as climate impacts. The objective of this work is to estimate air quality (in terms of PM10) as well as anthropogenic fraction of aerosol over India using chemical transport model, CHIMERE. In Europe this model has been extensively used on wide range of spatial scale from regional to urban scale with high resolution. This model has been recently adopted for use outside Europe by developing an emission interface with a worldwide emission data base in order to take into account pollutant emissions from any country in the world. We have done simulation over India for year 2007 to obtain information about spatial distribution of different air pollutants mainly those which are getting measured by central pollution control board of India. Air quality measurements central pollution control board is utilized to validate the model output. Preliminarily results show that model is capable of well capturing the diurnal variation of pollutants even though absolute magnitude was different. Main source destinations such as metro cities are well captured in spatial variation of pollutants over India. Large amount of PM10 concentration was observed over Indo-Gangetic plains throughout the year. Model results are useful in understating the radiative effects of particulate matter and health issues related with high concentration of gaseous and particulate pollution.