

Seasonal Verification of Dust Forecast over the Indian Region

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Abstract: The medium-range forecast of the dust aerosols over Indian region produced by the NCMRWF numerical weather prediction model with mineral dust scheme from May 2013 to May 2014 is examined in this study. Coarse mode aerosol observations are only used for comparison with dust forecast with the assumption that coarse mode aerosol over Indian region largely represents dust aerosol, especially over the areas of high dust load. Accuracy and trends of the day-to-day dust forecast are studied at three AERONET locations in Indo-Gangetic Plains (IGP) using surface and MODIS satellite retrievals of coarse mode aerosol optical depth for entire one year (May 2013 to May 2014). Seasonal mean geographical distribution of the medium-range forecast of dust by the model over Indian region is validated with different satellite retrievals for all four seasons. Availability of suitable observations is one of the limiting factors and big challenges for the validation of the dust forecast. The main focus of this study is to assess dust forecast by the model over Indian region for all seasons, to know the biases and errors of the model forecast for its optimal use. The study finds that model dust forecast is comparable to AERONET observations over three locations for all seasons except monsoon season.