Characterizing the vertical distribution of aerosols using simulated meteorological fields, remotely sensed observations and in-situ air quality data

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Satellite observations have been used extensively to study the long-range transport and spatial distribution of atmospheric aerosols. Assimilation of data from satellites within air quality models is an area of active research. In-situ observations, although sparse, provide useful information about the chemical composition of aerosol species. Fusing these observations with data from low-earth orbiting satellites could provide gridded aerosol fields for air quality model initialization. In this paper, we attempt to gain a better understanding of the aerosol distribution within and above the planetary boundary layer, using satellite observations, in-situ data, and meteorological fields simulated by a meteorological model. The results are compared against aerosol distribution simulated by the air quality model.