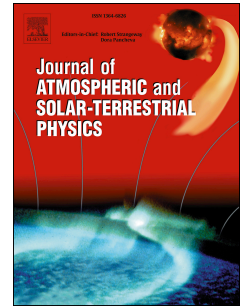


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DUST AND DUST STORMS OVER KUWAIT:**GROUND-BASED AND SATELLITE OBSERVATIONS**

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Abstract

We investigate the consistency between Aerosol Optical Depth (AOD) retrieved by MODerate resolution Imaging Spectroradiometer (MODIS) sensor aboard NASA's Aqua satellite and measurements collected by ground-based Aerosol Robotic Network (AERONET) site in Kuwait for 2007-2012. A good correlation ($r = 0.7$) is obtained between the two data sets. The volume size distributions (VSDs) of particles with geometric mean radius ranges of 0.05–15 μm has been studied as well. Seasonal variations are clearly found in the shape and magnitude of the VSDs for fine and coarse particles. The VSD of aerosol coarse particles was the highest during spring and summer. It increases substantially during dust storms, reaching the highest value during the dust storm of 24 May 2012. Satellite lidar observations from CALIPSO reveals a moderate vertical extent of the dust storms with the highest extinction coefficients below 500 m height. The method of superposed epoch analysis is used to test the behavior of meteorological parameters during the dusty days of 2012. Increase in wind speed together with significant reductions in visibility and diurnal

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