

عنوان مقاله:

Study of aerosol optical properties in the Middle East

محل انتشار:

دومین همایش بین المللی گرد و غبار (سال: 1397)

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خلاصه مقاله:

Aerosols affect the earth's atmospheric radiative fluxes via direct, semi-direct, and indirect mechanisms and they can be regarded as a major source of uncertainty in climate forcing assessments. In the Middle East, in addition to climate effects, various problems such as reduction of the visibility, human health hazards and air pollution are caused by atmospheric aerosols. Studying optical and physical properties of aerosols on a local and global scale helps reduce the uncertainties in climate forcing. In this study, aerosol optical properties like Aerosol Optical Depth (AOD), Angstrom Exponent (AE), ASYmetry parameter (ASY), Single Scattering Albedo (SSA) and phase function have been analyzed. These properties have been studied in five sites in the Middle East region during 2013 using the Aerosol Robotic Network (AERONET) data. The results revealed an inverse relationship between AOD and AE for all sites. The high value of AOD and low value of AE were observed in the spring and summer in all studied sites that were indicative of coarse mode particle and dust storms in these seasons. As wavelength increased, ASY initially decreased due to the dominance of absorbing aerosol in the visible spectrum, whereupon the ASY increased with growing wavelength in the infrared region due to the dominance of the coarse mode particles. In most sites, as a result of the dominance of desert dust, SSA increased especially in the spring and summer proportionate to the increase in the wavelength. In the spring and summer, the phase function was high in all sites. High phase functions for small scattering angles were due to the coarse mode particles. Phase function was reduced uniformly in angles between 0-10 degrees due to the presence of fine mode particles.

کلمات کلیدی:

SBDART; AERONET; Middle East; Aerosol Optical Depth; Aerosol Physical Properties

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