

Study of MODIS satellite derived aerosol angstrom exponent and in-situ measured values using Sun photometer in part of the west coast of Indian Peninsula

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Abstract: The aerosol angstrom exponent (AAE) is often used as a qualitative indicator of aerosol particle size. It is important to understand and quantify the microphysical impact of aerosols which are derived from natural and anthropogenic activities. The AAE has been evaluated at Malvan, Dona Paula, Murdeshwara and Karwar coastal regions of the west coast of Indian Peninsula. The correlation of satellite derived aerosol angstrom exponent with the in-situ measured values (using Sun photometer) at the 440, 500, and 675nm wavelengths were carried out. The error observed in the MODIS derived AAE values may be attributed to the atmospheric correction algorithm used for processing the satellite data over the coastal waters. The MODIS Aqua image and Sun photometer data of the study area provides the distribution of AAE on the west coast of India. In the Malvan, the aerosol angstrom exponent is high at 675nm, which is 1.44 and 1.57 and decreases to 1.15 and 1.18 at 440nm, respectively. In the Dona Paula which is 1.44 and 1.52 and decreases to 1.26 and 1.32 at 440nm, respectively. In case of Murdeshwar, the AAE is 1.26 and 1.40 in 675nm range and decreases at 440nm in the range of 0.97 and 1.07, respectively. The AAE in Karwar is about 1.54 and 1.63 at 675nm and decreases to 1.26 and 1.32 at 440nm, respectively.

Keywords: MODIS Aqua, Aerosol Angstrom Exponent, Sun photometer, Coastal region