Aerosol retrieval based on combination use of multi-sensor data

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Satellite based aerosol remote sensing plays an important role for monitoring of the Earth environment and global climatology. Many of new generation sensors, e.g., MODIS, GLI, POLDER and MISR, are designed to acquire more accurate aerosol information than classical ones. For instance, both POLDER (Polarization and Directionality of Earth Reflectances) and GLI (Global Imager) sensors mounted on the satellite ADEOS-2 (Advance Earth Observing Satellite-2), and working during April to October in 2003 are considered here. POLDER sensor has such a unique facility as directional polarization measurements with three channels, and GLI provides high-resolution images over the wide range of wavelength from near ultra violet to the thermal infrared. This fact looks promising that combining both sensor data presents effective information of aerosols.

This work intends to develop a retrieval algorithm for aerosol characteristics based on combination use of POLDER and GLI data. So far aerosol optical thickness and its wavelength tendency have been obtained from POLDER data alone[1]. Our proposed algorithm for aerosol retrieval over the land, in addition to forgoing POLDER oriented procedure, involves following processes as: 1) Cloud screening using GLI and POLDER data. 2) Classification of non-absorbing and absorbing aerosols based on GLI data in the near ultra violet and the violet channels.

Obtained results are evaluated with the ground based sun photometric data such as AERONET.

[1] Sano, I., (2004) : Optical thickness and Angstrom exponent of aerosols over the land and ocean from space-borne polarimetric data, Adv. Space Res., 34(4), pp 833-837.