Retrieval Algorithm of Total Atmospheric Column Nitrogen Content Using Multi-Filter Rotating Shadowband Radiometer in Thailand

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The retrieval algorithm of daily instantaneous total atmospheric column nitrogen content at Sri Samrong district of Sukhothai province in Thailand from Multi-Filter Rotating Shadowband Radiometer (MFR-7) of clear sky data at wavelength 415 nm is described. Atmospheric total nitrogen contribution was derived from Rayleigh scattering subtraction from optical depth retrieval in the terrestrial atmosphere and from trading total extinction between NO2 absorption and aerosol extinction. The daily morning/evening and full day NO2 variations were studied for 5-day period in winter and summer 2003. Results show trend of higher NO2 densities in the evening than morning period with daily mean atmospheric column NO2 amounts of 8-55 DU (high in summer). The aerosol Ångström wavelength exponent α around 0.1-0.6 related to soil dust particles has been obtained.

**Keywords:**  Aerosol optical depth, Clear sky, Langley analysis, Dobson unit (DU), Angstrom wavelength exponent