

DETECTION OF TROPOSPHERIC AEROSOLS FROM SATELLITE NADIR SOUNDING IN THE THERMAL INFRARED.

M. Kruglanski, A.C. Vandaele, and M. De Mazière

Belgian Institute for Space Aeronomy

Remote-sensing from space is part of the strategy for observation of the system Earth, to get a better insight into atmospheric changes on a global scale and to predict the evolution of the planet. For example, nadir-viewing sensors in the thermal infrared serve meteorological applications, and have important capabilities to support studies in tropospheric chemistry, as they are able to measure abundances of trace gases in the troposphere. The question then arises as to what extent these observations are affected by the presence of atmospheric aerosols and, further, whether the retrieval of aerosol properties is feasible. This is the subject of the present work.

The study presented here focuses on the impact of tropospheric aerosols on the observations performed by a satellite-borne high-resolution thermal infrared sounder looking at nadir, in particular the Infrared Atmospheric Sounding Interferometer, IASI, to be launched in 2006 onboard the first platform of the EUMETSAT Polar System satellite series. IASI will perform atmospheric nadir-looking spectral radiance measurements in the $650\text{--}2760\text{ cm}^{-1}$ spectral range with a $0.35\text{ to }0.5\text{ cm}^{-1}$ resolution. An algorithm has been developed to retrieve aerosol information from IASI spectra. We have evaluated its performances by application to the spectral data recorded by IMG, the Interferometric Monitor for Greenhouse gases onboard the ADEOS platform in 1996-1997. IMG has characteristics that are similar to the ones of IASI, albeit with a two times higher spectral resolution. The data record spans 7 months. The retrieval algorithm and first results will be presented.