Retrieval of aerosol optical properties for cloudy scenes from METOP

Michael Grzegorski, Gabriele Poli, Andriy Holdak, Ruediger Lang, and Rosemary Munro
EUMETSAT, RSP, Darmstadt, Germany (ruediger.lang@eumetsat.int, 0049 6151 305577)

The retrieval of aerosol optical properties is an important task for industry and climate forecasting. An ideal instrument should include observations with moderate spectral and high spatial resolutions for a wide range of wavelengths (from the UV to the TIR), measurements of the polarization state at different wavelengths and measurements of the same scene for different observation geometries. As such an ideal instrument is currently unavailable the usage of different instruments on one satellite platform is an alternative choice.

We present the Polar Multi sensor Aerosol Product (PMAp) which is delivered as operational GOME-2 product starting in February 2014. The algorithms retrieve aerosol optical depth, further aerosol classifications like volcanic ash and cloud properties (geometric cloud fraction, cloud optical depth) combining different METOP instruments like GOME-2, AVHRR and IASI. These instruments provide high spatial resolution (AVHRR), moderate and high spectral resolution in the UV/VIS range (GOME-2), measurements in the infrared (AVHRR, IASI) and the determination of the polarization state (GOME-2).

The multi-sensor approach allows a simultaneous retrieval of aerosol and cloud properties for GOME pixels with cloud coverage smaller than 30%. We demonstrate the benefit of our approach by verifications and comparisons to other data products (e.g. AERONET, MODIS/Terra).