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IASI/METOP sounder contribution for atmospheric composition monitoring

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During the last decade, remote sensing sounders have demonstrated their capability for monitoring atmospheric composition and pollution. The Infrared Atmospheric Sounding Interferometer (IASI) instrument is a high resolution, nadir viewing Fourier Transform Spectrometer working in the thermal infrared range extending from 645 to 2760 cm-1 (with no gaps). Flying on a polar orbit on the METOP-A platform since 5 years, IASI delivers more than 1.3[U+E129]106 spectra per day and provides global coverage twice a day. It is characterized by an apodized resolution of 0.5 cm-1 and a low radiometric noise. From the IASI spectra concentrations for several atmospheric key species can be retrieved. These include strong absorbers such as CH4 or O_3 and also weakly absorbing molecules detected during extraordinary events, like SO_2 during volcanic eruption or reactive species in fire plumes.

With now 5 years of atmospheric monitoring available from the IASI mission, long term variations for key species can also be analyzed from the observations. A detailed analysis based on Level 1 (spectra) and Level 2 data (concentrations) will be provided. Special events such as volcanic eruptions, fires plume or pollution episodes are studied from the comparison of fully resolved IASI spectra along with reconstructed spectra using principal component analysis.