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Global and local ozone measurements from the thermal infrared IASI sounder for the monitoring of atmospheric composition

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Global monitoring of ozone is essential as it plays an important role in the chemical processes occurring in the atmosphere and has a major impact on the climate. Tropospheric and stratospheric ozone are highly variable in both space and time and thus in order to correctly quantify its effect on stratospheric chemistry, air quality and radiative forcing it is necessary to develop accurate global measurements.

The IASI instrument launched onboard the METOP platform in October 2006 is a nadir looking Fourier transform spectrometer that probes the Earth's atmosphere in the thermal infrared spectral range, with a spectral resolution of 0.5 cm-1 (apodized). IASI monitors the atmospheric composition at any location two times per day, and measures many of the chemical components which play a key role in the climate system and pollution issues.

Here we present ozone concentrations retrieved from the IASI Level 1c radiance data using a near-real time retrieval software (FORLI) which allows the derivation of global distributions and profiles of ozone. We discuss the current performances in terms of vertical resolution and accuracy, and validate the global distributions and observed profiles with available ground-based and satellite data. We also discuss stratospheric intrusion of ozone into the troposphere and its affect on tropospheric ozone measurements.

METOP satellite platform also carries the GOME 2 UV – vis instrument, mainly devoted to ozone monitoring. Here we also present preliminary results of a combined IASI/GOME 2 ozone data product, with the aim of improving the available tropospheric ozone measurements.