The Ozone Monitoring Instrument: towards a 14 year data record and applications in the air quality and climate domain

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The Ozone Monitoring Instrument (OMI), launched on board of NASA's EOS-Aura spacecraft on July 15, 2004, provides unique contributions to the monitoring of the ozone layer, air quality and climate from space. With a data record of 13 years, OMI provides the longest NO_2 and SO_2 record from space, which is essential to understand the changes to emissions globally.

The combination of urban scale resolution (13 x 24 km^2 in nadir) and daily global coverage proved to be key features for the air quality community. Due to the operational Very Fast Delivery (VFD / direct readout) and Near Real Time (NRT) availability of the data, OMI also plays an important role in the early developments of operational services in the atmospheric chemistry domain. For example, OMI data is currently used operationally for improving air quality forecasts, for inverting high-resolution emission maps, the UV forecast and for volcanic plume warning systems for aviation.

An overview of air quality applications, emission inventory inversions and trend analyses based on the OMI data record will be presented. An outlook will be given on the potentials of augmenting this record with the high resolution air quality measurements of TROPOMI (3,5 x 7 km^2) and new satellite instrumentation entering the imaging domain, such as the TROPOLITE instrument (1 x 1 km^2). Potential of imaging type of NO_2 measurements in the the climate and air quality domain will be given, most notably on the use of high resolution NO_2 measurements for pin-pointing anthropogenic CO_2 emissions.

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