Eight years of OMI measurements and what we can learn from these for the Sentinel missions

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The Ozone Monitoring Instrument (OMI) is an UV/VIS nadir solar backscatter imaging spectrometer, which provides nearly global coverage in one day with a spatial resolution of 13 x 24 km2. OMI measures solar irradiance and Earth radiances in the wavelength range of 270 to 500 nm with a spectral resolution of about 0.5 nm. The OMI instrument was launched at July 15, 2004 on NASA's EOS-Aura satellite. OMI is a third party mission of ESA.

OMI's unique capabilities rely in measuring tropospheric trace gases with a small footprint and daily global coverage. The unprecedented spatial resolution of the instrument revealed for the first time tropospheric pollution maps on a daily basis with urban scale resolution, and also enables research improving our understanding of air pollutants and aerosols in the interaction between air quality and climate change. The data are used for obtaining emission maps using inverse modelling or related techniques.

The sentinel missions (S5p/TROPOMI and Sentinel 4 and 5) will have an even better spatial resolution than OMI. In order to exploit their capability for tropospheric research and actual monitoring of emission sources the calibration and validation of these instruments and their data products are of high importance. In this presentation new findings of OMI will be presented and what we can learn from that for the preparation of the Sentinel missions, their validation and their scientific exploitation. Also lessons learned from the NASA methodology for OMI validation will be discussed and results of validation campaigns that supported OMI validation (i.e. SAUNA, DANDELIONS, CINDI, DISCOVER AQ, etc etc) will be shown.