

## First exciting new measurements of the recently launched TROPOMI instrument on Copernicus sentinel 5 precursor

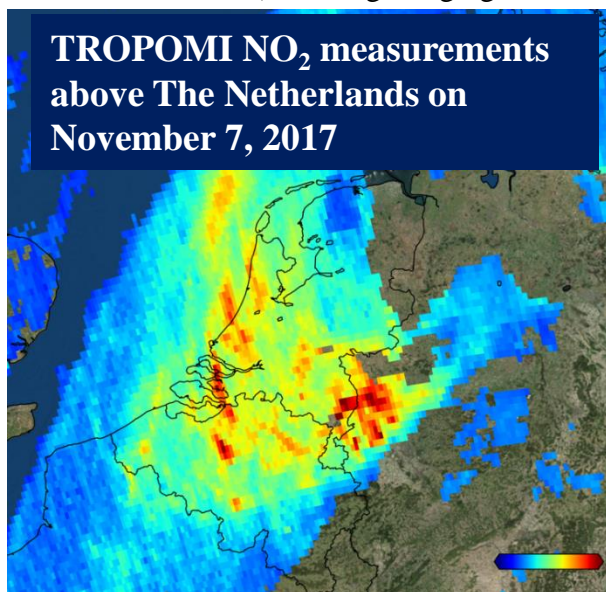
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On 13 October 2017 the TROPOMI instrument on board the Copernicus Sentinel 5 Precursor (S5P) satellite, the first of the European Sentinel satellites dedicated to monitoring of atmospheric composition, was launched. The mission objectives of TROPOMI/S5P are to globally monitor air quality, climate and the ozone layer in the time period between 2017 and 2023. The TROPOMI instrument is performing beyond expectation, showing amongst others air pollution plumes with unprecedented spatial resolution. In this seminar an overview of the exciting new measurements will be shown.

The single payload of the S5P mission is TROPOspheric Monitoring Instrument (TROPOMI), which has been developed by The Netherlands in cooperation with the European Space Agency (ESA). TROPOMI is a nadir viewing shortwave spectrometer that measures in the UV-visible wavelength range (270-500 nm), the near infrared (710-770 nm) and the shortwave infrared (2314-2382 nm). A major step forward of TROPOMI compared to its predecessors OMI (Ozone Monitoring Instrument) and SCIAMACHY (Scanning Imaging Absorption Spectrometer for Atmospheric Chartography) is the spatial resolution. For most of the UV-visible bands TROPOMI has a spatial resolution at nadir of  $3.5 \times 7 \text{ km}^2$  (12 times better than OMI) and  $7 \times 7 \text{ km}^2$  for the shortwave infrared, while maintaining or even improving the signal-to-noise per ground pixel. The high spatial resolution is combined with a wide swath that allows for daily global coverage. The TROPOMI/S5P geophysical (Level 2) operational data products include nitrogen dioxide, carbon monoxide, ozone (total column, tropospheric column & profile), methane, sulfur dioxide, formaldehyde and aerosol and cloud parameters. The first 6 months of the mission are used for special observations to commission the satellite and the ground processing systems; the operational phase will start in the second half of 2018.

In this contribution, an overview of the TROPOMI mission and results obtained early in the mission will be shown, as well as first aircraft measurements of our new follow-on satellite instrumentation, TROPOLITE, that is designed to fly on small satellites. With this instrument we envisage to improve emission monitoring of megacities to the  $< 1 \times 1 \text{ km}^2$  spatial resolution level.



**Date:** Monday, March 19, 2018; **Time:** Refreshments 3:15pm, Seminar 3:30pm  
NCAR Foothills Laboratory - 3450 Mitchell Lane, Boulder, CO 80301  
FL2-1022, Large Auditorium

**Live webcast:** <http://ucarconnect.ucar.edu/live>

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