

EARTH OBSERVATION SYMPOSIUM (B1)
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Author: Dr. Johan de Vries

Airbus Defence and Space Netherlands B.V., The Netherlands, j.de.vries@dutchspace.nl

Dr. Andrew Court

TNO, The Netherlands, andy.court@tno.nl

Dr. Pepijn Veefkind

KNMI, The Netherlands, pepijn.veefkind@knmi.nl

Dr. Robert Voors

Airbus Defence and Space Netherlands B.V., The Netherlands, r.voors@dutchspace.nl

Prof. Ilse Aben

Netherlands Institute for Space Research (SRON), The Netherlands, e.a.a.aben@sron.nl

Mr. Frits Teule

Airbus Defence and Space Netherlands B.V., The Netherlands, f.teule@dutchspace.nl

TROPOMI, THE NETHERLANDS ORIGINATED ATMOSPHERIC TRACE GAS INSTRUMENT IN
THE LINE OF SCIAMACHY AND OMI

Abstract

TROPOMI (Tropospheric Monitoring Instrument) is the next generation passive UV-VIS-NIR-SWIR trace gas spectrograph in the line of SCIAMACHY and OMI. SCIAMACHY is a Dutch-German co-development launched in 2002 on ESA's ENVISAT and OMI is a Dutch-Finnish instrument launched in 2004 on NASA's AURA satellite. Both instruments are still very successful. They constitute a line of instruments where the Netherlands has a leading role.

The heritage of this line of instruments is primarily via four cooperating parties: on industrial side Dutch Space and TNO and on science side KNMI and SRON.

TROPOMI is the next step. Like SCIAMACHY it measures UV to SWIR wavelengths and like OMI it is a wide angle push-broom instrument enabling daily global coverage in combination with good spatial resolution.

TROPOMI measures O₃, NO₂, SO₂, HCHO and H₂O tropospheric columns from the UV-VIS-NIR spectral region and CO and CH₄ tropospheric columns from the SWIR spectral region. Cloud information will be derived mainly from the O₂ A band in the NIR and will help together with the aerosol information constraining the light path of backscattered solar radiation. This yields an improved accuracy of the tropospheric products in comparison to existing instruments.

TROPOMI makes a major step forwards especially in terms of spatial resolution and sensitivity. The nominal observations are at 7 x 7 km² and the signal-to-noises are sufficient for trace gas retrieval at very low albedo (2 - 5

TROPOMI is the single payload in ESA's Sentinel-5 precursor mission and is planned for launch in 2015. As such, it is meant to bridge the data gap between OMI / SCIAMACHY and the upcoming ESA Sentinel 5 mission. The instrument is funded partly by the Netherlands (UVN module) and partly by ESA (SWIR module) and Dutch Space acts as overall instrument prime. SSTL in the UK is developing the SWIR module. Dutch Space and TNO are working as an integrated team on the UVN.