



Sentinel-5 Precursor Data Product Validation Approach

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Sentinel-5 Precursor (S-5P) is the first of a series of atmospheric chemistry missions within the European Commission's Copernicus Programme, launched successfully in October 2017. With a nominal lifetime of 7 years, S-5P will provide continuity in the availability of global atmospheric data products between its predecessor missions SCIAMACHY (Envisat) and OMI (AURA) and the future Sentinel-4 and -5 series. S-5P will deliver unique data regarding the sources and sinks of trace gases with a focus on the lower Troposphere including the planet boundary layer due to its enhanced spatial, temporal and spectral sampling capabilities as compared to its predecessors.

The S-5P satellite carries a single payload, namely TROPOMI (TROPOspheric Monitoring Instrument) that was jointly developed by The Netherlands and ESA. Covering spectral channels in the UV, visible, near- and short-wave infrared, it measures various key species including tropospheric/stratospheric ozone, NO₂, SO₂, CO, CH₄, CH₂O as well as cloud and aerosol parameters.

The geophysical validation and characterization of the TROPOMI Level 1 and Level 2 data products during the phase E2 is conducted by ESA at different levels. The so-called Mission Performance Center carries out the routine validation throughout the mission life-time and rely on the availability of independent data sets for example from ground based measurements or the so-called Fiducial Reference Measurement data sets, as well as the contributions from independent national Validation Teams coordinated by ESA under the Sentinel 5 Precursor Validation Team (S5PVT).

The overall ESA S5P Validation approach during the operational phase E2 will be presented in this paper.