Retrieval of chlorine dioxide columns from Sentinel-5p observations

Andreas Carlos Meier¹, Andreas Richter¹, Gaia Pinardi², Michel Van Roozendael², and John Philip Burrows¹

¹Universität Bremen, IUP, Bremen, Germany (ameier@iup.physik.uni-bremen.de)
²Royal Belgian Institute for Space Aeronomy, Brussels, Belgium

The Sentinel-5-precursor (S5p) satellite with the TROPOMI payload was launched on 13 October 2017. It is part of the European Copernicus program and provides a set of operational products of atmospheric constituents related to air quality and climate change with almost daily global coverage. The good signal to noise ratio of the instrument enables precise measurements despite the fine spatial resolution of 3.5 x 5.5 km².

The ESA S5p+ Innovation activity aims at extending the list of S5p products with scientific products, which are not yet part of the operational processor, to exploit the potential of the Sentinel-5p mission's capabilities beyond its primary objectives. The retrieval of chlorine dioxide (OClO) from S5p is among the seven funded sub projects. Chlorine dioxide is an indicator for chlorine activation in the stratosphere and thus of importance for the understanding of stratospheric ozone chemistry, in particular in the polar vortex. Chlorine dioxide was retrieved from heritage instruments (GOME, SCIAMACHY, GOME2, OMI) and the S5p OClO product will act as a continuation of these time-series.

Here we present the current status of the IUP-Bremen S5p OClO product developed within the ESA S5p+ Innovation framework. The new S5p product will be put into context with products from previous and current (e.g. GOME-2c) satellite missions as well as ground-based measurements used for validation.