



Two decades of homogenized satellite ozone measurements for climate services

K.-P. Heue, M. Coldewey-Egbers, D. Loyola, P. Valks, A. Delcloo, C. Lerot, and M. v. Roozendael
Deutsches Zentrum für Luft- und Raumfahrt (DLR), Oberpfaffenhofen, Germany (klaus-peter.heue@dlr.de)

Since the launch of GOME onboard ERS-2 in 1995 total and tropospheric ozone have been derived from European satellite instruments. In the framework of the ESA CCI and the EU ECMWF C3S projects, BIRA generates total ozone products from the satellite sensors GOME, SCIAMACHY, OMI, and GOME-2 using the GODFIT algorithm and DLR is responsible for harmonizing the total column data from all these sensors and generating a merged product, which encompasses more than two decades of global total ozone observations.

Additionally, tropospheric ozone columns from the European sensors are generated by DLR using the convective cloud differential algorithm. Total and tropospheric ozone from GOME-2 onboard MetOp-A and -B are operational products from the EUMETSAT AC-SAF and within the ESA CCI project the tropical tropospheric ozone products from GOME, SCIAMACHY, OMI, and GOME-2 were harmonized and a merged data product was delivered and has been updated regularly.

On a global scale a slight increase in total ozone columns is observed over the years since 1995 until today indicating that the total ozone starts to emerge into the expected recovery phase. Tropospheric data from the last 22 years show a slightly increasing trend with strong regional variations especially in the tropical eastern Pacific and Atlantic Ocean.

These unique ozone datasets will be extended during the next two decades with measurements from the EU Copernicus missions Sentinel-5 Precursors (successfully launched in October 2017) and the future Sentinel-4 and Sentinel-5 missions.