Assessment of (Merged) Ozone Profile Data Records by Limb and **Occultation Sounders within ESA's Climate Change Initiative**

D. Hubert¹ (daan.hubert@aeronomie.be), A. Keppens¹, J.-C. Lambert¹, T. Verhoelst¹, S. Compernolle¹, V. Sofieva², C. Arosio³, A. Rozanov³, M. Van Roozendael¹, C. Retscher⁴





(A) Drift satellite Level-2 w.r.t. to sonde, lidar and MWR

Coherent picture of satellite drift relative to each type of ground-based instruments. Results are mostly statistically insignificant and less than 5% per decade, except for a few records in part of the stratosphere (HALOE, OSIRIS, GOMOS, SABER, OMPS-LP).



(B) Drift merged satellite Level-3 w.r.t. to sonde

Data from the ozonesonde networks are processed to mimic CCI's Level-3 products. The SAGE-CCI-OMPS zonal mean data record is stable between 10-30 km. However, inhomogeneities in the sonde records make it a real challenge to asses the stability of lat-lon resolved record to 3% decade⁻¹.







Conclusion

Detecting and quantifying ozone profile trends requires excellent stability of long-term data records. Comparisons to ground-based data rarely indicate a significant drift in limb / occultation records, but precision of the analysis is insufficient to test down to ~2% per decade level. Further homogenisation of ground-based data is critical to achieve this goal.

Further reading

Product Validation Intercomparison Report (PVIR) by the Ozone cci validation team https://climate.esa.int/en/projects/ozone

Affiliations

¹Royal Belgian Institute for Space Aeronomy (BIRA-IASB), Belgium; ²Finnish Meteorological Institute, Finland; ³Institute of Environmental Physics, University of Bremen, Germany; ⁴European Space Agency/Centre for Earth Observation (ESA/ESRIN), Italy

