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Consistency of RO data from multiple satellites and knowledge of the structural uncertainty arising from different processing schemes is essential for establishing a climate data record. In this context, collaboration in the ROTrends group is ongoing since 2007 on the inter-comparison of RO multi-year records for a systematic assessment of the accuracy and quality of data from different RO processing centers. So far we have quantified the structural uncertainty of the CHAMP RO record for dry atmospheric profile and climatology products. Results confirmed the climate quality of RO in the upper troposphere and lower stratosphere between 50°N to 50°S and showed larger structural uncertainty at polar latitudes as well as above 25 km to 30 km and below about 8 km altitude.

In the current ROTrends study round we extend the assessment on RO data from multiple satellites. They are provided by six international RO processing centers, DMI Copenhagen, EUM Darmstadt, GFZ Potsdam, JPL Pasadena, UCAR Boulder, and WEGC Graz. A first analysis was performed for RO profiles of two example months, covering several RO missions. Results show high consistency of bending angle and refractivity across different centers and missions up to 35 km to 40 km altitude and good consistency of further retrieved atmospheric variables up to about 25 km.

We will report on the status of the current study and on latest results based on recently reprocessed RO records from several centers. We will evaluate the full range of variables from raw and optimized bending angle to dry and moist atmospheric variables. Preliminary estimates of the structural uncertainty of RO multi-satellite time series will be presented. The aim is to assess whether trends in RO products are essentially independent of the retrieval center, which is a key aspect towards provision of RO as a climate benchmark record.
OSTS session
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