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The Radio Occultation Meteorology Satellite Application Facility (ROM SAF) is a decentralized facility under EUMETSAT responsible for delivering radio occultation products for Numerical Weather Prediction (NWP) and climate monitoring. Recent ROM SAF activities have focused on the preparations toward a full reprocessing to generate Climate Data Records (CDRs) from a number of Radio Occultation (RO) missions, namely CHAMP, GRACE, COSMIC, and Metop. Together these missions span more than 15 years of high-quality information about the state and change of atmospheric key variables.

We here present results from a preliminary validation of the ROM SAF gridded monthly-mean data record. The consistency of single-mission data records during mission overlap periods are discussed, and the effects of sampling-error correction – which is important for the construction of multi-mission data records - are described. Data quality differences between missions, and quality variations over time, are discussed.

The RO data time series has now become long enough to provide useful information on long-term trends in the atmosphere. We briefly discuss stratospheric temperature trends, as revealed by the RO dry temperature records, and compare to trends from the Aqua AMSU measurements and from reanalysis. Dry-pressure retrievals of RO measurements provide a direct means of measuring the geopotential heights of upper-troposphere and lower-stratosphere pressure surfaces. The isobaric surfaces changes on climatological time scales as a consequence of warming or cooling of the underlying atmosphere and, hence, respond to bulk tropospheric temperature variations. We here discuss the trends in RO geopotential heights in terms of bulk tropospheric temperatures, and compare to tropospheric temperature changes based on AMSU/MSU data and global reanalysis data.
OSTS session
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