

THE GRAS SAF PROJECT: FIRST RESULTS FROM METOP

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The GRAS SAF is part of EUMETSAT's network of Satellite Application Facilities (SAFs) under the EUMETSAT Polar System (EPS). The objective of the GRAS SAF is to deliver operational radio occultation products from the GRAS occultation instruments (Global Navigation Satellite System Receiver for Atmospheric Sounding) onboard the three MetOp satellites. The Leading Entity is the Danish Meteorological Institute (DMI) and this is also the physical location of the operational GRAS SAF processing and archiving center. The other project partners are the IEEC (Institute d'Estudis Espacials de Catalunya, Barcelona, Spain), the Met Office (Exeter, UK), and the European Center for Medium-range Weather Forecasts (ECMWF). The GRAS SAF started the operational phase in March 2007 and will start to deliver validated products in 2007. The archiving of GRAS SAF products is done locally at DMI with user interfaces at the GRAS SAF and the UMARF archive at EUMETSAT.

The operational GRAS SAF Processing and Archiving Center will receive raw and preprocessed GPS radio occultation data from the GRAS instrument, process these into vertical height profiles of refractivity, temperature, pressure, and humidity, and distribute these products continuously in NRT (near real time, within 3 hours from sensing) to numerical weather prediction users. In addition, offline products (improved products, within 30 days from sensing) will be disseminated to e.g. climate monitoring users. Another objective of the GRAS SAF is to supply the software package ROPP (radio occultation processing package) containing tools for 4D-VAR-assimilation of radio occultation data into numerical weather prediction models. The results of several NWP assimilation impact trials using RO data from e.g. the German CHAMP satellite show a clear positive impact on NWP forecasts in the upper troposphere and lower stratosphere. We present the status of the analyses and validation of the first GRAS data from MetOp and also discuss the latest results related to scientific investigations of NRT, offline and global climate data based on radio occultation data. We present a statistical analysis of the differences between GRAS SAF products and analysis fields from ECMWF and discuss the measurement error-covariance matrices.