

GRAS SAF ACTIVITIES IN SUPPORT OF CLIMATE DATA GENERATION AND CLIMATE MONITORING

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Since the launch of EUMETSAT's MetOp-A satellite in October 2006, the GRAS instrument has been delivering radio occultation (RO) data of high quality with only few interruptions. On average, around 650 occultations are observed each day. MetOp-A is the first satellite in the EUMETSAT Polar System (EPS) and will be followed by two more satellites, each with a nominal lifetime of 5 years. EPS is expected to deliver data for at least 14 years.

This provides an opportunity to create an RO climatology of high quality, adding to data from other RO missions such as CHAMP and COSMIC. The processing of GRAS occultation data from Level 1b (bending angles over impact height) to Level 2 (refractivity, temperature, humidity) is the responsibility of the GRAS Satellite Application Facility. This includes the generation of reprocessed data sets of climate quality, as well as monthly-mean gridded data sets. In preparation for the operational generation of GRAS climate data, we are currently undertaking studies on how to best exploit the GRAS RO data, both for construction of an accurate single-source climate data set with well-defined error characteristics, and for the possibility to use GRAS data in conjunction with data from other RO missions.

We here present the plans for operational climate data generation by the GRAS Satellite Application Facility. We also discuss how to estimate errors observational errors, sampling errors, systematic biases of the RO data and the consequences for the construction of accurate climatologies. Quantification of uncertainties related to differences in the processing algorithms and software is currently addressed by the cross-centre project Radio Occultation Trends Intercomparison Study (ROtrends). Some results from the ROtrends project is presented.