

THE GRAS RADIO OCCULTATION INTERCOMPARISON (ROPIC) PROJECT

A. Loescher*(1), K. B. Lauritsen (2), and M. Soerensen (2)

(1) ESA/ESTEC Future Missions Division (EOP-SF), Noordwijk, NL (2) GRAS-SAF Project, DMI, Copenhagen, DK

The Global Navigation Satellite System Receiver for Atmospheric Sounding (GRAS) Satellite Application Facility (SAF) located at the Danish Meteorological Institute (DMI) initiated the Radio Occultation Processing Intercomparison Campaign (ROPIC). Since radio occultation (RO) data should serve as a climate benchmark the processing must be robust and deliver reproducible results. The RO processing chain itself is composed of a number of algorithms which differ between the centres; even if the same underlying algorithm is used the specific implementations will be different, resulting in slightly different results. To assess those variations we undertook a comprehensive study to compare the results of different processing chains. The intention is not the assessment of the absolute accuracy but to reveal possible inconsistencies between the results of different centres and the identification of benefits from using certain algorithms and methods. Most likely the optimal processing method is complex (e.g. it may vary with altitude range and spatial location of the observation). The aim of this project is thus that a better understanding is gained concerning the behaviour of different processing chains and algorithms to come up for discussions to optimize the procedures and make them more robust. In our study we focus on the assessment of the processing chains from excess phase level and orbits to bending angles and refractivities. Those are the quantities used in Numerical Weather Prediction (NWP) systems and are the best candidates for long term climate monitoring applications. As a common baseline a (CHAMP based) dataset had been compiled containing the occultation events from January and July 2005 covering the middle month of two seasons. The occultations had been processed from raw to excess phase & orbits by GeoForschungsZentrum Potsdam (GFZ). The participating centres Deutscher Wetterdienst (DWD), DMI and Wegener Center for Climate and Global Change (WEGC) processed the common data set to bending angles, refractivities and higher level products. We present the results of the bending angle and refractivity intercomparison.