Geophysical Research Abstracts
Vol. 12, EGU2010-3509-2, 2010
EGU General Assembly 2010

GRAS Radio Occultation Data: A closer look at the troposphere

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The GRAS (GNSS Receiver for Atmospheric Sounding) radio occultation instrument onboard of Metop-A has been profiling the atmosphere since switch-on in October 2006. More than 650 occultations are detected per day and operationally processed to bending angles at EUMETSAT's central site. The data is provided within Near-Real-Time (less than 2 hours 15 minutes) to Numerical Weather Prediction centers worldwide, providing information on the atmospheric temperature, pressure, and humidity profile. Further processing of bending angles to refractivity is performed at the GRAS-SAF (Satellite Application Facility) with a data latency less than 3 hours from observation.

The operational processing is focusing on atmospheric altitudes above about 8 km, data measured in Raw Sampling (RS - also called open-loop) mode is currently only processed offline. A dedicated ESA (European Space Agency, contract 21995/08/NL/EL) funded study was set up to investigate the potential of RS and evaluate different processing options. The 1 kHz sampling rate of the GRAS RS mode allows in comparison to other radio occultation instruments flying (1) a much more detailed look at the receiver behaviour and (2) provides much more atmospheric data. Results of this study will be presented, with a particular look at the troposphere. The schedule to bring RS data to the operational EUMETSAT chain will also be discussed.