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# First results from space weather monitoring with the GRAS instrument

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GRAS (GNSS Receiver for Atmospheric Sounding) is the first radio occultation instrument especially designed and built for operational meteorological applications. GRAS has been developed by ESA and EUMETSAT in the framework of the EUMETSAT Polar System (EPS). GRAS instrument will be onboard the Metop 1-3 satellites to be successively in the years from 2006.

GRAS instrument has been designed for sounding of the neutral atmosphere. The design drivers for the GRAS measurement system have been the timeliness and the high quality of the observations. This approach means that the GRAS mission contains some rather severe constraints in respect to space weather monitoring. However, GRAS does provide navigation and occultation measurements that can be used for space weather applications. The measurements from the GRAS zenith antenna can be used to determine the electron density profiles in the hemisphere above the spacecraft. Because the Metop orbit height of 840 km is very close to the boundary between the ionosphere and plasmasphere, the GRAS navigation measurements can potentially be very useful in the validation of the topside electron density models. The occultation measurements to the flight and anti-flight directions of the Metop spacecraft contain only limited amount of ionospheric information due to the 80 km upper limit of the sounding.

This presentation describes the GRAS measurement system characteristics and constraints from the space weather monitoring point of view. The presentation shows the first space weather sounding results retrieved from the GRAS observations during the commissioning period of the instrument.