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EUMETSAT Radio Occultation Observation With Metop-A and Metop-B in Orbit

A. von Engeln, C. Marquardt, and Y. Andres
EUMETSAT, Germany (axel.vonengeln@eumetsat.int)

The GRAS radio occultation instrument is flying onboard the European Metop satellites. Metop-A was launched in 2006, it is the first satellite in a series of three essentially identical spacecrafts (Metop-C will not carry the HIRS instrument), belonging to the EUMETSAT Polar System (EPS). Each satellite is expected to last at least 5 years, and successive satellites will be launched with an overlap of about 0.5 years to allow satellite inter-calibration. The next satellite, Metop-B, will be launched mid-2012. Several of the Metop-A instruments show very little degradation, it is thus planned to operate Metop-A and -B in parallel as long as valuable data is received from Metop-A. The instruments will use the "same" orbit, with a local solar time at the Equator of 9:30, but will be separated in orbit by 50min. The last Metop satellite is expected to be launched around 2017.

On average, one GRAS instrument provides about 600 to 700 occultations per day, with Metop-A and -B in orbit, the expected number of occultations in near-real-time is thus expected to be around 1300 per day, thus partly offsetting the degradation of the COSMIC constellation. Several other radio occultation instruments are currently in orbit or are about to be launched and EUMETSAT is looking into options on how to provide data from these instruments in near-real-time. EUMETSAT is also studying to include radio occultation instruments on its future programs, primarily the second generation EPS, but also for the altimeter mission Jason-CS.

The talk will first show the GRAS performance over the last years, compare the Metop-A and Metop-B GRAS instruments, compare them to other available radio occultation observations, and outline future product improvements. The second part of the talk will highlight some recent activities, e.g. sensitivity studies with respect to the provided GPS and Metop orbit accuracy, sensitivity to the processing setup, as well as first results from the processing of other radio occultation instruments. The last part will focus on future EUMETSAT programs.