

## **Use of GPS radio occultation observations to improve numerical weather prediction forecast skill at NOAA**

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The U.S. National Centers for Environmental Prediction (NOAA/NCEP) have been using GPS Radio Occultation observations (RO) in their Global Data Assimilation System since May 2007. The first set of RO retrievals to be used operationally was from the FORMOSAT-3/COSMIC mission. At the present, NCEP is using operational data from the following additional satellites: GRAS on MetOp-A and MetOp-B, TerraSAR-X, GRACE-A, and C/NOFS. Retrievals from other missions are planned to be assimilated once the data become available in real-time and their accuracy is fully evaluated.

Similar to other operational centers, the assimilation of RO at NOAA has shown to provide significant benefits in terms of weather forecast skill, in particular in the Southern Hemisphere. Some of the characteristics of the RO technology that resulted in important benefits after the assimilation of this observation type in numerical weather prediction centers include high vertical resolution, high accuracy, similar accuracy over land than over ocean, and all-weather capability. In addition, the biases associated to the RO retrievals are small enough so they can be assimilated without being bias corrected in the assimilation algorithms. Because of this, RO data act as “anchor” measurements, preventing a drift of the model towards its own climatology. This in turn enhances the bias correction of the satellite radiance observations.

During this presentation, an overview of the utilization of radio occultation observations at NOAA will be presented.