1   Impact studies with COSMIC GPS radio occultation data at NOAA/NCEP

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The COSMIC (Constellation Observing System for Meteorology, Ionosphere and Climate) mission launched six small satellites in April 2006, each carrying a GPS radio occultation (RO) receiver. COSMIC constellation will provide 2,500 ∼ 3,000 RO soundings per day, nearly uniformly distributed around the globe in near real time (less than 180 min) when the satellites reach their final configuration (∼800 km).

In preparation for the operational assimilation of COSMIC data into the next-generation NCEP Global Data Assimilation System, a development program has been underway for the last three years at the US National Weather Service (NOAA/NWS). The NASA-NOAA-DoD Joint Center for Satellite Data Assimilation (JCSDA) has developed, tested and incorporated into the assimilation system the necessary components to assimilate two different types of GPS RO observations: refractivity and bending angle. These components include complex forward operators to simulate the observations from analysis variables and associated tangent linear and adjoint models, quality control algorithms, error characterization models, data handling and decoding procedures, and verification and impact evaluation procedures.

Results of impact studies with COSMIC GPS RO observations (bending angle and refractivity) will be presented during the talk. The motivation for these forecasts trials is to select the optimal forward operator to be used for GPS RO and to finalize the tuning of the data assimilation system before its implementation in operations.