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Title: GPS Occultation Experiment with EQUARS (Equatorial Atmosphere Research Satellite)

Abstract:

GPS (Global Positioning System) occultation from low earth orbiting (LEO) satellite is very useful for monitoring global distribution of humidity, temperature and electron density perturbations. Current GPS mission with CHAMP and SAC-C satellites has proved that GPS occultation data give an important contribution to the numerical weather prediction, climate monitoring, and the atmospheric dynamics. UCAR and NSPO are now promoting COSMIC Project with 6 satellites, which will be launched in 2005. Since inclination angles of these satellites are 72 degree, the distribution of GPS occultation events is concentrated in the high latitude region and relatively sparse in the low latitude region. With objective of obtaining the dense observations in the equatorial region, we plan to perform GPS occultation experiment on the Brazilian LEO satellite named EQUARS (Equatorial Atmospheric Research Satellite) to be launched in 2006. The inclination angle of the EQUARS orbit is planned to be less than 20 degree, so we will compensate the lack of coverage of COSMIC satellites. The data obtained from EQUARS can be useful for data assimilation to the numerical weather prediction model of JMA, in addition to application for investigation on the equatorial climatic variations. In this study we are also developing a nearly real-time analysis system for retrieving profiles of bending angle, refractivity, temperature, and water vapor.

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