

A development of the analysis system for GPS occultation data

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As one of the atmospheric observation techniques using GPS (Global Positioning System), GPS radio occultation sounding is expected to monitor the global state of the atmosphere. When a low-earth orbiting (LEO) satellite which mounts a GPS receiver rises or sets relative to one of the GPS satellites at the Earth's horizon (occultation), the radio waves which propagate from GPS satellite to the LEO satellite pass through the atmospheric layer. Since the phase delay depends on the atmospheric refractivity gradient. The refractivity profiles can be retrieved from the measured Doppler shift calculated from phase delay. GPS occultation has the following advantages; (1) high accuracy and (2) vertical resolution, (3) calibration free, (4) global coverage.

We plan to perform GPS occultation experiment with the LEO satellite named EQUARS (Equatorial Atmosphere Research Satellite) launched in 2006 in order to investigate the climatic variation of equatorial region. In this plan the atmospheric parameters retrieved from the GPS occultation data will also be assimilated to the numerical weather prediction model of JMA operationally. Therefore it is required to develop the nearly real-time analysis system for GPS occultation data immediately.