

地球科学輻合ゼミナール (2009年度 前期 第4回)のご案内

Applications of GPS Radio Occultation Data to Climate

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The atmospheric limb sounding technique making use of radio signals transmitted by the Global Position System (GPS) satellites possesses some unique characteristics. This is an active atmospheric remote sensing method that is not affected by clouds and precipitation. The raw measurements are the phase and amplitude of the GPS radio signals. Unlike the passive microwave or infrared radiance instruments, it does not require a first guess for inversion. There is no satellite-to-satellite bias, and there is no instrument drift. These unique characteristics make GPS RO technique uniquely suited for climate monitoring and climate research. On 15 April 2006, the joint U.S.-Taiwan COSMIC/FORMOSAT-3 (hereafter COSMIC) mission, a constellation of six microsattellites, was successfully launched from Vandenberg Air Force Base. During the early phase of the COSMIC mission, the spacecraft were closely located. This produced GPS RO soundings with tangent points separated by 10 km or less, offering a unique opportunity to examine the precision (e.g., reproducibility) of GPS RO measurements technique. These comparisons showed that GPS RO technique has a precision on the order of 0.05°C, which is much better than the radiosondes. This encourages us to compare GPS RO measurements with other satellite microwave measurements and radiosonde observations. These comparisons reveal interesting measurement error characteristics of satellite microwave systems and various types of radiosondes. The results indicate that GPS RO data can serve as an excellent climate benchmark data set, for the calibration of other measurements and for long-term climate monitoring.

6月3日(水) 午後4:30~午後6:00

場所: 理学研究科6号館 201号室