

FORMOSAT-3/COSMIC Project for Ionospheric Research in Taiwan — Preliminary Results

YEN-HSYANG CHU

Institute of Space Science, National Central University

FORMOSAT-3/COSMIC, which is a satellite constellation system consisting of 6 small satellites being planning to deployed in the orbit at around 800 km height, is scheduled to launch at the end of March this year. The FORMOSAT-3 project is also called COSMIC (Constellation Observing System for Meteorology, Ionosphere, and Climate) project. There are three payloads mounted on each FORMOSAT-3 satellite, namely, GPS receiver, tiny ionospheric photometer (TIP), and tri-band beacon transmitter. With the GPS receiver, the atmospheric refractive index can be retrieved from received GPS signals using limb sounding technique, in which the profiles of temperature and ionospheric electron density can be deduced. With TIP, the horizontal variation of ionospheric total electron density content can be observed. The ionospheric scintillation and total electron density content from the satellite to ground receiver can be measured by using tri-band beacon transmitter. By using these instruments in combination with ground-based facilities, it is an attempt to investigate the ionospheric global structures and dynamic behavior associated with solar and magnetic disturbances. In this talk, the preliminary results of the global ionospheric electron density distribution retrieved from bending angle of GPS ray path by using radio occultation technique will be presented. In addition, the measured total electron content and ionsopheric scintillation estimated from tri-band beacon signal of the FORMOSAT-3 will be introduced, and the validation result of the radio occultation-retrieved maximum ionospheric electron density will also be presented.