人工衛星による電離圏プラズマバブルの観測シミュレーション

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New mission to observe the plasma bubble from the space satellite

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The project of FORMOSAT-7/COSMIC-2 is a bilateral collaboration between Taiwan (National Space Organization; NSPO) and U.S. (National Oceanic and Atmospheric Administration; NOAA), and is the continued project of FORMOSAT-3/COSMIC. Six micro satellites out of twelve will be launched in 2015 with a 24 degrees inclination angle at around 520 km - 550 km altitude, and followed by the other six that will be launched in 2017 with a 72 degrees inclination angle at around 770 km - 800 km. It can provide full global coverage with around 8000 observation points every day using the advanced radio occultation receivers capable of receiving GPS, GLONASS, and GALILEO. The major mission is designed to provide advances in meteorology, climatology, space weather and ionospheric research. In this study, we propose to build a set of Dual-band Optical Camera (DOC) with 630.0nm filter on board the satellite to observe the structure of ionospheric plasma bubble and its physical mechanisms. In this presentation, the three dimensional ionospheric self-consistent model (SAMI3) will be used to simulate the plasma bubble structures under various geophysical conditions for feasibility study of the instrument. Capability of reconstructing the three dimensional structure of plasma bubble by the DOC will also be presented.