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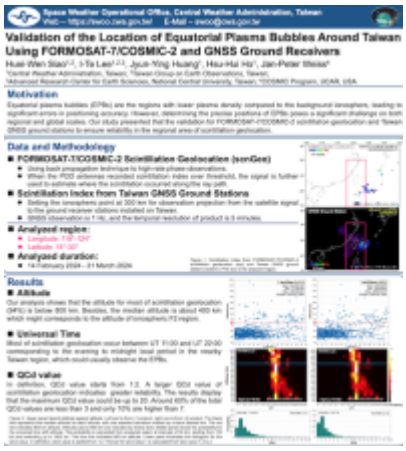
Poster
Equatorial plasma bubbles (EPBs) are the regions with lower plasma density compared to the background ionosphere. Besides, EPBs are one of the sources that alter both the phase and amplitude of signals from GNSS (Global Navigation Satellite System) satellites, leading to significant errors in positioning accuracy, commonly referred to as ionospheric scintillations. Given Taiwan's unique geographic location, it is particularly easier to observer EPBs. However, determining the precise positions of equatorial plasma bubbles poses a significant challenge on both regional and global scales.
To address this challenge, the Space Weather Operational Office (SWOO), established by the Central Weather Administration (CWA), has the primary task of providing and improving space weather information as well as local space weather forecasts. For ionospheric products, SWOO utilizes data obtained from both space-based and ground-based observations. The verification of plasma bubble positions relies on bubble geolocation products retrieved from FORMOSAT-7/COSMIC-2 measurements and ionospheric scintillations using GNSS ground receivers installed by the CWA/Seismological Center. It is noteworthy that under certain conditions, there may be slight differences in the positions of plasma bubbles between these two monitoring methods.
SWOO also provides global ionospheric electron density structures, scintillation indices, in-situ ion composition and temperature data, radio frequency interference indices, and radio occultation (RO) profiles retrieved from FORMOSAT-7/COSMIC-2 measurements, enhancing the monitoring of local space weather conditions.



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