

## Observations of local ionospheric TEC variation for advanced use of GNSS

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Propagation delays in the ionosphere is one of the major error source in the global navigation satellite systems (GNSS). To support a use of GNSS in a critical phase, augmentation systems such as the satellite-based augmentation system (SBAS) or the ground-based augmentation system (GBAS) are being developed and some of them are already in operation. In designing those systems, a threat model which defines the range of ionospheric parameters, especially local total electron content (TEC) variation, that must be accounted for is essential. Local TEC variation associated with plasma bubbles should have characteristics different from the threat model developed for mid-latitudes. However, it has not yet been studied well.

To study the local TEC variation associated with plasma bubbles, we have been conducting short baseline TEC variation measurements in Ishigaki. 1Hz GPS observation data from GEONET is also used to derive local TEC variation. An all-sky imager installed in Yonaguni provides two-dimensional structures of plasma bubbles. Recently, we have started another short baseline TEC variation measurement in Thailand.

This study is intended to contribute to an international activity in International Civil Aviation Organization to characterize the ionospheric variation for aviation use of GNSS.

At the meeting, more detailed plan of the project as well as initial results from the observation network will be presented.