

## プラズマバブルの地上型衛星航法補強装置に与える影響について

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### Effects of plasma bubbles on GNSS ground-based augmentation system (GBAS)

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GBAS (ground-based augmentation system) is a next generation aircraft landing system based on global navigation satellite systems (GNSS).

Since GBAS is based on the differential GNSS technique, local ionospheric delay (equivalent to the total electron contents, TEC) is one of the potential error source. Ionospheric scintillation of GNSS signals due to small-scale ionospheric irregularities is another threat to GBAS by reducing number of available satellites. Plasma bubble is such a phenomenon accompanying local TEC gradient and scintillation.

Though GBAS is designed so that the ionospheric impacts are effectively mitigated, it was not easy to demonstrate it by using real data.

This study presents the results of GBAS flight trials conducted in March and September 2014 at New Ishigaki Airport where a experimental prototype of GBAS has been installed. Plasma bubbles were observed by an all-sky airglow imager and GNSS scintillation receivers installed near the GBAS site. This study presents the relationship between the GBAS performance and characteristics of plasma bubbles as seen in airglow and scintillation.