

IAF SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)
Advances in Space-based Navigation Systems, Services, and Applications (7)

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IONOSPHERIC EFFECTS TOWARDS GBAS STATION AT KUALA LUMPUR INTERNATIONAL
AIRPORT, MALAYSIA

Abstract

The demand for long haul air travel has space based technologies such as the Global Navigation Satellite System (GNSS) playing a major role in the aviation navigation. This further encouraged airports to implement augmentation system which has led to lesser delays and fewer disruption for travelers. The Ground Based Augmentation System (GBAS) was introduced to replace the Instrument Landing System (ILS) to increase runway throughput. However, low latitudes and equatorial region like Malaysia (412'N, 10158' E) have a high probability of experiencing irregularities formed in the ionosphere known as amplitude scintillation. The performance of the GNSS is threatened as the integrity of the GBAS between ground receiver and the aircraft decrease. This further cause the GPS receivers to lose lock on one or more satellite signals at the same time. This paper will present the effects of scintillation on 3 GPS receivers installed at the Kuala Lumpur International Airport (KLIA) for a period of 12 months, from September 2017 until September 2018. The data were collected by Civil Aviation Authority of Malaysia (CAAM). The results will show how frequent the ionospheric scintillation occurrence takes place with respect to solar minimum activity at a low latitude region.