

Study of tri-band beacon signal scintillation for new LITN Study of tri-band beacon signal scintillation for new LITN

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Beginning from 2006, seven ground stations located at Chung-Li (25.136N, 121.539E), Chiayi (23.5661N, 120.466E), CheCheng (22.725N, 120.544E), Kinmen (24.411N, 118.292E), Manila (14.262N, 121.043E), Pontianak (-0.003N, 109.366E) and Itu Aba Island (10.06N, 114.350E) within the tropical regions were set up to receive beacon signals from six FORMOSAT-3/COSMIC (P. A. Bernhardt et. al, 2000), C/NOFS and other NNSS-like satellites. By applying the differential Doppler technique on three quadrature components of the three-band beacon signals, we were able to obtain total electric contents (TEC) values and scintillation along the radio path through the ionosphere. In this study, we explore the low latitude scintillation near midnight, and approach the correct location of the F region step by step using a simple optical model when the radio signals traveled through them. The data shows scintillations at low-latitude have high correlation with months when Kp less than 3. They are usually happened at May-June and December-February less than the other months. On the contrary, scintillations are normally more frequent during the equinoctial months of August?October and March?April. Finally, we compare seasonal and solar activity dependence using a statistical analysis of the collected data between all stations.

キーワード: Ionosphere, Scintillation, Ionospheric irregularity
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