

Ionospheric Weather of S4 Index Observed by FORMOSAT-3/COSMIC during 2006-2011

LIU, Jann-Yenq^{1*}, Shih-Ping Chen¹, Chao-Yen Chen¹, Guey-Shin Chang²

¹Institute of Space Science, National Central University, Chung-Li 320, Taiwan, ²National Space Organization, Hsinchu 300, Taiwan

The FORMOSAT-3/COSMIC (F3/C) constellation launched on 15 April 2006, which consists of six micro-satellites in the low-earth orbit, is capable of monitoring the troposphere and ionosphere by using the powerful technique of radio occultation. With more than 2000 observations per day, it provides an excellent opportunity to monitor three-dimensional structures and dynamics of the ionospheric scintillations during 2006-2011. The global F3/C S4 index are subdivided and examined in various latitudes, longitudes, altitudes, and seasons. The F-region scintillations in the equatorial and low-latitude ionosphere start around post-sunset period and often persist till post-midnight hours (0300 MLT, magnetic local time) during the March and September equinox as well as December Solstice seasons. The E-region scintillations reveal a clear solar zenith effect and yield pronounced intensities in mid-latitudes during the Summer Solstice seasons, which are well correlated with occurrences of the sporadic E-layer. There is no obvious scintillation activity observed in the high-latitude ionosphere.

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