



Equatorial anomaly effects on GPS scintillations in China

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GPS signals provide an excellent means for measuring ionospheric scintillation effects on a global basis because the signals are continuously available and can be measured through many points of the ionosphere simultaneously. Recently, amplitude scintillation measurements of L1 signals from GPS satellites have been performed in the region of ionospheric equatorial anomaly. This paper describes some characteristics of the intensity and activity of scintillations observed and the comparison of amplitude scintillations with fluctuations of the total electron content at two observation sites in China: (1) Wuhan(30.5°N, 114.3°E, magnetic latitude 19.4°); (2) Guilin(25.3°N, 110.3°E, magnetic latitude 14.2°), the last one is located at the equatorial anomaly peak. Strong scintillation with S_4 index exceeding 0.6 only has been observed under equatorial anomaly peak while at Wuhan which is located the northern slope of equatorial anomaly scintillation intensity (S_4 index) did not exceed 0.3 with the exception of strong geomagnetic storm period. Observations also indicated that amplitude scintillations and fluctuations of the total electron content always occurred in company with at night. It means the co-existence of large and small scale irregularities in equatorial irregularity structures.