



GPS Amplitude Scintillations over Kampala, Uganda, During 2010-2011

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Abstract

This study characterizes equatorial scintillations at L1/L2 GPS frequency over Kampala (0.30°N, 32.50°E, mag. lat. 9.26°S), Uganda, on different time scales during the minimum and ascending phases of solar cycle 24 (2010-2011). Of all the days investigated, 25 October 2011 recorded the highest occurrence of scintillation, and it was attributed to geomagnetic storm occurrence. We used the data of 25 October to generate plots of the elevation angle and S_4 index against local time on a satellite-by-satellite basis, with a view to distinguishing satellites links whose signals were impaired by ionospheric irregularities from those impaired by multipath. Conclusively, GPS amplitude scintillations over Kampala occur predominantly during post sunset hours and decay around midnight. Equinoctial months recorded the highest occurrences of scintillations, while June solstice recorded the least. Scintillation occurrences also increase with solar and geomagnetic activity.

Key words: ionospheric scintillation, Africa, equatorial region, irregularities, solar cycle 24.