

Impact of magnetic activity on occurrence of ionospheric amplitude scintillation over Lagos, Nigeria

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Abstract:

With the increasing researches in the understanding of the ionospheric irregularities' behaviour near the magnetic equator, an attempt has been made to study the impact of magnetic activity on occurrence of Amplitude Scintillation (S4) over Lagos, Nigeria. The occurrence rate of international quiet (Q) and international disturbed (D) days were examined compared for five days. The occurrences of S4 were recorded during quiet days than the disturbed days in the study area, except in September where there were more S4 during disturbed days than quiet days. Generally, occurrence of S4 was enhanced during pre-midnight hours but was suppressed during post-midnight hour both at quiet and disturbed days in Lagos.

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I. Introduction

Research in ionospheric scintillation has become one of the crucial aspects of the current geodetic and space research activities due to the increasing dependence on space-based technology by many organizations. Different ionospheric effects are controlled by ionospheric variability. Ionospheric scintillation results from such variability that depends on various geophysical parameters among which location of the observing station plays a core role. The ionosphere near the anomalous region exhibits extreme variability under various geophysical and geomagnetic conditions. This approach requires an estimate of the level of impairment that must be accounted for, which in turn needs the knowledge of the magnitude of important ionospheric effects cause by scintillations, along with its occurrence distribution.

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Keywords

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