

CHARACTERISTICS OF IONOSPHERIC IRREGULARITIES OVER INDIAN LOW-LATITUDE REGION VARANASI DURING ASCENDING PHASE OF SOLAR CYCLE 24

A. K. SINGH[†], VISHNU S. RATHORE AND SANJAY KUMAR

Atmospheric Research Lab., Department of Physics,
Banaras Hindu University,
Varanasi-221005, INDIA

[†] e-mail: abhay_s@rediffmail.com; singhak@bhu.ac.in

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Summary. Ionospheric irregularities degrade the performance of radio technological system by producing fluctuations in amplitude and phase of signal passing through them, a phenomenon which is known as scintillation [1-2]. This study presents diurnal and seasonal variations of ionospheric irregularities during ascending phase of solar activity from 2009 to 2014 by using the amplitude scintillation index S_4 computed from a dual frequency GPS receiver installed at the low-latitude station of Varanasi (Lat. 25.31° N, Long. 82.97° E). Scintillation occurrences are found to be higher during nighttime hours (1930-0130 LT).

Scintillation occurrences are found to show equinoctial maximum throughout the years 2009-2014 with the exception of the solar minimum year 2009. Gravity wave seed perturbation from lower atmosphere and pre-reversal enhancement in zonal electric field are basically two parameters to control the seasonal variations in scintillations/irregularities [3]. During solar minimum year 2009 unusual seasonal maximum could be attributed to a predominance of gravity wave seed perturbation over pre-reversal enhancement in zonal electric field, which makes scintillations occurrences maximum during solstice months instead of equinox [4]. Influence of solar activity on scintillation occurrence has also been studied, and it was found that there is linear dependence between the solar activity and scintillation occurrence, which is seasonally variable.

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