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DEVELOPMENT AND EXPERIMENTAL STUDY OF SUDDEN IONOSPHERIC DISTURBANCES PRODUCED BY SOLAR FLARES

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Abstract

The purpose of this experiment was to build an effective receiving system from local indigenous material by which the Sudden Ionospheric Disturbances (SID) associated with Solar flares could be observed. For the experiment, a very low frequency submarine communication signal was monitored. The frequency of the signal, transmitted from Harold E. Holt, North West Cape, Exmouth, Australia, was 19.8KHz (NWC). The monitoring system was installed at Dhaka, Bangladesh. A 1.5 meter magnetic square loop antenna was used to receive the signal. The signal was fed into a computer's sound card input via a preamplifier to record the data for subsequent analysis. The VLF (Very Low Frequency) radio signals transmitted by the above station via ionosphere were continuously monitored for several months. Those data were collected and stored at an interval of one second. The final findings were compared with the Solar X-Ray flux data of GOES 15 satellite. The minimum detection sensitivity of the system was found to be solar flare of class C2.9. In this paper, a discussion on a series SID observation of a solar active region is added. The analysis and interpretation of the final data received is also discussed here.

Keywords: Solar flares, Ionosphere, Sudden Ionospheric Disturbances, Very Low Frequency, Solar Radio Telescope

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