

Triggering of downward flux of protonospheric electrons caused by

LS TIDs (≥ 2 h) at mid latitudes during daytime

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Present study shows that the Large Scale Travelling Ionospheric Disturbances (LS TIDs), with period equal to or greater two hours (≥ 2 h), can trigger the downwards flux of protonospheric electrons of the order of 22×10^8 electrons $\text{cm}^{-2}\text{sec}^{-1}$ at mid latitude station during the daytime (i.e. during the period of solar flux), enhancing the electron density over there. This study is facilitated by using a formula for calculating the downward flux of protonospheric electrons, producing the Daytime Enhancement (DEs) in ionospheric electron density. This formula takes into account the partly increase of N_{max} F2 (i.e. the number of maximum electron density in F2-layer) of the ionosphere caused by the downwards flux and partly loss due to its recombination. The normal daytime production of N_{max} F2 is also accounted for. A total of 33 daytime LS TIDs have been observed over Karachi (24.95°N 67.14°E) during solar minimum (1986). The daytime foF2 (and hence N_{max} F2), the h-plot and f-plot are simultaneously plotted. A study of these plots shows that the LS TIDs (≥ 2 h), have produced DEs. A criterion of enhancement in foF2 equal to or greater than 2.5 MHz has been adopted to define the DEs produced by LS TIDs (≥ 2 h). The developed formula has been used for calculating the daytime downwards protonospheric flux for all the days of LS TIDs which was produced DEs.