

EFFECT OF THE LONG-TERM SOLAR ACTIVITY ON THE NIGHTTIME LOWER IONOSPHERE IN ANTARTIC

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Abstract:

Daily amplitude curves of Very Low Frequency (VLF, frequency = 3 - 30k Hz) radio signals show well-defined pattern of pronounced minima amplitude as result of modal interference and conversion processes [1]. The occurrence time of these minima amplitude (called as Terminator Times, TTs) has been used to estimate the nighttime reflection height of the lower ionosphere (h_N) and study the effect of the long-term solar activity. We have used five years of data for the transequatorial propagation path between the NPM transmitter (Lualualei, Hawaii, 21.4°N, 158.15°W, frequency= 21.4 kHz) to EACF receiver (Comandante Ferraz Brazilian Antarctic Station, 62.1° S, 58.4° W). The results show that h_N decrease from low to high solar activity which suggests a control of the solar radiation on the nighttime lower ionosphere, and hence, on the electron density at night [2].

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