

Impact of Solar cycle variation on Critical Frequency of F layer

Roshni Atulkar and P. K. Purohit

National Institute of Technical Teachers' Training and Research, Bhopal – 462002, MP, India.

Abstract

The period of approximately 11 year cycle of solar activity is characterized by the rise and fall in the numbers and surface area of sunspots. We observed a number of other solar activity indices, including the 10.7 cm radio flux, solar Mg II core to wing ratio, relative sunspot number R_z and solar flare index and geomagnetic activity that vary in association with the sunspots for solar cycles 21, 22 and 23 (1976–2008). This paper presents an analysis of the F-region variability of the ionospheric parameter foF2 at mid latitude station Hobart (Hobart is a town in County Australia) Latitude:- 42.8806° S and Longitude: 147.3250° E during in the whole period (1976–2008) of solar cycle-21, 22, and 23. The diurnal, monthly, yearly and cycle to cycle characteristics of these ionospheric F-region parameter foF2 have been studied in detail. We also compared the dependence of foF2 on solar activity indices by using a correlation analysis, and showed that a significant linear relationship between the foF2 values and Solar indices. The foF2 variation is strongly influenced by solar activity with about an 11-year solar cycle from the solar maximum to solar minimum.

Keywords:- Solar cycle, foF2, geomagnetic indices, correlation