

## Solar cycle variation and its impact on Critical Frequency of F layer

\*Pramod Kumar Purohit<sup>1</sup>, Roshni Atulkar<sup>1</sup>, Azad A. Mansoori<sup>2</sup>, Parviaz A. Khan<sup>3</sup>

1. National Institute of Technical Teachers' Training and Research, Bhopal –462002, MP, India, 2. Department of Electronics, Barkatullah University, Bhopal –462026, MP, India, 3. Department of Electronics and Communication Engineering, Islamic University of Science and Technology, Pulwama, J & K, India

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