0.1 The accuracy of ionospheric models with ionosonde observations at mid-latitude region

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The purpose of this paper is to validate the ionospheric models to assess its suitability and usefulness as an operational tool for Iraqi HF-Communication. The ionospheric model is a computer model designed to predict the state of the global ionosphere for 24 hours. The scope was limited to conduct comparisons between the predicted F2 layer critical frequencies (f_0F_2) against observed ionosonde data. An ionospheric prediction model (IPM) was designed to predict a set of ionospheric parameters by using monthly median sunspot number. The observation data were taken for three months only (February, March and December) and it was chosen with high solar activity (for 1989) based primarily on data availability from two digital ionospheric sounding (DIS) stations (Al-Battani, Iraq 33.34 N, 44.45 E; Kokubunji, Japan 34.54 N, 109.49 E) which lies within the mid latitude region of the globe. Analysis of the f_0F_2 data showed that there is non linear difference between the IRIC, IRIU and CHIU models output and the observed data values, from these results the empirical formula for applying correction factors were determined, these formula can be used to correct the error occurred in predicted f_0F_2 value.