Comparison between observed ionospheric foF2 and IRI-2001 predictions over periods of severe geomagnetic activities at Grahamstown, South Africa
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The observed ionospheric F2 critical frequency (foF2) values over a South Africa mid-latitude station, Grahamstown, (geographic coordinates: 33.3°S, 26.5°E), were analysed and compared with International Reference Ionosphere (IRI) model, using the CCIR (Comite’ Consultatif International des Radio communications) and URSI (Union Radio-Scientifique Internationale) coefficients, during four geomagnetically disturbed days in the year 2000. These days are April 5, May 23, August 10 and September 15. The data were analysed for five days around the storm day. Comparisons between the IRI-2001 predicted foF2 values, using both CCIR and URSI coefficients and the observed values are shown with their root-mean-square error (RMSE) and the relative deviation module mean (rdmm) for the various storm periods. The CCIR option performed more accurately than the URSI option. In general, the model generates good results when compared with observed foF2 values during geomagnetic storms, although some improvements are still necessary to be implemented in order to obtain better predictions.