M(3000)F2 and IRI-2012 model at an equatorial latitude in the African sector

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Abstract

We have used ionosonde data from Ouagadougou (Geo. Lat.12.4^0 N, Long. 358.5^0, Magnetic declination -5.132^0) to study the morphology of M(3000)F2 and to investigate the performance of IRI-12 during 1991 and 1995, years of high and low solar activities respectively. Results show that M(3000)F2 exhibits diurnal and solar cycle characteristics with no distinctive monthly/seasonal features. The two peaks which characterize the diurnal M(3000)F2 during high solar activity (HSA) are reduced to just one (the sunrise peak) during low solar activity (LSA). The study also shows that IRI-12 gives good representations of the observed values of M(3000)F2 with high correlation coefficient, R ranging between 0.9 and 0.95 during LSA and 0.94 and 0.99 during HSA. The model gives its best performance in the months of April irrespective of the solar activity. It either under-estimates or over-estimates the observed values of M(3000)F2 during other months.