

The ionospheric characteristics over the northern equatorial anomaly crest during the prolonged solar minimum period

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In this study we have analyzed the diurnal, monthly, seasonal, and annual variation in NmF2, hmF2, foE, B0, scale height at F2 layer peak height (H_m), total electron content (TEC), and ionospheric equivalent slab thickness (tau symbol) over the northern crest equatorial anomaly area at solar minimum during 1995-1996 and 2008-2009. We collected the data from an ionosonde station located at Chung-Li Observation (121.1.oE, 25.0oN) and GPS receiver (TWTF) located at Tao-Yuan (121.09oE, 24.57oN). The result shows the first maximum value for NmF2 and TEC occurred a time delay in 2008 comparison with values in 1995. The result of foE depicts a lower value during 2008-2009 than variation in 1995-1996. The variation of hmF2 in 2008-2009 was lower than values in 1995-1996. The ionospheric equivalent slab thickness during 0600-1200 LT was higher in 2008-2009 than values in 1995-1996, particularly in summer season. Furthermore, a comprehensive discussion of the physics processes for the variation of ionosphere during the prolonged low solar activity period.

Keywords: ionospheric physics, solar activity, ionospheric dynamics