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Ionospheric F2 layer behavior during prolonged solar minimum

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The prolonged solar activity minimum in 2007-2009 gives possibility to explore ionospheric behaviour under long-lasting low solar ultraviolet (EUV) irradiance conditions. This paper presents results of the analysis of the ionospheric F2 layer critical frequency foF2 and peak height hmF2 variation over middle latitudes. The paper focuses on ionospheric response to occasional minor-to-moderate geomagnetic disturbances preceded by significant enhancement in Dst index occurred within the solar minimum. The results show that the departure of foF2 and hmF2 from their 27-days running means during such events was comparable with the differences observed under strong ionospheric storm conditions. The solar cycle differences in the daily and seasonal variation of the main ionospheric parameters are also discussed. Observations are compared with the International Reference Ionosphere (IRI 2007) outputs. Our results indicate an importance of fully understanding the local patterns of foF2 and hmF2 variations for the improvement/development of ionospheric models.