

SAIP2014



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Analysis of ionospheric response to geomagnetic storms during solar cycle 23

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Abstract :

The presentation discusses the statistical analysis of ionospheric response over Madimbo (22.4° S, 30.9° E) and Grahamstown (33.3° S, 26.5° E), South Africa using ionosonde and GPS data during the time interval 1996 - 2011. A comprehensive analysis on the critical frequency of F2 layer (foF2) and Total Electron Content (TEC) was performed using the Disturbance storm time (Dst) index with a storm criteria of $Dst \leq -50nT$ to identify the disturbed days. There were 3 categories of ionospheric disturbances identified in this study namely: single disturbance, double disturbance and not significant (NS) ionospheric storms. Single disturbance include positive (P) and negative (N) ionospheric storms separately, while in double disturbance category both negative and positive ionospheric storms are observed during the same storm period. The statistics reveal the dependence of ionospheric storms on geomagnetic storms and also the negative ionospheric effects follow the sunspot cycle. In general few ionospheric storms (0.11%) were observed during solar minimum. Positive ionospheric storms occurred most frequently (47.54%) during the declining phase of the solar cycle 23.

Award :

yes

Level :

Msc

Supervisor :

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Paper :

No

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