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Analysis of ionospheric storm effects based on GPS and ionosonde data during geomagnetic storms.

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Major space weather events may contribute to ionospheric delay where additional noise is introduced into observations of the satellite signal. As a result, the accuracy and reliability of the Global Positioning System (GPS) is compromised. This study aims to conduct an analysis of the ionospheric storm effects using Total Electron Content (TEC) derived from ionosonde and GPS observations during geomagnetically disturbed conditions.

The dataset over a period of 17 years (2005-2022) from co-located ionosonde and GPS receiver over Grahamstown (33° 30'S, 26° 52'E, geographic) will be used. Geomagnetic storm periods selection is based on storm-time criteria of $Dst \leq -30$ nT or where $Kp > 4$. This study will focus on determining the ionospheric storm effects where the ionospheric response are separately studied as established from GPS TEC, bottomside TEC, topside TEC as well as plasmaspheric TEC.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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