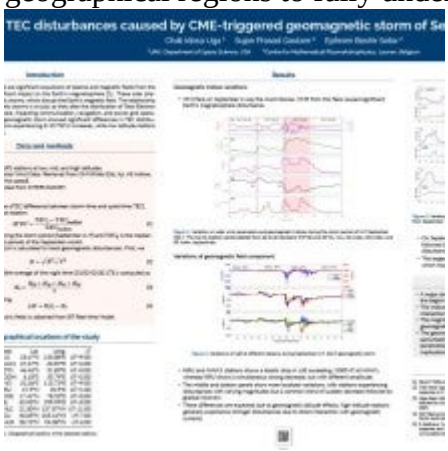
Chali
Idosa Uga
University of Alabama in Huntsville, Department of Space Science
Sujan Prasad Gautum and Ephrem Beshir Seba
University of Alabama in Huntsville, Department of Space Science and KU Leuven, Department Wiskunde, Centre for Mathematical Plasma-Astrophysics, Leuven, Belgium
Poster
This study investigates the ionospheric response to a geomagnetic storm triggered by a Coronal Mass Ejection (CME) during 6–9 September 2017, across GPS stations located in diverse geographical regions. We analyze the changes in the magnetic field component (??), the Prompt Penetration Electric Fields (PPEF), and the Total Electron Content (TEC). We find that ?? exhibits latitude-dependent responses during the storm, with high-latitude stations experiencing more significant reductions compared to low-latitude stations. The PPEF behavior is found to be directly correlated with solar wind disturbances. Particularly during the main phase of the storm, fluctuations in PPEF were clearly associated with negative values in the Dst index. The KIRU station, located at a high latitude, shows the most pronounced PPEF effects, indicating the increased susceptibility of high-latitude regions to solar wind interactions. The time series plot of TEC, covering a full month at different stations, shows a distinct diurnal pattern driven by solar ionization. Equatorial stations such as HYDE, BOU, HON (HNLC), and DODM exhibit the highest daily TEC values. During the geomagnetic storm, TEC disturbances are evident across all stations, with significant disturbances and varying trends in TEC depletion rate observed at different locations. The TEC values differ by 5–25 TECU during the storm period, suggesting intricate ionospheric responses to geomagnetic storms at different stations. This highlights the importance of considering different geographical regions to fully understand the ionospheric dynamics related to solar activities.



Poster PDF
Chali-Bo.pdf
Meeting homepage
Space Weather Workshop 2025
Download to PDF