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Modelling and observation results for the 23-25 March 2023 geomagnetic storm

Wednesday 9 July 2025 11:30 (20 minutes)

This talk will present results of ionospheric changes during the 23-25 March 2023 geomagnetic storm using observational and modeling data over the African-European sector. Both ionosonde and Swarm observational results show that mid latitudes experienced negative storm effects which have been attributed to thermospheric composition changes. We use models to simulate the ionospheric behavior during this storm period. Considered models were Thermosphere Ionosphere Electrodynamics General Circulation Model (TIE-GCM) and the three-dimensional storm time empirical model (3D-NNstorm) constructed based on radio occultation and ionosonde data. For the maximum electron density of the F2 layer, TIE-GCM and 3D-NNstorm models provide correlation values ranging between 0.48-0.64 and 0.64-0.88, respectively, with lower performance observed at low latitudes.

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