Low and middle latitude thermospheric and ionospheric responses to geomagnetic activity

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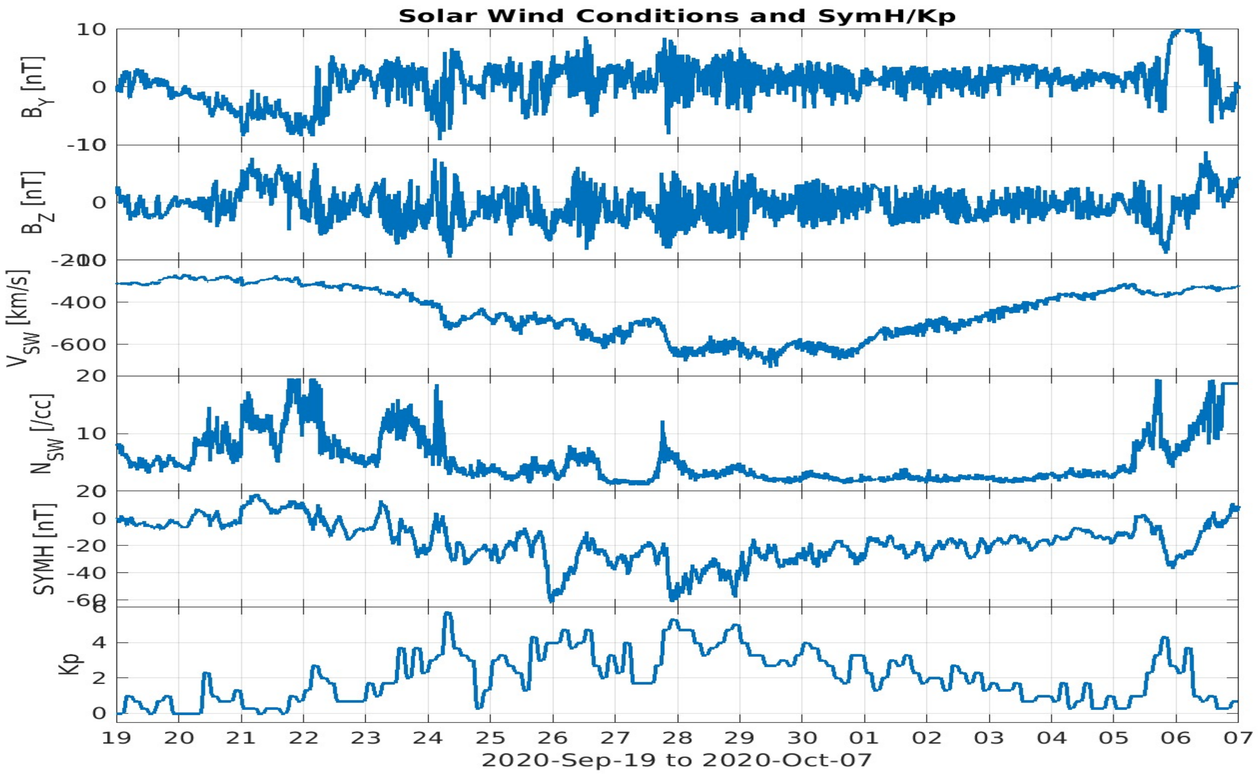
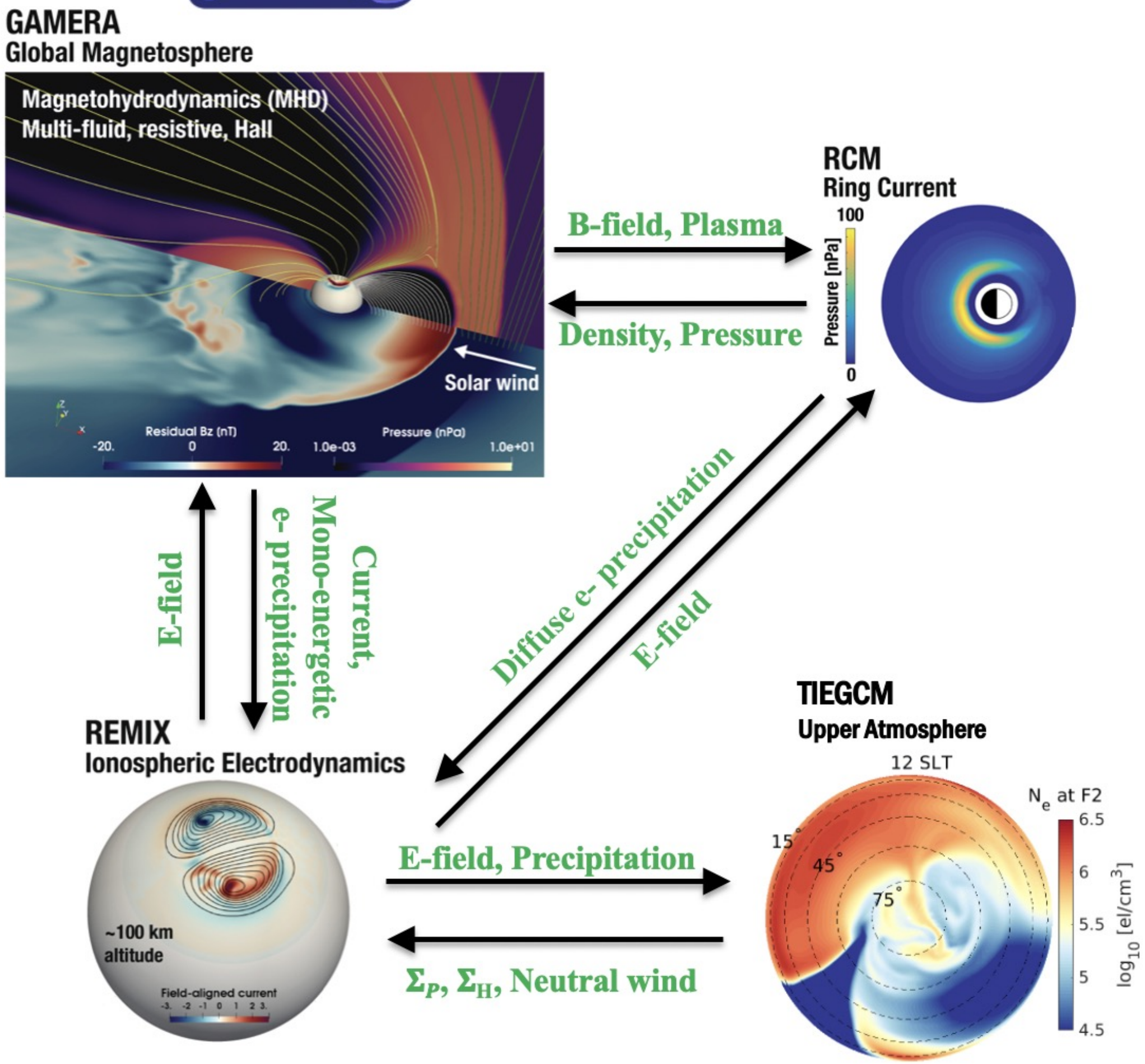
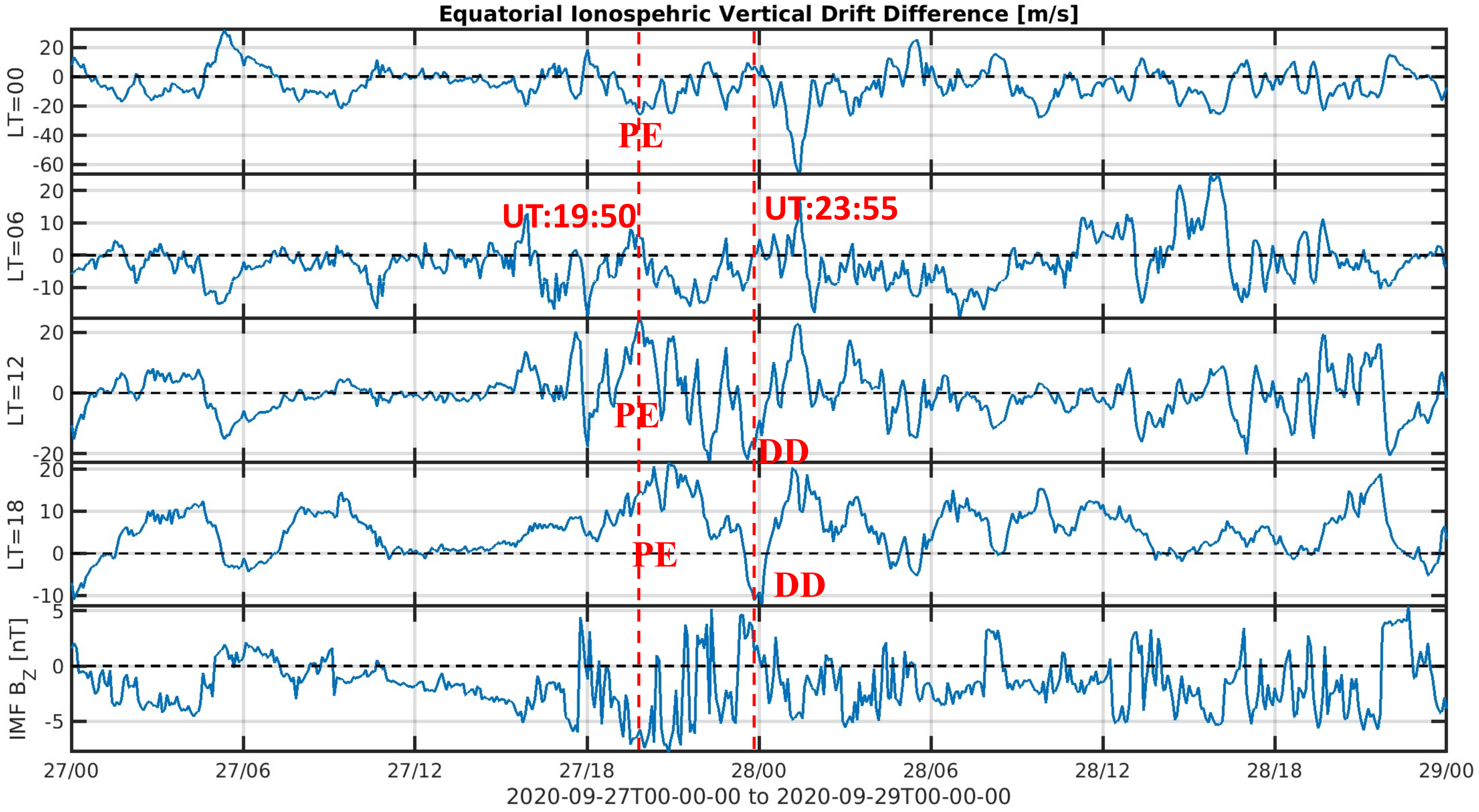


MAGE
Multiscale Atmosphere-Geospace Environment

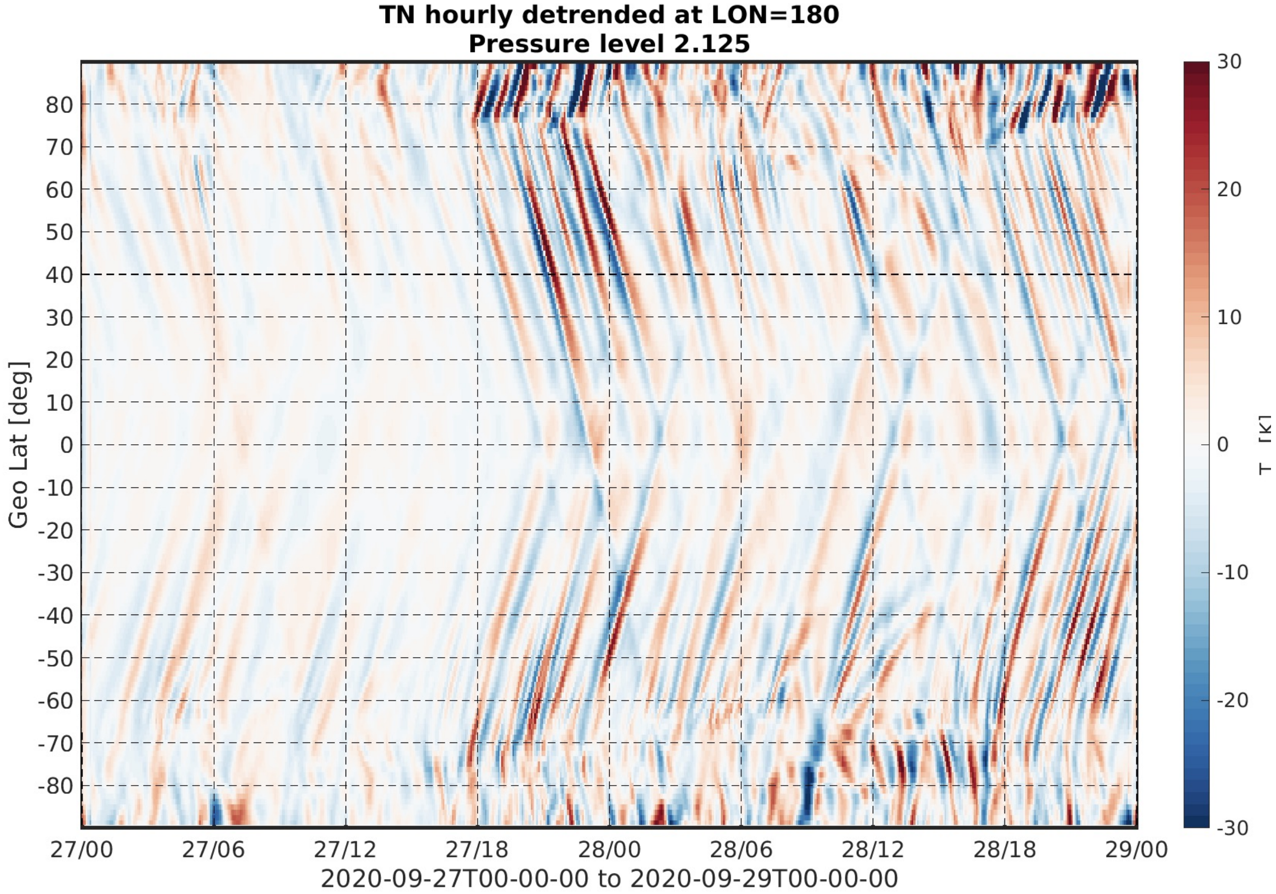


Vertical Plasma Drifts at the Equator

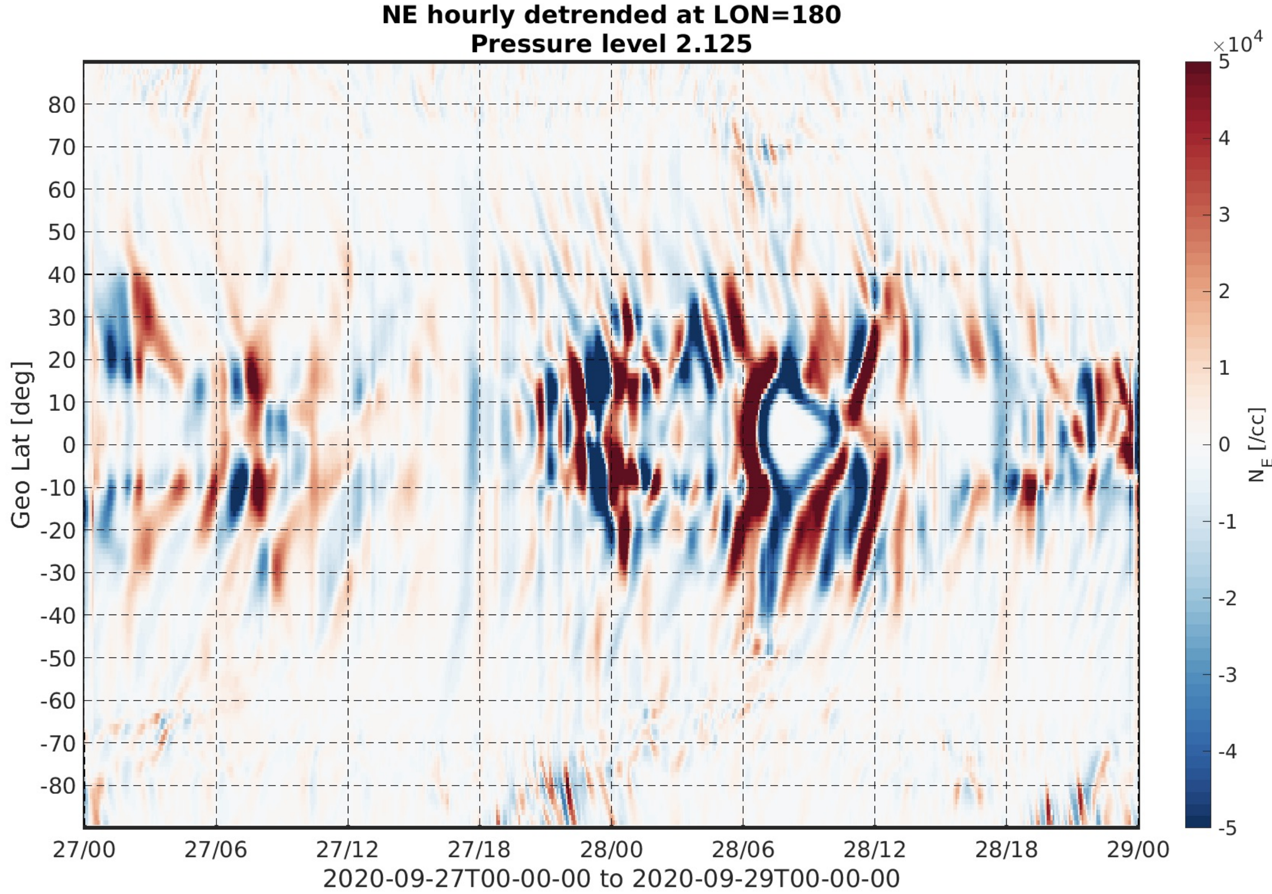


Large local time changes in ionospheric equatorial electric field occur during storm time, which are associated with penetration electric fields and disturbance dynamo

Traveling Atmospheric Disturbances (TADs)

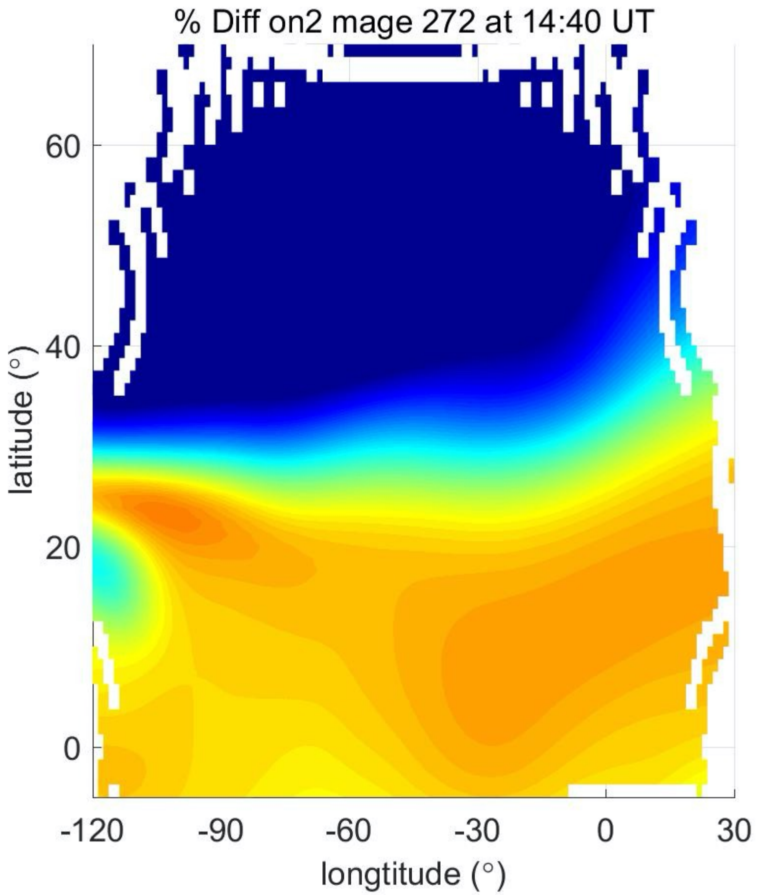


Traveling Ionospheric Disturbances (TIDs)

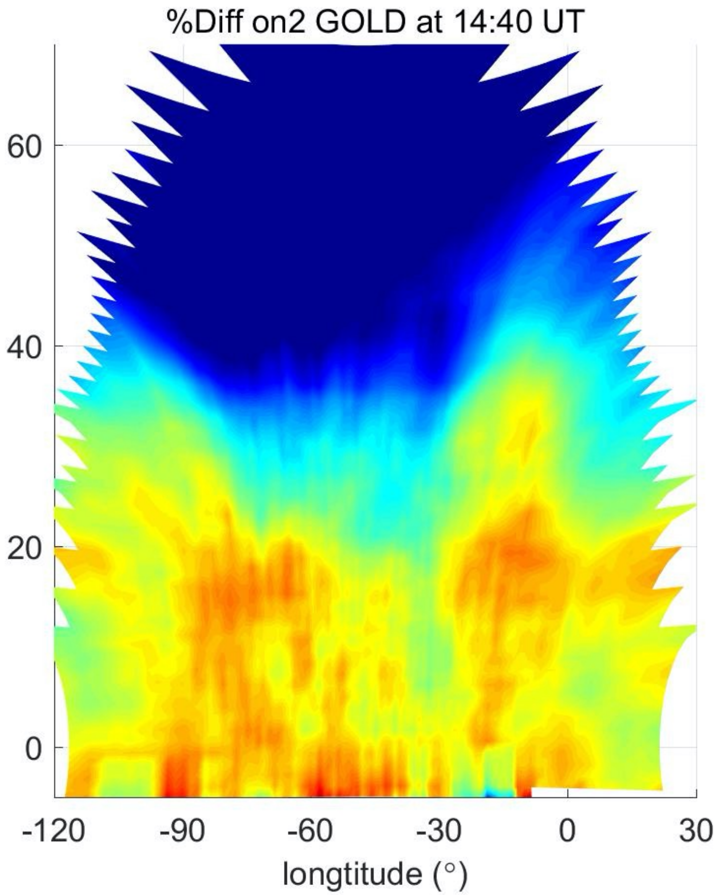


Ionospheric electron density and TEC changes at middle and low latitudes during storms are the result of the combined effects of electric field changes and TADs.

MAGE O/N_2



GOLD O/N_2



The modeled thermospheric composition and temperatures changes are consistent with GOLD observations. O/N_2 depleted at high and middle latitudes and enhanced at lower latitudes