

EGU21-1458

<https://doi.org/10.5194/egusphere-egu21-1458>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



The influence of ionospheric neutral wind variations on the propagation of a MSTID event

Ji Luo^{1,2}, Jiyao Xu^{1,2}, Kun Wu^{1,2}, Wenbin Wang³, Chao Xiong⁴, and Wei Yuan^{1,2}

¹State Key Laboratory of Space Weather, National Space Science Center, Chinese Academy of Sciences, Beijing, China

²College of Earth and Planetary Sciences, University of Chinese Academy of Sciences, Beijing, China

³High Altitude Observatory, National Center for Atmospheric Research, Boulder, CO, USA

⁴GFZ German Research Centre for Geosciences, Potsdam, Germany

The event reports a special case of the propagation and morphology of medium scale travelling ionospheric disturbances (MSTIDs) over middle-latitude China. The MSTIDs were simultaneously observed by the all-sky imager, Swarm satellite, as well as the total electron content (TEC) from global positioning system (GPS). In addition, the MSTIDs lasted for about 6 hours of the field view of airglow imager, the continuous imagers show that the inclination angles of phase fronts were decreasing gradually during the propagation process, resulting in the propagation direction changed from southwestward to nearly westward. More interestingly, the MSTIDs began to dissipate in the airglow observation when they propagated to lower latitudes with the MSTIDs at higher latitudes still visible in the later times. The simulation results from the Thermosphere-Ionosphere-Electrodynamics General Circulation Model (TIEGCM) and the Fabry-Perot Interferometer (FPI) wind observations suggest that the variations of background neutral winds and the ionospheric density might play important roles in the changes of propagation direction and the dissipation of MSTIDs.