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(POS-8) Observations of traveling ionospheric disturbances driven by gravity waves generated in extratropical cyclones

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Travelling ionospheric disturbances are plasma density fluctuations usually driven by atmospheric gravity waves generated by sources in the upper or lower atmosphere. Eastward to southeastward propagating medium-scale traveling ionospheric disturbances (MSTIDs) are commonly observed at mid latitudes over Europe by the GNSS total electron content (TEC) mapping technique and the multipoint and multifrequency continuous Doppler sounder in Czechia. The MSTIDs appear to be driven by atmospheric gravity waves originating from intensifying extratropical cyclones over the northeast Atlantic. The gravity waves are generated in the low-pressure systems by geostrophic adjustment processes and shear instability. Using the ERA5 meteorological reanalysis the gravity waves are identified in the stratosphere by patterns of alternating bands of convergence and divergence of the horizontal wind, which have been interpreted as a signature of inertia-gravity waves propagating upwards above the tropopause.

Keyword-1

atmospheric gravity waves

Keyword-2

MSTIDs

Keyword-3

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