

Conjugate observations of mid-latitude travelling ionospheric disturbances by HF radars

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We present a survey of travelling ionospheric disturbances (TIDs) observed at mid-latitudes in the northern and southern hemispheres by the Wallops Island and Falkland Islands SuperDARN HF radars. Observations were made during the 18 month operational interval of the Falkland Islands radar between March 2010 and September 2011. Statistics of the radar ground backscatter, in which the signatures of TIDs are manifest, will be presented along with an analysis of the TID spectral and propagation characteristics. Observed periods were in the range 30 - 60 minutes, corresponding to frequencies of 0.3 - 0.6 mHz. Wavelengths were generally in the range 250 - 400 km with phase speeds in the range 50 - 200 m s⁻¹. These values are within the ranges typically associated with medium-scale gravity waves. We discuss these results in terms of hemispheric, seasonal and diurnal variations, as well as in terms of their relationship to the local topography and large-scale geomagnetic activity.

Keywords: Travelling Ionospheric Disturbance, HF radar, Conjugate observations