

Propagation of Travelling Ionospheric Disturbances over the Southern Ocean

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Abstract

At high latitudes important sources of Travelling Ionospheric Disturbances (TIDs) are atmospheric gravity waves generated in the auroral region that produce medium scale TIDs and, rarer impulsive events associated with large magnetic disturbances that produce large-scale TIDs. The Tasman International Geospace Environment Radar (TIGER) detects TIDs propagating in the region between Tasmania and Antarctica and the occurrence of medium scale TIDs, observed using the TIGER Bruny Island radar, is consistent with auroral sources (He at al, Ann. Geophysicae. 22, 4077, 2004). Nevertheless important questions remain, such as: How far do TIDs propagate before dissipating? What is the extent of TID fronts? How selective are observational techniques? TIGER now includes a second radar, called Unwin, located in New Zealand and a new beam swinging facility for the Bruny radar that extends its footprint over Macquarie Island where a vertical incidence sounder is located. As a consequence both TIGER radars and the ionosonde observe a common volume within the larger overlapping ionospheric footprints of the TIGER radars. This provides an excellent experimental arrangement to address aspects of the questions raised above and initial results will be presented.