

Identification and implication of multiple flow channels in the TIGER data

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Westward flow channels are latitudinally narrow regions with enhanced F-region convection near magnetic midnight seen by the most equatorward radars in the SuperDARN array of paired HF radars. A newly deployed TIGER radar near Invercargill, New Zealand (46.51°S , 168.38°E) often observes double or triple flow channels at magnetic latitudes (MLAT) of 59° - 65°S . Most equatorward channels are difficult to identify in the data simultaneously collected by the TIGER Bruny Island radar (43.38°S , 147.23°E) as these latitudes typically refer to the scatter from the E region so that this radar typically observes only the main flow channel at 61° - 63°S MLAT. In this study we develop a method of the flow channel identification and tracking using the TIGER F-region velocity data. We examine flow speed and direction within each channel as determined by fitting cosine law curve to the maxima in the velocity profiles for all radar beams. Several cases of possible identification of westward flow channels in the E-region velocity data are presented and analysed. Implications of the multiple flow channel observations for convection models are discussed.