

SuperDARN Hokkaido radar observation of westward flow enhancement in subauroral latitudes

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Westward flow enhancement in subauroral latitudes is investigated based on the first one and a half year observation of the SuperDARN Hokkaido radar. A total of 15 events are identified with the criteria of westward flow speed of >1.0 km/s in magnetic latitude from 45 to 65 deg during geomagnetically disturbed period of $Kp > 3+$ at 20 magnetic local time. It is found that especially during the storm recovery phase, the flow enhancement occurs in broad range of Dst amplitude, and the occurrence latitude depends on the amplitude of Dst. It is also found that the disturbed Kp condition is not sufficient for the appearance of the subauroral flow enhancement as seen by Hokkaido radar while storm-like Dst condition is necessary, supporting the idea that ring current particles play an essential role to enhance the westward flow in subauroral latitudes via magnetosphere-ionosphere coupling through the field-aligned current.