

SuperDARN レーダーで観測された SAPS 振動の複数イベント解析

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Multi-event study of SAPS Wave Structures observed by the SuperDARN radars

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SAPS Wave Structures are wavy phenomena embedded in the Sub-Auroral Polarization Streams structure. It was first reported by Erickson et al. (2003), and was also reported using the SuperDARN radar network mainly in the mid-latitude region(e.g., Makarevich and Bristow, 2014; Hori et al., 2018). Because of the limited number of examples studied so far, their generation mechanism is not fully understood yet.

One problem in identifying the SAPS wave structure in the SuperDARN data is that because the temporal resolution of the standard SuperDARN operation mode is 1 to 2 minutes, so that the radar sometimes cannot identify the shorter-scale wavy variations.

In this study we used the SuperDARN Hokkaido Pair of (HOP) radars data with special operation modes to study the wavy variations of embedded in the fast flow structure. Using the data using the new fitting algorithm (fitacf Ver. 3) we had more extended coverage of the echo regions. In this paper we focus mainly on the events on Sep 08, 2017 and Aug. 26, 2018. Both events occurred near the peak of large geomagnetic storms. These events were registered by the SuperDARN radars with higher temporal resolution (3 and 12 seconds respectively) camping beams. Using both camping beam data and 2-dimensional data (with 1 to 2 min temporal resolution) we can discuss period, wavelength and propagation speed of these wave structures. Similarity and differences between these two events, as well as their possible generation mechanisms, will be discussed.