

Classification and occurrence characteristics of subauroral rapid plasma flows observed by SuperDARN Hokkaido HF radar

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The rapid ionospheric plasma flows equatorward of the auroral zone are called Sub-Auroral Polarization Stream (SAPS). As a result of the past studies of SAPS, Kataoka et al. [2009] reported that positions of SAPS shift toward lower latitude with developing Dst index using the SuperDARN Hokkaido HF radar.

In this study we investigate the occurrence characteristics of SAPS, with focus on the relationship between SAPS occurrence and solar wind / geomagnetic parameters, using the SuperDARN Hokkaido HF radar with the field of view covering the Far East region, which began its operation in 2006. In order to discuss characteristics of SAPS extensively, we take a wider range of velocity (>10 m/s) and MLAT (>40 deg) than the previous studies. As a result of the statistical analysis we identified two kinds of flows with a threshold of 150 - 200 m/s. MLAT of faster flows has correlation with SYM-H and AL index, whereas the slower ones have no such correlation. We will report on the details of correlation between flow characteristics of solar wind and geomagnetic parameters, including substorm and storm phases.