

## Study of the occurrence characteristics of SAPS observed by the SuperDARN Hokkaido East Radar with the beam-swing technique

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We investigate occurrence characteristics of Sub-Auroral Polarization Streams (SAPS), using Super Dual Auroral Radar Network (SuperDARN). We mainly use the Hokkaido East radar data. In this study, we statistically analyze about 10-year data for years from 2007 to 2016 and studied the occurrence frequency of flows that can be considered as SAPS, and their dependence on MLT and MLAT. We use the beam-swing technique, which calculates the real flow velocity and angle from the line of sight velocity of all the radar beams. We set criteria for the SAPS event, i.e., the flow should exceed 150 m/s and have westward component. We obtained most of the overall characteristics of SAPS distribution that were reported in past studies, i.e., the equatorward shift of the high occurrence rate region with increasing MLT and geomagnetic activity. Some other characteristics, however, are different from those identified by past studies (e.g., Kunduri et al., 2017). The SAPS region seems to be expanded toward higher latitudes than the past studies, and the SAPS occurrence peak region is located at later MLTs. These differences might be due to the difference in geographic longitude, as well as the relative values between geographic and geomagnetic latitudes (Far-East Siberia to Pacific vs North American region). We also found new characteristics, i.e., westward flows from midnight to morning at relatively low geomagnetic latitudes, which could not be studied by the previous studies, probably due to the limited fields of view at mid latitudes (equatorward of about 50 degrees geomagnetic latitude). Study of the seasonal and solar activity dependence of SAPS distribution is also in progress.