SuperDARN北海道-陸別第二レーダーのステレオモードによるSAPS擾乱構造の高時間空間分解能観測

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High temporal / spatial resolution observation of SAPS perturbations using the SuperDARN Hokkaido West radar stereo mode

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We show the results of the high temporal resolution / two-dimensional observation of small-scale SAPS wavy perturbations during the September 8, 2017 geomagnetic storm, using the stereo mode operation of the SuperDARN Hokkaido West (hkw) radar. The Hokkaido West radar, deployed in October 2014, is the second SuperDARN radar located in Hokkaido, Japan and one component of the SuperDARN HOkkaido Pair of (HOP) radars. The Hokkaido West radar deploys stereo mode scan system, where the radar can emit two radar beams with two different radar frequencies and beam directions simultaneously. Using this stereo mode, it can monitor the ionosphere and upper atmosphere both with 1 min 2-dimentional scan and 3 sec camping beam, enabling both two-dimensional (1 min) and high temporal resolution (3 sec) data acquisition. We succeeded in observing the SAPS perturbation signatures having various temporal scale of from 1 min to several tens of minutes. One of them is disturbance from 1228 to 1234 UT, with about 1 min periodicity and 10 degrees longitudinal wavelength, propagating westward. The temporal scale of SAPS perturbation is obviously shorter than previously reported values (about 5 mins). Possible generation mechanisms of these perturbations will be discussed. Coordinated study with the Arase spacecraft is also in progress.