Initial statistical study of FACs simultaneously observed along the same field line by MAGDAS on the ground and by QZS in space

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The QZS satellite of JAXA has an orbit whose geocentric distance is almost the same as those of geosynchronous satellites but whose orbital plane makes an angle of about 45 degrees from the equatorial plane. The footpoint of the magnetic field line running through QZS keeps staying very close to the Siberian MAGDAS ground magnetometer stations KTN, TIK, and CHD. Thus, they can simultaneously and continuously monitor the same FAC at high-latitudes in space and on the ground, for the first time in history. This enables us to study the detailed spatial structure and motion of the current circuit consisting of the FAC and the ionospheric current. At present we have data from QZS and Siberian MAGDAS for the same five years, and we can study them on a statistical basis. So far we have made an overview-type analysis of one-year data, and the following is the features of the FACs simultaneously identified both in space and on the ground along the same field line. (1) The majority of them was observed on the nightside. (2) The majority of them flowed into (away from) the ionosphere in the postmidnight (premidnight) sector. (3) They tended to move away from the midnight meridian in the east-west direction. (4) They tended to move away from the equatorial plane in the north-south direction. (5) Their current intensities had a positive correlation with the AE index.