

MMS satellites and EISCAT radar observations of dayside flow bursts.

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A magnetic flux transfer event (FTE) was compared with ground radar observations of ionospheric ion flow bursts. Magnetospheric multiscale (MMS) satellites were located near the subsolar magnetopause at approximately 1049 UT on 15 December 2015. MMS satellites observed a southward turning of the interplanetary magnetic field (IMF), followed by a FTE 20 minutes later, and MMS entered the magnetosphere a further 10 minutes later. The European incoherent scatter (EISCAT) VHF radar at Tromso (Norway) was pointed to geographic north, with an elevation angle of 30 degrees, and was monitoring the ionospheric F region between 68 and 72 MLAT at 13 MLT. The Tromso radar did not observe an ionospheric flow burst at the time of the IMF southward turning but instead at the time of the FTE. A 630 nm all-sky imager at Longyearbean (74 MLAT, Norway) observed several poleward moving auroral forms (PMAFs) originating near 74 MLAT but none below 73 MLAT. The most significant PMAF accelerated and became enhanced approximately 3 minutes before the observation of the FTE. FTEs are usually associated with ionospheric flow bursts near the cusp and higher latitudes. In this particular case, it is suggested that the FTE is also associated with an ionospheric flow burst in subauroral latitudes. Such a subauroral flow burst may indicate a rarefaction inflow into the cusp and may occur when significant magnetic flux is removed by a FTE.

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