# カスプの transient フローに伴うプラズマの温度上昇

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# Plasma temperature enhancements associated with transient flow in the cusp

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Transient reconnection on the magnetopause creates fast intermittent flow in the cusp region of the high-latitude ionosphere. This flow enhances ion temperature as a consequence of the increased ion-neutral frictional heating that is associated with the elevated flow speed. Reconnection also injects particles from the reconnection site, and those particles precipitate in the cusp ionosphere. The precipitating electrons transfer energy to thermal electrons, and thereby raising the temperature of the thermal electrons. These suggest that the enhancement of the ion temperature and that of the electron temperature are collocated in the cusp, and previous studies from low time resolution measurement of IS radars have shown that the collocation is generally true. Several recent reports, however, have revealed that mesoscale structure in the cusp moves rapidly on timescales of 1-2 min. In this study, using 30-second integrations of data from EISCAT Svalbard radar, we clarify a more detailed relationship between the enhancement of the cusp electron temperature and the ion temperature enhancement. We took 62 events of the cusp ion temperature enhancements from the observation during 2000-2003, and examined how the electron temperature enhancement overlaps with the elevated ion temperature. Results of the analysis show that while those enhancements agree very well in some cases, there are a significant number of events in which the ion temperature enhancement precedes the electron temperature enhancement by 1 min or so. We present the characteristics of this difference, and discuss them in terms of the relative location of the radar’s FOV to the mesoscale structure in the cusp.