

Characteristic distance between mesoscale auroral brightenings along the equatorward boundary of the cusp

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Each auroral brightening event near the equatorward boundary of the cusp is thought to be the ionospheric signature of the beginning of intermittent reconnection on the dayside magnetopause, i.e., a flux transfer event. In order to understand whether two neighboring flux transfer events occur at intervals of any characteristic length scales, we examined mesoscale auroral brightenings that occur near the equatorward boundary of the cusp by analyzing 630-nm auroral image data obtained from an all-sky imager at Longyearbyen, Svalbard. Statistical analyses of the distributions of the mesoscale auroral brightenings for stable southward IMF show that two mesoscale auroral brightenings tend to occur approximately at 0.4-hour MLT intervals. We discuss this distance at ionospheric heights in terms of the formation of the flux transfer events on the dayside magnetopause.

Keywords: cusp, aurora, electron precipitation, reconnection