



## **The correspondence between dayside long-period geomagnetic pulsations and the open-closed field line boundary**

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Long-period pulsations in the nominal Pc5-6 band (periods about 3-15 min) have been known to be a persistent feature of dayside high latitudes. A mixture of broadband Irregular Pulsations at Cusp Latitudes (IPCL) and narrowband Pc5 waves is often observed. The mechanism and origin of IPCL have not been firmly established yet. Magnetopause surface eigenmodes were suggested as a potential source of high-latitude ULF waves with frequencies less than 2 mHz. A ground response to these modes is expected to be beneath the ionospheric projection of the open-closed field line boundary (OCB). To unambiguously resolve a possible association of IPCL with the magnetopause surface modes, multi-instrument observation data from Svalbard have been analyzed. We examine the latitudinal structure of high-latitude Pc5-6 pulsations recorded by magnetometers covering near-cusp latitudes. This structure is compared with the instant location of the equatorward boundary of the cusp aurora, assumed to be a proxy of the OCB. The OCB latitude has been identified by an automatic algorithm, using data from the meridian scanning photometer at Longyearbyen, Svalbard. The comparison has shown that the latitudinal maximum of the broadband IPCL maximizes about 2-3 degrees deeper in the magnetosphere than the OCB optical proxy. Therefore, these pulsations cannot be associated with the ground image of the magnetopause surface modes. It is likely that an essentially non-dipole geometry of field lines and a high variability of the magnetopause region may suppress the excitation efficiency. The obtained result imposes important limitations on possible mechanisms of high-latitude dayside ULF variations.