カスプの赤道側の安定したsun-alignedオーロラアーク
Stable sun-aligned arcs equatorward of the cusp

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A well-established feature of the aurora in the cusp is a transient poleward-moving auroral form. The initial brightening of this aurora occurs near the equatorward edge of the persistent east-west aligned aurora, and then the auroral form moves poleward. This aurora form often occurs at several minute intervals. When compared with this kind of active features, the aurora equatorward of the cusp may be thought to be generally quiet. In this study, we focus on auroral arcs that sometimes appear equatorward of the persistent cusp. By examining auroral image data obtained at wavelengths of 557.7 nm and 630.0 nm by an all-sky imager at Longyearbyen, Svalbard, we found several events in which sun-aligned arcs exist stably equatorward of the cusp in the noon sector. The sun-aligned arcs, which range between ~70 and ~76 MLAT, move from the postnoon to the noon sector slowly. The lifetime of the sun-aligned arcs is ~15 min or longer, which is much longer than that of the transient moving auroral form. The poleward portion of this arc, which is located at ~76 MLAT, is measured by the EISCAT Svalbard Radar. Simultaneous observations from the EISCAT Svalbard Radar and the all-sky imager show that fast plasma flow exists in the region of the auroral arc. Multiple sun-aligned arcs can also be observed. We discuss the spatial distribution of the plasma flow associated with the stable sun-aligned arcs equatorward of the cusp, and interpret the flow distribution in terms of temporal variations in the duskside convection cell.

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