

## **Asymmetrically traveling auroral surges in the northern and southern hemisphere**

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Eastward and westward traveling surges were simultaneously observed at Syowa station in Antarctica and at its magnetic conjugate station, Tjörnes in Iceland simultaneously on 22 September 2018, respectively. At that time, Arase satellite was located on the magnetic field line connecting these two stations and observed sudden increase in electron fluxes and following modification in geomagnetic components. The breakup was characterized by its large longitudinal displacement (~3 MLT) of the initial brightening position in both hemispheres. The surge observed in the northern hemisphere traveled eastward much faster compared to the westward traveling surge observed in southern hemisphere. We discuss that the observed north-south asymmetrical traveling surge is consistent with the prediction from global magnetohydrodynamic simulations.