

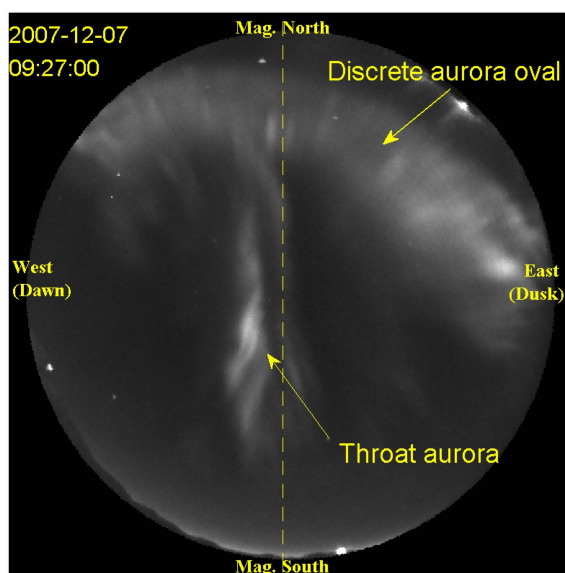
The main observational properties of throat aurora and their implications on dayside S-M-I coupling

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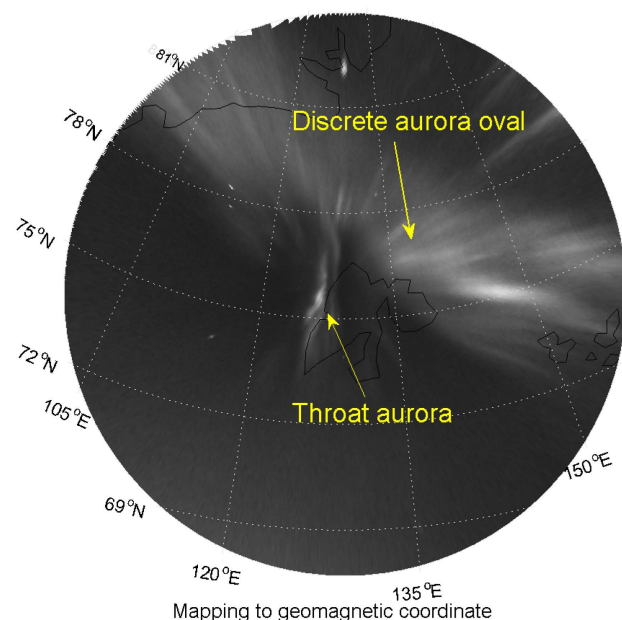
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Throat aurora is a particular auroral form observed around the dayside ionospheric convection throat region and was defined during an extensive study on dayside diffuse aurora. Throat auroras typically exhibit as north-south aligned discrete auroral forms extending from the equatorward edge of the east-west-aligned auroral oval toward low latitude. The main observational properties of throat aurora have been revealed as follows. 1) The occurrence rate of throat aurora is rather high. 2) Throat auroras are caused by precipitation of particles from the magnetosheath and have been suggested to be the ionospheric signature of magnetopause indentations. 3) The occurrence rate of throat aurora is dependent on both magnetospheric internal factors, such as diffuse aurora and magnetospheric convection, and external factor, i.e., the IMF cone angle. 4) Throat aurora are associated with clear magnetopause reconnection signatures. Based on these observational results, a conceptual model for throat aurora is proposed, which suggests that a polarization electric field in the ionosphere may play the key role for producing throat aurora by affecting the magnetopause reconnection.

Keywords: Throat aurora, Cusp, solar wind-magnetosphere coupling



Original auroral image in red line



Mapping to geomagnetic coordinate