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1 IHY CIP 19. Evolution of the magnetopause X line during variable IMF orientation.

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We selected a three hour interval, when the Interplanetary Magnetic Field (IMF) observed by ACE and the magnetosheath magnetic field observed by Cluster flipped twice between two states: B_y dominated and predominantly northward, both with positive $B_y$and negative B_x.

In this period Cluster was on an outbound orbit at the dusk high latitude magnetopause tailward of the northern cusp and observed a boundary layer which can be explained in the framework of high latitude reconnection. Simultaneously, SuperDARN observations in both hemispheres show that the high latitude convection at noon responds to the IMF turnings.

We study in detail the reconnection reconfiguration at the magnetopause for the varying IMF orientation. We use the Cooling model to predict the X line evolution at the magnetopause and we compare the model results with Cluster observations. Moreover, we compute the footprint of the X line in the polar ionosphere and study the evolution of the position of the X line projection with respect to the convection reconfiguration as observed by the SuperDARN radars in the Northern and Southern Hemisphere.