



Cluster observations of the mid-altitude cusp under strong northward Interplanetary Magnetic Field

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We report on a multi-spacecraft cusp observation lasting more than 100 minutes. We determine the cusp boundary motion and reveal the effect on the cusp size of the interplanetary magnetic field (IMF) changing from southward to northward. The cusp shrinks at the beginning of the IMF rotation and it re-expands at the rate of 0.50 deg ILAT per hour under stable northward IMF. Based on plasma signatures inside the cusp, such as counter-streaming electrons with balanced fluxes, we propose that pulsed dual lobe reconnection operates during the time of interest. SC1 and SC4 observations suggest a long-term regular periodicity of the pulsed dual reconnection, which we estimate to be 1-5 minutes. Further, the distances from the spacecraft to the reconnection site are estimated based on observations from three satellites. The distance determined using SC1 and SC4 observations is around 15 Re, and that determined from SC3 data is around 8 Re. The large-scale speed of the reconnection site sunward motion is about 16 km/s. We observe also a fast motion of the reconnection site by SC1, which provides new information about the transitional phase after the IMF rotation.