



Evolution of asymmetrically displaced footpoints during substorms

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It is well established that a transverse (y) component in the interplanetary magnetic field (IMF) induces a B_y component in the closed magnetosphere through asymmetric loading and/or redistribution of magnetic flux. Simultaneous images of the aurora in the two hemispheres have revealed that conjugate auroral features are displaced longitudinally during such conditions, indicating that the field-lines are displaced from their symmetric configuration. Although the direction and magnitude of this displacement show correlations with IMF clock angle and dipole tilt, events show large temporal and spatial variability of this displacement. For instance, it is not clear how substorms affect the displacement.

In a previous case study, it has been demonstrated that displaced auroral forms, associated with the present IMF orientation, returned to a more symmetric configuration during the expansion phase of two substorms. Using IMAGE and Polar, we have identified several events where conjugate images during substorm are available. We identify asymmetric auroral features during these events and investigate their time development during the substorm phases.