

**Structure and dynamics of the exterior cusp:
Comparison between global MHD simulations and observations**

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We report a comparison between results from time-dependent global magnetohydrodynamic (MHD) simulations of the magnetosphere-ionosphere system with high-altitude spacecraft observations. The study focuses on the structure and dynamics of the exterior cusp. To define the boundary of the exterior cusp we use plasma density contours on the magnetospheric side and locations of the magnetic minima on the magnetopause side. The exterior cusp forms a large cone that widens rapidly in diameter as we approach the magnetopause. The exterior cusp is found at high-latitude when the BZ component of the interplanetary magnetic field (IMF) is positive and at low-latitude when BZ is negative. The simulations show that the polar cusps move inward as the solar wind pressure increases, but their center remain approximately located at the same invariant latitude. We conclude this paper by considering the effects of the IMF-BY component and the tilt-angle on the exterior cusp and compare the simulation results with spacecraft observations.