



Response times of the two cell convection pattern in the ionosphere

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Dayside and nightside reconnection result in two ionospheric convection cells - one in dawn and one in dusk. During purely southward interplanetary magnetic field (IMF $B_Z < 0$), the two cells are almost symmetric across the noon-midnight meridian. When the IMF also has a B_Y component, the cells are distorted. One cell resembles a banana, while the other cell resembles an orange. This is a dawn-dusk asymmetry. IMF B_Y usually dominates over IMF B_Z due to the Parker spiral, and the asymmetric convection cells are the rule rather than the exception. In this presentation we address the response of the two-cell convection pattern to changes in the orientation of the IMF. The response is studied separately in local time sectors from noon to midnight both inside and outside the polar cap boundary. Measurements from AMPERE are used to quantify the magnetic responses at 780 km altitude associated with the convection. For each local response we identify both the initial and subsequent response times to changes in the IMF orientation, and they are estimated with an auto-regressive model of first order with exogenous inputs, where the number of input terms are determined by forward regression. The local responses will be compared to infer the global reconfiguration of the two-cell convection pattern.