

# **Nonlinear dependence of Dst and AE indices on the electric field of magnetic cloud**

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The dependence of Dst and AE geomagnetic indices on Pd,  $\sigma B$  and Ey solar wind parameters is analyzed. We study the influence of the Ey electric field of magnetic clouds on the character of magnetic disturbance development at different levels of dynamic pressure Pd and irregularity  $\sigma B$  of the magnetic field. The nonlinear different kind dependence of Dst and AE on the electric field has been found. The magnitude of Dst like the transpolar potential at large values of Ey is the saturation regime. The transpolar potential saturation level depends on both Pd and  $\sigma B$ . In contrast to Dst, the value of AE decreases at large Ey. The nonmonotone dependence of AE on Ey is probably due to the influence of the region 1 current system on the dayside magnetopause reconnection. The features found are the sign of passage of the magnetic clouds near the Earth orbit.