



Shape of the dayside equatorial magnetopause

Jiri Simunek (1), Jana Safrankova (2), Zdenek Nemecek (2), and Lubomir Prech (2)

(1) Institute of Atmospheric Physics, Upper Atmosphere, Prague, Czech Republic (jsim@ufa.cas.cz), (2) Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic

A magnetopause location is generally believed to be determined by the solar wind dynamic pressure and by a sign and value of the interplanetary magnetic field (IMF) vertical (B_z) component. The contribution of other parameters is usually considered to be minor or negligible near the equatorial plane. A great majority of present magnetopause models describes the magnetopause shape with an ellipsoid or paraboloid of revolution. The axis of such surface usually reflects the Earth orbital motion around the Sun. Ten years of magnetopause observations near the equatorial plane by the THEMIS spacecraft allow to tests of this description and facilitates search for a better approximation of the magnetopause shape. We present a statistical study based on more than several thousand magnetopause crossings identified in the THEMIS data. The study accounts for a dependence of the magnetopause location on the upstream solar wind dynamic pressure and expects that all other effects can be averaged. The study suggests a very simple expression for the shape of the dayside magnetopause and examines the influence of IMF and solar wind parameters on this shape. The effects of magnetospheric current systems are also discussed.