Geophysical Research Abstracts, Vol. 9, 04537, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04537


# Systematic Analysis of Magnetic Clouds

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The model of Hidalgo et al. (2003) is used for the study of magnetic clouds to consider the possible deformation (in the elliptic in the first approximation) of its cross-section and take into account expansion during the temporal interval of spacecraft measurements. From the fitting of the model to the data we can obtain fit parameters associated with the orientation of the magnetic cloud with respect to the ecliptic plane, its geometry, and other variables related to characteristics of the plasma. The values of such parameters are important for the study of geomagnetic storms and for understanding the evolution of magnetic clouds in the interplanetary medium. The purpose of this work is to show a relatively simple magnetic clouds model that allows one to make a systematic and complete analysis of all observed clouds. The data used for this study encompasses all the magnetic clouds observed by the WIND spacecraft since launch to the present time.