Motions of the Earth's bow shock in the deep-tail flank

Ken Tsubouchi [1], Toshio Terasawa [2], Toshifumi Mukai [3], Yoshifumi Saito [3], Susumu Kokubun [4], Hirotsugu Kojima [5], Hiroshi Matsumoto [5]

[1] Dept. Earth and Planetary Phys., Univ. of Tokyo, [2] Dept. Earth Planetary Phys., Univ. of Tokyo, [3] ISAS, [4] STEL, Nagoya Univ., [5] RASC, Kyoto Univ.

The structure of the bow shock observed at the tail flank over 100 Re behind the Earth is analyzed with the GEOTAIL observations. From the parameter sets describing the shock structure, we can find the quantitative relation between the direction of a shock normal vector and its expansion/shrinking velocity. An MHD model is constructed to explain this relation; showing the dependence on the upstream solar wind velocity and the directional change of the IMF.