

The dependence of the Solar wind on the Martian Induced Magnetosphere Boundary

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The recent observations by Mars Express (MEX) revealed that there are some plasma boundaries in the solar wind-Mars interaction region; the bow shock, the induced magnetosphere boundary (IMB), and the photoelectron boundary [Lundin et al., 2004].

We searched 2324 orbits, (Jun.7 2004-Mar.13 2006), and identified IMB crossings.

Due to the large thickness of the IMB layer, we defined two IMBs; top of the IMB (IMBT) and bottom of the IMB (IMBB).

The IMB layer distribution is shown by plotting IMB crossings. The IMB crossings are sorted by the solar wind parameters and we confirmed that the IMB altitude becomes lower at the high solar wind velocity.

On the other hand, the clock angle of the simultaneous IMF is calculated using the magnetic field data observed by Mars Global Surveyor. We investigated the dependence of the IMB crossings for interplanetary magnetic field and the induced electric field by solar wind.

In this paper, we study the effect of the solar wind, IMF, and the induced electric field by the solar wind on the Martian IMB.