

Solar wind conditions during the Mars express Upper Atmosphere campaign in March 2010

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Abstract

This paper will present the solar wind observations during the Mars Upper Atmosphere campaign conducted by Mars express in March 2010.

1. Introduction

The alignment of Mars with Earth during March 2010 was such that upstream solar wind monitors of Earth such as ACE as well as the 2 Stereo spacecraft could act as excellent indicators of the solar wind conditions at Mars. As a consequence 4 instruments on Mars Express were operated throughout the month in modes which would enhance the upper atmosphere science. This campaign period was originally identified through the Mars Upper atmosphere Network1.1 Sub-section

2. An additional section

This paper presents an overview of the solar wind conditions during the campaign period. The solar wind conditions measured in situ by ACE and stereo will be compared in order to enhance the prediction of the solar wind conditions at Mars. In addition the remote sensing instruments on board Stereo will enable disturbances such as CIRs and CMEs during the interval to be tracked through the inner heliosphere. The analysis methods used in this paper have been presented elsewhere and have been shown to be successful in predicting the onset of extreme conditions at Mars, such as CIRs during solar minimum [1]. Here we investigate whether this technique can be extended to more normal conditions as well as a period when the solar activity is increasing.

An overview of the solar wind conditions during the interval are shown in the Figure below. These show that there were several intervals when the solar wind velocity was enhanced above the normal conditions indicating several potential intervals of interest for mars express.

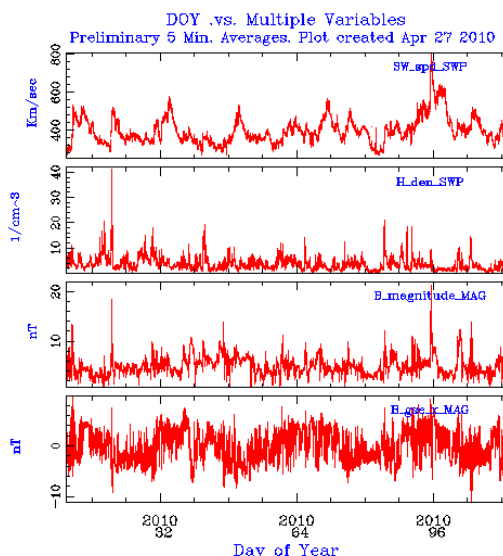


Figure 1: Solar wind conditions during March 2010.

References

- [1] Edberg, N.J.T., H. Nilsson, A. Williams, M. Lester, S.E. Milan, S.W.H. Cowley, M. Franz, S. Barabash and Y. Futaana, Pumping out the atmosphere of Mars through solar wind pressure pulses, *Geophys. Res. Lett.*, 37, L03107, doi:10.1029/2009GL041814, 2010

