

## **Mars Express aeronomy and solar wind observation campaigns: Overview and selection of results**

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### **Abstract**

The behavior of planetary upper atmospheres is influenced by the variations in solar activity. At Mars, which does not possess any internal magnetic field, the coupling between the thermosphere, the ionosphere, the induced magnetosphere, and the solar wind is complex; and in a way, the influence is much more direct than at the Earth. The Mars Express spacecraft performs daily measurements of the Mars' upper atmosphere and has acquired a unique data set over a significant portion of the solar cycle, since January 2004.

Recently, special coordinated campaigns with four Mars Express instruments have been organised in order to study the effects of solar wind drivers at Mars. Such campaigns took place in March-April 2010 and January-April 2012, when planetary alignments between Earth and Mars (with Mercury and Venus also in 2012) give good opportunities for such studies, where data from solar and solar wind monitoring spacecraft near Earth provided measurements from which to correlate and define the Mars-Sun interaction.

We will present an overview of these campaigns and show a selection of results.