



## **Magnetospheric and Ionospheric Response to Solar Wind Variability at Mars**

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At planets with induced magnetospheres the coupling between the ionosphere, the small draped magnetosphere and the solar wind is very direct in comparison to Earth. On the other hand it is more complicated as the weak induced magnetosphere itself is created by and in its shape and strength dynamically depending on the prevailing Solar wind conditions.

In early 2010 Mars was located behind Earth in the Solar wind. In this study we utilized coordinated data from multiple near-Earth spacecraft (Stereo, ACE) to evaluate what kind of Solar wind disturbances have passed by Earth and might hit Mars consecutively (and when). We use plasma data from the ESA Mars- Express mission (mainly from the ASPERA particle instrument and the MARSIS topside ionospheric sounder) to investigate, for a number of isolated events in March and April 2010, how the induced magnetosphere at Mars develops and decays in response to Solar wind variability in the magnetic field, density and velocity, and what kind of ionospheric dynamics are produced in association with such events.