THE SOLAR WIND INTERACTION WITH MARS: RECENT OBSERVATIONS

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Mars is a unique obstacle to the solar wind flow. It lacks a significant global magnetic field but does possess an extensive exosphere/ionosphere which interacts with the incident solar wind in a manner similar to Venus and comets. However, in contrast to Venus and comets, there are very strong, localized regions of magnetization in the crust of Mars. These crustal magnetic fields contribute to the Martian obstacle locally. The combination creates an asymmetric and time-varying object.

The wealth of data from the Mars Global Surveyor mission has enabled great insights into this interaction, especially when put together with complementary observations from previous spacecraft missions. We review the current understanding of the solar wind interaction with Mars. Then, we highlight recent results from the Magnetometer/Electron Reflectometer and the Radio Science experiments onboard Mars Global Surveyor that illuminate aspects of the solar wind interaction or resolve outstanding issues. Among these are observations indicating the amount of influence the crustal magnetic fields have on the solar wind interaction with Mars.