Geophysical Research Abstracts
Vol. 16, EGU2014-8784, 2014
EGU General Assembly 2014

Dynamics of planetary ions at Mars and Venus in a global hybrid simulation

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We discuss the solar wind induced ion escape from Mars and Venus in a global hybrid simulation. Using the HYB hybrid model for planetary-solar wind interactions we analyze the dynamics of planetary ions in plasma environments of these planets. Especially, we study planetary ions with different mass-to-charge ratios ranging from hydrogen to oxygen. We analyze the trajectories and escape channels of the planetary ions under different solar wind and interplanetary magnetic field conditions and quantify how different conditions affect the ion dynamics. We consider the physics of the ion dynamics in a hybrid model and discuss the importance for in situ plasma measurements such as those made by Mars Express and Venus Express as well as the forthcoming MAVEN observations.