



Plasma transport at Mercury and its relation with Hermean space weather

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Space weather deals with a number of aspects of the solar wind interaction with planetary environments, be they magnetized or not. In this talk, I will review some of these aspects in the miniature magnetosphere of Mercury. In this magnetosphere, MESSENGER observations have revealed a variety of structural and dynamical features similar to those at Earth such as dayside cusps at high latitudes and a nightside magnetotail due to the weak (northward shifted) intrinsic magnetic field of the planet, or global topological reconfigurations with frequent reconnection events in the frontside and tail regions as well as short-lived dipolarizations. However, the characteristic spatial and temporal scales of these events are here much smaller than those occurring at Earth. I will discuss some features of plasma transport and acceleration in this miniature magnetosphere of Mercury, starting from solar wind entry in the cusp and subsequent transport in the plasma mantle and plasma sheet, then addressing circulation of planetary material and its energization due to convection or impulsive electric fields, followed by magnetospheric escape or precipitation onto the planet surface. The common knowledge of Mercury's magnetized environment that has been acquired from MESSENGER datasets and theoretical/numerical studies will be considerably expanded with the forthcoming observations of the extensive plasma payload onboard the BepiColombo mission that was launched on October 20, 2018 and that will reach Mercury in December 2025.