

The E_{sw} asymmetry and the magnetic morphology of the Martian magnetotail

*LiHui Chai¹

1. Institute of Geology and Geophysics, Chinese Academy of Sciences

Due to that the gyroradius of the planetary heavy ions picked up by the solar wind electric field (E_{sw}) is comparable to the planet size, the morphology and strength of the induced magnetosphere on Mars are asymmetric in the E_{sw} direction. Based on the statistical analysis of the observations by Mars Atmosphere and Volatile Evolution (MAVEN) mission, the morphology of the Martian magnetotail are studied. We found that there are more lobe magnetic fluxes in the $+E_{sw}$ hemispheres than that in the $-E_{sw}$ hemispheres in the near magnetotail on Mars. The lobe magnetic flux transports gradually towards the $-E_{sw}$ hemispheres along the magnetotail. The regions with more/less lobe magnetic fluxes coincide with the regions with draped/reversed magnetic field and fast-but-sparse/slow-but-dense escaping ions, respectively. The cause of the magnetic flux inhomogeneity and transport is discussed.

Keywords: Mars, magnetotail, ion pickup