



Simulation of Energetic Neutral atoms at Mars and a Comparison with ASPERA-3 data

H. Gunell (1), K. Brinkfeldt (1), S. Barabash (1), E. Kallio (2), P. Brandt (3), and the ASPERA-3 team

(1) Swedish Institute of Space Physics, Kiruna, Sweden (herbert.gunell@physics.org).

(2) Finnish Meteorological Institute, Helsinki, Finland, (3) Appl. Phys. Lab, Laurel, MD, USA

We present simulations of the energetic neutral atom (ENA) flux at the Mars Express orbit and compare these to ASPERA-3 observations.

ENA images of the solar wind–Mars interaction region have been simulated in the past using an empirical model of the solar wind flow around the planet (*M. Holmström, S. Barabash, and E. Kallio, JGR, vol. 107 (A10), 1277, doi:10.1029/2001JA000325*), and comparing different models (*Gunell H., et al., Planetary and Space Science, under review*).

Gunell et al. used three different models of the ion flow and temperature: an empirical model that is based on Phobos 2 measurements (*Kallio, Luhmann, and Barabash, JGR, vol. 102, pp. 22183–22197, 1997*); a 3D hybrid simulation (*Kallio and Janhunen, JGR, vol. 107, 19 March 2002*); and a 3D MHD simulation (*Ma, et al., JGR, vol. 107, 09 October 2002*).

In the present study simulations are used to aid the interpretation of ENA data obtained by the ASPERA-3 instrument onboard ESA's Mars Express spacecraft. Comparing the different models will enable us to determine what the sources of the observed ENA flux are.