EPSC Abstracts
Vol. 8, EPSC2013-266-1, 2013
European Planetary Science Congress 2013

The effects of the May 2007 solar eruption on the induced magnetosphere of Venus

D. Vech (1), **K. Szego** (1), A. Opitz (2), M. Fraenz (3)

(1) Wigner Research Institute for Physics, Budapest, Hungary (szego.karoly@wigner.mta.hu)
(2) RSSD, ESA/ESTEC, Noordwijk, The Netherlands (andrea.opitz@esa.int)
(3) Max-Planck-Insitut für Sonnensystemforschung, Katlenburg-Lindau D-37191, Germany (fraenz@mps.mpg.de)

During the recent very quiet long solar minimum there was one major solar eruption in May 2007, which was extensively studied by the solar community. As one separate solar eruption under otherwise quiet solar conditions, this coronal mass ejection could be thoroughly investigated. Rouillard et al. (2009) described this solar event as it propagated from the Sun towards Venus and Mercury, and also discussed its effects on pure solar wind magnetic field measurements taken in the vicinity of Venus. Here we study the effects of this solar event on the charged particles in the induced magnetosphere of Venus. This solar event hit Venus end of May 2007 and Venus Express (VEX) orbiting around the planet observed the effects of this clear solar event on the charged particles in the induced magnetosphere of Venus.

As it is discussed in Rouillard et al. (2009), from about 2000 UT on 24 May until the end of 26 May, the interplanetary magnetic field increased in magnitude, and it was immediately followed by a large-scale rotation in the field directions which are both common characteristics of flux ropes recorded in situ by spacecraft in interplanetary space, hence, it provided a clear evidence of an interplanetary coronal mass ejection crossing the VEX orbit at that time.

The solar wind was variable on a larger time scale near Venus between 5 and 30 May 2007.. The solar wind velocity reached 600 km/s several times, and the density also varied almost by an order of magnitude. We focus here on the changes observed by the ASPERA-4 plasma spectrometer in the energy spectra of protons and heavy ions during this time interval in the induced magnetosphere, especially near boundary crossings. The magnetic field variations accompanying the observed changes in the spectra are also investigated. The solar events induced changes relative to the average conditions are presented and analysed in detail.

.

References

Rouillard, A. P., et al. (2009), A solar storm observed from the Sun to Venus using the STEREO, Venus Express, and MESSENGER spacecraft, J. Geophys. Res., 114, A07106, doi:10.1029/2008JA014034