Geophysical Research Abstracts
Vol. 16, EGU2014-12173-1, 2014
EGU General Assembly 2014

Cassini ENA Observations of an Asymmetric Europa Torus with Indications of Magnetospheric Dynamics

Pontus Brandt, Joseph Westlake, Barry Mauk, and Donald Mitchell
The Johns Hopkins University Applied Physics Laboratory, Laurel, United States (pontus.brandt@jhuapl.edu)

From about December 2000 to January 2001 the Ion Neutral Camera (INCA) on board the Cassini spacecraft imaged Jupiter in Energetic Neutral Atoms (ENA) that are created when singly charged ions charge exchange with neutral gas atoms or molecules. The INCA observations were obtained from a distance of about 137-250 Jovian planetary radii (RJ) over an energy range from about 10 to 300 keV. These observations have been demonstrated to be consistent with a neutral gas torus encircling Jupiter at Europa's orbit (Mauk et al., 2004). Here, we present a new, detailed analysis of the ENA images implying an asymmetric Europa neutral gas torus with indications of magnetospheric dynamics. The analysis uses images with a minimum integration time and background. A forward model using a parametric energetic ion model and a neutral gas model simulates ENA images through the instrument response function of INCA in order to determine the spatial distribution of the neutral gas.