



Venus' Induced Magnetosphere

J.G. Luhmann (1), D. Ulusen (1), T. McEnulty (1), Y-J. Ma (2), H-Y. Wei (2) C.T. Russell (2), T-L. Zhang (3), S. Barabash (4)
(1) SSL, University of California, Berkeley, CA, USA, (2) IGPP UCLA, Los Angeles, CA, USA, (3) Space Research Institute, IWF, Graz, Austria (4) Swedish Inst. Of Space Physics, Kiruna, Sweden (jgluhman@ssl.berkeley.edu / Fax: +1 510 643 8302)

Abstract

PVO at Venus provided us with the first detailed observations of a classic induced magnetosphere. This type of planet-solar wind interaction is characterized by a bow shock and magnetosheathlike region produced by the ionospheric obstacle to the oncoming magnetized plasma flow of the solar wind. While the basics are well-documented and modeled by MHD codes in particular, there are details that remain to be understood. For example, the subsolar solar maximum interaction so well observed on PVO could be idealized in early models by external flow incident on a conducting sphere, but the near-planet flow wake details are not so easily described. Similarly, the high solar wind dynamic pressure cases observed on PVO, and the low solar activity interaction were only touched upon due to insufficient observations. Now Venus Express has accumulated enough data to help us investigate these and other aspects of the induced magnetosphere by comparisons with the PVO results and models. We summarize both relevant published findings and the results of some additional analyses of the data organized by solar wind flow and interplanetary field coordinate systems.