

Project Details

ROSES ID: NNH13ZDA001N

Selection Year: 2013

Program Element: Cross-Discipline Infrastructure Building Programs

Topic: Thermospheric wind dynamics during geomagnetic storms and their influence on the coupled magnetosphere-ionosphere-thermosphere system

Project Title:

Magnetosphere-Ionosphere Coupling in the Solar System A Cross-Discipline Infrastructure Building Conference

PI Name: Robert Schunk

PI Email: schunk@cc.usu.edu

Affiliation: Utah State University

Project Member(s):

- Chappell, Charles R; Co-I; Vanderbilt University
- Nagy, Andrew F.; Co-I; University of Michigan

Summary:

Over the half century of exploration of the Earth's space environment, it has become evident that the interaction between the ionosphere and the magnetosphere plays a dominant role in the evolution and dynamics of magnetospheric plasmas and fields. It is now being found that this same interaction is of fundamental importance at other planets and moons throughout the solar system. We propose to hold a cross-discipline AGU Chapman conference, which will examine the details of the coupling processes using results from both measurements and modeling. This conference addresses the Cross-Discipline Infrastructure Building Program portion of the Living With a Star (LWS) Program solicitation. Topics that will be discussed include the ionosphere as a source of magnetospheric plasma, the effects of the low energy ionospheric plasma on the stability of the more energetic plasmas, the role of currents and electric/magnetic fields in coupling the two regions, the unified global modeling of the ionosphere and magnetosphere, and the coupling of ionosphere and magnetosphere at other planets and moons in the solar system. Our goal is to enhance the understanding of this coupling by researchers in both the heliophysics and planetary science communities through the sharing of measurements and modeling techniques. This conference is planned to occur on the 40th anniversary of the initial magnetosphere-ionosphere coupling conference that took place at Yosemite National Park in 1974 giving a four decade perspective of the progress in understanding these fundamental processes. Short segments of the video of the original meeting in 1974 will be used to set the stage in the sessions and the total original video recording will be digitized for the use as an historical resource by the heliophysics and planetary sciences communities. The conference has been approved as an American Geophysical Union Chapman Conference and, in addition to the NASA support proposed herein, is expected to receive support from the National Science Foundation that will help with student travel.

Publication References:

Summary: no summary

Reference:

Seki, K.; Nagy, A.; Jackman, C. M.; Cray, F.; Fontaine, D.; Zarka, P.; Wurz, P.; Milillo, A.; Slavin, J. A.; Delcourt, D. C.; Wiltberger, M.; Ilie, R.; Jia, X.; Ledvina, S. A.; Liemohn, M. W.; Schunk, R. W.; (2015), A Review of General Physical and Chemical Processes Related to Plasma Sources and Losses for Solar System Magnetospheres, Space Science Reviews, Volume 192, Issue 1-4, pp. 27-89, doi: 10.1007/s11214-015-0170-y

Summary: no summary

Reference: Seki, K.; Nagy, A.; Jackman, C. M.; Cray, F.; Fontaine, D.; Zarka, P.; Wurz, P.; Milillo, A.; Slavin, J. A.; Delcourt, D. C.; Wiltberger, M.; Ilie, R.; Jia, X.; Ledvina, S. A.; Liemohn, M. W.; Schunk, R. W.; (2016), A Review of General Physical and Chemical Processes Related to Plasma Sources and Losses for Solar System Magnetospheres, Plasma Sources of Solar System Magnetospheres, Space Sciences Series of ISSI, Volume 52. ISBN 978-1-4939-3543-7. Springer Science+Business Media New York, 2016, p. 27, doi: 10.1007/978-1-4939-3544-4_3

