

Project Details

ROSES ID: NNH05ZDA001N

Selection Year: 2006

Program Element: Data, Tools, & Methods

Topic: Shock acceleration of solar energetic particles by interplanetary CMEs

Project Title:

Coordinated Data Analysis Workshops (CDAWs): Meeting of the LWS Minds

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Project Member(s):

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- Zhang, Jie ; Collaborator; George Mason University
- Thompson, Barbara J.; Collaborator; null
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Summary:

The primary scientific objective of this proposal is to characterize the solar eruptions that produce significant impact on the heliosphere in general, and on Earth in particular, so that a global understanding of the phenomenon can be developed. The specific impacts we are concerned with are the prompt arrival of solar energetic particles (SEPs) and the delayed arrival of the energetic plasma, known as the coronal mass ejections (CMEs). The multitude of effects that directly affect the day-to-day life of the human society arise from the geoeffectiveness and SEPeffectiveness of the solar eruptions. To achieve the scientific objectives we propose a two-pronged attack: (1) to hold a series of three Coordinated Data Analysis Workshops (CDAWs) to pool data, models, and analysis tools together for end-to-end studies of solar eruptions, and (2) to perform a targeted investigation of the solar sources of complex geomagnetic storms that last for more than three days with high intensity. CDAWs have proved to be an excellent forum for bringing scientists together from various disciplines of the Living with a Star (LWS) community for an in-depth look at science issues that cross the traditional discipline boundaries. The CDAWs are relevant to the Cross-Discipline Infrastructure Building Programs, because they address the timely and important topics of LWS. The CDAWs also create value-added data products and publications in refereed journals that become part of the LWS infrastructure. The targeted investigation of CGS is directly relevant to the Focused Science Topic (d): Storm effects on the global electrodynamics and the middle and low ionosphere. This proposal is highly relevant to many of NASA's exploration objectives because the results will help understand the space (radiation and plasma) environment along and at the path of robotic and human exploration.

Publication References:

Summary: no summary

Reference:

Zhang, J.; Richardson, I. G.; Webb, D. F.; Gopalswamy, N.; Huttunen, E.; Kasper, J. C.; Nitta, N. V.; Poomvises, W.; Thompson, B. J.; Wu, C.-C.; Yashiro, S.; Zhukov, A. N.; (2007), Solar and interplanetary sources of major geomagnetic storms ($Dst \leq -100$ nT) during 1996-2005, Journal of Geophysical Research: Space Physics, Volume 112, Issue A10, CiteID A10102, doi: 10.1029/2007JA012321

Summary: no summary

Reference: Yashiro, S.; Michalek, G.; Gopalswamy, N.; (2008), A comparison of coronal mass ejections identified by manual and automatic methods, Annales Geophysicae, Volume 26, Issue 10, 2008, pp.3103-3112, doi: 10.5194/angeo-26-3103-2008

