

Project Details

ROSES ID: NNH10ZDA001N

Selection Year: 2011

Program Element: Focused Science Topic

Topic: Factors that Control the Highly Variable Intensity and Evolution of Solar Particle Events

Project Title:

Investigation of solar energetic particle event properties

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Summary:

This investigation will focus on solar energetic particle (SEP) events that include protons with energies above 25 MeV, and the related solar phenomena. Around a thousand such events since 1967 have been studied and will form the basis of this investigation. Data from the HET instruments on STEREO A and B and SIS on ACE will be used to investigate future cycle 24 events at multiple spacecraft. We will also consider multi-point observations made in cycle 21 by the Helios 1 and 2 spacecraft at 0.3- 1 AU and by near-Earth spacecraft. Among the proposed topics are: the longitudinal variation of SEP events based on the location and properties of the related solar events, coronal mass ejections and interplanetary shocks; the effects of interplanetary structure, including interplanetary coronal mass ejections, on particle propagation in the inner heliosphere; and the possible role of preceding CMEs and seed populations in determining the intensity of SEP events. A foundation of the work will be our previous studies that have already addressed some of the topics of interest to the Focus Team.

Publication References:

Summary: no summary

Reference: Cohen, C. M. S.; Mason, G. M.; Wiedenbeck, M. E.; Haggerty, D. K.; Gomez-Herrero, R.; Bucik, R.; Christian, E. R.; Cummings, A. C.; Korth, A.; Labrador, A. W.; Leske, R. A.; Mall, U.; Mewaldt, R. A.; Stone, E. C.; Rosenvinge, T. T. Von; (2012), Observations of the longitudinal spread of solar energetic particle events in solar cycle 24, PHYSICS OF THE HELIOSPHERE: A 10 YEAR RETROSPECTIVE: Proceedings of the 10th Annual International Astrophysics Conference. AIP Conference Proceedings, Volume 1436, pp. 103-109, doi: 10.1063/1.4723596