

1. Record Nr.	UNINA9910293141403321
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Titolo	Solar Particle Radiation Storms Forecasting and Analysis [[electronic resource]] : The HESPERIA HORIZON 2020 Project and Beyond // edited by Olga E. Malandraki, Norma B. Crosby
Pubbl/distr/stampa	Springer Nature, 2018 Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-60051-6
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XIII, 203 p. 73 illus., 54 illus. in color.)
Collana	Astrophysics and Space Science Library, , 0067-0057 ; ; 444
Disciplina	523.2
Soggetti	Solar system Natural disasters Space sciences Atmospheric sciences Solar and Heliospheric Physics Natural Hazards Space Sciences (including Extraterrestrial Physics, Space Exploration and Astronautics) Atmospheric Sciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
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Sommario/riassunto

Solar energetic particles (SEPs) emitted from the Sun are a major space weather hazard motivating the development of predictive capabilities. This book presents the results and findings of the HESPERIA (High Energy Solar Particle Events forecasting and Analysis) project of the EU HORIZON 2020 programme. It discusses the forecasting operational tools developed within the project, and presents progress to SEP research contributed by HESPERIA both from the observational as well as the SEP modelling perspective. Using multi-frequency observational data and simulations HESPERIA investigated the chain of processes from particle acceleration in the corona, particle transport in the magnetically complex corona and interplanetary space, to the detection near 1 AU. The book also elaborates on the unique software that has been constructed for inverting observations of relativistic SEPs to physical parameters that can be compared with spaceborne measurements at lower energies. Introductory and pedagogical material included in the book make it accessible to students at graduate level and will be useful as background material for Space Physics and Space Weather courses with emphasis on Solar Energetic Particle Event Forecasting and Analysis. This book is published with open access under a CC BY 4.0 license.
