

1. Record Nr.	UNINA9910293141403321
Autore	Olga E. Malandraki
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
Nota di contenuto	Intro -- Preface -- Acknowledgements -- Contents -- List of Abbreviations -- 1 Solar Energetic Particles and Space Weather: Science and Applications -- 1.1 Science -- 1.1.1 Historical Perspective of Solar Energetic Particle (SEP) Events -- 1.1.2 Large Gradual SEP Events -- 1.1.3 Ground Level Enhancement (GLE) Events -- 1.1.4 Multi-Spacecraft Observations of SEP Events -- 1.1.5 Particle Acceleration -- 1.1.6 Key Open Questions and Future Missions -- 1.2 Applications -- 1.2.1 Why Study SEP Events? -- 1.2.2 SEP Effects on Technology -- 1.2.3 SEPs and Human Health Effects -- 1.2.4 Mitigating the Effects of SEPs -- 1.2.4.1 Hazard Assessment -- 1.2.4.2 Mitigation Procedures -- References -- 2 Eruptive Activity Related to Solar Energetic Particle Events -- 2.1 Introduction -- 2.2 The Scene -- 2.3 Solar Flares: Energy Release and

Radiative Signatures of Charged Particle Acceleration -- 2.3.1 Emission Processes -- 2.3.1.1 Bremsstrahlung -- 2.3.1.2 Gyrosynchrotron Radiation -- 2.3.1.3 Plasma Emission from Electron Beams -- 2.3.1.4 Gamma-Rays from Accelerated Protons and Ions -- 2.3.2 Where Are Electrons Accelerated in Solar Flares? -- 2.3.3 A Qualitative View of Acceleration Processes -- 2.4 What Is a Coronal Mass Ejection? -- 2.4.1 CME Magnetic Structure and Eruption -- 2.4.2 Shock Waves and Particle Acceleration at CMEs -- 2.5 Summary and Conclusion -- References --

3 Particle Acceleration Mechanisms -- 3.1 Introduction -- 3.2 Acceleration Mechanisms -- 3.2.1 Large-Scale Electric Field Acceleration -- 3.2.2 Resonant Wave Acceleration -- 3.2.3 Shock Acceleration -- 3.2.4 Compressional Acceleration and Collapsing Magnetic Traps -- 3.2.5 Stochastic Acceleration -- 3.3 Concluding Remarks -- References --

4 Charged Particle Transport in the Interplanetary Medium -- 4.1 Introduction -- 4.1.1 Energetic Particles in the Solar System. 4.1.2 The Interplanetary Magnetic Field -- 4.1.3 Motion of Charged Particles. First Adiabatic Invariant -- 4.2 Particle Transport -- 4.2.1 Particle Transport Equations -- 4.2.2 Focused Transport -- 4.2.3 Diffusive Transport -- 4.3 Application: Description of Solar Energetic Particle Events -- 4.3.1 Numerical Techniques -- 4.3.2 Observations -- 4.3.3 Inferring Transport Conditions -- 4.4 Concluding Remarks -- References --

5 Cosmic Ray Particle Transport in the Earth's Magnetosphere -- 5.1 Introduction -- 5.2 Motion of Charged Particles in a Magnetic Field: Lorentz Force -- 5.3 Earth's Magnetic Field -- 5.3.1 The Magnetic Field of the Earth as a Dipole Field -- 5.3.2 Magnetic Field Model Due to Internal Sources: IGRF -- 5.3.3 Contributions to the Earth's Magnetic Field by Magnetospheric Electric Currents -- 5.3.4 Magnetic Field Models of the External Sources -- 5.4 Computation of the Propagation of Cosmic Ray Particles in the Earth's Magnetosphere -- 5.5 The Concept of Cutoff Rigidities and Asymptotic Directions -- References --

6 Ground-Based Measurements of Energetic Particles by Neutron Monitors -- 6.1 Introduction -- 6.2 History -- 6.3 Transport of Cosmic Ray Particles in the Earth's Atmosphere -- 6.3.1 Model of the Earth's Atmosphere -- 6.3.2 Particle Cascade in the Atmosphere -- 6.4 Neutron Monitor Detector -- 6.4.1 Components of a Neutron Monitor -- 6.4.2 Neutron Monitor Yield Function -- 6.4.3 Atmospheric Effects -- 6.5 Worldwide Network of Neutron Monitor Stations as a Giant Spectrometer -- 6.6 Neutron Monitor Database: NMDB -- References --

7 HESPERIA Forecasting Tools: Real-Time and Post-Event -- 7.1 Introduction -- 7.2 Predicting SEP Event Onsets from Historical Microwave Data by Using the UMASEP Scheme -- 7.3 Predicting SEP Energy Spectra from Historical Microwave Data -- 7.4 Predicting 30-50 MeV SEP Events by Using the RELeASE Scheme. 7.5 Predicting > 500 MeV SEP Events by Using the UMASEP Scheme -- 7.6 Concluding Remarks -- References --

8 X-Ray, Radio and SEP Observations of Relativistic Gamma-Ray Events -- 8.1 Introduction -- 8.2 Theory and Early Observations of Gamma-Ray Emission at Photon Energies > 60 MeV -- 8.2.1 Pion-Decay -Ray Emission -- 8.2.2 Long-Duration -Ray Events -- 8.3 New Insights of Sustained Emission Events from Fermi Observations -- 8.4 Multiwavelength Observations of Fermi/LAT -Ray Events -- 8.4.1 Impulsive and Early Post-impulsive -Ray Emission -- 8.4.2 Long-Duration -Ray Events -- 8.4.3 Soft X-Ray Bursts and -Ray Events -- 8.4.4 Coronal Shock Waves and -Ray Events -- 8.5 Solar Energetic Particle Events Associated with Fermi/LAT Gamma-Ray Events -- 8.5.1 SEP Characteristics and Association with Fermi/LAT -- 8.5.2 SEP Spectra -- 8.6 Summary and Discussion -- References --

9 Modelling of Shock-Accelerated Gamma-Ray Events --

9.1 Introduction -- 9.2 Model Description -- 9.2.1 Shock and Particle Model -- 9.2.2 Coronal Shock Acceleration Model -- 9.2.3 DownStream Propagation Model -- 9.3 Results -- 9.3.1 2012 May 17 Event -- 9.3.1.1 Modelling of the SEP Event -- 9.3.1.2 Simulations of Proton Acceleration at the Shock -- 9.3.1.3 Modelling of the Proton Transport Back to the Sun -- 9.3.2 2012 January 23 Event -- 9.3.2.1 Modelling of the SEP Event -- 9.3.2.2 Simulation of Proton Acceleration at the Shock -- 9.3.2.3 Modelling of the Proton Transport Back to the Sun -- 9.4 Discussion and Conclusions -- References -- 10 Inversion Methodology of Ground Level Enhancements -- 10.1 Introduction -- 10.2 Space and Ground Based Measurements of GLEs -- 10.2.1 dE/dx - dE/dx -Method -- 10.2.2 dE/dx - C -- 10.2.3 Magnet Spectrometer -- 10.3 Forward Modeling from the Sun to the Observer at Ground. 10.3.1 Interplanetary Particle Transport: From the Sun to the Magnetosphere -- 10.3.2 From the Interplanetary Particle Distribution to Neutron Monitor Measurements - Magneto- and Atmospheric Transport of Charged Energetic Particles -- 10.3.3 Combined Greens-Function -- 10.4 Inversion Methodology -- 10.4.1 Inversion of Spacecraft Data to the Sun -- 10.4.2 Inversion of NM Data to the Border of the Earth's Magnetosphere -- 10.4.3 The HESPERIA Approach -- 10.5 Results and Validation -- 10.6 Concluding Remarks -- References -- Index.

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.

2. Record Nr.	UNINA9910845293503321
Autore	Yovel, Yirmiahu
Titolo	Spinoza et autres hérétiques / Yirmiyahu Yovel ; traduit de l'anglais par Éric Beaumatin et Jacqueline Lagrée
Pubbl/distr/stampa	Paris, : Éditions du Seuil, c1991
ISBN	202012517X
Descrizione fisica	555 p. ; 24 cm
Collana	Libre examen. Histoire de la pensee
Locazione	FLFBC
Collocazione	DAM A91.17 SPIB/S 03
Lingua di pubblicazione	Francese
Formato	Materiale a stampa
Livello bibliografico	Monografia