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Multi-spacecraft observations and transport modeling of energetic electron for a series of solar particle events in August 2010

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During August 2010 a series of solar particle events was observed by the two STEREO spacecraft as well as by near-Earth spacecraft. The events, occurring at the 7th, 14th and 18th of August, were originating from active regions 11093 and 11099. We combine in-situ and remote-sensing observations with predictions from our model of three-dimensional anisotropic particle propagation in order to investigate the physical processes which cause the

large angular spreads of the energetic particles during these events. In particular, we address the effects of lateral transport of the electrons in the solar corona as well as due to diffusion perpendicular to the average magnetic field in the interplanetary medium. We also study the influence of

two CMEs and associated shock waves on the electron propagation, and a possible time variation of the transport conditions during the above period. For the 18th August event we additionally utilize electron observations from the Messenger spacecraft at a distance of 0.31 AU from the Sun for an attempt to separate between radial and longitudinal dependences in the transport process.

Collaboration

– not specified –

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