

Observations and numerical simulations of impulsive SEP events with Ulysses and ACE observations

Monday, July 12, 2021 7:12 PM (12 minutes)

We study the latitudinal extent of the impulsive solar energetic particle (SEP) events of 2000 June 10 and 2001 December 26 using energetic electron observations from the *ACE* and *Ulysses*. We investigate the effects of particle source and transport on the profiles. We get the best fit parameters for simulations by comparing simulations with the two spacecraft observations. We show that perpendicular diffusion and adiabatic cooling can significantly affect the propagation of particles. In addition, it is found that the start and peak times of particle injections are between the onset and peak times of flare for the two events. Furthermore, we have theoretical models for the peak intensity of the particle source and the time interval from the onset of flares to the peak time of the particle source. We show that the theories agree well with the best fit parameters.

Keywords

Solar energetic particles; acceleration of particles; turbulence; flare

Collaboration

other Collaboration

Subcategory

Theoretical Results

Primary authors: LIAN, L.-L.; QIN, Gang; Prof. WANG, Yang (School of Science, Harbin Institute of Technology, Shenzhen); Prof. CUI, S.-W. (Hebei Normal University, Shijiazhuang)

Presenter: LIAN, L.-L.

Session Classification: Discussion

Track Classification: Scientific Field: SH | Solar & Heliospheric