

Modeling of large SEP events: energetic particle fluxes and spectra at 1 AU

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Propagation of a CME-driven parallel shock and associated energetic particle acceleration are modeled. We trace time evolution and weakening of the shock. Background solar wind model is adjusted to model selected events. Our code describes particle acceleration at the shock, diffusion and convection with the shock, and escape of the particles from the shock. Parallel diffusion coefficient is introduced in a self-consistent manner based on intensity of Alfvén waves in the vicinity of the shock. Comparison of the simulation results with observations of a number of large SEP events is presented.