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The active Sun and its implication for the heliosphere
no preference

SEP events at distances <1 AU: Particle intensities above threshold values

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The longitudinal dependence of time-intensity profiles in large solar energetic particle (SEP) events is usually consistent with the presence of a traveling CME-driven shock that continuously injects SEPs. When the same event is observed at different helioradii, the shape of the time-intensity profiles depends not only on the magnetic connection between the shock and the observers, but also on how the efficiency of the shock accelerating particles varies as the shock propagates and how energetic particles and shocks are transported. The prediction of time-intensity profiles at different helioradii from SEP data collected by spacecraft orbiting either the Earth or the Sun-Earth L1 point must consider the relative motion of the Earth with respect to the traveling spacecraft. A critical issue regarding future missions going close to the Sun is the prediction of periods with particle intensities above certain thresholds that may affect instrument performance or spacecraft guidance. We present a method that using observational data and models of SEP transport allows us to predict the duration of intervals with particle intensities exceeding pre-defined values.