

Coronal mass ejections and large solar energetic particle events

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The relationship between Coronal mass ejection (CMEs) and large solar energetic particle (SEP) events became well established relatively recently (Kahler et al. 1978; Gosling 1993), not too long after the discovery of CMEs (Tousey, 1973). There was a paradigm shift from flares to CMEs as the main source of SEPs. There are still many questions regarding the CME-SEP relationship, which indicates huge variability in the source and environment parameters of SEP events. The source parameters include the location so the associated eruption on the Sun and kinematics of the associated CME. The environmental parameters include the ambient physical state (density, magnetic field and their combination in the form of the Alfvén speed), presence of seed particles and the interaction of the associated CME with other CMEs and coronal holes. The variability also includes the changes associated with the solar cycle in the source and environment parameters. This talk summarizes some key results that highlight our current understanding of SEP events in relation to CMEs.

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