

Earth-Affecting Coronal Mass Ejections

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Coronal mass ejections (CMEs) are the most energetic phenomenon in the heliosphere occurring a few per day during solar maxima and one every other day during solar minima. However, only a small fraction of the CMEs affect Earth by producing geomagnetic storms and solar energetic particles (SEPs). The internal structure of CMEs is important for producing geomagnetic storms because it determines where the southward component of the CME magnetic field. On the other hand, SEPs depend on the outer structure of CMEs, viz., the shock. The coronal and interplanetary environment into which a CME is launched can significantly affect the ability of CMEs in causing these space weather events. This paper discusses various ways in which CME/shock propagation is modified and how the modification affects the Earth impact.