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## Observations of solar energetic particle events during multiple coronal mass ejections

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We investigate associations of solar energetic particle events with multiple solar eruptions incorporating both coronal mass ejections (CMEs) and intense flares. Searching through the time period from 1996 to the end of 2013 we found three series of eruptions with start times occurring in a time window of less than two days and consisting of at least three fast and wide CMEs from the same active region and associated with intense X-ray flares and clear type II emissions. The selected events, on 24-26 November 2000, 9-11 April 2001, and 22-23 August 2005, were all halo CMEs associated with X- or M-class flares. In all cases, clear type III bursts and interplanetary type II radio emissions were observed, indicative that the CMEs were driving interplanetary shocks. The first two CMEs and flares in each group of multiple eruptions were associated with large solar energetic particle events up to high ( $\sim 100$  MeV) proton energies, while the third one in each case was not associated with an observable enhancement of the proton intensity. We investigate the possible solar and interplanetary causes for the absence of solar protons at  $\sim 1$  AU during the third eruptions.

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