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Oral
We investigate the interaction of a coronal mass ejection (CME) with a corotating interac-tion region (CIR) that results in the intensification of magnetic field and formation of ge-oeffective meso-scale flux ropes. We simulate the CME-meso-scale system with the Alfven Wave Solar Atmosphere Model (AWSoM) by first producing the background solar wind con-dition for solar maximum conditions occurring September 2014. The CME is initiated from the originating active region with a Gibson-Low magnetic flux rope with parameters chosen to simulate an energetic event. With the use of high-resolution grids, we capture magnetic reconnection within the erupting flux rope as it impacts the CIR leading to the formation of meso-scale flux ropes containing sufficiently strong magnetic fields (~40 nT) to be geoeffec-tive. We provide wide-angle synthetic PUNCH images to show the viability of capturing me-so-scale structures in the inner heliosphere. We also present the magnetic field and plasma quantities are extracted in the location of four virtual probes arranged in a tetrahedral con-figuration with an average spacecraft separation of 1 Rs at Lagrange point L1. The constella-tion, corresponding to Space Weather Investigation Frontier (SWIFT) mission, is shown to resolve the spatial characteristics and temporal evolutions of magnetic reconnection at and small- to meso-scale current sheet structure within the ICME.
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