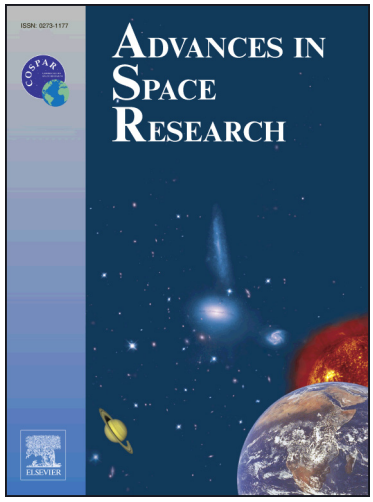

Source Identification of moderate (-100 nT < Dst < -50 nT) and intense geomagnetic storms (Dst <-100nT) during ascending Phase of Solar Cycle 24

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Source Identification of moderate (-100 nT < Dst < -50 nT) and intense geomagnetic storms (Dst <-100nT) during ascending Phase of Solar Cycle 24

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Abstract:

The origin of 39 moderate (-100 nT < Dst <-50 nT) and 12 intense (Dst < -100 nT) geomagnetic storms has been investigated using fixed time window and adoptive time window. Coronal mass ejections (CMEs) and corotating interaction region (CIR) are found to be the primary sources. Out of 12 intense geomagnetic storms, 6 (50%) events are associated with unique FSH CMEs, 2 (17%) events with multiple FSH CMEs, 3 events (25%) with partial halo CME with no surface signature and 1 event (8%) is caused due to a CIR. Out of 39 moderate geomagnetic storms 21 (54%) are associated with full halo CME and 5 (13%) with partial halo CME, 4 (10%) storms associated with high speed solar wind from CIR whereas 1 storm has been found to be due to the combined effect of CME and CIR. The remaining 8 (20%) storms have unknown solar origins and were mostly observed when solar activity was at the minimum. The probability of a CIR causing a moderate storm is almost double as compared to an intense storm during the ascending phase of weak solar cycle 24.

Keywords: Geomagnetic storm; Coronal mass ejections (CME); CIR; Space Weather.

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