

Accepted Manuscript

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

Abha Singh, V.S. Rathore, R.P. Singh, A.K. Singh

PII: S0273-1177(16)30700-1

DOI: <http://dx.doi.org/10.1016/j.asr.2016.12.006>

Reference: JASR 13005

To appear in: *Advances in Space Research*

Received Date: 14 May 2016

Revised Date: 18 November 2016

Accepted Date: 7 December 2016



Please cite this article as: Singh, A., Rathore, V.S., Singh, R.P., Singh, A.K., Source Identification of moderate ($-100 \text{ nT} < \text{Dst} < -50 \text{ nT}$) and intense geomagnetic storms ($\text{Dst} < -100 \text{ nT}$) during ascending Phase of Solar Cycle 24, *Advances in Space Research* (2016), doi: <http://dx.doi.org/10.1016/j.asr.2016.12.006>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

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

Abha Singh^{1,2}, V. S. Rathore¹, R. P. Singh¹ and A. K. Singh^{1*}

¹Atmospheric Research Lab., Department of Physics, Banaras Hindu University, Varanasi-221005, U.P., India.

²Department of Physics, T. D. P. G. College, Jaunpur-222002, U.P., India

Abstract:

The origin of 39 moderate ($-100 \text{ nT} < \text{Dst} < -50 \text{ nT}$) and 12 intense ($\text{Dst} < -100 \text{ nT}$) 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.

*Corresponding author

Prof. Abhay Kumar Singh

Atmospheric Research Laboratory,

Department of Physics

Banaras Hindu University, Varanasi

Email: abhay_s@rediffmail.com

Phone: +919415303722

Download English Version:

<https://daneshyari.com/en/article/5486254>

Download Persian Version:

<https://daneshyari.com/article/5486254>

[Daneshyari.com](https://daneshyari.com)