

## Accepted Manuscript

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PII: S0273-1177(17)30270-3  
DOI: <http://dx.doi.org/10.1016/j.asr.2017.04.004>  
Reference: JASR 13183

To appear in: *Advances in Space Research*

Received Date: 12 December 2016  
Revised Date: 7 March 2017  
Accepted Date: 6 April 2017

Please cite this article as: Mustajab, F., Badruddin, Passage of the high-speed solar wind streams, their plasma/field properties, and resulting geomagnetic disturbances, *Advances in Space Research* (2017), doi: <http://dx.doi.org/10.1016/j.asr.2017.04.004>

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# Passage of the high-speed solar wind streams, their plasma/field properties, and resulting geomagnetic disturbances

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## Abstract

We study the geomagnetic disturbances and solar wind plasma/field properties during the passage of High Speed Solar Wind Streams (HSS) emanating from the sun. We consider the HSS detected during the period 1996-2011. For this study, we divided the geomagnetic disturbances that occurred during the passage of these HSS into four groups based on the level of geomagnetic activity. We analyze the solar plasma/field variations during the disturbances of different levels. We apply the method of the superposed epoch analysis to study the average behavior of geomagnetic disturbances and selected plasma/field parameters during the passage of HSS producing geomagnetic activity of different level. We also study the relation between the geomagnetic activity and solar plasma/field parameters during the passage of the HSS.

Keywords; High speed stream, geomagnetic storm, solar wind, superposed epoch analysis

## 1. Introduction

The strength of the geomagnetic disturbance is generally expressed by the Dst index indicating the amount of solar wind energy penetrating the Earth's ionosphere. Depending on the level of the disturbance, geomagnetic storms have been generally called as weak, moderate and intense storms(see e.g., Alves et al., 2006; Mustajab and Badruddin, 2011, 2013 and references there in).

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