



## **Prediction of space weather based on a statistical model**

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Space weather prediction involves predicting the magnitude and the time of onset of intense geomagnetic storms at the earth. In this paper, I describe a new statistical prediction model for predicting major geomagnetic storms, which was developed using only solar variables. The input variables for the model were identified through an exhaustive statistical investigation of the solar origins and interplanetary characteristics of major geomagnetic storms that occurred during 1996-2002, based mainly on observations of coronal mass ejections from LASCO/SoHO. This model was then used to predict the occurrence of major geomagnetic storms during 1996-2009. The results of this study reveal that solar variables contribute relatively less in the prediction of major geomagnetic storms, as compared to interplanetary parameters. The model also shows the relative importance of each solar variable for the prediction of major geomagnetic storms. Amongst the solar variables, the speed and location of the source region of the CME was found to be the most important factor controlling the geo-effectiveness. With the launch of STEREO in 2006, albeit it is possible to measure the true speed and direction of propagation of the CMEs in general using SECCHI coronagraph observations, however only a few cases of geo-effective events have been recorded till now. The results obtained using STEREO observations thus far and their implications on the space weather prediction model will also be discussed.