Influence of Solar wind-Interplanetary Magnetic Field Conditions on the Low-latitude Geomagnetic Variations During Solar Cycle 23

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Solar cycle 23 witnessed numerous energetic solar eruptions which produced several intense geomagnetic storm events. Geomagnetic storms are large scale disturbances in the geomagnetic field caused when highly energetic charged particles emitted from the Sun penetrate into the Earth's magnetosphere and enhance existing current systems therein. Contributions of solar wind and interplanetary parameters like IMF By, Bz and dynamic pressure for development of intense main phase for the storms that occurred during cycle 23are assessed. Geoeffectiveness of the rapidly changing interplanetary conditions on the geomagnetic field variations are examined using the high resolution digital magnetic data from the low-latitude geomagnetic observatories in the Indian longitude sector along with the multi-satellite observations of solar wind plasma and interplanetary parameters. Role of interplanetary coronal mass ejections (ICMEs) comprising magnetic cloud structures responsible for producing significant southward Bz is also discussed.