

MULTIPLE PEAK STRUCTURES IN THE OCCURRENCE PATTERN OF GEOMAGNETIC STORMS DURING THE RECENT SOLAR CYCLES

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Energetic solar emissions originating from the highly tenuous environment of the sun form the major energy source of the geomagnetic disturbances induced in the ground magnetic records. Measurements of the geomagnetic field variations at low latitude form a highly reliable database to understand the energy influx through the sun-earth interactive processes. Long term trend with 11-year cycle is a well known dominant periodicity in the sunspots and tend to influence the geomagnetic activity. During solar maximum, solar flares, geo-effective CMEs and the intense southward IMF are the dominant interplanetary phenomena causing the development of non-recurrent geomagnetic storms. Dominance of high speed streams from coronal holes is a known feature during solar minimum. If the high speed streams overtake slower speed streams, the interactions result in the magnetic field and plasma compressions at their interfaces. These intense magnetic field regions known as Co-rotating Interaction Regions (CIRs) are responsible for recurrent geomagnetic storms during the descending phase of a solar cycle. Highly modulating features observed in the storm development pattern during the solar cycles 20-23 will be discussed on the basis of the observed geomagnetic field variations over the low latitude locations in India and the possible influences of solar wind and interplanetary magnetic field parameters.

solar cycle, geomagnetic disturbance

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