Dependence of geomagnetic storm on interplanetary magnetic field –Bz across latitudes.

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Abstract

A comprehensive study of geomagnetic storm variations and its dependence on interplanetary magnetic field-Bz (IMF-Bz) at dip, low and mid latitudes has been extensively carried out. Data set of H geomagnetic component for the years under study was employed for only quiet conditions. The observed Sq field variation was attributed to the seasonal variation of ionospheric electron content (IEC). It was observed that the geomagnetic storms (GMSs) with H-component amplitude (ΔH) values larger than 45nT occurred more in the nighttime than the daytime. While values of GMSs with values between 80 and 150nT at the low latitudes were still larger during nighttime than daytime side, except for those near the equator latitude. This trend of amplitude variation was found to be associated with position of IMF-Bz. GMSs amplitudes were larger in nighttime, when IMF-Bz turned northward and larger still when it turned southward. We therefore inferred that GMS variation is dependent on IMF-Bz.

Key words: Interplanetary magnetic field, geomagnetic storm, latitudes, amplitude, H-component.