

# **STUDY OF EFFECT OF GEOMAGNETIC STORMS IN EARTH: A GLIMPSE TO A POSSIBLE PHENOMENA ON OTHER PLANETARY SYSTEMS**

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Several phenomena are associated with or are caused by geomagnetic storms like solar energetic particles, geomagnetically induced currents and ionospheric disturbances that can cause frequent radio and radar scintillations, severe failure of power grids, disruption of navigation by magnetic compass and auroral displays at much lower latitudes than normal in earth. The geomagnetic Northward component (X) field of the four stations in the equatorial and low latitude region of Earth were taken to study their variations during super substorm events of April 05 2010, August 24 2005 and November 24 2001. The location of the stations extends from Asia to South America across Africa. During a brief disturbance in the Earth's magnetosphere that causes energy to be released from the tail of the magnetosphere and injected into the ionosphere, we found that there was a peak decrease in the Northward component (X) field of all the low latitude stations across the globe. The storm time ( $D_{st}$ ) variations in the Northward component (X) of geomagnetic field at low latitude stations during super substorm events was shown to be significant and to substantiate the results, wavelet transform and cross correlation techniques were used. We checked the correlation of Northward component of (X) with  $D_{st}$ , SYM-H,  $B_z$ , X, Y and  $E_y$  individually. Positive correlation of X with  $D_{st}$  and SYM-H shows that geomagnetic effect during the super substorm events at low latitude is significant. The power regions with the maximum fluctuation were analyzed using the continuous wavelet transform and was found to be uniformly distributed during the super substorm occurrences.