

WHAT IS THE DST INDEX?



The Dst is a geomagnetic index which monitors the world wide magnetic storm level. It is constructed by averaging the horizontal component of the geomagnetic field from mid-latitude and equatorial magnetograms from all over the world. Negative Dst values indicate a magnetic storm is in progress, the more negative Dst is the more intense the magnetic storm. The negative deflections in the Dst index are caused by the storm time ring current which flows around the Earth from east to west in the equatorial plane. The ring current results from the differential gradient and curvature drifts of electrons and protons in the near Earth region and its strength is coupled to the solar wind conditions. Only when there is an eastward electric field in the solar wind which corresponds to a southward interplanetary magnetic field (IMF) is there any significant ring current injection resulting in a negative change to the Dst index. Thus, by knowing the solar wind conditions and the form of the coupling function between solar wind and ring current, an estimate of the Dst index can be made.

