

PRESENT TRENDS IN GENERATION AND USES OF GEOMAGNETIC INDICES

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Geomagnetic indices have been successfully generated for many decades and are acknowledged as an extremely useful indicator, even measure of physical processes. In refining and diversifying indices, they have answered the needs of more focused areas of study, like high latitude, sub-storm activity, local and longitudinal activity. With real time collection and dissemination of data, the computation of indices – prompt, preliminary, etc. have proliferated. The uses of indices have also diversified, with many satellite applications.

Achievements deriving from the development of indices have been:

Better definition of morphology of disturbed magnetic fields. With increased monitoring from satellites within and outside the magnetosphere, these indices have also been estimators for specific regions of disturbance (e.g. polar cap indices, pulsation indices). Centennial studies for solar activity, long term trends, have also provided impetus for refining and extending the series of indices.

Good correlation with interplanetary and solar parameters has led to introduction of proxies for missing satellite data. This provides another useful series in study of long term trends in solar physics. Derivation of indices from LEO data is also being attempted. This would provide a completely new look at the morphology of disturbance. The fine structure of some phenomena may be better described.

It has been noticed that indices have more specific and local uses than before. Study of deviation from global models are becoming evident – as in Ae, Asym, etc. Another factor that is increasingly studied is: the impact of variability in the quiet days defined for each month. These form the basis of indices and are not amenable to standardization, yet.

The development and evaluation of indices has been a continuously evolving one and there are reports of new methods and insights, every few years. Such developments have been the focus of this session.

Geomagnetic indices, development, dissemination

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