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# Increased local time accuracy of the corrected Dst index

K. Mursula (1), L. Holappa (1), and V. Jordanova (2)

(1) University of Oulu, Department of Physical Sciences, Oulu, Finland (Kalevi.Mursula@oulu.fi), (2) Los Alamos National Lab, NM, USA (vania@lanl.gov)

The Dst index is one of the most used geomagnetic indices which has been constructed to monitor the most dramatic events in the near-Earth space, the geomagnetic storms. However, it has been known for some time that the Dst index includes random and systematic errors, e.g., an excessive, seasonally varying quiet-time level, the so called "non-storm component" which is unrelated to the intensity of the ring current or magnetic storms. Therefore, we have developed a corrected and extended version of the Dst index, the so called Dcx index which exists since 1932.

So far, the Dcx index, in analogy with the Dst index, is based only on four stations, roughly evenly distributed over the longitude. Such a coarse longitudinal accuracy does not allow for a detailed study of the local time structure of global disturbances during storms, in particular the current systems like the symmetric and asymmetric ring current or the tail current.

Here we reconstruct, based on the corrected method implemented in the Dcx index, a longitudinally enhanced index called the Dcx16 index, which is based on the data from 16 low and mid-latitude stations. We study the detailed local time structure of storm-time disturbances and calculate the maximum momentary asymmetry in the disturbance level. We compare our results with similar results based on the four stations and the conventional Dst index during recent years. We also compare the local time properties during storms driven by high speed streams and coronal mass ejections.