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Dcx - the corrected and extended index for monitoring geomagnetic storms

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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 contains both sporadic and systematic errors. E.g., the Dst index includes an excessive, seasonally varying quiet-time level, the so called "non-storm component" which is completely unrelated to the intensity of the ring current or magnetic storms. We have recently calculated a corrected and extended version of the Dst index, the so called Dcx index for 1932-2007, which corrects the known flaws of the Dst index and extends it by 25 years to earlier times.

Here we review the rationale for introducing the Dcx index, and discuss its properties and the consequences of replacing the Dst index by the Dcx index. We also discuss the properties of geomagnetic storms during the 70-year time interval.