

SuperMAG: Global Specifications of Ionospheric Currents based on Ground Magnetic Field Observations, and Beyond

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The ionospheric current is one of the most important components for specifying the electrodynamic coupling between the magnetosphere and ionosphere. Whereas local (equivalent) currents may be deduced from local magnetic field observations, global distributions of ionospheric currents can be obtained only by collecting, processing, and analyzing data from various networks, which is always a challenge. SuperMAG is a worldwide collaboration of organizations and national agencies that currently operate more than 300 ground based magnetometers, and it provides easy access to validated ground magnetic field perturbations in the same coordinate system, identical time resolution and with a common baseline removal approach [Gjerloev et al., 2012, DOI: 10.1029/2012JA017683] through its website (<http://supermag.jhuapl.edu/>). In this paper we present its (i) basic products and functions such as generalized geomagnetic indices, polar plots, and personalized movie creation, (ii) recent additions such as global ULF maps and global equivalent currents at uniform grids, and (iii) future expansions for more comprehensive global specifications including Birkeland currents and ionospheric convection.

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