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The Antarctic geomagnetic Reference Model updated version

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The Antarctic Reference Model (ARM) has been here updated using geomagnetic data from both ground observatories and satellites (CHAMP and Ørsted) from 1960 to 2009. This regional geomagnetic model, whose first version dates back to 2002, is based on a Spherical Cap Harmonic Analysis (SCHA) of geomagnetic field data recorded over the Antarctic continent. SCHA has been applied to a polar cap of 30 degrees half-angle centred at the geographic South Pole, fixing the maximum spatial expansion index K=8 and the maximum temporal order L=4.

The importance of updating ARM model lies, for instance, in its usefulness for the reduction of magnetic surveys, performed during the period of model validity over the Antarctica, or for geomagnetic anomaly field estimations. Moreover, so far, ARM still remains the only regional reference magnetic model specifically constructed for the Antarctic continent.

The present updated version, with validity up to 2009 and with predictive coefficients up to 2012, besides considering the most recent available data also takes advantage of a stricter selection of satellite data in order to consider quieter periods of external magnetic activity. As the previous versions, the new updated model has been tested and compared with other major global models to show its reliability over the region under investigation.