



Third version of the GFZ Reference Internal Magnetic Model: GRIMM-3

Vincent Lesur, Praveen Kunagu, Ingo Wardinski, and Mohamed Hamoudi
GFZ-Potsdam, Physics of the Earth, Potsdam, Germany (lesur@gfz-potsdam.de)

We extend the second version of the GFZ Reference Internal Magnetic Model (GRIMM) to include the whole range of CHAMP satellite data in its version 2.51. The new model called GRIMM-3 covers years 2001 to 2010 and aims at describing as accurately as possible the Earth core magnetic field, its secular variation (SV) and secular acceleration (SA). The model of the core field extend up to Spherical Harmonics (SH) degree 20 and is defined in time by B-splines of order 6 with spline-nodes 6 months apart. The data set used also includes hourly mean values of more than hundred magnetic observatories. These data have been carefully checked for discontinuities and outliers. The contribution of these observatory data to the core field model has been limited to SH degree 12 in order to avoid instabilities in the high SH degree of the SV model. Furthermore they allow us to derive the SA to higher SH degree than previously achieved. Regularization method has been carefully selected and applied in order to obtain a SA model valid at the core mantle boundary.