



Lithospheric Field Modeling from Satellite Data

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We will present a new global lithospheric magnetic field model defined at the Earth's surface. We consider the inverse problem of estimating the spherical harmonic model from vector magnetic observations. This is solved by minimizing an objective function consisting of L2 and L1 measures of the misfit with some regularization. The data used are the observations collected by the CHAMP satellite between years 2007.0 and 2010.0 where the GRIMM-2 core field model has been subtracted from degree 1 to 16. No further data pre-processing steps have been made to avoid spurious signal and bias in the model. The inversion process does not require regularization before SH degree 80. Different types of constraints have been applied. Particularly, a new method based on localized anisotropic constraints has been investigated. This model provides a new insight on the relatively short wavelength of the lithospheric anomaly field and a new step towards bridging the spectral gap between satellites derived models and near-surface airborne maps.