



## **Satellite magnetic residuals investigated with geostatistical methods**

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The Earth's magnetic field is a dynamic entity which varies on many different timescales and wavelengths. Some of these variations are well known and included in field models, others are not. The unmodelled field, the residual, is considered as the noise in field modelling and is typically assumed to be uncorrelated and Gaussian distributed. We have used geostatistical methods to analyse the residuals of the Oersted(09d/04) field model [[http://www.dsri.dk/Oersted/Field\\_models/IGRF\\_2005\\_candidates/](http://www.dsri.dk/Oersted/Field_models/IGRF_2005_candidates/)], which is based on 5 years of Ørsted and CHAMP data, and includes secular variation and acceleration, as well as low-degree external (magnetospheric) and induced fields.

The purpose of the geostatistical analysis is to find the space-time covariance function of the residuals. Once known, this can be used to estimate the uncertainty of the field model, improve the field model and eventually determine the optimal data sampling rate.