Magnetization properties of the geological sources of some of Earth's magnetic field anomalies: rock magnetism and SWARM data numerical modelling

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Résumé

The ESA Swarm mission was launched in 2013 to produce a set of data with an unprecedented level of precision concerning the Earth's magnetic field, and in particular the crustal field. Our objective is to use either these data or already existing models (MF7) in order to create a three-dimensional model of the crustal sources of some of earth's most important magnetic field anomalies: the West African and Bangui anomalies. To achieve this goal and properly constrain our model, we need to study the magnetic properties of the African Banded Iron Formation rocks, known as the most magnetic component of this continent's crust, and thus the most probable source of the anomalies. The remanent magnetization – both with and without thermal demagnetization – and magnetic susceptibility were measured on a wide set of BIF samples from the Kediet ej Jill in Mauritania. The data obtained will allow us to constrain a source model for the West African magnetic anomaly.

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