



# ÉCOLE DOCTORALE SCIENCES DE LA TERRE



Subject offered for a contract starting in October 2012

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**SUBJECT TITLE:** Geomagnetic data assimilation

Advisor: **AUBERT Julien, CR CNRS, [aubert@ipgp.fr](mailto:aubert@ipgp.fr)**

Second Advisor/ Supervisor: **FOURNIER Alexandre, MCF, [fournier@ipgp.fr](mailto:fournier@ipgp.fr)**

Host lab/ Team : **Equipe de Géomagnétisme- IPGP - UMR7154**

Financing: **Doctoral contract financed by ANR**

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*For more information go to <http://ed109.ipgp.fr>, section: Offres de these (PhD offer), You must apply also on the Doctoral School website*

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## Presentation of the subject

The successful applicant will be involved in a research program funded by the French agence nationale de la recherche for years 2011-2015, whose goal is to develop innovating and operational data assimilation tools for geomagnetic data analysis. Our group is currently developing an ensemble Kalman filter whose backbone is a three-dimensional model of the geodynamo. The first task of the student will be to develop a smoother atop the already existing filter. This smoother will effectively allow for a retrospective analysis of those geomagnetic observations describing the secular variation of the Earth's magnetic field over the past few centuries to millenia. After an initial validation phase involving synthetic data, the student is expected to assimilate true observations, an exercise which will lead him/her to estimate the dynamical trajectory of Earth's core over the past few centuries to millenia.

Applicants must have, or expect to obtain, a Master's degree in an appropriate subject e.g. geophysics, physics, or applied mathematics. They are requested to send a full CV (including the name and email address of at least one academic referee), and personal statement outlining how this programm of research and training will benefit from their past experience, and impact their career aspirations, to Alexandre Fournier ([fournier@ipgp.fr](mailto:fournier@ipgp.fr)) and Julien Aubert ([aubert@ipgp.fr](mailto:aubert@ipgp.fr)).