PhD position in Geodynamics at Ecole Normale Supérieure / PSL, Paris France

The Geoscience Department at Ecole Normale Supérieure (ENS) is seeking applicants for a PhD position in Geodynamics within ENS' Laboratoire de Géologie, on the characterization of active rift deformation from space geodetic measurements and tectonic modeling.

Project description

This PhD project aims to quantify and model deformation at continental rifts on time scales of seconds to decades, and interpret the results in light of the plate boundary strain and structures developed over millions of years. The focus will be on the areas where extensional strain localizes in incipient vs. mature rift sections. These areas and their characteristic extent will be documented by collecting space geodetic measurements in the East African Rift, which we will compare to the outputs of a new generation of geodynamic models of short— and long—term rift basin evolution. We plan to assess connections between areas of localized strain and: (1) underlying patterns of mantle and crustal flow; (2) shallow heterogeneities in the brittle crust; and (3) magmatic plumbing systems and pathways for volatiles. We will do so by integrating existing and new geodetic measurements, earthquake catalogs and visco-elasto-plastic models of deformation to infer the background stress state that leads to short-term events such as earthquakes or magmatic intrusions.

Context

This position is one of twelve PhD projects that make up the *Rift Science Network for the Energy Transition* (TALENTS), an EU-funded Marie Skłodowska-Curie Doctoral Network. TALENTS aims at training early-career researchers with the interdisciplinary, science-driven understanding and skills that are the foundation to develop new sustainable solutions for the global challenges of the energy transition. We focus on continental rifts which are key regions for geothermal energy, carbon capture and storage, new resources such as native hydrogen as well as high-risk human habitats due to geohazards such as earthquakes and volcanic activity. TALENTS fuses research and training at 18 European institutes and academic partners as well as 11 companies that are actively involved in the energy transition. The doctoral network is centred around 12 individual PhD projects addressing fundamental scientific aspects of rift system processes, collectively bridging several orders of magnitude of spatial and temporal scales. Each doctoral candidate is linked to a second academic partner to complement and broaden their scientific training and to a dedicated industry partner to acquire industry-relevant skills and preview possible non-academic career paths.

The bulk of the work will be carried out at ENS Paris, in the heart of the city, with field work in East Africa, collaborative work at Univ. of Florence (Italy) and at ACRI-ST (Sophia Antipolis, France). As part of the TALENTS Doctoral Network, the successful applicant will take part in regular workshops and field trips (e.g., Greece, Ethiopia, Germany) organized by the European network partners. The salary is competitive, and the funding includes a mobility allowance and a family allowance.

Supervision

This 36-months position will be under the supervision of Dr. Jean-Arthur Olive & Pr. Eric Calais (ENS, Paris), with academic secondment at UNIFI (Florence, Italy) in collaboration with Pr. Derek Keir. A few months will also be dedicated to an industry secondment at ACRI-ST (Sophia-Antipolis, France) focused on the processing of satellite geodetic measurements in collaboration with Dr. Oliva Lesne.

Qualifications & Eligibility

The applicant should hold a Master's degree (or equivalent) in Geophysics, Geology, Physics (or related field) and have a strong interest in geodynamics, geodesy, and tectonics. Experience with geophysical data analysis or geodynamic modeling would be ideal. Proficiency in English is necessary. Importantly, the applicant should meet the following **EU-defined eligibility criteria**: (1) All researchers recruited in a Doctoral Network must be Early-Stage Researchers (ESRs; i.e., be in the first four years (full-time equivalent research experience) of their research careers and have not been awarded a doctoral degree); (2) Researchers can be of any nationality; (3) **Mobility Rule**: at the time of recruitment by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation (in this case: France) for more than 12 months in the 3 years immediately prior to the reference date. Compulsory national service and/or short stays such as holidays are not taken into account. The mobility rule applies to the (first) beneficiary where the researcher is recruited (here ENS in Paris, France), and not to beneficiaries to which the researcher is sent or seconded. It is also only determined at the time of the fellow's first recruitment in the project.

How to apply

The application should include (1) a statement detailing your background, interest in the position and general career goals; (2) a curriculum vitae, (3) academic credentials (mark sheets and degree statements), (4) a short abstract of the MSc thesis or equivalent, and (5) the names and contact details of two referees. The application should be submitted to olive@geologie.ens.fr as a single pdf file by May 12th, 2024. The start of the project is planned for September 1st or October 1st, 2024 and the position is funded for 3 years.