

Postdoctoral Research Position

BRGM-GEOMAS Collaborative Research Project (INSA Lyon)

Position Title: Postdoctoral Researcher in Hydro-Mechanical Numerical Modelling of Landslides

Project Background

As part of a one-year collaborative research project, the GEOMAS laboratory at INSA Lyon, in partnership with BRGM, proposes an innovative numerical approach to study the Grand-Ilet landslide on Réunion Island. The main objective is to assess site stabilization methods through drainage using a coupled hydro-mechanical finite element numerical model.

The project aims to simulate several drainage strategies to support decision-making regarding the best solution to implement in the field, while accounting for geological and hydrogeological uncertainties and assessing the potential effects of climate change on landslide dynamics.

Main Responsibilities

The successful candidate will be responsible for the following tasks:

Development of a numerical model

- Design and implement a coupled hydro-mechanical finite element model to simulate drainage strategies.
- Calibrate the model using existing geological, geophysical, and geotechnical studies, as well as inverse analysis of documented past events.

Collaboration with BRGM experts

- Participate in a field mission with geology, hydrogeology, and geophysics experts to refine the model assumptions.
- Discuss and validate the model limitations and assumptions according to the specific characteristics of the site.

Results analysis

- Assess the impact of large-scale drainage on the internal structure of the landslide.
- Identify and understand runaway acceleration phenomena.
- Study the effects of climate change on landslide dynamics.

Candidate Profile

Required Skills

- PhD in soil mechanics, geotechnical engineering, numerical modelling, or a related field.
- Demonstrated experience in numerical modelling (software such as PLAXIS, FLAC, CODE_BRIGHT, or equivalent).
- Ability to work in a multidisciplinary team (geologists, hydrogeologists, engineers).
- Autonomy, scientific rigor, and ability to write technical reports.

Desirable Skills

- Strong knowledge of hydrogeology and unsaturated soil mechanics.
- Proficiency in inverse analysis methods for model calibration.
- Knowledge of landslide-related issues and drainage strategies.

Working Conditions

- **Contract type:** 12-month fixed-term contract.
- **Workplace:** INSA Lyon (GEOMAS Laboratory), with travel to Réunion Island planned for a field mission.
- **Salary:** According to the INSA/BRGM salary scale (to be specified depending on experience).
- **Start date:** To be agreed upon (ideally within 2–3 months).
- **Supervision:** Under the supervision of an expert in numerical modelling of landslides (GEOMAS) and in collaboration with BRGM.

Application Procedure

Interested candidates are invited to submit:

1. A detailed CV (including publications and relevant experience).
2. The contact details of a PhD or postdoctoral supervisor.
3. A sample of work (paper, report, or code related to numerical modelling).

Contact:

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Application deadline: 30/10/2026

About the Partners

- **GEOMAS (INSA Lyon):** Laboratory specializing in civil engineering, soil mechanics, and numerical modelling.
- **BRGM:** French national geological survey, with expertise in geological hazards and hydrogeology.