

Postdoctoral position within the Reisol Chair

Université de Lorraine | GeoRessources laboratory (Université de Lorraine - CNRS)

Research topic: Integrating geological, geophysical and geochemical data to develop a framework for subsurface use in support of the energy transition.

Based at the GeoRessources laboratory, you will contribute to the Reisol Chair, co-funded by regional industrial and institutional partners.

Context and research objectives

The Reisol Chair aims to promote the use of the subsurface for the energy transition in the eastern Paris Basin. It is co-funded by industrial partners, government agencies and local and regional authorities. Its activities are organised into three working groups:

- Acquire data, build a database and define investigation areas: review current knowledge, identify available data and assess data needs.
- Assess subsurface potential for the energy transition and identify possible uses.
- Inform and train stakeholders and local communities throughout the process.

This postdoctoral project aims to synthesise existing geological data, contribute to new geophysical, geological and geochemical data acquisition campaigns, and integrate these datasets into a regional framework for developing subsurface uses. The successful candidate will join a team of five academic staff members, three postdoctoral researchers and three PhD students, and will also work with regional stakeholders.

The project falls within the first working group, specifically the “Lorraine structural framework” research theme. This theme aims to improve understanding of the subsurface in the eastern Paris Basin to support its role in the energy transition, through primary energy production and/or storage.

The basement of the eastern Paris Basin is structured by several major tectonic discontinuities, including major sutures represented by the Metz and Vittel faults, as well as major Variscan (Hercynian) structures that may have been reactivated during opening of the Upper Rhine Graben. Associated magmatic activity is dated to the Late Cretaceous and Oligocene. These structures have shown moderate but non-negligible historical seismicity. They also exert strong control on the geometry of Carboniferous and Permian basins and may have distinct tectonic histories depending on their orientation.

Several of these faults suggest potential for geothermal energy, hydrogen and helium production. Their role in controlling the location of hydrothermal or thermal springs also warrants investigation. Their capacity to transmit fluids may vary with the amount of accommodated deformation and the present-day stress field. Understanding their arrangement and geometry is therefore critical to assessing their influence on resource production and/or storage.

The analysis would draw on reinterpretation of existing geophysical data (seismic, magnetic and gravity data), acquisition of new geophysical data (electrical, magnetotelluric and magnetic surveys), and acquisition of geochemical data from liquids, gases and solids, including surface gas profiles.

These data would help refine the regional structural framework and better delineate Carboniferous basins with potential for hydrogen or methane production, geothermal energy and CO₂ storage, as well as Permian basins with potential for geothermal energy or CO₂ storage. They would also help assess how opening and deformation of the Upper Rhine Graben influenced structural reactivation.

Main responsibilities

- Identify and synthesise existing data.
- Identify sites where relevant new data should be acquired.
- Acquire new data and contribute to data acquisition campaigns.
- Help integrate the results into a 3D geological model to support exploration of new prospects for resource production and storage.
- Disseminate scientific results through six-monthly reports, presentations to the project committee and articles in international journals.
- Collaborate with geologists and geophysicists from academic and industrial teams.

Candidate profile

- PhD in Earth Sciences.
- Strong background in general geology and geophysics.
- Sound knowledge of hydrothermal systems and/or aquifers.
- Ability to analyse, synthesise and communicate data through reports, publications and scientific presentations.
- Fluency in written and spoken scientific English; French is an asset but is not required.
- Ability to work independently, scientific rigour, and strong teamwork skills within a network of academic and industrial partners.

Supervision

Supervisor: Yves Geraud - GeoRessources

Co-supervisors: Marc Diraison and Gaetan Milesi - GeoRessources

Contract and location

Contract: 12-month fixed-term contract, renewable.

Start date: January 2027.

Salary: €2,800 gross per month, corresponding to a total employer cost of approximately €4,000 per month.

The postdoctoral research will be carried out at the GeoRessources laboratory, Université de Lorraine, in Vandœuvre-lès-Nancy, France. The successful candidate will be based in the laboratory's premises on the École Nationale Supérieure de Géologie campus.

Application deadline

Applications must be received no later than **30 October**.