Offer #2024-07091

Post-Doctoral Research Visit F/M Regional modeling of the capacity and vulnerability of near subsurface aquifers

Contract type: Fixed-term contract
Level of qualifications required: PhD or equivalent
Fonction: Post-Doctoral Research Visit

About the research centre or Inria department

The Inria Rennes – Bretagne Atlantique Centre is one of Inria’s eight centres and has more than thirty research teams. The Inria Center is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative PMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute, etc.

Context

The Aqui-Aqua project (SAD Région Bretagne) is part of a partnership between Inria and the lab Géosciences Rennes.

The goal of the project is to generalize shallow aquifer models designed for some identified and well-monitored sites, to a whole region. It will be done under the assumption that their hydraulic and geochemical properties are correlated to their fundamental geologic characteristics, and especially their lithology.

If necessary, the contract beginning can be postponed until the end of 2024.

Assignment

There are three parts in the project:

1. Use of transfer models, to extract observable phenomena from representative hydraulic and chemical properties of the catchments, as flow or nitrogen concentration chronicles. Field expeditions on interest sites will be programmed, for the recruited person to get familiar with the local geologic and hydrogeologic specificities.
2. Identification of correlations between hydraulic and chemical properties and major geologic characteristics (eg. lithologie, weathering depth)
3. Chart of hydraulic properties at the regional scale, and generalization of transfer models to non-monitored sites.

For more information, feel free to contact the supervising team before your application.

Collaboration:
The postdoc is co-supervised by Jean-Raynald de Dreuzy (Hydrology/Hydrogeology, CNRS, Géosciences Rennes) and Hélène Hivert (Mathématiques, Inria and Géosciences Rennes).
The recruited person will also interact with

Camille Bouchez, (CNAP, Géosciences Rennes), Philippe Boulvais (Géosciences Rennes), Jean de Bremond d’Ars (Géosciences Rennes), Nicolas Cornette (Cydre project, BRGM and Géosciences Rennes), Camille Vautier (ENS Rennes, Géosciences Rennes) and Philippe Yamato (Géosciences Rennes).

Main activities

Main activities:

- Determination of equivalent hydrolic and chemical properties on each monitored catchment, using numerical simulations.
- Solution of contrained optimisation problems, to identify correlations between hydro-chemical properties and geologic characteristics of the catchments.
- Regional scale modelisation anc cartography
Skills
Technical skills and level required: PhD in earth sciences or applied mathematics. Taste for environmental problems, mathematical formalism and numerical simulations.

Languages: English

Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Possibility of teleworking (90 days per year) and flexible organization of working hours
- Partial payment of insurance costs

Remuneration
Monthly gross salary amounting to 2788 euros.

General Information

- Town/city: Rennes
- Inria Center: Centre Inria de l’Université de Rennes
- Starting date: 2024-07-01
- Duration of contract: 2 years
- Deadline to apply: 2024-04-08

Contacts

- Inria Team: AT-REN AE
- Recruiter: Hivert Helene / helene.hivert@inria.fr

About Inria
Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

The keys to success
The recruited person must have spend at least 18 months outside of France between May 1st, 2020 and the beginning of the project.

The project lies at the interface between hydrology/hydrogeology and applied mathematics. Skills are expected in one of these domains. During the contract, the recruited person will acquire new skills and knowledge related to both domains. Strong motivation and thirst for knowledge are necessary, as well as the desire of working in a pluridisciplinary environment.

Warning: you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

Instruction to apply
Please submit online: your resume, cover letter and letters of recommendation eventually

For more information, please contact helene.hivert@inria.fr

Defence Security:
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

Recruitment Policy:
As part of its diversity policy, all Inria positions are accessible to people with disabilities.