

Postdoctoral Researcher in Agri-Hydrogeological Modelling

The Centre for Hydrogeology and Geothermics (CHYN) at the University of Neuchâtel (UNINE) is actively seeking to hire a postdoctoral researcher in agri-hydrogeological modelling for the project “*FARMWISE: Future Agricultural Resource Management and Water Innovations for a Sustainable Europe*”.

FARMWISE is a 6.4 million EUR Horizon Europe research project funded by the European Union and Switzerland. As a consortium of 20 partner institutions from 12 countries, we are working together to improve water management across Europe. Our multi-faceted project melds systems thinking, numerical modelling, remote sensing, and AI to address current and future agricultural water challenges.

At UNINE, we will develop a scalable numerical modelling framework for the unsaturated zone to assess the impact of innovations on water use and quality across current and future EU climate zones and soil types. We will assimilate case study data and incorporate different fertilization and irrigation strategies. The efficient framework will enable a multitude of individual models to be executed. These models will span various climate zones, soil types, and crop varieties, providing valuable quantitative insights into factors influencing groundwater quantity and quality impacts from agriculture and informing the assessment of innovative practices. The postdoc will be supervised by hydrogeologist/geophysicist Dr. Landon Halloran at UNINE and will work closely with colleagues at partner institutions.

UNINE is a French-speaking public university located in the vibrant city of Neuchâtel, nestled between the Jura mountains and Lake Neuchâtel. The CHYN, Switzerland’s leading hydrogeology and geothermics research institute, offers a supportive and stimulating research environment of ~50 collaborators working on a diverse range of research projects.

Responsibilities:

- Implementation of a physically-based modelling framework for vertical transport of solutes in the vadose (unsaturated) zone. This framework will be used to *a)* evaluate impacts of various innovations on water use and quality in agricultural settings and *b)* provide an AI-based platform with datasets (e.g., risk of nitrate loss to regional groundwater) spanning European climate zones and soil types.
- Assimilation of data from diverse case studies and international datasets.
- Stochastic modelling of meteorological and hydraulic property data to determine model output probability distributions.
- Attendance of online and in-person meetings with project partners.
- Possible visits to partner institutions across Europe for collaborative work.
- (Co-)authorship of reports, journal articles, and conference presentations.

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Your qualifications:

- PhD in hydrogeology, soil physics, environmental engineering, etc.
- Experience in modelling vadose zone hydrological processes
- Experience in programming (ideally, python)
- High level of fluency in written and spoken English
- High level of motivation and capacity for trans-disciplinary collaboration.
- Experience in any of the following is an asset: *data assimilation, inverse modelling, stochastic modelling, ensemble methods, water-soil-plant interaction modelling, software development, GIS products.*

Duration: 24 months.

Start date: Flexible. Between Sept. 2024 (earliest) and Jan. 2025 (latest)

Salary: Approx. 90k CHF (~95k EUR) per year + social benefits & pension contribution.

Deadline: May 1st, 2024. Evaluation of candidates will occur continuously before this date, and after, if necessary.

How to apply: Email application.chyn@unine.ch, with the subject *FARMWISE POSTDOC APPLICATION – [LAST NAME, FIRST NAME]*, a **single pdf file** composed of:

- Brief letter of presentation summarising how you meet the requirements (1 page)
- CV, including list of publications (with DOI links)
- List of 2-3 referees (to be contacted only with your consent if selected for interview)
- Copy of PhD diploma

Applications that ignore these guidelines will not be considered.

Further information:

Questions can be addressed to [landon\(DOT\)halloran\(AT\)unine\(DOT\)ch](mailto:landon(DOT)halloran(AT)unine(DOT)ch).

Information about the project, the Centre and the PI can be found at www.farmwise-project.eu (website pending), www.unine.ch/chyn, and www.ljsh.ca.

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