Postdoc in groundwater modelling for nature-based recharge solutions

Join us at the Department of Electrical and Computer Engineering at Aarhus University to help shape the future of sustainable water management. In close collaboration with the Hydrogeophysic Group (HGG) at the Department of Geoscience, we're looking for a motivated postdoc for a 1-year postdoc position (with a possible extension for 1 more year) to advance groundwater modelling approaches as part of the **Ethio-Nature** project, a major international research collaboration project focused on identifying and enhancing groundwater recharge in Ethiopia through nature-based solutions. If you're passionate about hydrology, environmental modelling, and working across disciplines, this position offers a unique opportunity to make a real-world difference!

Application Deadline:
30 June 2025

Institute/Faculty:
Department of Electrical and Computer Engineering

Faculty:
Faculty of Technical Sciences

Academic contact person:
Muhammad Rizwan Asif
Adjunkt (Tenure Track)
rizwanasif@ece.au.dk
+4593521583

Vacant positions:
1

Number of months:
12

Hours per week:
37

Expected date of accession:
01/09/2025

Expected start date and duration of employment

This is a 1-year position from September 1, 2025, or as soon possible.

This is a fixed-term position to end on 31 August 2026, or 12 months after the start date with a possible extension of one more year.

Job description

This postdoc position offers the opportunity to work at the intersection of hydrological modelling, geophysics, and nature-based solutions within a highly collaborative, interdisciplinary environment. You will play a key role in advancing groundwater modelling frameworks that support the siting, implementation, and evaluation of interventions aimed at enhancing recharge and improving water quality.

You will be embedded within the **Ethio-Nature** project, funded by the Danish Ministry of Foreign Affairs and managed by Danida Fellowship Council. Ethio-Nature aims to optimize the use of machine learning, remote sensing and hydrology to evaluate and validate nature-based solutions that enhance local recharge and support the replenishment of shallow groundwater systems in dryland environments.

Your key responsibilities will include:

- Developing hydrological models to predict recharge zones using remote sensing and in-situ data.
- Integrating soil moisture maps, digital elevation models, and environmental indicators into modelling workflows.
- Collaborating with the geophysics team to refine model input and follow up on validating recharge predictions
- Contributing to catchment-scale water balance modelling and surface–groundwater interaction analysis
- Publishing high-impact research and contributing to outreach and dissemination activities.

You will work in close collaboration with colleagues at the Department of Electrical and Computer Engineering and the Hydrogeophysics Group (HGG) at the Department of Geoscience, as well as with our international partners in Ethiopia. You will also have the opportunity to supervise bachelor's and master's students.

Your profile

We are looking for a highly motivated candidate with a strong background in groundwater modelling. The ideal candidate is comfortable working across disciplines and eager to contribute to both methodological development and applied research in support of sustainable water resource management. Required qualifications include:

- PhD in hydrology, geoscience, or a related field with a focus on groundwater or hydrological modelling
- Documented experience in numerical or data-driven groundwater modelling (e.g., MODFLOW)
- Proficiency in handling geospatial and environmental datasets (e.g., topography,

land cover)

- Strong programming skills in Python, including experience with scientific computing libraries
- Strong publication record relative to career stage
- Excellent written and spoken English communication skills

Following qualifications will be considered as an advantage:

- Integration of remote sensing datasets into hydrological workflows
- Experience working with geophysical data
- Experience working with machine learning models
- Experience with water balance modelling or ecohydrological assessments in semi-arid regions.

Who we are

You will be based at the Department of Electrical and Computer Engineering (ECE) at Aarhus University, a dynamic and growing department committed to excellence in research, education, and innovation.

This position is anchored within the Signal Processing and Machine Learning section at ECE and your daily work will be closely linked to researchers at the Hydrogeophysics Group (HGG) in the Department of Geoscience — an internationally recognized leader in developing geophysical methods for groundwater exploration.

What we offer

We offer a vibrant and inclusive research environment with a strong interdisciplinary foundation and a clear commitment to real-world impact. Denmark is consistently ranked among the best countries in the world for work-life balance and quality of life. Family-friendly policies include generous parental leave, subsidised childcare, and access to excellent public healthcare and education. As a postdoc at Aarhus University, you will benefit from a supportive and flexible workplace culture that values diversity and offers excellent conditions for researchers and their families.
Specifically, we offer:

- A vibrant, interdisciplinary work environment that encourages collaboration across different domains
- Access to state-of-the-art facilities and computing infrastructure
- Strong support for research career development, including mentoring and international networking opportunities
- A commitment to diversity, equity, and inclusion in all aspects of our work
- A high degree of flexibility and autonomy in planning your research activities
- a workplace characterised by professionalism, equality and a healthy work-life balance.
- Non-financial relocation support and assistance with practical matters such as housing, childcare, and integration into Danish society.

We warmly welcome applications from all qualified candidates and strongly encourage women and individuals from underrepresented backgrounds in STEM to apply.

Place of work and area of employment

The place of work is Finlandsgade 22, 8200, Aarhus N, and the area of employment is Aarhus University with related departments.

Contact information

For further information, please contact: Assistant Professor Muhammad Rizwan Asif, +4560909831, rizwanasif@ece.au.dk.

Deadline

Applications must be received no later than June 30, 2025.

Application procedure

Shortlisting is used. This means that after the deadline for applications – and with the assistance from the assessment committee chairman, and the appointment committee if necessary, – the head of department selects the candidates to be evaluated. All applicants will be notified whether or not their applications have been sent to an expert assessment committee for evaluation. The selected applicants will be informed about the composition of the committee, and each applicant is given the opportunity to comment on the part of the assessment that concerns him/her self. Once the recruitment process is completed a final letter of rejection is sent to the deselected applicants.

Letter of reference

If you want a referee to upload a letter of reference on your behalf, please state the referee's contact information when you submit your application. We strongly recommend that you make an agreement with the person in question before you enter the referee's contact information, and that you ensure that the referee has enough time to write the letter of reference before the application deadline.
Unfortunately, it is not possible to ensure that letters of reference received after the application deadline will be taken into consideration.

If you wish to add a referee **after** you have submitted your application, you must send this person's details (name, job title, place of work, and email address) as well as the name of the position you have applied for to: HR.Nattech@au.dk

Formalities and salary range

Technical Sciences refers to the Ministerial Order on the Appointment of Academic Staff at Danish Universities under the Danish Ministry of Science, Technology and Innovation.

The application must be in English and include a curriculum vitae, degree certificate, a complete list of publications, a statement of future research plans and information about research activities, teaching portfolio and verified information on previous teaching experience (if any). Guidelines for applicants can be found here.

Appointment shall be in accordance with the collective labour agreement between the Danish Ministry of Taxation and the Danish Confederation of Professional Associations. Further information on qualification requirements and job content may be found in the Memorandum on Job Structure for Academic Staff at Danish Universities.

Salary depends on seniority as agreed between the Danish Ministry of Taxation and the Confederation of Professional Associations.

Aarhus University's ambition is to be an attractive and inspiring workplace for all and to foster a culture in which each individual has opportunities to thrive, achieve and develop. We view equality and diversity as assets, and we welcome all applicants.

Research activities will be evaluated in relation to actual research time. Thus, we encourage applicants to specify periods of leave without research activities, in order to be able to subtract these periods from the span of the scientific career during the evaluation of scientific productivity.

Aarhus University offers a broad variety of services for international researchers and accompanying families, including relocation service and career counselling to expat partners. Read more here. Please find more information about entering and working in Denmark here.

Aarhus University also offers a Junior Researcher Development Programme targeted at career development for postdocs at AU. You can read more about it here.

The application must be submitted via Aarhus University's recruitment system, which can be accessed under the job advertisement on Aarhus University's website.

Aarhus University

Aarhus University is an academically diverse and research-intensive university with a strong commitment to high-quality research and education and the development of society nationally and globally. The university offers an inspiring research and teaching environment to its 38,000 students (FTEs) and 8,300 employees, and has an annual revenues of EUR 935 million. Learn more at www.international.au.dk/