Postdoctoral position in landscape biogeochemical C, N, and water modeling

Application Deadline:
20 May 2026

Institute/Faculty:
Department of Agroecology

Faculty:
Faculty of Technical Sciences

Academic contact person:
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Vacant positions:
1

Number of months:
36

Hours per week:
37

Expected date of accession:
01/08/2026

The Pioneer Center for Landscape Research in Sustainable Agricultural Futures, Land-CRAFT, at the Department of Agroecology at Aarhus University, Denmark, is offering a postdoctoral position in modelling of nitrogen, carbon and water fluxes in agricultural dominated landscapes. The position will be available starting August 1, 2026, or as soon as possible thereafter. The position is available for a period of three years.

Food security, climate change and loss of biodiversity represent three of today's major societal challenges. Finding solutions for all these challenges requires studies that extend across multiple scales. The Pioneer Center Land-CRAFT was established in June 2022 to undertake fundamental and applied research from field to landscape scales that will address these societal challenges. The Center brings together experts on climate impact research and landscape analyses with backgrounds in biogeochemistry, agronomy, biology, geography, and social sciences from Aarhus University and University of Copenhagen, as well as our international partners: Colorado State University/NREL and Karlsruhe Institute of Technology/IMK-IFU. Digital technologies, including biogeochemical modelling and remote sensing, as well as interactions with stakeholders are key components of Land-CRAFT.

Our team of researchers works at field, farm, and landscape levels. The postdoctoral researcher will specialize in the exchange of nitrogen (N), carbon (C), and water between the biosphere, atmosphere, and hydrosphere from the landscape to the national level. Using a combination of state-of-the-art biogeochemical modeling, remote sensing, and data-driven machine learning approaches, they will improve our understanding of nutrient flows in agricultural landscapes. The postdoc will contribute to the development of databases representing the current state of environmental and agricultural data, with a focus on Denmark as a test bed for wider EU application. Using this information, the postdoc will explore tangible development pathways under climate change constraints to reduce the environmental impact of agriculture. Ideal candidates have experience in using biogeochemical models at the field and regional levels, as well as exploring machine learning (ML) and artificial intelligence (AI) approaches to develop surrogate models based on field observations, remote sensing, or modeling outputs.

We expect that you will be an important part of the research environment and that you will contribute positively to the social working environment. We also expect that you will take part in our teaching activities and that you will report research results in high-impact scientific journals.

Your profile

We are searching for a highly motivated candidate who has:

- A PhD in agronomy, engineering, biology, technical oriented sciences or similar
- Ability to communicate effectively in English
- Research experience on process-based and ML models to simulate nutrient flows in agro-ecosystems
- Strong skills with scripting (R, Python) and programming
- Ability to collaborate within teams and across disciplines
- Ability to take initiative, develop and manage research activities
- Ability to communicate effectively in English
- Documented experience of publishing in peer-reviewed scientific journals
- Insight into the societal challenges for a green transition of agricultural production landscapes, and the related ecosystem services
- Experience with digital technologies in relation to site-specific environmental, technical and socio-economic data, including remote sensing

Job description

The postdoctoral researcher will:

- Develop and conduct research on nitrogen (N), carbon (C), and water (H_2O) flows

from the field to regional and national scales using a combination of modeling and remote sensing approaches.
- Develop data-driven machine learning/AI models using field observations (including remote sensing) or model outputs.
- Establish approaches to quantify uncertainty in model outputs using different methods.
- Run scenario analyses to identify management practices with the greatest mitigation potential in terms of space and time.
- Support the training of young researchers in using biogeochemical and machine learning (ML) models.
- Coordinate and contribute to international, peer-reviewed publications.
- Contribute to the development of new project ideas and proposal writing.
- Participate in network-building activities, both internationally and across disciplines within the Pioneer Center Land-CRAFT.

Who we are

At the Department of Agroecology, our main goal is to contribute to sustainable solutions to some of the world's biggest problems within the areas of soil, plants, animals, humans, and the environment. We want to make a difference by contributing to both fundamental knowledge generation and the attainment of sustainable production systems via innovative research, contracted policy advice, and education. We offer professional laboratories, greenhouses, semi-field, and field-scale research facilities, advanced computing capacities as well as an extensive national and international researcher network. The department consists of nine research sections with around 350 highly skilled employees, of which approximately 50% are scientific staff. More information can be found here.

What we offer

- A collaborative, international research environment that combines high academic standards with an informal and supportive atmosphere. We value accountability, curiosity, flexibility, and teamwork in everything we do.
- An inclusive and respectful workplace culture, where mutual trust, kindness, and professional dialogue are part of daily life. We encourage open communication and develop a cohesive sense of community across teams and disciplines.
- A flexible working environment that supports work-life balance and individual needs.
- An active institutional commitment to diversity, equity, and inclusion – in recruitment, career development, and everyday interactions.
- An innovative and meaningful workplace where your work contributes to solving real-world challenges. No two days are alike, and we welcome creative thinking and new ideas.
- Support for international researchers and their families, including Relocation Service and an Expat Partner Programme

Living and working in Denmark

- Subsidized childcare and free education from primary school through university.
- Universal healthcare for you and your family as residents.
- Five weeks of paid holiday per year.
- Generous parental leave – up to 52 weeks shared between parents, with full or partial salary.

Place of Work

The place of work is Aarhus University, Ole Worms Allé 3, 8000 Aarhus C. The affiliation will be with the Department of Agroecology.
More information can be obtained from Professor Klaus Butterbach-Bahl (klaus.butterbach-bahl@agro.au.dk).

Application deadline: 20th May 2026

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.

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 37,000 students (FTEs) and 8.700 employees and has an annual revenue of EUR 1.106 billion. Learn more at www.international.au.dk/