Postdoc in Landscape Nitrogen-flux modelling at Aarhus University

Application Deadline:
05 January 2026

Institute/Faculty:
Department of Agroecology

Faculty:
Faculty of Technical Sciences

Academic contact person:
Klaus Butterbach-Bahl
Centerleder, professor
+4593508238
klaus.butterbach-bahl@agro.au.dk
+4593508238

Vacant positions:
1

Number of months:
24

Hours per week:
37

Expected date of accession:
01/07/2026

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 fluxes in agricultural systems, starting 01-07-2026 or as soon as possible thereafter. The position will be available for a period of 2 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.

We have a team of researchers working at field, farm and landscape scales. The postdoctoral researcher specializing in landscape nitrogen-flux modelling will use state-of-the-art biogeochemical modelling and data-driven machine learning approaches at an ecosystem scale to improve our understanding of the fate of nitrogen fertilizers applied to agricultural soils. This understanding will be developed in relation to crop nitrogen uptake, soil storage and losses to the environment via hydrological and gaseous pathways. The ideal candidate will have experience of using biogeochemical models at field and regional scales, and of exploring machine learning (ML) and AI approaches to develop surrogate models based on field observations, remote sensing or modelling outputs.

We expect that you will be an active part of the research environment across campus sites and universities and that you will contribute positively to the social working environment. Moreover, you will contribute to dissemination and teaching, and to reporting research results in high-impact scientific journals.

Job description

The postdoctoral researcher will:

- Develop and conduct research on nitrogen flows from field to regional scales, using a combination of modelling and remote sensing approaches.
- Develop data-driven machine learning/AI models using field observations (including remote sensing) or model outputs.
- Establish approaches to quantify the uncertainty in model outputs using different methods.
- Run scenario analysis to identify management practices with the largest mitigation potential, both spatially and temporally
- Support training of young researchers in using biogeochemical and ML models
- Play a key role in contributing to international peer-reviewed publications
- Contribute to development of new project ideas and proposal writing
- Participate in network building activities both internationally and across disciplines within the Pioneer Center Land-CRAFT

Your profile

We are searching for a highly motivated candidate who has:

- A PhD in agronomy, engineering, biology, technical oriented sciences or similar
- Research experience on process-based and ML models to simulate nutrient flows in agro-ecosystems
- Proficient skills with scripting (R, Python) and programming
- An ability to collaborate within teams and across disciplines

- An ability to take initiative, develop and manage research activities
- An ability to communicate effectively in English
- Good scientific and technical writing skills
- 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

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.

We believe in encouraging inclusion, acceptance, and understanding by employing staff who bring unique perspectives to our department.

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

- Subsidised 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 Alle 3, DK-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 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/