

Two-year Postdoctoral scholarship in hydrodynamics and aquatic greenhouse gas - exchange at the Swedish University of Agricultural Sciences (SLU)

Department of Forest Ecology & Management

SLU is a ‘water university’, hosting around 400 researchers and experts that work with water-related issues. The Department of Forest Ecology and Management has a strong focus on the cycling of carbon and water in the boreal landscape. The department has ca. 90 employees of which around 20 work with greenhouse gas exchange and/or water related questions. The department is equipped with state-of-the-art labs for stable isotopes and biogeochemical analysis. For further information about the department and its research activities visit: <https://www.slu.se/en/departments/forest-ecology-management/>

Research project and duties:

Many inland waters emit carbon dioxide (CO₂) and methane (CH₄) that affect the global climate. Recently, both surprising and impactful observations have been made that inland waters exchange CH₄ much faster than CO₂. This effect cannot be explained by established theory and is currently unaccounted for in earth system models. A groundbreaking hypothesis explains this phenomenon by microscopically small bubbles (microbubbles) that may provide ‘hidden’ gateways for CH₄ emissions. Despite large controversies, this *microbubble hypothesis* has never been tested.

The postdoc will be working in a challenging, but highly rewarding, research project with the aim to test the hypothesis that invisibly small microbubbles contribute to the exchange of CO₂ and CH₄ between inland waters and the atmosphere. To address this aim, the Postdoc will conduct field experiments and modelling to detect and quantify microbubbles in inland waters and to link microbubble characteristics with CO₂ and CH₄ emissions and other environmental conditions. Field experiments will be carried out in inland waters in northern Sweden at the Vindeln Experimental Forests close to Umeå, and the Abisko Scientific Research Station. A field sampling campaign to Germany (Stechlinsee) is optional.

The Postdoc is expected to work independently, but also in close collaboration with other team members. The established research environment will offer ample opportunity to facilitate and foster the Postdocs’ professional development and scientific expertise.

Qualifications:

The Postdoc is required to hold a PhD degree in physical geography, limnology, physics, environmental engineering or similar disciplines. We are primarily looking for a highly motivated candidate who received a doctoral degree within the last three years and is interested in pursuing academic research in the forefront of this research area.

The applicant shall have well-documented competence in measurements of air-water gas exchange, bubbles and/or turbulence. Experience in hydro-acoustic measurement and modelling techniques, field work experience as well as programming skills (e.g. R, Matlab) are a merit. Strong communication skills in oral and written English is a requirement. Driver’s license class B is required.

Emphasis will also be placed on the applicant's personal characteristics and suitability, including the ability to work constructively in a group and to take own initiatives.

Place of work:

Umeå, Sweden

Form of employment:

Scholarship during 2 years

Extent:

100%

Starting date:

According to agreement, but preferably between 2024-01-01 and 2024-04-01.

Application:

We welcome your application no later than 2023-09-30.

Specific documents to be attached to the application: 1) PhD certificate; 2) current CV, including a list of publications; 3) statement of research experience and scientific interests (max. 1 page); 4) contact information of two references.

Academic union representatives:

<https://internt.slu.se/en/my-employment/employee-associations/kontaktpersoner-vid-rekrytering/>

The Swedish University of Agricultural Sciences (SLU) is a world-class international university with research, education and environmental assessment within the sciences for sustainable life. Its principal sites are in Alnarp, Umeå and Uppsala, but activities are also conducted at research stations, experimental parks and educational establishments throughout Sweden. We bring together people who have different perspectives, but they all have one and the same goal: to create the best conditions for a sustainable, thriving and better world.

SLU has just over 3,000 employees, 5,000 students and a turnover of SEK 3 billion. The university has invested heavily in a modern, attractive environment on its campuses.

Contact persons

Marcus Klaus
Researcher, PhD
+46 70 589 33 33
marcus.klaus@slu.se

Mats Öquist
Associate professor, PhD
+46 90 786 85 25
mats.oquist@slu.se