Two Post-doctoral Fellowships (2-years) in Peatland Microbial Ecology and Mercury Biogeochemistry

Department of Forest Ecology and Management
Two post-doctoral Fellowships in peatland microbial ecology, and mercury biogeochemistry, are available at the Department of Forest Ecology and Management at the Swedish University of Agricultural Sciences (SLU) in Umeå, Sweden. The department includes 100 people of which about 10 are professors. Our mission is to advance the understanding of forest ecosystem processes and to progress the principles of forest ecosystem management. For more information: http://www.slu.se/en/departments/forest-ecology-management/. The fellowships are funded by the Kempe foundations and the research conducted is a part of a larger project funded by both the Swedish EPA and the Swedish Research Council Formas.

Fellowship#1 – Peatland Microbial Ecology
The postdoctoral researcher will study the microbiology of methane and mercury biogeochemistry in an interdisciplinary team of researchers and students with expertise and interests in methane and Hg biogeochemistry, peatland ecology and environmental genomics. The postdoc will collaborate closely with the Uppsala-based research group in Functional Microbial Ecology led by Professor Stefan Bertilsson (https://www.slu.se/en/ew-cv/stefan-bertilsson/).

Methane is the second most important greenhouse gas after carbon dioxide, and wetlands are the main natural source of atmospheric methane. Wetlands are also hotspots for mercury methylation and other biogeochemical processes of environmental concern. In many regions of the world, large areas of wetlands have been drained for agriculture or forestry purposes. During recent decades, wetland restoration has become a prioritized environmental protection action in many European countries. A century or more of drained conditions has drastically changed the soil properties in relation to natural wetlands and thus the potential for various biogeochemical processes. The broader aims of the project are to identify properties of rewetted wetlands that are critical for methane production, methane oxidation and mercury transformation and compare these with the situation in natural, undisturbed wetlands. Understanding these biological systems will be fundamental to developing strategies for minimizing emissions of the greenhouse gas methane following wetland restoration and exposure to toxic mercury species.

Qualifications: Successful candidates will have a PhD in microbial ecology, environmental microbiology or closely related fields, preferably with a focus on microbial processes in anaerobic environments. The degree should not be more than three years old. Demonstrated expertise in anaerobic microbiological work, DNA and RNA based methods and experimental approaches to studying metabolic processes and growth rates will be considered a merit.
Fellowship #2- Peatland Mercury Biogeochemistry
Mercury is a globally spread pollutant having severe negative consequences on wildlife and human populations. Much of the threat from this pollutant is related to biogeochemical processes that transform inorganic Hg to the most toxic and bioavailable form of Hg: methylmercury (MeHg). This transformation process takes place in lake sediments and water saturated soils, such as peatlands, by the action of anaerobic microorganisms. Another important biogeochemical process is the transformation of Hg to the gaseous form of elemental Hg (Hg⁰). Also this process takes place in peatlands. Despite recent research advances, there is an uncertainty to what extent drainage and rewetting of peatlands result in an increase or decrease in MeHg and Hg⁰ formation.
The overarching goal of the research conducted by the post-doctor would be to resolve and quantify environmental and biogeochemical factors controlling the formation of MeHg and Hg⁰ during drainage and rewetting of peatlands. The postdoc will collaborate closely with Professors Ulf Skyllberg (SLU; https://www.slu.se/en/ew-cv/ulf-skyllberg/) and Erik Björn (Umeå University; https://www.umu.se/en/staff/erik-bjorn/).

Qualifications: Successful candidates will have a PhD in (bio)geochemistry, preferably with a focus on Hg, or in closely related fields. The degree should not be more than three years old. Demonstrated experience in applying synchrotron-based spectroscopy (e.g. XAS), stable Hg isotope methods, other relevant analytical techniques, as well as chemical speciation modelling of environmental samples are merits for this position.

Requirements for both Fellowships
We require that candidates have documented capabilities for independent research as well as the writing of scientific publications and reports in English. In addition, the postdoctoral researchers are expected to participate in other ongoing research projects within the collaborating research groups. A willingness and interest to develop research-funding possibilities within the research groups is encouraged. Good command of the English language, both written and spoken, is required. A driving license is desirable.

Place of work: Umeå

Form of funding: The Fellowships are funded by stipends (2 years)

Starting date: According to agreement

How to apply: Your application should contain: (1) a cover letter stating which of the two Fellowships you are applying for, a summary of your research accomplishments and how you could contribute to the research project (maximum 2 pages), (2) a Curriculum Vitae, (3) a publication list, (4) transcripts of relevant degree certificates and publications, and (5) names and contact details of 2-3 references. The application should be submitted electronically to mats.oquist@slu.se. All documents submitted should be in MS Word or PDF format. Deadline for submission of applications is Sunday February 28th.

Contact person
Mats Öquist, Project coordinator (Email: mats.oquist@slu.se)
The Swedish University of Agricultural Sciences (SLU; https://www.slu.se/en/) conducts education, research and environmental monitoring and assessment in collaboration with society at large. Through our focus on the interaction between humans, animals and ecosystems and the responsible use of natural resources, we contribute to sustainable societal development and good living conditions on our planet. The university ranks well internationally within its subject areas. SLU is a research-intensive university that also offers unique degree programs in for example rural development and natural resource management, environmental economics, animal science and landscape architecture.

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 in Alnarp, Umeå (https://www.slu.se/en/about-slu/locations/slu-umea/) and Uppsala.