ORNL Publications

External Publication

Job Posting Title

Postdoctoral Research Associate - Linking root traits and ecosystem processes / NB50525061

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Purpose

Under general supervision, the incumbent will conduct research within the Terrestrial Ecosystem Science (TES) program at ORNL. Specific research tasks include woody plant fine-root and rhizosphere responses to warming and elevated [CO2] at a new climate change experiment in northern Minnesota, as well as linkages among root dynamics and ecosystem carbon and water fluxes in a long-running AmeriFlux site in Missouri. Focused, self-directed research is also expected. This position resides in the Environmental Sciences Division (ESD) and Climate Change Science Institute (CCSI) at Oak Ridge National Laboratory (ORNL).
The TES program at ORNL is focused on advancing mechanistic understanding of terrestrial ecosystem processes and applying such advances to terrestrial biosphere models for simulating impacts of climate change. The group encompasses multiple disciplines spanning experiment, data, model and supercomputing to investigate how critical ecosystems may respond to climate change, and how feedbacks from those responses affect global climate.

The flagship ORNL-TES ‘Spruce and Peatland Responses Under Climatic and Environmental Change’ (SPRUCE) field experiment is located in Marcell, MN at the southern edge of the boreal forest in a high carbon peatland expected to be particularly vulnerable to projected changes in climate. Ten large, open-topped field chambers have been built within a black spruce – Sphagnum bog ecosystem. Five enclosures are currently being warmed—above- and belowground—in a regression design (+0 to +9 #C), while another five are being warmed in the same regression design, and also exposed to elevated CO2 concentrations (+500 ppm) to facilitate understanding of response thresholds of key mechanisms associated with ecosystem carbon, water and energy fluxes. Additional information can be found online about the SPRUCE project (http://mnspruce.ornl.gov) or Climate Change Science Institute (http://climatechangescience.ornl.gov/)

The MOFLUX project is also part of the ORNL’s TES program. The MOFLUX site has been in operation since 2004, and is located at the University of Missouri’s Baskett Wildlife Research and Education Area (BWREA) near Ashland, Missouri. This site is characterized by extremely high levels of biogenic isoprene emission. It also has the longest known continuous observation of tree mortality and predawn leaf water potential of multiple species. The site is located in a key ecotone between the Eastern Deciduous Forest and Prairie regions and is subject to large inter-annual variation in summer precipitation and drought intensity.

Major Duties/Responsibilities

- Design and lead experiments focused quantifying root and rhizosphere traits, and their response to warming and elevated [CO2] (SPRUCE) and developing relationships among root traits and ecosystem carbon and water fluxes measured with an eddy covariance system and soil chambers (MOFLUX). Research will involve multiple trips to northern Minnesota and also Missouri throughout the growing season.

- Collaborate with internal DOE and external University researchers to comprehensively assess belowground responses to treatments (SPRUCE experiment).
- Develop novel hypotheses and successfully complete self-directed study of plant, soil, or ecosystem level processes.
- Participate in monthly SPRUCE teleconferences.
- Periodic travel to various conferences for presentation of results and interactions with other researchers.
- Publication of scientific results in high-impact peer-reviewed journals in a timely manner.
- Ensure compliance with environment, safety, health and quality program requirements.
- Maintain strong commitment to the implementation and perpetuation of values and ethics.

Qualifications Required

- A PhD in root ecology, ecosystem ecology, or a closely related field, completed within the last 5 years.
- An excellent record of productive and creative research demonstrated by publications in peer-reviewed journals
- Expertise, as measured through first-author publications and/or major conference presentations focused on root ecology and one or more of the following disciplines: ecosystem ecology, biogeochemistry, peatland or wetland ecology, global change ecology, or ecosystem modeling.
- Expertise in experimental field ecological research and associated laboratory approaches.
- Excellent written and oral communication skills and the ability to communicate in English to an international scientific audience.

QUALIFICATIONS DESIRED: Expertise and experience in minirhizotron data analysis, quantification of root morphology, anatomy, or physiology, soil nutrient dynamics, ecosystem carbon and water fluxes, ecosystem modeling or an appreciation of data-model interactions are strongly desired.

The appointment length will be up to 24 months with the potential for extension.

Applicants cannot have received the most recent degree more than five years prior to the date of application and must complete all degree requirements before starting their appointment.

This position will remain open for a minimum of 5 days after which it will close when a qualified candidate is identified and/or hired.

We accept Word(.doc, .docx), Excel(.xls, .xlsx), PowerPoint(.ppt, .pptx), Adobe(.pdf), Rich Text Format(.rtf), HTML(.htm, .hmtl) and text files(.txt) up to 2MB in size. Resumes from third party vendors will not be accepted; these resumes will be deleted and the candidates submitted will not be considered for employment.

If you have trouble applying for a position, please email ORNLRecruiting@ornl.gov.

Notice: If the position requires a Security Clearance, reviews and tests for the absence of any illegal drug as defined in 10 CFR 707.4 will be conducted by the employer and a background investigation by the Federal government may be required to obtain an access authorization prior to employment and subsequent reinvestigations may be required.

If the position is covered by the Counterintelligence Evaluation Program regulations at 10 CFR 709, a counterintelligence evaluation may include a counterintelligence-scope polygraph examination.

ORNL is an equal opportunity employer. All qualified applicants, including individuals with disabilities and protected veterans, are encouraged to apply. UT-Battelle is an E-Verify Employer.