Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Position: Postdoctoral researcher in blanket bog stable isotopes
Funded project: DRYPEAT- Deuterium-excess reconstruction to yield peatland evaporation, aridity, and transpiration

We are currently seeking applicants for a postdoctoral researcher to join the Science Foundation Ireland (SFI)-funded DRYPEAT project beginning in January 2025. This researcher will join the School of Natural Sciences at Trinity College Dublin, The University of Dublin (Trinity), Ireland, in the Discipline of Geography. The position is paid at Level 2A Point 1 (SFI salary scaling) and is funded for 2 years with an annual salary point raise and a potential extension for a third year. The application deadline for this position is **31 October 2024**.

Background: The DRYPEAT project
Blanket bogs are a type of waterlogged peatland that carpet ≈11% of the Irish landscape in mountainous regions and the Atlantic coast lowlands. Blanket bog carbon storage and biodiversity are critical components of a sustainable Ireland, but a warming and drying climate may push the bogs beyond a tipping point into ecological collapse. The exact environmental conditions that lead to this threshold are unknown, but we could constrain uncertainty about blanket bog resilience by knowing the maximum aridity levels that blanket bogs have survived in the past. In project DRYPEAT, we aim to develop a new evapotranspiration (ET) proxy through deuterium-excess (*dxs*), a second-order stable isotopic parameter, and bog plant cellulose. The project will initiate a precipitation isotope monitoring network across Ireland in coordination with sustained monitoring of blanket bog precipitation, surface waters, and vegetation in the Wicklow Mountains south of Dublin. Using multiple peat cores, the project will culminate in a new bog-based ET and aridity reconstruction for the Wicklow Mountains covering the past 4000+ years.

The three main objectives of DRYPEAT are summarized as:

1. Install a precipitation isotope monitoring network (ÉireNIP) to quantify the spatiotemporal relationships between precipitation *dxs* and geographic/meteorological variables.
2. Determine a transfer function from bog plant cellulose isotopes to bog ET through regular *dxs* monitoring of blanket bog water and plants in the Wicklow Mountains.
3. Apply the new transfer function to cellulose extracted from 2+ peat cores to reconstruct 4000+ year ET histories of the Wicklow Mountain blanket bogs and compare to predicted future ET conditions.

Postdoctoral researcher role in DRYPEAT
The postdoctoral researcher will be an integral component of DRYPEAT and work closely with the other members of the project team: Pete D. Akers (PI) and a PhD student. The researcher will lead field collection and monitoring of precipitation, surface water, bog plants, and peat cores in a mountainous peatland terrain. The researcher will also have significant time devoted to the processing of plant and peat core samples in a laboratory setting to extract and isotopically analyse cellulose in collaboration with the PhD student in order to develop the *dxs*-ET transfer function. The researcher will be funded to visit at least one other European laboratory to observe their cellulose isotope methodology and analytical system, and funding is also available to support academic conference travel.

Qualifications
A PhD in botany, geography, geoscience, environmental science, or an affiliated area is required.

The successful candidate will have:

- Experience collecting and analysing qualitative and quantitative data in both a field and laboratory setting.
- Skills in plant taxonomy and field identification of plant species as well as knowledge of plant physiology and ecology.
- Knowledge of the broad parameters of climatology, geochemistry, and environmental science that pertain to hydrology and ecology.
- Experience conducting an independent empirical research project as evidenced through their PhD dissertation/thesis.
- A working knowledge of statistical programming (e.g., R, Python) and GIS.
- Excellent written and oral communication and interpersonal skills.
- Ability to work independently and collectively as part of the DRYPEAT project team.
- Legal ability to drive in Ireland or the capability to gain this ability quickly after arriving in Ireland.

Additionally, it is highly desirable if a candidate can exhibit any of the following:

- Prior experience with stable isotope analysis and environmental tracing.
- Prior experience with botanical surveying, field collection, and/or experimentation.
- Prior experience with climate or weather modelling.
- Prior experience working in challenging field conditions.

Application Procedure
Applicants should submit in one document:

- A cover letter setting out your motivation for applying for the role and how your skills meet the requirements set out in this document.
- A full curriculum vitae.
- The names and contact details of 2 referees (including email addresses and affiliation to the applicant).

Contact information
The application and any inquiries regarding the position should be sent by **31 Oct 2024** to:
Dr. Pete D. Akers, Asst. Professor of Physical Geography Email: pete.akers@tcd.ie