Integrating plant plasticity and demography in land surface models

We invite applications for a 2-year postdoctoral researcher (with the possibility of extension for) within the Plant Ecology Modelling group in the Discipline of Botany, School of Natural Sciences at Trinity College Dublin.

Project background and description

Understanding how terrestrial vegetation responds to environmental changes is crucial to predict the carbon cycle under future climates which lack a historical analogue. Land surface models (LSMs) have made significant advances in incorporating biologically realistic processes but are still far from adequately representing plant responses to changes in climate or atmospheric CO_2. Plants are fundamentally plastic, and respond flexibly to their environment, both at short timescales through phenotypic adaptation and across multiple generations through evolution and competition, processes currently not incorporated in LSMs.

The project will integrate plant plasticity and demography modelling concepts within one single model to predict ecologically realistic community level plant traits. The development work will take place in the context of the QUINCY model, a cutting-edge land surface model designed for easy hypothesis testing. Model development and evaluation will use data from site-scale manipulative experiments and global trait databases.

The project is part of the Trait-Tweaks project funded by Science Foundation Ireland (SFI) which aims to increase ecological realism in land models and change the way we use and predict plant trait data. The candidate will join the QUINCY international modelling team with groups across Europe providing scientific and technical support.

Candidate profile

The ideal candidate will:

- Hold (or be close to completing) a PhD in ecology, geosciences, environmental science, or a similar relevant subject

- Have experience in using and/or developing vegetation or land surface models

- Have programming experience (e.g. R, Python, Matlab, Fortran)

- At least one first author peer-reviewed publication (can be preprint)

- Good written and spoken English

What we offer

- 2-year position with the possibility of extension upon satisfactory performance for another 2 years (funding already secured)
- Salary €44,847 - 52,715 commensurate with experience and including annual increments (in accordance with the IUA scale)
- Pension and benefits in accordance with Irish university regulations

Application

Please send a CV and a 1-page personal statement detailing why you are interested in the project and names and contact details of two referees, no later than the 14th of June 17:00 GMT by email to Dr. Silvia Caldararu caldaras@tcd.ie.

The personal statement should contain details of your research interests, career plans and how this project relates to these.

Project starting date September 2024 or as soon as possible thereafter.

We strive for a bias free recruitment process so we ask you to not send CVs that include a photo or information of a personal nature (e.g. age, marital status, nationality). Statements will be read before CVs. We encourage applications from underrepresented groups in STEM.

Please address all enquiries by email to Dr. Silvia Caldararu caldaras@tcd.ie

Links

Plant Ecology Modelling group: https://plantecomodelling.org/

Botany at Trinity College Dublin: https://www.tcd.ie/Botany/