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

Plant trait plasticity from models and manipulative experiment networks

We invite applications for a fully-funded (EU & UK fees only) 4-year PhD project 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 PhD project will integrate existing data from distributed experiments in the DroughtNet and Nutrient Network with the QUINCY model, a cutting-edge land surface model designed for easy hypothesis testing. The work will involve novel uses of experimental data to build and evaluate models and development of model representations of plant plasticity in response to drought and nutrient addition.

The PhD 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 a Bachelor or Masters degree in ecology, geosciences, environmental science, plant sciences, mathematics, computer science or another relevant discipline.

- Have demonstrable quantitative skills, including ecologically-relevant statistical methods

- Have previous programming experience (e.g. R, Python, Matlab, Fortran) and/or a background in ecology or plant physiology and a willingness to learn programming

- Meet the Trinity College Dublin postgraduate entry requirements

Funding

This is a 4-year Phd project funded by Science Foundation Ireland and covers an annual stipend of €22,000, as well as project costs and EU student fees (funder constraint). EU fees apply to anyone who has worked or studied in the EU or UK for at least 3 out of the last 5 years, more details here: https://www.tcd.ie/academicregistry/fees-and-payments/applicants/what-are-my-fees/.

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.

Project starting date September 2024 or January 2025.

The personal statement should contain details of why you want to do a PhD and why you want to do this particular PhD.

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/