

Post-doctoral researcher: **Combined plant hydraulics and xylem growth in a global dynamic vegetation model**

Background The project PHydrauCC researches the interactions between tree growth and hydraulic traits under ambient and elevated CO₂, using data from Free-Air Carbon dioxide Enrichment (FACE) facilities. To determine the resilience of trees under changing climatic conditions, it is imperative to know whether elevated CO₂ will affect the structure of wood and the physiological traits conferring drought- and heat-tolerance. Plant hydraulic traits describe the efficiency and safety of xylem water transport through roots, stems, branches, and leaves. It is unknown how growth variations under rising CO₂ and a changing climate will affect those traits.

Aim This postdoc of PHydrauCC will assess forest resilience to future climate change on continental scale under the dichotomy of the very different hydraulic strategies of conifers and broadleaved trees. A hydraulic and tree-ring formation model, developed in another workpackage, will be adapted and incorporated in a dynamic global vegetation model. We expect that the new combined model of tree-ring formation and plant hydraulics will display hysteresis and legacy effects in plant growth for several years after major drought and heat wave events. Drought-related risks under climate change in temperate and boreal forests will be evaluated, with a special interest in the different hydraulic strategies of broadleaved angiosperms compared to needle-leaved gymnosperms.

We are looking for an enthusiastic researcher able to work with and develop large-scale vegetation models based on partial differential equations, who is motivated to study legacy effects in forests in response to major drought events.

The successful candidate will work closely with [Matthias Cuntz](#) and [Emilie Joetzjer \(UMR Silva\)](#) located in [Nancy](#), France, and with the other members of the project [PHydrauCC](#) such as [Jean-Christophe Domec](#), [Jérôme Ogée \(UMR ISBA\)](#), and [Cyrille Rathgeber \(UMR Silva\)](#), another postdoc, and several students.

Requirements

PhD in suitable fields (physics, ecophysiology, global change biology)

Strong programming skills (e.g. Fortran, Python)

Good spoken and written English language skills

Ability to carry out independent and well-organised research, as well as work as part of a team

Interest in ecophysiology, forest functioning and/or biogeochemical cycles

Location: [UMR Silva](#) Nancy (Champenoux) France

Contract duration: 12 + 36 months

Starting Date: the position is available from October 2022 and will remain open until filled

Contacts

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How to apply Applicants should submit a complete application package by email to the contact above. The application package should include (1) a curriculum vitae including a publication record, (2) statement of motivation, (3) names, addresses, phone numbers, and email addresses of at least two references.