Two-year funding for PhD (or Postdoc) in dendroecology/dendroclimatology/densitometry of temperate wood species, at the University of Liège (Gembloux Agro-Biotech)

Project "ADAPTED": Finding climate-**Adap**ted **T**rees in Northwestern **E**urope based on **D**endrochronology/X-ray CT densitometry of trees from different forest genetic resources

Climate change will have an impact on forest productivity and composition in Europe. Forest management and afforestation projects should take into account the forest genetic resources that will provide climate-adapted tree species/provenances. Do certain available genetic resources [1] provide us with better-adapted species/provenances to increased drought and temperature?

Dendrochronology of a large number of tree species/provenances reveals both life history of the tree and its climate response [2]. The main focus of this project is to work on available forest genetic resources for the production of forest reproductive material in Belgium, France and neighbouring regions. Coring trees from these known provenances, and measuring growth traits (ring width, density) from pith to bark provides a powerful tool to assess tree response and productivity and thus allow finding the better adapted provenances. A large amount of data is necessary and X-ray computed tomography (CT) scanning is one of the few techniques that can deliver such data sets [3]. This technique in combination with a custom-built toolbox allows obtaining both tree-ring density and ring width at an unprecedented rate, thus creating sufficient data volume for model development [4].

The project outcome should support current incentives in forest management/afforestation projects that take into account the climate adaptability of tree species/provenances in Northwestern Europe.

References:

[1] www.euforgen.org

[2] Martínez-Sancho *et al.* The GenTree Dendroecological Collection, tree-ring and wood density data from seven tree species across Europe. *Scientific Data 7, 1* (2020) https://doi.org/10.1038/s41597-019-0340-y

[3] De Mil et al. A field-to-desktop toolchain enables tree-ring analysis. *Annals of Botany* 117, 1187-96 (2016) https://doi.org/10.1093/aob/mcw063

[4] Van den Bulcke et al. Advanced X-ray CT scanning can boost tree ring research for earth system sciences. Annals of Botany 124, 837-847 (2019) https://doi.org/10.1093/aob/mcz126

Responsibilities

- Study design: Mapping and selecting species and specific genetic resources
- Participate to field campaigns when needed
- Perform classic tree ring analysis/dendroclimatic analysis at Gembloux Agro-BioTech
- Perform densitometry at UGent-Woodlab, Ghent University
- Data analysis of large amounts of tree-ring data
- Writing manuscripts for publication in scientific articles

Profile

Hold a master of forest science/dendrochronology or has a PhD in dendrochronology (outside Belgium). Experience in dendro field work is a must. Knowledge of forest ecology is required and programming skills (R studio) are key.

We offer

This position is opened at Gembloux Agro-Bio Tech, University of Liège, a lovely campus with easy train connections from Brussels (https://www.gembloux.uliege.be).

- A 22-month contract as full-time PhD or international Post Doc.
- Net monthly salary of 2100-2700 €/month depending on candidate's degree and working experience
- Starting date: as soon as possible (April 1 2020 preferably)

The successful candidate will be based in Gembloux Agro-Biotech (University of Liège), and will have the opportunity to visit partners at Ghent University (UGCT- UGent-Woodlab), the AfricaMuseum (Tervuren), the University of Arizona (Tucson, Arizona), Swiss Federal Institute for Forest, Snow and Landscape Research WSL (Birmensdorf, Switserland) and present research results at international conferences.

Document requirements

- Curriculum vitae with recent C.V. /Scientific C.V.
- Cover Letter, with motivation specifying how the candidate would fit in this project/how the candidate would elaborate on this project.

Contact

- For questions: contact Tom De Mil (Tom.demil@ugent.be)
- Applications can be sent by **March 20 2020** to p.lejeune@ulg.ac.be (tom.demil@ugent.be in cc)