**Pith to bark variations of wood density and anatomical features as a potential tool for dendrochronology of tropical tree species**

Y. Tarelkin1, 2, 3, S. Hahn4, J.-F. Bastin5, 6, J. Van Den Bulcke3, O. Debeir4, J. Van Acker3, H. Beeckman2 and C. De Cannière1

*1 Landscape Ecology and Plant Production Systems Unit, Université libre de Bruxelles, Belgium*

*2 Laboratory for Wood Biology and Xylarium, Royal Museum for Central Africa, Belgium*

*3 Department of Forest and Water Management, Faculty of Bioscience Engineering, Ghent*

*University, Belgium*

*4 Laboratory of Image Synthesis and Analysis, Université Libre de Bruxelles, Belgium*

*5 Botanique et bioinformatique de l'architecture des plantes (UMR-AMAP), IRD, France*

*6 Biens et services des ecosystèmes forestiers tropicaux (UPR-BSEF), CIRAD, France*

**Corresponding author:** [ytarelki@ulb.ac.be](mailto:ytarelki@ulb.ac.be)

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In this study we investigate the potential of using wood density microvariations coupled with anatomical variations in the dendrochronological studies in the tropics. We focus on species located in the primary and secondary forests of the Congo Basin. Sanded increment cores are used to analyse the variations of anatomical features such as fibre wall thickness, fibre lumen size, vessel area and parenchyma/fibres ratio. These features will be detected along the pith-to-bark profile and measured by image analysis software on the basis of their shape and size. Variation profiles will allow us to detect patterns which could reveal a possible intermittence in the cambial activity. By crossdating different anatomical variation profiles of trees of the same species we can assess whether these trees have similar and periodical growth patterns and, therefore, are influenced by a common external factor. Samples will be collected in three different areas located along a North-South climatic gradient in DR Congo. Climate-growth correlations will be calculated in order to identify which climatic factors (i.e. precipitation, temperature, air humidity) have an effect on cambial activity. This will allow us to better understand the growth dynamics of trees in that region of the Congo Basin, estimate those trees age and assess the evolution of the climatic variables that influence tree growth over the last years.