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Virtual tree cores in the Congo Basin: perspectives for biomass mapping

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The Congo Basin forests provide ecosystem services, directly and indirectly contributing to human well-being. One of these services is carbon sequestration and the largest part of the aboveground carbon is stored in the tree trunk. In order to quantify this tree trunk carbon, we need detailed measurements of an important variable in the equation of biomass calculation: wood density. At UGent-Woodlab (www.woodlab.be) we have been working towards the use of X-ray Computed Tomography (CT) scanning to obtain large datasets of virtual increment cores. These cores are obtained and processed using dedicated software resulting in pith-to-bark density profiles and ring width series. Assessing density and growth simultaneously as such allows for accurate biomass stock estimations, as well as productivity throughout the lifespan of a tree. Efforts are being made for an online platform, and machine learning techniques are being developed to treat such large datasets (<http://www.dendrochronomics.ugent.be/#database>).