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Impact of anthropogenic and climatic changes on biomass and diversity of the Central African forests, from local to global scale: original methods for new results

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Forests of the Congo Basin, the second most important remaining block of tropical moist forest in the world, are facing increasing anthropogenic pressure and climate change. Understanding the biomass and diversity dynamics under these pressures is one major challenge for African nations and international communities.
This talk aims to present original methods to model, infer, and predict growth, biomass and diversity of Central African forests, as well as new results on the impacts of global change on those forests, at various scales.
With respect to methods, we will present theoretical frameworks allowing (i) to model growth processes in species-rich ecosystems like tropical rain forests, (ii) to take into account uncertainties in biomass estimation.
In terms of results, we will highlight at a local scale, how human activities as well as climatic variations would impact (i) the composition and diversity of forests, (ii) the dynamics of biomass and growth processes. At a global scale, we will demonstrate how environmental filtering controls the above ground biomass.
The number of studies are currently increasing over the Congo Basin through several research projects led by our team (CoForTips, DynAfFor) and contributing to various international organization's programs (Cifor, FAO, Comifac, Ofac).