



## Séminaire / Seminar **AMAP**



Frédéric Mortier is a senior researcher at CIRAD (Forests and Societies Unit). His main research activities deal with applied statistics, especially related to Bayesian methods, matrix population models, mixture models, dimension reduction, and population ecology in tropical forests.

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**3 Octobre 2024**  
11h00 – 12h

Salle 201, Bâtiment PS2, CIRAD-UMR AMAP,  
Boulevard de la Lironde  
**Visioconférence :** [Lien Teams](#)

# Zero-inflated binary tree Pólya-splitting Regression

*presented by*

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### ABSTRACT

Understanding the impact of climate change on tropical rainforest ecosystems is crucial to promote efficient conservation strategies. The classical approach remains the use of species-specific distribution model. However, in species-rich ecosystems with many rare species, such an approach is doomed to failure. Moreover, univariate approaches ignore species dependencies. However, biodiversity is not merely the sum of species but the result of multiple interactions. Modeling multivariate count data allowing for flexible dependencies as well as zero inflation and overdispersion is challenging. In this presentation, we develop a new family of models called the zero-inflated binary tree Pólya-splitting models. This family allows the decomposition of a multivariate count data into a successive sub-model along a known binary partition tree. Model is illustrated on a real case study based on an impressive dataset consisting of the abundance of more than 180 tree taxa sampled on 1,571 plots covering more than 6 million hectares from the Congo Basin tropical rainforests.

**KEY WORDS:** Joint Species Distribution models, multivariate count Data, partition tree, zero-inflation.

**Invited and animated by:**

Jean-Baptiste Durand (UMR AMAP)

**Type:**

Research in progress

**Oral language:**

français

**Language of PPT:**

english

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