



Elizabeth is currently a PhD candidate at LIPhy, Grenoble, France. Working on the biogeography of tropical rainforest trees, she is interested in inferring the influence of past environmental fluctuations on current tree diversity using eco-evolutionary modelling.

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11h00 – 11h40

Salle 201, Bâtiment PS2, CIRAD-UMR AMAP,
Boulevard de la Lironde

Zoom : <https://umontpellier-fr.zoom.us/j/92504253488>

***ecophylo*: Simulating and assessing eco-evolutionary dynamics under past environmental changes in Python**

presented by

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ABSTRACT

While ecology addresses the coexistence and dynamics of species depending on their adaptations to their environment at present, evolution addresses the appearance-disappearance of species and the changes in their characters over a longer term and a large spatial scale. A major challenge is to bridge the gap between ecological and evolutionary models, in order to address eco-evolutionary dynamics. Specifically, past environmental changes have determined changing regimes of population and migration dynamics, yet existing approaches do not allow investigating the long-term influence of such historical changes on extant biodiversity patterns.

In this talk I would like to introduce a new modelling approach (and associated Python package): *ecophylo*, dedicated to coalescent-based simulation of neutral eco-evolutionary dynamics. The model rests on coalescent theory to simulate a shared ancestry of co-occurring individuals, under the influence of past demographic fluctuations due to, for example, habitat fluctuations, fragmentation and/or migration events among separate areas. Mutations occur over time in the genealogy, and divergent genotypes represent distinct extant species.

Then I will illustrate how this package can be used to explore the remnant influence of past habitat reduction and subsequent expansion using an *in silico* experiment. More specifically how parameters controlling the demography of assemblages in the past – under the effect of habitat reduction and subsequent expansion - affects patterns of taxonomic, phylogenetic and functional diversity.

KEY WORDS

eco-evolutionary modelling; community phylogeny; demographic stochasticity, ecological drift, extinction-speciation dynamics

Invited and animated by:

Zhun Mao / François Munoz

Type:

Research results

Oral language:

english

Language of PPT:

english

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