Multi-millennial modeling of Armorican vegetation

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Résumé

The Massif Armoricain, historically less prone to wildfires due to its climate and vegetation, is projected to experience significantly increased fire risks in the coming decades. This risk is exacerbated by pastoral decline, leading to fuel accumulation and fire spread, especially in military training areas prone to ignition. The exceptional wildfire activity during the summer of 2022, which saw over 3800 hectares of vegetation burned in Brittany, supports these predictions. While wildfires may promote plant diversity in some regions, their impact on historically less fire-affected areas like Brittany remains unknown. Hence, understanding the long-term vegetation dynamics is crucial for anticipating potential changes in these ecosystems in the context of climate change.
Palynology is the most commonly used method for reconstructing past plant biodiversity. However, representing plant biodiversity through pollen is challenging due to variations in pollen production and dispersion among species. The Landscape Reconstruction Algorithm (LRA), incorporating models like REVEALS and LOVE, offers a promising approach to vegetation reconstruction based on pollen data, while effectively reducing biases caused by the complex pollen-vegetation relationship. These models have been tested and validated in various regions, including southern Sweden, and will be used to reconstruct past plant biodiversity in Brittany. Reconstruction will use pollen data from the Armorican database, containing pollen records from 60 sites studied throughout Brittany and beyond the Armorican Massif. Various diversity indices will be employed, with expectations of increased plant biodiversity over the past two millennia, mainly due to traditional human activities, but also anticipating a decline in recent centuries due to increased fire frequency, climate warming, pastoral decline, and intensified agriculture.
This presentation will provide an overview of the initial findings of this project, which aims in the long term to reconstruct the history of fires, human activities, and vegetation during the Holocene in Brittany, and to model vegetation and fire hazard.

Mots-Clés: Holocene, biodiversity, Europe, Landscape Reconstruction Algorithm (LRA)

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