POLLENOMICS: Decoding the Farming History of Europe Using a Bayesian Approach Combining Compositional Data with a Point Process

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Abstract

This study uniquely combines advanced continental-scale data from two distinct sources: pollen-based land cover (PbLC) and ancient DNA (aDNA), developing a novel statistical model for spatiotemporal reconstructions of past land use across Europe.

The aDNA data serves as a proxy for human habitation, differentiating anthropogenic and natural land cover from PbLC reconstruction. This will be accomplished using a Bayesian hierarchical model that combines compositional data, Gaussian Markov random fields and point process models.

This groundbreaking approach gives insights into the environmental impacts of Holocene human migration and subsistence practices, and marks a major advancement in understanding human-environmental dynamics over millennia.