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# Spatiotemporal dynamics of environmental controls on biodiversity hotspots

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## Résumé

Global and regional changes in the distribution of climate, elevation, landscapes and surface processes, are shaped by interactions across scales-emerging from large-scale drivers while also being influenced by small-scale physical processes-and are known to have origins and consequences for biodiversity patterns. Yet, the relative importance of these environmental factors in driving hotspot regions remains debated. Moreover, many studies often lack the critical question of their temporal dynamics. Assessing the magnitude and variability of predictor importance across both space and time is essential to elucidate how environmental controls shape ecological and evolutionary processes. To investigate these dynamics, we applied univariate (*Generalized Least Squares*) and multivariate statistical approaches (*Generalized Least Squares*, *Linear Models*, *Random Forest*) to hotspots regions simulated using a spatially explicit eco-evolutionary model of terrestrial mammal diversification over deep time. Our findings reveal substantial spatial and temporal variation in predictor importance, supporting ecological scaling theory (Levin, 1992), expressing the idea that different processes prevail at different spatial and temporal scales.

**Mots-Clés:** macroecology, macroevolution, biodiversity modeling, geomodeling, geodynamics

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