

Background: Understanding how factors related to environment and geographical distance explain community variation allows insights about how ecological niche and neutral processes control tropical community assembly.

Aims: Quantify how variation in regional tree community richness and composition in a humid tropical forest across a mountain chain are related to niche and putative neutral processes.

Methods: We used a variation partitioning routine based on Redundancy Analysis to model tropical tree community richness and composition within three distinct elevation belts, as a function of environment and spatial structure, using data from 32 studies in the Serra do Mar Range, south-eastern Brazil.

Results: Environmental effects were greater than spatial structure effects to explain community variation in the three elevation belts. There was a trend of decreasing spatial structure effects while environmental effects remained constant from lower to higher elevations. Patterns were congruent for species richness and composition.

Conclusions: We suggest that on tropical mountains, niche-related processes are equally relevant for tropical forest community assembly at all elevations, while neutral processes become weaker towards higher elevations. Determining if this trend is a consequence of the greater heterogeneity of environmental conditions associated with higher elevations in tropical mountainous terrain remains an important area of research.

