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Environmental drivers of woody diversity in the rupestrian vegetation of South America

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The rupestrian formations (rupestrian grassland and rupestrian cerrado) inserted in the rupestrian vegetation, together with forest formations (e.g. cloud dwarf forest and rocky dwarf forest) may be included beyond of the rupestrian grassland as an Ocbil area. For this, we analysed how the rupestrian sites using the woody species are grouped according to floristic composition, the number of shared and indicator species, the β diversity index, and the most important variables in driving its distribution. We used a dataset comprising 2,034 woody plant species and 182 woody plant communities distributed across four Brazilian vegetational domains (Atlantic Forest, Amazon, Caatinga and Cerrado) and two thermic zones (tropical and equatorial). Here we assessed how the rupestrian sites are grouped according to woody floristic composition, the number of shared and indicator species, the β-diversity index, the influence of the altitudinal gradient and the most important variables driving the distribution of the floristic groups. Our results suggest that the distribution of rupestrian vegetation is clearly influenced by environmental variables and the spatially structured fraction, indicating that the floristic composition of woody species depends on both environmental variation and geographic distances, in this case primarily related to substrate and climate. Despite the differences found in community composition between the floristic groups and across an altitudinal gradient, all vegetation types shared woody plant species with all other vegetation types in the rupestrian vegetation, influencing in the β-diversity index. It is allowed us to conclude that all vegetation types analysed should be included together the rupestrian grassland definition, as the Ocbil areas, thus bringing further relevance for the conservation of these areas. This fact is owing the analysis that permitted the strong relationship of the woody species composition and environmental factors between the vegetation types of rupestrian vegetation.