

## **Divergent causes of leaf and wood trait variation**

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According to the plant economic spectrum concept, trees should present a single inter-organ axis of ecologic trade-off between carbon investment and nutrient usage. Nevertheless, these associations can be determined by the species identity (Species effect) or by the environment where the plant grows (Environment effect). We assessed the chemical inter-organ relation between traits in both leaf and woody organs by using multilevel models to disentangle the species effect from the environment effect on the mean trait variation. Leaf traits vary mostly due to differences among species while woody traits variation is regulated by local environmental conditions. Leaf and wood traits were mostly orthogonal across species. Environmental conditions played a significant role only in wood vs leaf Ca concentrations. The lack of association between leaf and wood traits reflects the different underlying causes of trait variation in both organs thereby disputing the existence of a plant economic spectrum in terms of nutrient usage.