

Functional biodiversity and biogeochemistry: linking plant traits and processes in a globally changing environment

The traits of organisms result from evolutionary and physiological processes, and reflect variation in ecological strategies. They provide a lens through which those ecological strategies, and their consequences, can be compared among taxa that co-occur locally, as well as across climate zones and vegetation types worldwide. For example, most taxa have leaf, stem and root traits that reside somewhere along a continuum from a 'slow' to a 'fast' return on investment design strategy. Thus, traits influence whole-plant function, and the dynamics, structure, and function of communities and ecosystems, including feedbacks to belowground processes and biogeochemical cycling. Such links are relevant to both the historical ecological landscape of the past and to the dynamic and rapidly changing world of the 21st century, replete with its changing climate, chemistry and biota. Using data ranging from ecosystem-scale experiments with global change factors such as CO₂, temperature, rainfall and biodiversity to cross-continental observations to global earth system modeling, I provide an overview of the connections across *some* of these ecological strands.

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