



Nutrient availability and ecosystem carbon cycle responses to global change – insights from manipulation experiments

Sara Vicca

University of Antwerp, Biology, Wilrijk, Belgium (sara.vicca@uantwerpen.be)

The availability of nutrients like nitrogen and phosphorus regulates terrestrial carbon cycling and modifies ecosystem responses to environmental changes as well as their potential to mitigate or exacerbate climate change. For example, the influence of elevated atmospheric CO₂ concentration on plant growth depends on nutrient availability and positive warming effects on plant growth can be intensified by increased nutrient availability following accelerated mineralization. The overwhelming evidence of the dominant role of nutrient availability in the terrestrial carbon cycle has incited the modelling community to address its role. However, incorporating the role of nutrients in Earth system models poses a formidable challenge to both the modelling and the experimental community. Here I provide an overview of how nutrient availability modifies the effect of experimental manipulations such as elevated CO₂, warming and altered rainfall on ecosystem carbon cycling and reflect on key challenges that we currently face.