Scaling up individual metabolism to ecosystem fluxes

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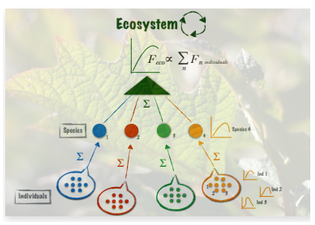
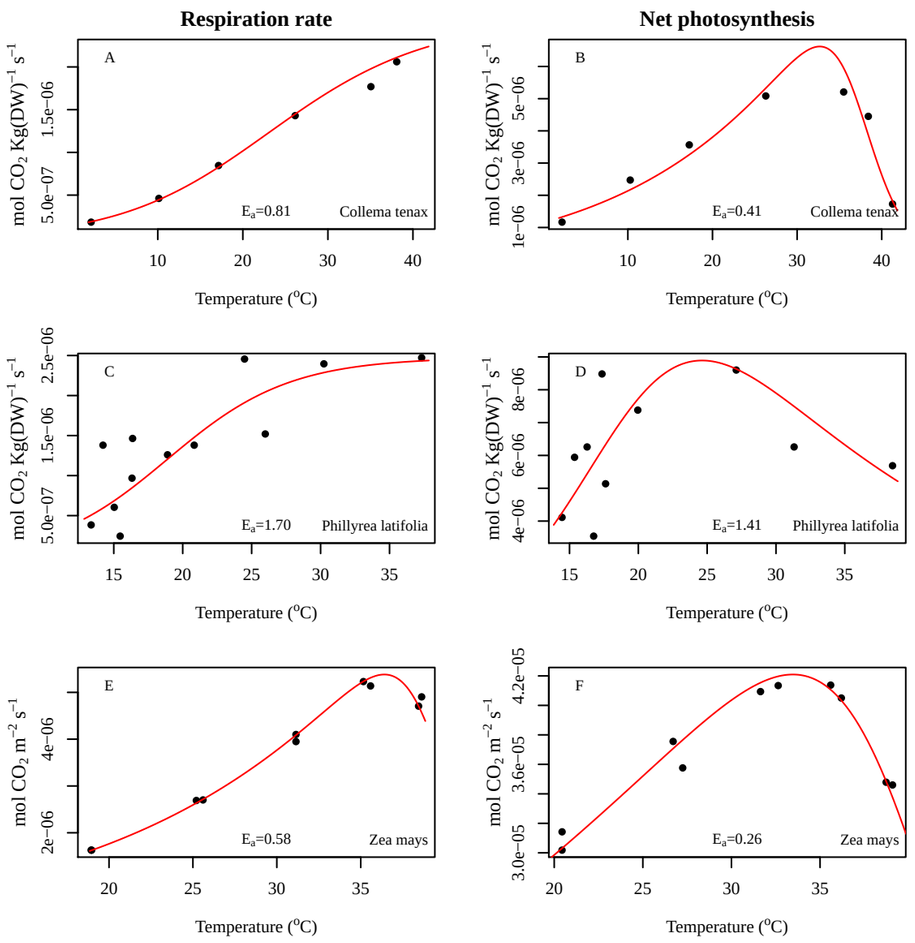
Do species-level thermal performance curves (TPCs) scale up to ecosystem fluxes?

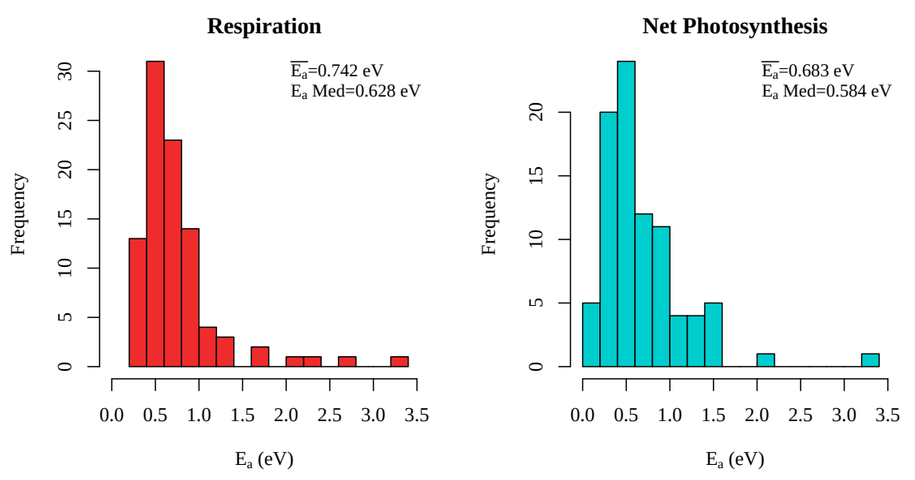


Previous studies assume that the temperature dependence of ecosystem function is a simple scaling up of all the component species' thermal responses. In this case, predicting the effects of climatic warming or cooling on ecosystem function would be a relatively straightforward task.

Parametrization

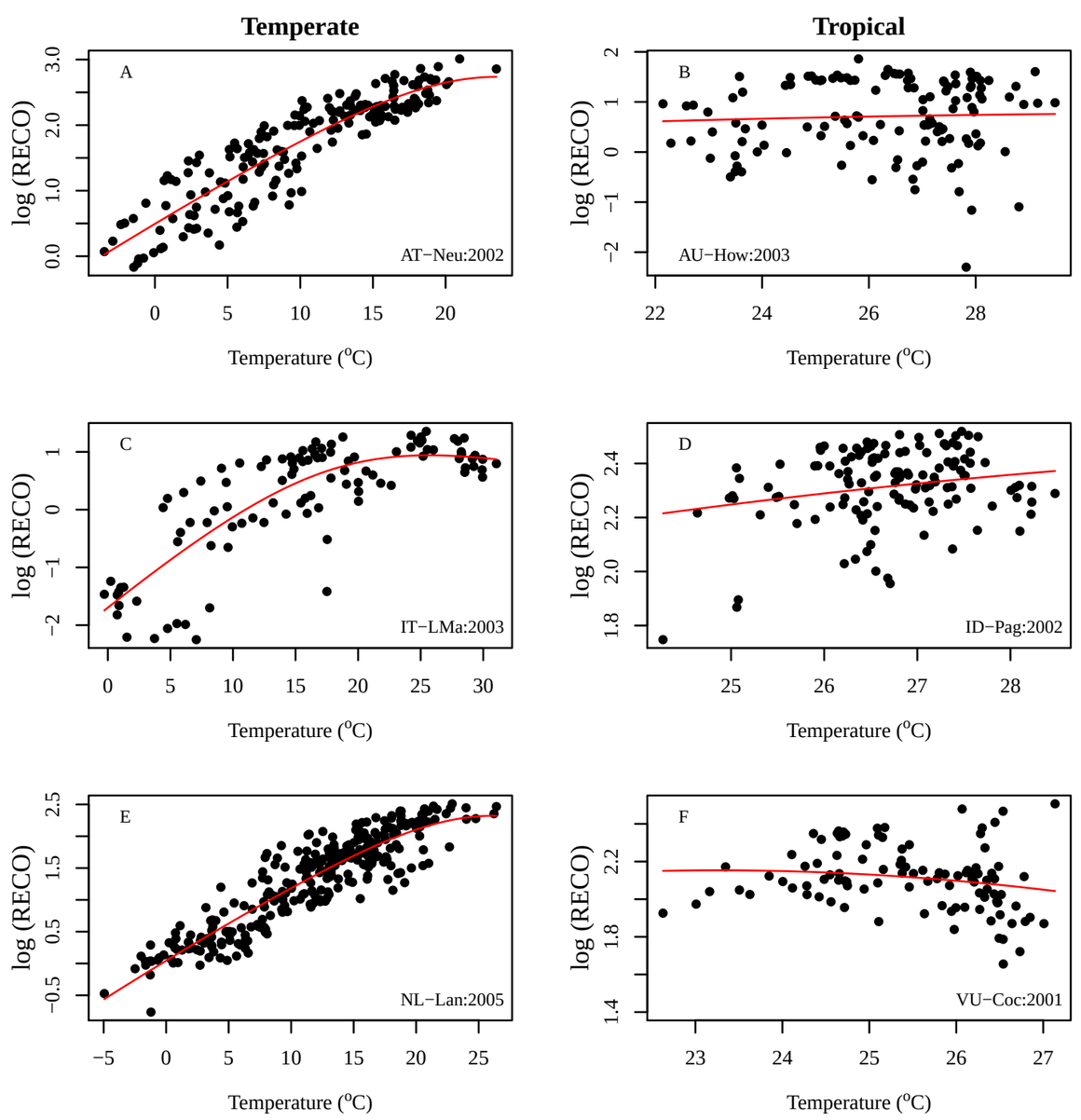


Representative set of individual-level plot pairs for R (left) and NP (right). Each pair of R-NP corresponds to the same experiment and species. These species are associated to temperate regions.



Distributions of intraspecific activation energies for R and NP.

Validation



Representative set of ecosystem flux responses to temperature for different sites from tropical and temperate regions. Y axis show respiration in log scale.

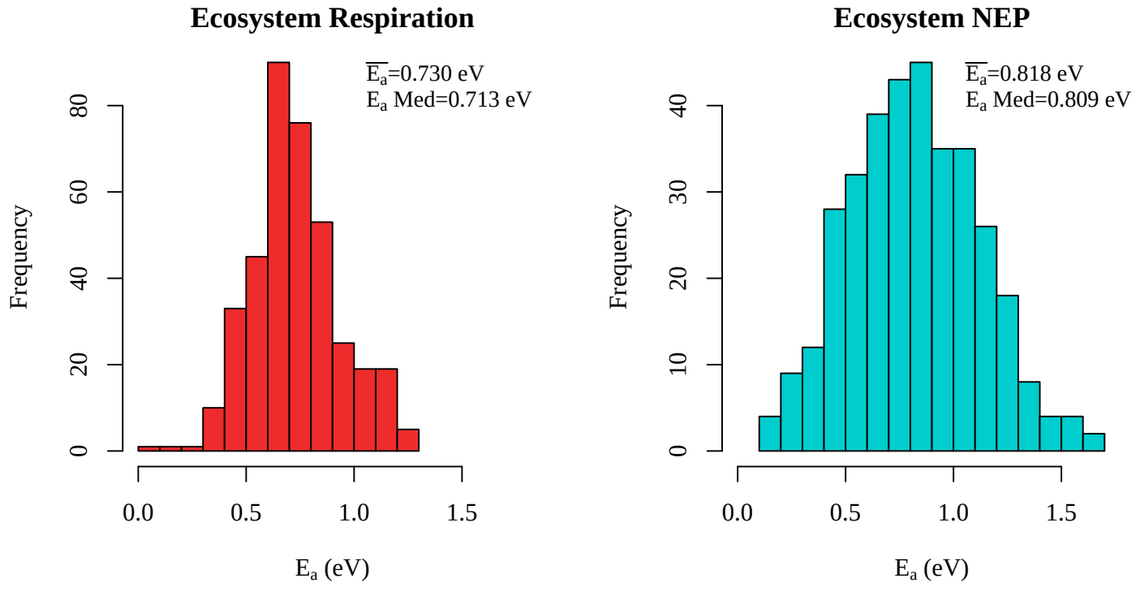


Figure 1: Distributions of activation energies for Reco and NEP at ecosystem level.

Summary

- At the intra-specific level, E_a and T_{max} for R are usu-

Ongoing