

Title: Global variation of ecosystem (intrinsic) water use efficiency

Coordinator

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Proposing group

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Outline

In our article with the title ‘Assessing parameter variability in a photosynthesis model within and between plant functional types using global Fluxnet eddy covariance data’ and the proposal with the title ‘Seasonal variation of plant functional type photosynthetic parameters derived directly from global Fluxnet eddy covariance data’ we used a photosynthesis model to study the variability of the parameters. In these studies we focused on the photosynthetic parameters $v_{cm,25}$, $j_{m,25}$ and α . In this study we want to investigate the global variation of a fourth important model parameter, the intrinsic water use efficiency (λ). We use λ as a model parameter, which is a different approach as for instance in the study of Beer et al. (2009), where the inherent water use efficiency is calculated from time integrated observed fluxes.

With the previously used model we want to investigate (1) whether λ is constant in time or should be related to soil water content or vapour pressure deficit, (2) what the variation of λ between sites is and (3) how this variation can be explained.

Key words: Water use efficiency, Plant functional types, Model parameters, Photosynthesis, Transpiration, Eddy covariance, Fluxnet

Sites that initially would be involved

All sites with enough and good quality data.

Rules applied for use of site data and co-authorship

The rules as proposed in the disclaimer for the FLUXNET2007 synthesis will be applied.

References

Beer et al., 2009. Temporal and among-site variability of inherent water use efficiency at the ecosystem level. *Global Biogeochemical Cycles* 23, GB2018.