

Interactive comment on “Water limitations on forest carbon cycling and conifer traits along a steep climatic gradient in the Cascade Mountains, Oregon” by L. T. Berner and B. E. Law

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General comments:

The authors present an extensive observational study about how moisture conditions impact a variety of growth responses and traits in three tree species in Oregon, USA. The main independent variable is the ‘climate moisture index’, which effectively explains a large degree of inter-species variability in carbon responses, demonstrating that species occupying drier sites are more coupled to inter-annual moisture variation than species at wetter sites. This result contrasts with the observed decline in growth of trees at the wettest sites, which during a period of sustained lower moisture expe-

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perienced a sharp decline in growth. Analyses of correlations between morphological traits and climate moisture suggest that trees trade hydraulic resilience with competition for carbon. The results imply that future moisture regimes along with changes in abiotic and biotic stresses could significantly alter growth, survival, distribution and thus biogeochemical processes.

The study was well executed and clearly presented. The conclusions are logical and sources of error or alternative explanations adequately discussed. That the findings aren’t terribly surprising and in fact confirm much previous research doesn’t detract from the importance of such a nicely done correlative study such as this. This paper presents an important addition to the body of literature regarding regional climate effects on forest processes and highlights the need for further investigation of these processes with additional parameters and better model parameterization.

Technical comments:

Pp. 14510, Line 5: ‘form’ should be ‘forms’

Pp. 14513, Line19: ‘We calculated SLA’ erroneously inserted into ‘US-Me6’

Pp. 14519, Line 4: Why not present r-square here also, as later used?

Pp. 14519, Line 5: What about agreement with US-Me6 site?

Pp. 14519, Lines 15 -19: The ‘stats’ package in R is part of the base distribution, thus doesn’t necessarily warrant specific mention here. However, calculation of r-square of nonlinear models is not standardized, so please be explicit as to how it was calculated.

Pp. 14521, Line15-16: Figures not labeled ‘a’ through ‘c’, please correct in text or figure.

Pp. 14522, Line19: Figures not labeled ‘d’ through ‘f’, please correct in text or figure.

Pp. 14523, Line 8: This is the only mention of a Kruskal-Wallis test, please explain in the methods first.

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