

Interactive comment on “Effects of climate variability and functional changes on the interannual variation of the carbon balance in a temperate deciduous forest” by J. Wu et al.

Anonymous Referee #1

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Wu and others use a data-driven analysis with a simple model to quantify climatic versus biotic responses of NEE at a beech-dominated forest using 13 years of eddy covariance data.

I like the idea of using a data-driven analysis for such an endeavor, and disagree somewhat with Reviewer #2's notion that parameters should be kept constant in a model. Hierarchical models may have parameter models while remaining rigorous and robust.

The manuscript was written extremely well, and there are many interesting ideas here. My concerns with this manuscript are that it follows too closely previous analyses by Richardson et al. (2007) (noting that the model used is different), and does not make a

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substantial improvement in explaining why biotic factors tend to control IAV, rather than it does. This is already known for these types of forest. We're left with statements like 'One possible reason is the different type and structure of the ecosystem (p. 9142), or some ideas about nitrogen cycling that went unmeasured. The deciduous forest -> mixed forest -> coniferous forest -> peatland gradient in functional/biotic control on IAV is very interesting. Future versions of the manuscript may want to build upon this observation and the recommendation on p. 9147 to apply this method elsewhere at multiple sites. Such an analysis on one stand is interesting, but the findings do not break new ground in my opinion.

A few minor comments or questions: P. 9217: Please be more clear about orders of magnitude on L. 5 and L. 13 using the most recent literature values for completeness.

Quick question: Is IAV the annual difference from the site-level mean annual NEE, or the difference from the -23 g C/year trendline from Pileggard et al., 2011?

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