

Interactive comment on “Functional convergence of biosphere–atmosphere interactions in response to meteorology” by Christopher Krich et al.

Anonymous Referee #3

Received and published: 10 November 2020

This paper aims to show that biosphere-atmosphere interactions are driven by meteorological conditions, and that these meteorological conditions produce similar biosphere-atmosphere interactions, regardless of climate gradient and ecosystem type. It concludes that based on these results, similar principles can be used to serve as empirical references for global vegetation models regardless of region and ecosystem type. This study uses observational FLUXNET data, combined with a novel causal method known as PCMCI.

Should these results be true, I believe that the findings have the potential to be quite helpful to the modeling community—perhaps we can stop trying to incorporate so many individual processes that vary between regions, and instead streamline the process using the knowledge of this shared behavior. However, there is not a lot of in-

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formation on the methods, making a reader feel that either one must simply ‘trust’ the results, or go on one’s own intense literature search to try and understand the paper. This is not a well-known methodology, and thus it is even more important than usual to go above and beyond convincing the reader that this is a sound and reliable method. While including other papers as references to the method is great, a reader should not be required to track these down to make sense of the paper.

Additionally, the figures that accompany the methods are non-intuitive and need better description—once again, making the paper, including the results section, quite difficult to follow.

Minor comments: Line 28: Change from ‘they allow to infer’ to ‘they allow one to infer’
Line 88: MCI has been previously defined Line 100-102 Remove the word ‘well’ L114-
What characteristics impinge on performance? This isn’t explained. Also, why use precipitation as binary (rain/no rain) rather than a time series? Why can’t precipitation be used in the model? Line 143- Add ‘The’ before following Line 164- Insert ‘as’ into ‘Are not as much’ Table A1—This table would be better with more information. Potentially adding ecosystem type/climate zone/type determined by PCMCI analysis of each flux tower site would be useful. Table B1—Shouldn’t radiation be added as a variable?

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2020-374, 2020.

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