Biogeosciences

Discussions

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Interactive comment on "The motion of trees in the wind: a data synthesis" *by* Toby D. Jackson et al.

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Received and published: 29 January 2021

I have been asked to post a short comment after declining to review. This is just my view on the manuscript as a scientist with interests in the research topic. I do not express any opinion on acceptance for publication or not.

The study presents the analysis of tree motion over a large and heterogeneous dataset. The results identify broad response patterns in relation to trees' architectural archetype. This preliminary classification should be useful in forest ecology and this type of meta-analysis is important for global studies of wind risk. In contrast, the number of tree samples in the study is very low compared to the combination of shape, size and species that is possible within each archetype.

The analysis introduces generic time series classifiers (catch22) in addition to more conventional descriptors of tree motion series (such as f_0). I find this addition novel and

useful because it does not depend on *a priori* knowledge of tree motion. The approach has the potential to tease out new features of tree dynamics. The use of machine learning for predicting tree size based on motion characteristics is also interesting. It is an important step towards integrating vibrational data in plant phenotyping.

Three points worth noting:

- I understand the need to harmonize the datasets, but I do not think that degrading the temporal resolution of high quality signals was necessary. A 4-Hz sampling may be sufficient to study the movement of a slow-moving tree but detrimental in the case of a fast-moving one. Down sampling all data to 4 Hz may have introduced artifacts and caused loss of information.

- The paper erroneously states twice that the study contains all tree motion data. There are other tree motion datasets that have not been included in this study.

- L348. Poor phrasing. A beam is a system with distributed properties. A cantilever beam is, typically, a beam supported at one end and free at the other.

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2020-427, 2020.