

Interactive comment on “Understanding Tropical Forest Abiotic Response to Hurricanes using Experimental Manipulations, Field Observations, and Satellite Data” by Ashley E. Van Beusekom et al.

Anonymous Referee #1

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Van Beusekom et al. present measurements of the forest abiotic environment following experimental and natural disturbances in the Luquillo forest in Costa Rica over a period of 16 years. They use this information to assess the recovery time of different variables. Measurements such as these can provide valuable insights into the mechanisms which govern a particular ecosystem response – particularly when combined with measurements or modelling of plant responses. The paper is clearly written and presented, and the measurements are well-described and, as best as I can judge, appropriately controlled for changes in measurement technique. However, the key to the

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story of the paper is the definition of recovery time, and this appears to be somewhat arbitrarily defined with significant consequences for the results. On this basis, I cannot recommend the paper for publication in its current form.

Recovery time is defined in the paper as the point when the treated data timeseries crosses the control data timeseries and afterwards stays within 15

The choice of x and y is also critical, however. $x=15$

Even if one just eyeballs the plots, whilst one can be fairly confident about recovery for solar radiation, for throughfall it is much less clear (there is even divergence in 2014 following the supposed point of recovery, making it questionable whether recovery had even occurred). The definition of recovery time therefore needs some careful thought and sensitivity testing to give confidence that the results are robust to the method used.

Minor comments

Line 94. Were Campbell sensors used after 2015 as well? In the previous paragraph it indicates not, but here that they were.

L187. Is this really resilience? There is presumably just less vegetation to be disturbed, which naturally leads to a smaller fluctuation. I would argue it just leads to lower amplitude of variability.

L188. “greater disturbance” is not clear. Perhaps, “greater fluctuations in the measured abiotic variables due to disturbance”?

L190. What exactly does it mean that “tree demographics were... dynamic”? Does this refer to the mix of ages in the forest, the rate of growth, the rate of turnover?

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