

Interactive comment on “Ideas and perspectives: Tree-atmosphere interaction responds to water-related stem variations” by Tim van Emmerik et al.

Anonymous Referee #1

Received and published: 23 July 2018

The manuscript “Tree-atmosphere interaction responds to water-related stem variations” brings novel data and interpretation on the dynamics of atmosphere forest interaction by applying an original methodology. In short it suggests that changes in tree mass due to lower water content relates to transfer of momentum from air masses to trees, quantified by their sway. The manuscript would benefit by a more careful structuring as is quite repetitive in several instances. It did kept me wondering to what extent does tree water content varies. Is there any data out there quantifying water volume/mass changes trough time? In percentage, how much do mass varies in a tree (1%, 5%, 25%)? In addition, is it possible that a lower water potential on the tree trunk cause changes in elasticity (flexibility) of the trunk? Furthermore, due to

C1

decreased leaf area index during dry months, is it possible that the changes in wind patterns within canopies space (not measured in this study) produced the observed temporal patterns? Because the speculative nature of this study (conclusion depending on an inferred water content), it would be great to have a deeper discussion on other alternative hypothesis.

Page 1: Line 5: Better use monitoring than “measurement”. Page 1: Line 2: Not sure what “meteorological fluxes” means. Page 1: Line 7: to “vary considerably” is quite vague. Provide a percentage (or range) of variation. Furthermore, need to specify “variations” in what (I suppose tree trunk diameter)? This also apply to the title of the manuscript. Page 2: Line 27: no need for capitalized “We”. Line 28: change “. . .momentum transfer various more...” to “momentum transfer varies more” Page 3; Line 8: Can you indicate the source of the meteorological data? Page 3; Line 11: A bit repetitive (7 tree species). Page 3; Line 15: Change to “measuring tape”. Page 4; Line 13: How long was the point dendrometers allowed to settle before reliable measurements could be taken. I mention that because it is said that regular band dendrometers requires some months to settle in place, preventing immediate reliable monitoring. Page 12; Line 4-5: Higher biomass do not necessarily relates to higher water content. Page 12; Line 6: “The relation between β and can explain the observations in Fig. 5 and 6A-D.” this phrase needs improvement. The observations suggest a relationship.

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2018-289, 2018.

C2