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Interactive comment on "Does drought advance the onset of autumn leaf senescence in temperate deciduous forest trees?" *by* Bertold Mariën et al.

Anonymous Referee #1

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Summary: Marien and co-authors presented an experimental study in which they assessed the effect of drought stress on leaf senescence for 3 tree species in Belgium forests (mature trees) over 2017-2019 and from manipulative experiments with saplings. Results did not show any effect of drought stress on the timing of leaf senescence. However, the authors observed an effect of drought on the chlorophyll content and the canopy greenness of trees.

Overall, this study is well written. The experimental design is sound, and limits in the protocol and analysis are clearly highlighted and discussed. Results support the conclusions of the manuscript. I don't have major comments on the manuscript, only a few suggestions that might strengthen the analysis:

1) The authors used piecewise logistic regression to estimate the timing of leaf senes-

cence. Some studies suggested that a simple threshold approach leads to better results and maybe a more robust comparison of phenological events. Did the authors tried to compare the timing of senescence using a threshold approach? The absence of observed effect might come from the definition of leaf senescence.

2) Drought stress is defined here as the rainfall deficit. Instead of a meteorological drought index, did the authors tried other physiological drought indices? For example, the ratio of actual over potential evapotranspiration (Stocker et al. 2018) that might be more representative of the stress than the rainfall deficit.

3) Some studies suggested that the timing in leaf unfolding impacts senescence (Fu et al. 2014). Was this effect observed on site? Did the authors include other effects than precipitation, temperature and drought stress in their model? It might be interesting to discuss this point in the discussion section.

4) I suggest the authors to highlight the effect of drought stress on CCI and greenness in the abstract. As they discussed (L. 464), the effect on greenness is probably an important source of confusion in the literature and I think it is an important message of this paper.

I hope the authors will find these comments useful for improving their manuscript.

Best regards,

References:

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