

Biogeosciences Discuss., referee comment RC2
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Comment on bg-2021-120

Anonymous Referee #2

Referee comment on "Persistent impacts of the 2018 drought on forest disturbance regimes in Europe" by Cornelius Senf and Rupert Seidl, Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-120-RC2>, 2021

Senf & Seidl contribute a very interesting assessment of post-drought forest disturbance impacts on European forests. Using a satellite based remote-sensing approach with 30 m x 30 m resolution (I guess with Landsat, not mentioned in the methods), they compute forest disturbance anomalies as the deviation of the 2018-2020 period from a 'long-term' average (1986-2015). They show that anomalies go up to >500%, and conclude that the 2018 drought had "unprecedented impacts on forest disturbance regimes in Europe".

The paper is well written and conveys a clear message. Knowing also other works by the authors, I have utmost confidence in the scientific soundness of their analytical approach.

My only comment on result reporting is that 'disturbance' is not defined anywhere in the text and it is not clear what a 500% increase actually means. Is this related to changes in forest canopy cover, changes in greenness or something else?

In my understanding, the conclusion is somewhat overstressing the data, though. Unprecedented impacts can only be defined if the historical level of disturbance is known, which is not the case. The reference to other works (Schelhaas et al. 2003) is not enough to make such a strong statement and the temporal horizon of 170 years mentioned there cannot be taken as a benchmark for precedence. The authors are certainly aware of early reports of large-scale drought-induced forest disturbance in the 18th century ("the wormy drought", Gmelin, Johann Friedrich. 1787. Abhandlung Über Die Wurmtröknis. Leipzig: Verlag der Crusiussischen Buchhandlung) that devastated large forest tracts in the Harz region in central Germany. It is likely that other regions were also strongly affected, but we simply don't know.

It would have been nice to see how disturbance anomalies relate to other important site factors, like altitude, exposition, soil depth, initial stand density, forest type etc. This

would allow insights into climate vulnerabilities of European forests and provide useful information for forest management.