We thank Christopher Reyer for his comments. We have included his suggestions to improve our manuscript and added a point-by-point response here.

L33ff. I understand your focus on drought and heat here and I do not want to downplay their importance but one key issue that I think is often overlooked is that these extremes interact and predispose other, more ecological extremes such as forest fire and insect outbreaks. in this paper (10.1038/NCLIMATE3303) on figure 2b we show that drought has in most cases found in the literature an amplifying effect on other forest disturbances. No need to cite this particular paper, I am sure you know similar ones, but I think the point for follow-up extremes and interacting disturbances could be made here (and extend the compound event concept).

We agree and now acknowledge that other extremes such as fire or insect outbreaks can interact with droughts and heatwaves:
"In many cases, drought and heat predispose or interact with other hazards and disturbances such as forest fires and insect outbreaks (Seidl et al., 2017)."

L170ff: you could also mention here what happens to NPP if trees replace grasses or vice versa

We have added a few sentences to this topic:
"The response of NPP to the replacement of trees with grasses and vice versa is varied, as it strongly depends on environmental conditions and vegetation composition. Generally, NPP is greater for trees than for grasses, which implies that global NPP is larger in a world with more trees and smaller if more forest area is replaced by grassland."
"Interestingly, although grass cover is increased in the *Hot* scenario (Fig. 2a), NPP in grasslands is reduced (Fig. 2b), explaining the lack of change in global NPP for the *Hot* scenario (Fig. 4a)."

L246ff if the models separates between c3 and c4 grasses you could discuss here the differential effects of co2 and how this would influence your grassland results if you had included co2. NOTE: I now saw that you mention c4 grasses in L301 so maybe a discussion is better place there. your call.

We have added a sentence on the effect of CO2 on C4 grasses in the discussion:
"A potential increase in atmospheric CO2 conditions as it is predicted by socio-economic scenarios would further alleviate drought stress and thus benefit C4 grasses."

L266ff: you could contrast your results on low effects on tropical trees here with the strong effects recent droughts had on the amazon forest

We now mention other studies that have found an effect of droughts on the amazon forest:

"However, case studies on recent droughts in the Amazon forest show how tropical forests can be negatively affected by drought conditions (Doughty et al., 2015, Feldpausch et al., 2016, Machado-Silva et al., 2021)."

Table A1: I think it would be good to give the full names of the PFTs, I could not really find them anywhere else and although I can guess what they mean for most of them, it would be easier to have them in table A1.

We have included the full names of the PFTs in Table A1.