

Reviewer # 2

The authors have generally responded thoroughly to the first round of reviews. However, there is no discussion concerning the rates of increasing post-fire ET, GPP, and LAI in figure 1, and increasing resilience in figure 3 across the three VTs under high burn severity. While full recovery of a forest or savanna is not expected 5 years following a severe burn, it is interesting that GPP, LAI, and ET seem to increase at seemingly similar rates across pre-fire VTs despite different “importance scores” presented in figure 4.

Reply: This is a good point raised by the reviewer. We added the following discussion in L494_501:

“Here, Figures 1 and 3 show similar recovery trends across NEF, WDS, and GL, while Figure 4 implies various importance scores of different factors in determining water dynamics and burn severity. We notice the differences in precipitation and temperature among these three VTs (Figure S4), with relatively drier and hotter conditions in GL, which underscores the role of climate in shaping the distribution of different VTs (Mather et al., 1968). In other words, the importance scores highlight the roles of different factors in recovery across VTs, which adapt to specific environmental conditions (Figures S1, S3, and S4) and exhibit their respective recovery rates.”

The added discussion concerning changes in pre to post fire VT transitions is appreciated, although figure 5 does not show where changes to VT have occurred. Another figure could be produced showing where VT transitions have taken place, however it is hard seeing pixel-scale details at the regional-scale of figure 5. Perhaps larger versions of these maps could be included in the supplemental materials.

Reply: Figure S12 is added in the SI with a smaller area and increased size of the panels. We will also upload the original high-quality (e.g., png, pdf) figures to the journal.

This version needs another round of proofreading. Some specifics are included below.

Reply: We did another round of proofreading, and the file with track changes is uploaded.

426 & 435 – These references to equations 1 and 2 are confusing.

Reply: The references for equations (1) and (2) are updated in these lines.

578-590: “One possible scenario is that in the next a few decades, NEF will regenerate, and the dominance of grass will decrease with the reestablishment of trees, which will compete with grassland for light and nutrients.”

Reply: Updated.

Figure 5: The caption needs some attention.

- Delete “and with VT changes”

- Cropland is not in the legend, and does not appear to be in figure b.

Reply: The caption is updated.

605: component

Reply: “components” is updated to “component”.

611: available ◊ active

Reply: “active” is used instead.

620-629: Sentence needs some reworking.

Reply: This part is updated as “*The similar responses of GPP and ET to fires could be associated with the tightly coupling between these two fluxes, which is governed by stomatal conductance. Stomatal conductance regulates both photosynthesis and transpiration (Knaue et al., 2020; Stoy et al., 2019), and the correlations between GPP and ET (Running et al., 2004). Partitioning the contributions of GPP and ET coupling, as well as the methods used to derive GPP and ET data, is beyond the scope of this study. Here, our third hypothesis is supported, and it suggests that resistance and resilience post-disturbance is highest for GPP and ET, and lowest for LAI across all VTs.*”