The authors have generally addressed my comments, although I wish they had indicated the specific changes made in their response. I still have a few comments/suggestions for the authors.

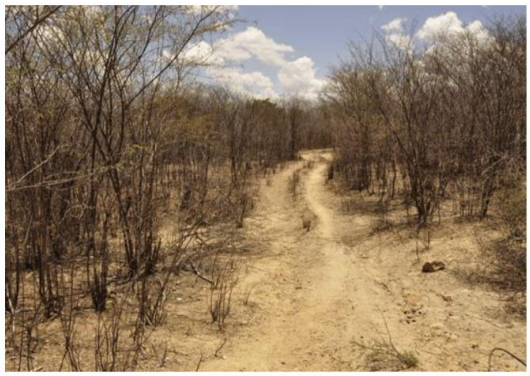
Regarding my comment on soil moisture, the authors have not really addressed the matter, as they just proceeded with their analysis assuming that 5 cm soil moisture is a good proxy for droughts. I suggest the authors to at least include more references and explain the limitations of this approach. When can 5 cm soil moisture be a good proxy for soil water storage? When can it not?

RESPONSE: To investigate the coupling between surface and subsurface soil moisture is beyond the scope of this study. We use aggregated surface soil moisture values on a yearly basis across pixels with >25km of spatial resolution. With a national perspective the scale of our analysis is at the biome level. We observe differences in soil moisture trends across biomes that are consistent with trends of two sources of independent informacion, a) trends of vegetation productivity tand b) trends of emergency declaration by drought across biomes. These trends (in soil moisture decline, vegetation browning and emergency declarations by drought) are indicators of drought conditions across Brazil. We agree with the Reviewer in that satellite soil moisture is limited to represent only a component of the soil water storage at the soil surface. We have indicated the main limitations of satellite soil moisture in the introduction of the revised manuscript, we have also clarified that we do not want to represent the soil water storage only with surface soil moisture estimates.

Fig. 1 can be a little misleading, especially because the authors refer to it in line 52 after mentioning water scarcity. Fig. 1 has nothing to do with droughts. The Caatinga forest is a seasonal ecosystem and Fig.1 is how the Caatinga looks like every dry season.

RESPONSE: We have included two more elements in Fig. R1 striving to clarify that the Caatinga region is a vulnerable area to drought conditions not only because of it high contrast between dry (Figure R1a,) and wet season (Figure R1b), but also because there are administrative decisions about water management (e.g., intensifying land use across along channel networks, Figure R1b or, changing the course of rivers, Figure R1c) that consequently could contribute explaining the high number emergency declarations across this biome.

A



B

C

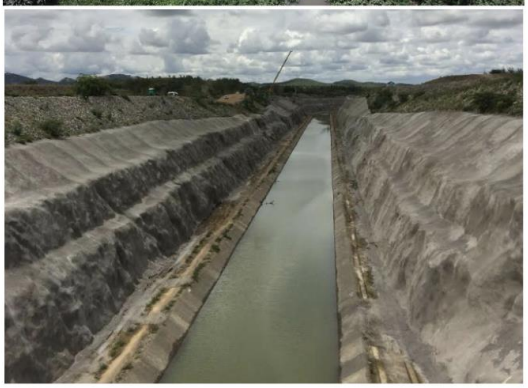


Figure R1 A perspective of the Caatinga forest during the dry season at the ground level (A), A perspective of land use in the Caatinga biome during the wet season at the landscape level (B). An example of human intervention to river course that has an impact on water availability across the region (C).

Most importantly, it is not clear to me yet what soil moisture trends add to the analysis of droughts. What are the advantages compared to drought indexes? I believe that adding a specific subsection in the Results and Discussion may help both the reviewers and future readers.

As stated in the introduction of our manuscript, soil moisture decline due to drought has a direct impact on agriculture, water security, and ecosystem services. Therefore, the lack of soil moisture information could lead to inaccurate assessment of drought conditions,

underestimation of drought impacts, and incomplete resilience and adaptation plans. In this paper we argue that soil moisture trends should be integrated into drought monitoring and early warning systems and soil conservation plans at national and local levels, which it is not so far in Brazil and in most countries in the world.