We thank Marie-Jose for identifying where she is happy with our response to her original comments. Here we provide response to her additional comments (in blue), changes to the text are given in red.

1) p. 4. There are RPPs for Africa (see e.g. Gaillard et al., 2017) and southern America (see e.g. xxxx)

Other than the PAGES magazine article, we can't find a Gaillard et al. (2017) paper. However, there are some pilot studies or studies for specific ecosystems in the 2021 Quaternary Vegetation Dynamics book, which we can refer to. The problem still remains that even these studies contain RPPs for a very limited number of taxa. There are only 13 taxa from the Cameroon study and the other studies cited in Gaillard et al. (2021) for Africa and South America appear to also cover a limited number of taxa. However, we will further modify the text to clarify where there are additional RPP data, as follows:

Landscape-level reconstructions are problematic if RPP information is not available for relatively common taxa (Harrison et al., 2020). RPP values have been estimated for common taxa in Europe and China, and there are a limited number of studies from North America (see e.g. Wieczorek and Herzschuh, 2020). Some studies have been conducted for some ecosystems in South America and Africa, but these only provide RPPs for a very limited number of taxa (e.g. Duffin & Bunting, 2008; Whitney et al, 2018; Gaillard et al., 2021; Hill et al., 2021; Tabares et al., 2021; Piraquive Bermúdez et al., 2022) and even this level of information is not readily available for other regions.

We will include the additional references:

Duffin, K. I. and Bunting, M. J.: Relative pollen productivity and fall speed estimates for southern African savanna taxa, Veg Hist Archaeobot, 17, 507–525, https://doi.org/10.1007/s00334-007-0101-2, 2008.

Gaillard, M.-J., Githumbi, E., Achoundong, G., Lézine, A.-M., Hély, C., Lebamba, J., Marquer, L., Mazier, F., Li, F., and Sugita, S.: The challenge of pollen-based quantitative reconstruction of Holocene plant cover in tropical regions: A pilot study in Cameroon, in: Quaternary Vegetation Dynamics: the African Pollen Database, edited by: Runge, J., Gosling, W., Lézine, A.-M., and Scott, L., CRC Press, London, 259–279, 2021.

Hill, T. R., Duthie, T. J., and Bunting, J.: Pollen productivity estimates from KwaZulu-Natal Drakensberg, South Africa, in: Quaternary Vegetation Dynamics: the African Pollen Database, edited by: Runge, J., Gosling, W., Lézine, A.-M., and Scott, L., CRC Press, London, 259–274, 2021.

Piraquive Bermúdez, D., Theuerkauf, M., and Giesecke, T.: Towards quantifying changes in forest cover in the Araucaria forest-grassland mosaic in southern Brazil, Veg Hist Archaeobot, 31, 107–122, https://doi.org/10.1007/s00334-021-00841-2, 2022.
Tabares, X., Ratzmann, G., Kruse, S., Theuerkauf, M., Mapani, B., and Herzschuh, U.: Relative pollen productivity estimates of savanna taxa from southern Africa and their application to reconstruct shrub encroachment during the last century, Holocene, 31, 1100–1111, https://doi.org/10.1177/09596836211003193, 2021.
Whitney, B. S., Smallman, T. L., Mitchard, E. T., Carson, J. F., Mayle, F. E., and Bunting, M. J.: Constraining pollen-based estimates of forest cover in the Amazon: A simulation approach, Holocene, 29, 262–270, https://doi.org/10.1177/0959683618810394, 2019.

2) P5. My question on crops still remains. Do the remote-sensed data provide details on the crops. Do all the crop areas you deleted correspond to areas that do not produce much pollen?
The Copernicus land-cover data set that we used does indeed include percentage of 100m pixel covered by all types of and, as we state in the text, we have removed these from our data set. The data set also includes the percentage of forest/tree cover for each pixel. It also identifies forest type (broad biome classification) but we do not use this in our analysis.

3) P6. I am sorry for this misunderstanding. I was thinking about REVEALS applications when I was writing this. My apologies. Your choice of using the Prentice's source area formula for 70% pollen as an estimate of the "appropriate area for the calculation of mean tree cover" is fine. I would however write that it is an estimate, because knowing wether this area is appropriate for all types of sites, large or small, lakes or bog, would need to be tested.
We will clarify that this is an estimate, as follows:

The source area for each record, and hence the appropriate area for the calculation of mean tree cover, was calculated using Prentice's (1985) source area formula for 70% of pollen, and lake or bog area from the SMPDS, noting that the original formula makes no distinction for different site types.

4) P7. what do you mean by "plausible"? How do you know that this is the "appropriate area", i.e. the vegetation area represented by the pollen assemblages in all your sites, large or small lakes, or small bogs?

By plausible, we mean that the final model has reasonably good (though not perfect) metrics (see Section 3.1). As we point out in the text, basin size is not available for all of the sites used for the reconstructions (both modern and fossil) which precludes a comprehensive evaluation of the impact of basin size on source area. The problem is compounded for bog sites, where even when there are estimates of size they are somewhat approximate.

5) P7 a pragmatic attempt …. You assume the pollen assemblages reflect the average vegetation composition within the Prentice's source area for 70% of pollen, for any type of site. It's an estimate or approximation of the area.
And P7 but taking a source area that is too large ….. Well, I do not see the problem.
We are indeed making the assumption that the pollen assemblages reflect the average vegetation composition using the Prentice' source area formula, and we agree that this is an estimate or approximation of the actual area. We also agree that using the median FS is an approximation. We have made these assumptions because of the limitations of the available data, both on basin size and on fall speeds. Hence we regard this as a "pragmatic" approach, but nevertheless the model does seem to give results that are consistent with the modern observations of tree cover.

6) P13 our reconstruction is of tree cover ….. I am not convinced that you reconstruct tree cover. Does your vegetation data provide the actual % cover of trees within all land-cover types you are using? Note that REVEALS estimate tree cover for the trees for which RPPs are available and nothing else, and it includes trees in woodlands and trees in mixed wooded/open land-cover types.
Also … see my comment above; I am not still not convinced that what you reconstruct is tree cover; I may misunderstand something re your vegetation data. In that case, I apologize; haven't the time to dig further into your vegetation data and how you handled it to get "tree cover".
We have clearly not explained the Copernicus data set well enough. The data set provides information on land cover classes. One of these land-cover classes is forest/tree cover. It provides information on forest/tree cover as a percentage for each 100m pixel. By using the percentage forest/tree cover at this high resolution, we are indeed reconstructing tree cover. We will expand the description of this data set to clarify this, as follows:

We used the Copernicus Dynamic Land Cover Dataset to source information on tree cover. This data set provides percentage land cover estimates for individual land-cover classes at a spatial resolution of 100m. We used the land-cover class designated as forest/tree cover, which at this spatial resolution can be regarded as an estimate of actual tree cover. A composite map of modern tree cover for the region 12°W to 45°E and 34-73°N was generated by averaging annual percentage forest/tree cover data from Copernicus annual land cover maps from 2015 to 2019 (Buchhorn et al., 2020a, e, d, c, b), after removing cells dominated (> 50%) by other land-cover classes, including bare ground, built up areas, moss or lichen, permanent water, snow, and crops (Fig. 2A). However, the Copernicus maps do not distinguish between natural forests and plantations and so the tree cover target may include planted species. This modern tree cover map has a resolution of 100m.

P15 to model them quatitatively ….. sorry, but these will also be only as good as the models themselves...... I can understand that you choose to be "cautious about attributing any of the reconstructed changes to human activities etc...." but I have difficulties to find it relevant to ignore all research on human impact on the Holocene vegetation before 1000 BP. Arguing that all this knowledge is based primarily on vegetation changes correlated to archaeological records and that correlation is not causation is a bit arrogant. I really don't see how you could replicate these Holocene pollen records from ca. 7-6 BP until today using climate, CO2 and records of natural fire (climate-induced fire). I really can't "buy" these arguments for erasing a enormous amount of knowledge in the fields of archaeology, vegetation history and palaeoecology in general. I am very sorry.

We agree that the reconstructions are only as good as the models themselves, and this is one reason that we have been at pains to provide metrics for model fit. We are not claiming that there has been no human impact on European vegetation cover during the Holocene and we are not dismissing the archaeological and palaeoecological literature on this out of hand, but we remain cautious about the spatial scale of this influence and its relative importance compared to other factors. We have also been careful to point out in the discussion that climate alone cannot explain all of the observed changes. We have not investigated or discussed the potential impact of other factors, such as disturbance, but agree this should not be neglected. (There may also be a role for CO2, given that the change between the mid-Holocene and pre-industrial is about 11 ppm, but this really has not been investigated and in any case would tend to increase tree cover rather than the opposite.) We will treat the discussion of the climate influence on the tree cover changes, including what these changes do not appear to explain, as a separate paragraph. We will create a new paragraph to discuss the potential influence of other factors, including human impacts, as follows:

There are several other factors that could have influenced tree cover during the Holocene. Human influence on the landscape has been identified in many regions of Europe from 6,000 cal. BP onwards (e.g. Roberts et al., 2018; Zapolska et al., 2023). Although this may have contributed to observed decline in tree cover from the mid-Holocene onwards, the most rapid population growth occurred only during the past 2000 years (Klein Goldewijk et al., 2010, 2017). The recent decline in tree cover may therefore reflect this rapid growth and the consequent increasing human influence on the landscape in some regions (see e.g. Marquer et al., 2017; Roberts et al., 2019). Climate-driven changes in disturbance (wildfires, windthrow) may also contribute to the inferred changes in tree cover. Changes in the frequency or intensity of storms has, for example, been shown in maritime Europe (e.g. Pouzet et al., 2018; Sjöström et al., 2024) during the late Holocene; storms are a major cause of widespread forest damage in Europe today (Senf and Siedl, 2020) and could have been important during the Holocene. Changing wildfire regimes could also have been an important influence on tree cover (Marlon et al., 2013; Kuosmanen et al., 2014). Much of the debate about the relative importance of climate and human activities on the environment during the Holocene has been based on local-scale correlations; other contributing factors have been largely ignored. More formal modelling of these relationships, using quantitative information on climate, population size, and disturbance is required to assign the impact of each on tree cover more confidently.

We will add these references;

Kuosmanen, N., Fang, K., Bradshaw, R. H., Clear, J. L., and Seppä, H.: Role of forest fires in Holocene stand-scale dynamics in the unmanaged taiga forest of northwestern Russia, Holocene, 24, 1503–1514, https://doi.org/10.1177/0959683614544065, 2014.

Marlon, J. R., Bartlein, P. J., Daniau, A.-L., Harrison, S. P., Maezumi, S. Y., Power, M. J., Tinner, W., and Vannière, B.: Global biomass burning: a synthesis and review of Holocene paleofire records and their controls, Quat Sci Rev, 65, 5–25, https://doi.org/10.1016/j.quascirev.2012.11.029, 2013.

Pouzet, P., Maanan, M., Piotrowska, N., Baltzer, A., Stéphan, P., and Robin, M.: Chronology of Holocene storm events along the European Atlantic coast, Progress in Physical Geography: Earth and Environment, 42, 431–450, https://doi.org/10.1177/0309133318776500, 2018.

Senf, C. and Seidl, R.: Mapping the forest disturbance regimes of Europe, Nat Sustain, 4, 63–70, https://doi.org/10.1038/s41893-020-00609-y, 2020.

Sjöström, J. K., Gyllencreutz, R., Martínez Cortizas, A., Nylund, A., Piilo, S. R., Schenk, F., McKeown, M., Ryberg, E. E., and Kylander, M. E.: Holocene storminess dynamics in northwestern Ireland: Shifts in storm duration and frequency between the mid- and late Holocene, Quat Sci Rev, 337, 108803, https://doi.org/10.1016/j.quascirev.2024.108803, 2024.