Reviewer 1

Dear authors,

Thank you very much for your work on this manuscript. I think the direction of the study is very important: TCs and bananas are a key research topic, and your work here fills an important research gap.

We would like to thank the reviewer for their very kind and constructive comments. Please see our replies to the reviewer's comments below.

I do have several comments to help to improve your manuscript, as there are several aspects of the manuscript that need work.

For example, you mention expert knowledge, but refer instead to a meta-analysis, and this is also referred to as empirical work?

We fully agree with the reviewer that this was unclear. In the methods section we have made significant changes in the overall structure and tried to improve our explanation of the approaches used for the different elements of risk. In section 4.3 we have also adjusted the order of the text of the paragraph to improve its flow. The rewritten part of section 2.3.1 now reads as follows:

To construct the curves, we use an approach similar to the research by Yum et al. (2021) (see Figure 2) where the authors use existing white and grey literature reporting on historic TC events, their maximum wind speed and damages. While we acknowledge that TC impacts are often caused by an interplay of wind, precipitation and storm surge, we use wind speed as a proxy for all three hazards as information on the latter two hazards is often lacking or incomplete (see for instance Eberenz et al., (2019) and Yum et al., (2021) for a similar approach for building vulnerability curves). Such an approach based on empirical data allows for a higher accuracy of the damage curve (Merz et al., 2010).

There are also several inconsistencies and the discussion is far too broad to be impactful. Who are you writing for? Who would you like these results to aid? While the results are relevant I struggle to see an effort to make a connection to readers or stakeholders. For example, there is only one sentence that describes the actual impact of a hurricane on banana production in Honduras. Taking a risk-based approach, there is certainly greater exposure and vulnerability to TCs in the Western North Pacific Basin, where the Philippines is a major grower and greatly affected by TCs annually, with some of them making severe impacts to banana production (e.g. Typhoon Bopha).

We fully agree that this was less clear in the earlier version of our manuscript. Our research aims to provide general insights into the (future) impacts of TCs on as important a crop as bananas. As this is a very interdisciplinary topic, our findings can be useful for other researchers from both the TC and the crop research fields. But it can also benefit international organisations such as the FAO in (re-)directing adaptation funds. We have tried to clarify this in different parts of the manuscript. For example, in the conclusions we now write:

Our study results can support the identification of vulnerable areas and can therefore be used as a starting point to target and implement adaptation and mitigation measures, such as awareness raising efforts and early warning systems. This will hopefully contribute to a reduction in the impact of future TCs to banana plantations.

I also make a point to be more geographically specific in your analysis. Saying that "Asia" is more impacted is an extremely broad statement, as it is a diverse continent. Which countries in Asia are banana growers, and which ones will be impacted?

We fully agree and have not only increased specifics of geographical locations but also of results.

While I appreciate the scientific and technical work behind this paper, please see my comments as hopefully helpful revisions to improve the presentation of your results. What are the steps forward for banana growing? How can adaptation efforts utilize these modelling studies?

With the very helpful comments from the reviewer, we have tried to improve the presentation of our results. In the conclusions section, we have provided examples of how our results can support adaptation efforts.

Thank you for your work, and I'm available to revise your work again.

Minor text notes: Reference style is somewhat inconsistent (with commas, no commas, semicolon, etc.). Please make this consistent throughout the document.

We thank the reviewer for pointing this out. We have critically revised and homogenized the reference style throughout the manuscript.

Also, I would suggest line numbers rather than paragraph numbers to aid the reviewer.

We understand the confusion, however the journal automatically adds line numbers by increments of 5.

Abstract

Please minimise the use of acronyms in the abstract to aid the unfamiliar reader

We have critically revised the use of acronyms in the abstract and have reduced the number of abbreviations.

What does 'majorly' mean in this context? Is there a way to quantify this in the abstract?

We thank the reviewer for pointing this out, and we followed up on their suggestion and rephrased and quantified the term to "almost (> 79%)".

'Asia' is a whole continent, not a region (e.g. compared to the Caribbean region). Be more specific here.
In line with earlier comment sand replies, we have tried to address this as much as possible.
Para 25: I would suggest that the text opens with the importance of bananas as a crop first, before going to climate change affecting it.

We have made substantial changes to the introduction which now reads as below. For now we left the order unchanged, but we will critically reflect on switching the order of the first two paragraphs to change the perspective from TCs to bananas.

Currently, average global surface temperatures have already increased between 1.1 and 1.2 degrees Celsius above pre-industrial levels (IPCC, 2023). These increasing temperatures can trigger fast changing weather patterns potentially causing more frequent and intense extremes affecting water and food security with high confidence (IPCC, 2021). Particularly tropical cyclones (TCs) are projected to increase in intensity (Knutson et al., 2020). This is predominantly driven by increasing sea-surface temperatures (SSTs), which serve as fuel for an intensifying TC. This is an alarming projection, since TCs can substantially impact coastal communities, causing potentially large agricultural and financial losses and human casualties. One of the agricultural activities with a

high socio-economic significance that is most under threat of TCs, is banana production. Globally, bananas are the most consumed fruit (FAO, 2022). In countries all over the world bananas provide a large part of nutritional diversity in the diet of the average consumer. The wide-spread benefits of bananas include its nutritious values; they are rich in calories, are perfectly suitable for dietary diversity and they contain a variety of vitamins & fibers (Petsakos, 2019). A sustainable production of the fruit poses an important source for nutrition to maintain food security and sustain income (Petsakos et al., 2019, Varma & Bebber, 2019). In Latin American and Caribbean and Asian countries, bananas remain a significant contributor to the economy and provide a livelihood for millions (FAO, 2019).

To many rural households, bananas generate an important part of their income (Mohan, 2017). In addition, bananas, together with plantain, are an important source of nutrition for millions of people. A reduced availability of bananas leads to higher prices for consumers and can cause a sudden and drastic decrease in income and economic prosperity of tens of thousands of producers in exporting countries (FAO, 2022). Due to our globalized economic system and its strong interdependencies, the potential negative impact on the production system will not only be harmful on a local scale, but can escalate to the global scale (Lesk et al., 2016). Consequently, the partial or full destruction of banana plantations across larger areas would have a large influence on the currently stable and reliable global value chain of bananas (Varma, et al., 2020). In addition, a disruption in banana production will negatively impact the United Nation's Sustainable Development Goals, including the first (no poverty), second (zero hunger) and third (good health and well-being) goals (United Nations, 2015). Banana production is already expected to be more impacted by numerous extreme weather events in the coming decades such as drought, heavy precipitation, and heatwaves (Malek et al. 2022).

Yet so far, studies on the impact of extreme weather on agricultural areas have mainly focused on the influence of extreme heat or precipitation deficit on production, thereby lacking a perspective on high- impact low-probability events like TCs (Calberto et al., 2015, Lesk et al., 2016, Varma & Bebber, 2019, Malek et al, 2022). This is remarkable, since the direct impact of TCs on the agricultural sector can be substantial (FAO, 2015, Kunze, 2021). Research has shown that there is a clear negative direct impact of TCs on banana producing areas (Huigen & Jens, 2006, Robinson & Saúco, 2010, Mohan, 2017). TCs can completely disrupt the banana production area and it can take up to a year to recover depending on farmers' access to facilities and finance (Mamuye, 2016). For example, the 2021 Hurricanes Eta and Iota caused a 51% decrease of banana yields in Honduras (FAO, 2022. P.2). Due to production disruption, there is less supply increasing the average price of the fruit (Beer et al., 2014). However, due to a lack of available data on TCs, the spatial impact of this hazard for bananas can not be identified on a global scale (Malek et al., 2022). Several indirect risk assessments have been performed after the occurrence of a TC event on macro- or meso-scale (Huigen et al., 2006, Beer et al., 2014, Mohan, 2017). It is expected that in the coming decades banana producers in Southeast Asia, Oceania and the Caribbean will likely be impacted even more by TCs, but there is no evidence of where impacts are expected to occur on a supra-national scale (, Varma & Bebber, 2019, Malek et al., 2022). This is problematic, as banana cultivators have no reliable projections of the probability to be affected by a TC. When banana producers are provided with better estimates of the likelihood of TC impacts, they will be able to implement adaptation strategies, hereby increasing their resilience i (Chavez et al., 2015).

In this paper, we therefore assess how future TCs could impact banana production on a global scale. We first synthesize the documented impacts of TCs on banana production, by reviewing recent studies. Using data on the global distribution of current and future TCs, we identify where banana producing areas will be exposed to TCs. Finally, we quantify and map the extent of banana production that will experience more frequent and damaging TCs. This way, we contribute to the ongoing efforts to better understand the potential impacts of TCs on agriculture.

Para 25: Coumou 2012 reference – is this not an outdated reference, considering that the IPCC released a synthesis report in 2023? There has also been significantly more literature on tropical cyclone projections since. This may need an update as it appears several times in the introduction.

We fully agree and have adjusted this.

Para 25: "Particularly…" is not a complete sentence.

We checked the sentence, and we believe it is alright.

Para 25: categories?
This was an oversight and we have removed this.

Para 25: "CC"?
This refers to Clausius-Clapeyron, but we have rewritten the entire sentence.

Paras 35 and 40: I would also emphasise the socio-economic importance of the crop, and for farmers' or communities' livelihoods more than just consumer prices. This appears briefly in Para 55, 110, 115.I think the introduction section could be tightened up in terms of its flow and writing as the information presented is a bit scattered throughout the first few sections.
We agree on this point and have critically rewritten the introduction and checked this throughout the rest of the manuscript.

Para 45: Recent analyses from the Philippines shows more data to support these paragraphs on major TC damages to banana production, and that recovery can be up to 5 years post-TC: e.g. https://doi.org/10.18783/cddj.v005.i01.a05; https://journalofnaturestudies.org/files/JNS19-2/62-83_Damasa-Macandog_Assessment_Impacts_Flashflood.pdf; https://www.ijisrt.com/assets/upload/files/IJISRT21DEC732.pdf

Para 120/125: What are the limitations of this assumption re: equal vulnerability of all banana cultivars? Do your datasets differentiate between different types of banana cultivars? As you are using plantation data, this are likely to be monocultures of the Cavendish variety. Please elaborate on this assumption as it is important to distinguish what farm type is considered in the analysis.
We would like to clarify that we are looking at very destructive events so damage will be similar and there is no systematic data. Based on the (limited) vulnerability literature on this topic, we make the assumption that for TCs there won't be a significant difference between banana crop types.

Para 130: A reference missing for the final sentence.
Thank you, we have address this.

Para 155: it is unclear if you, in this work, employed expert opinion. Relying on a review of literature is not the same as soliciting expert opinion. (cf. para 180). This has impacts on your description of methods to determine damage categories (cf Table 2). You also later describe this is as a 'meta-analysis' (cf. Figure 1).
We agree this was unclear, we have explained how we addressed this in an earlier reply.

Para 230. 's.'?
Thank you, we have address this.

Para 230-235 'areas' – banana growing areas? Areas in general? What is a 'banana area'? Be more specific.

We fully agree and now write "banana producing area".

Figure 2, Table 5: future climates implies several scenarios, but I believe you only used SSP585. Please clarify throughout the text.

Thank you, we have addressed this.

Figure 2: why is the map cropped? Please show the whole map. There are also banana-growing regions in the subtropics, and I don't know (or you haven't described) if the IFPRI dataset is limited to tropical areas only.

We understand this comment. The reason it looks like that is because we wanted to use a non-colonial map projection. To improve the clarity of our results, we only show areas where tropical cyclones occur. We found it challenging to visualize 6 different global figures on the impacts of TCs on banana cultivation. Showing the whole map does not provide additional information, as areas outside the cropped map are minor. We provide full maps in a higher resolution in the supplementary material, where each RP for the baseline and future scenario are displayed in a larger format.

Table 4: what is a 'globally damaged banana producing area'?

Thank you, we meant area and we have address this.

Para 255: as with the abstract, please be more specific with your language. Southeast Asia versus 'Asia' broadly allows for a more accurate representation of banana growing in the region, which is highly concentrated in the Philippines at the moment – this is also a country highly vulnerable to TCs. I think it would be helpful to ground your analysis (or maybe just introduction) in more practical examples of TCs and their impacts.

Countries in Asia that will be highly impacted are China India and several countries in southeast Asia. The most impacted countries in southeast Asia are: Vietnam, Philippines, Cambodia and Indonesia. In the text we now write Southeast Asia, China and India instead of Asia.

Para 270: what does this first sentence mean, exactly?

Area is not production totals/share in global production; we have clarified this in the text.

Para 280, 315: 'We found out', 'especially valid' are quite journalistic phrasing – please make this more a report of results.

We agree and we have adjusted this.

Also, same comment about broad reporting of the 'Asia' region. This paper would be more valuable if you named the specific countries rather than the whole continent.

We agree and have addressed this.

Para 315: banana supply chains implies the whole system of food supply, including transport, storage, and distribution. Do you mean this? Or just production?

We have rewritten and clarified this.

Para 325: pests and diseases such as…? Banana pests and diseases are a major research point in banana production, and it is only briefly mentioned in passing here.

We explain in more detail how our study underestimates potential impacts due to not including indirect impacts such as increases in pests and diseases.

Para 335: "The IPCC (Koks et al. 2019) concluded that global modelling errors are associated with limitations in parametrizations." – what are you trying to say by adding this citation here? I think your discussion of modeling limitations in this paragraph is very valuable, but this statement feels like a blunt addition, and could be made more specific in the context of your study limitations.
We agreed and have addressed this.

Para 350: I would revise and review this paragraph. Was it an empirical approach? Was it expert knowledge? Which experts were consulted? Or was it a meta-analysis? The lack of clarity in methods on this point weakens the paper.
We agree with the reviewer that this was unclear. In the methods section (2.3.1) we have improved our explanation of the empirical approach used. In section 4.3 we have also adjusted the order of the text of the paragraph to improve its flow.

Para 360: "This genotype is less vulnerable to TCs because of their short stems and recovery period." – I'm not sure about this. What is your reference here? Cavendish bananas are typically planted in monocultures and the landscape homogeneity can contribute to its vulnerability to hazards.

We rewrote the section on genotypes and removed some information. We now focus more on the type of plantation.

Para 360: "An example of this" – an example of what, sorry?

We solved this when addressing the previous point.

Para 370: what do you mean by "the susceptibility of a country"? Some of these statements are unfortunately exceptionally broad.
We would like to clarify that we focus on the (relative) "short-term" vulnerability analysis (ie impacts on banana crops right after extreme TC event) rather than the long-term vulnerability of a country or banana production chain (e.g. how resilient is the country, can it easily aid speedy recovery of the banana plants). We tried to clarify this in the text.

Paras 370-390: These statements/ citations are simply placed together, with little additional insight. Why is there a comparison to Australia? Why are parameter limitations re-discussed here? How can the results of the study help to inform adaptation in agricultural production? Can they be connected to other efforts to understand food security under changing TCs?

We agree that this wasn't clear, and we have adjusted this whole part of the results section.

Reviewer 2

This is an interesting paper looking at the impacts of tropical cyclones on banana production under climate change. The most novel aspect is the vulnerability curve; I think how it was obtained needs to be explained better. Another major technical concern is that it appears that the maximum sustained wind speed is assumed to be experienced at the plantation when surely that is not generally the case (and if it was not done this way, then the methodology is not explained adequately) --- this affects the vulnerability calculation as well as the impacts projections. I have some other comments listed below. I think the paper needs major revision.

We thank the reviewer for their kind and very valuable comments on our manuscript. Below we address each of their comments separately and show the changes we made in the manuscript to address their points.

Major comments:

The main innovation here seems to be the development of the vulnerability curve. Given this, it is not described in enough detail. The reader should be able to reproduce it if they wish to. Data and code should be provided. What is the functional form assumed for the curve? How are the values interpolated between the small number of categories for which damage was calculated explicitly? Etc.

We thank the reviewer for their comment and fully agree that this was not explained well. We have made significant changes to this section, trying to better explain this. The curve follows the typical wind-vulnerability curve shape and we have included a more thorough explanation of how it was derived and included the excel file that shows how the curve was made. We did note that in developing the original appendix, some strange shift in numbers took place. However, the curve appears to be correct. Unfortunately, no similar curves exist for bananas so we cannot validate it with other curves. We will very critically reflect on the original appendix and adjust things accordingly.

Along with the above, some representation of uncertainty should be given. The results are stated to a high degree of precision, 2 significant figures in the percentages. Surely this level of precision is not justified given the many uncertainties.

We agree that there are many uncertainties. We checked the writing of numbers carefully and have used up to a max of one decimal behind the comma throughout our manuscript.

In supplemental table 1 only the maximum sustained wind speed for the storm is listed. Was it assumed that this wind speed was experienced at the banana plantation? Surely this is not correct unless the storm hits very directly, and maybe not even then. A parametric wind profile should be used to estimate the wind speed at the plantation. Please explain and justify better what was done. This goes both for the development of the vulnerability curve and the subsequent calculation of impacts.

As explained in an earlier reply, we noticed that in creating the original appendix 1, some strange shift of numbers occurred. We will look into this very critically and then in depth address this point of the reviewer.

One comment that is not about the results themselves, but how the results are communicated: there are many statements (including in the abstract) of the form that X percent of banana producing areas will experience some level of damage at 100-year return period. I think this is misleading. I believe what is mean that X percent will be damaged if they experience a 100-year

event at their location. But the way it is stated sounds like a 100-year event for the planet will see X percent of banana production damaged at once --- which is not true, because the different areas will not experience 100-year storms at the same time. Please clarify this everywhere it comes up, including the abstract.

We agree with the reviewer and have rewritten and clarified this in the text.

P14: the area around the Bay of Bengal seems important to these results. My understanding of the STORM dataset though is that it has a poor representation of storms in this region due to its neglect of wind shear. Please clarify if this is the case and caveat appropriately.

The reviewer is right in their understanding of the limitations of the STORM dataset. We have added a discussion on this (and some other limitations) in the Discussion (Section 4):

There are also limitations in the STORM model that could affect the outcomes of this study. First of all, TC intensity in STORM is solely modelled as having a direct relationship with sea-surface temperatures. In reality TC intensity is also largely influenced by vertical wind shear; an effect that is absent in STORM. While in general STORM validates well against observations (Bloemendaal et al., 2020c), there are regions where vertical wind shear in reality plays a critical role in governing TC intensity. One of these regions is the Bay of Bengal; for this region, TC intensity and associated RPs tend to be over- and underestimated, respectively. As a consequence, our impact assessment for this region can be overestimated. Secondly, STORM uses the parametric wind field model from Holland (1980) to translate point data to a 2-dimensional wind field. This model assumes asymmetry in the wind field to arise from background flow; in reality, these asymmetries can also be induced by enhanced wind shear or interaction with land. This may result in slightly altered wind speed RPs. Lastly, TC decay after landfall is modeled through an empirical inland decay function (Kaplan and DeMaria, 1995). This decay function was derived based on USA landfalls, and hence may perform less well elsewhere.

The discussion of caveats at the end is very long and detailed, more so than the explanation of the calculation of vulnerability itself (which is surely a source of great uncertainty). This seems a bit unbalanced.

We fully agree and have made significant changes in this section to address this. The discussion section now reads as follows:

4. Discussion

4.1 Hazard modelling and impacts on banana production

The results of this analysis are in line with anticipated impacts of climate change (IPCC 2021) and show a larger share of globally damaged areas at risk and higher damage levels under future warming. Nevertheless, our study potentially underestimates impacts on banana production, as we did not consider indirect impacts of TCs on banana production. Waterlogging could lead to root rot, and excessive water could lead to favorable conditions for pests and diseases which are a major limitation to banana production (Aguilar et al., 2003). However, whether TCs would lead to such indirect impacts is very context specific, meaning that even within the same grid cell of our study we can expect different indirect impacts, depending on the slope, soil, terrain orientation, previously drained wetlands, to name

a few. To account for such indirect impacts, both more detailed TC data, as well as data on soil drainage are necessary. In addition, TCs can impact electricity, refrigeration and road infrastructure, furthermore leading to disruptions in the supply chains and potential inability to harvest and store the crops (Koks et al., 2019).

The STORM future climate datasets were generated based on the high-end SSP585 scenario. While one can discuss the likelihood of this emission scenario, as current developments are steering away from this scenario, the average climate conditions over the 2015 – 2050 time period do not differ substantially between the different forcing scenarios. We therefore believe that the SSP585 input dataset as was used for Bloemendaal et al., (2022) can be seen as a good proxy for changes in TC characteristics over the aforementioned time period. While this study does not consider TC impacts beyond 2050, we alert readers that the average climate conditions past 2050 do start to deviate and that the approach as used in Bloemendaal et al., (2022) does not hold then.

There are also limitations in the STORM model itself that could affect the outcomes of this study. First of all, TC intensity in STORM is solely modelled as having a direct relationship with sea-surface temperatures. In reality TC intensity is also largely influenced by vertical wind shear; an effect absent in STORM. While in general STORM validates well against observations (Bloemendaal et al., 2020c), there are regions where vertical wind shear in reality plays a critical role in governing TC intensity. One of these regions is the Bay of Bengal; for this region, TC intensity and associated RPs tend to be over- and underestimated, respectively. As a consequence, our impact assessment for this region can be overestimated. Secondly, STORM uses the parametric wind field model from Holland (1980) to translate point data to a 2-dimensional wind field. This model assumes asymmetry in the wind field to arise from background flow; in reality, these asymmetries can also be induced by enhanced wind shear or interaction with land. This may result in slightly altered wind speed RPs. Lastly, TC decay after landfall is modeled through an empirical inland decay function (Kaplan and DeMaria, 1995). This decay function was derived based on USA landfalls, and hence may perform less well elsewhere.

First, the STORM wind module does not take elevation effects into account. This means that TCs windspeeds can be over- or underestimated over land, as wind speeds can increase or decrease depending on the orientation of for instance a mountain ridge (Bloemendaal et al., 2020a). Second, STORM uses a lower bound at 18m/s wind speed (Bloemendaal et al., 2022). However, it was found that banana plants can already be damaged by speeds above 10 m/s, meaning we cannot assess damages up to 18 m/s wind speed. Our results therefore potentially underestimate damages to banana production. Third, STORM models TCs on a basin scale, meaning that there is no transition of TCs across basins. This can be problematic in regions that can be affected by TCs originating from multiple basins, such as Central America. Lastly, TCs can also cause damage to banana plantations through excessive rainfall, runoff and landslides. These factors are, however, not modelled in STORM. Inclusion of such factors can potentially alter the risk estimates that were presented in this study.

4.2 Vulnerability of banana production systems

We used an empirical approach to construct the vulnerability curve using a meta-analysis of 22 studies, to increase accuracy of the curve. However, limited data availability can impact the results, and in turn the results can be difficult to transfer in space and time. Damage assessments rely on numerous assumptions and require more thorough validation, According to Merz, et al., (2010) hazard evaluation often overshadows damage assessment. Consequently, many damage levels can be considered inconsistent and subject to bias. The vulnerability curve that we developed is based on 22 TC events damaging banana plantations and expert knowledge. The curve is based on the understanding that all banana producing areas have the same features irrespective of the location or country's political or economic situation. We did not include assumptions on the type of banana, wind, or plantation characteristics such as soil. slope and elevation. However, the impact of wind speed to the banana plant can depend on a variety of factors. Firstly, the type of wind can either positively or negatively influence the productivity of the plant (Robinson & Saúco, 2010). Secondly, the vulnerability of the fruit can depend on the type of banana plant (Coltro & Karaski, 2019). Unfortunately, there were no records on the phenological characteristics of bananas damaged by TCs. Thirdly, the type of the plantation identified in the grid cell can vary (Coltro & Karaski, 2019). Bananas that are produced in a mixed crop system have a larger resilience to TC damage, than those produced on a monoculture farm and should therefore be evaluated separately (Huigen et al., 2006, Robinson & Saúco, 2010, Mohan, 2013). Next, it should be noted that because the constructed vulnerability curve was based on a meta-analysis of reported damages in academic and grey literature, there can be a bias towards the more damaging events as these could have been covered more in literature.

We only included physical damage parameters in the development of the vulnerability curve, meaning that future research should also focus on socio-economic and cultural aspects of banana producers. To achieve this, future research should focus on local scales and thereby increasing the accuracy of the vulnerability curves by including more input parameters, among other local terrain and soil characteristics, production system, and implemented adaptation. Such case-studies can consider the climatic conditions and reliance on banana production at the specific location, as well as socio-economic situation of the countries involved. Finally, future studies could also assess low probability events as they often show higher damage levels. Even though we already indicate high damage levels under high probability RPs, the effects of the low probabilities will be even larger and should be identified (Ward et al., 2011).

The last paragraph of the paper is a bunch of boilerplate statements that seem unnecessary. I suggest sticking to summarizing the findings of the research itself.

We fully agree and have made significant changes in this section to address this.

Minor/editorial comments:

P1, l2 of main text: Coumou, 2012 reference for the global mean warming is a bit odd. It's 12 years old, and an 0.5 degree uncertainty seems way too large. Please use an updated reference and a more precise number, this is a very well-studied quantity.

We agree with the reviewer and have critically revised the introduction. The sentence now reads:

Currently, the average global surface temperatures haves already increased between 1.1 and 1.2 degrees Celsius above pre-industrial levels (IPCC, 2023).

P1, last line: what does "these categories" refer to?

This sentence has been removed from the introduction.

Some references (e.g., Baldwin, 2023) are not in the reference list. Others (e.g., Robinson) seem to have incomplete information. Please do a detailed check on all of them.

We thank the reviewer for pointing this out. We have critically revised the use of references and have removed or updated references from the reference list.

P2, l30: but this decrease in Walker circulation and trend towards El Niño has not been observed, and there is currently a very active debate about it, so it seems inappropriate to cite it uncritically.

P2, l34: what is "CC"? This needs more explanation.

We agree with the reviewer and are aware that there are active debates on the ENSO bias in climate models. We have decided to remove this entire paragraph from the Introduction. As this paragraph has now been omitted, the term "CC" has also been removed.

P2, l45: is this really true? How does the FAO determine this? It seems quite surprising indeed given how many buildings TCs destroy, etc.

The FAO report we cite, states how a recent tropical cyclone decreased production and exports in Guatemala, Mexico, Honduras and Philippines. In Honduras for example, 40% of plants were destroyed in 2021, and in the Philippines exports were lower by 37% due to a hurricane. All this leads to a worsened economic situation for tens of thousands of people in the mentioned countries.

The rewritten introduction (as shown in an earlier reply to reviewer 1) reflect our more careful wording on this.

P2, l57: what does "these indices" refer to? And is "mitigation or adaptation" really meant seriously? Surely whatever banana growers can do to mitigate climate change (i.e., reduce their own emissions) will have a negligible impact on their own impacts from climate change, and any real direct benefit to them can only come through adaptation. This is repeated again in the conclusions, line 396.

We have rephrased that part of the sentence so that it now reads "the likelihood of TC impacts". We also agree with the reviewer that we should focus on adaptation rather than mitigation strategies. We have carefully revised the manuscript and removed the use of the word mitigation wherever appropriate.

P4, l103: there may be little difference between scenarios by 2050, but it becomes much larger later. This should be made clear.

We thank the reviewer for pointing this out, and have added a paragraph on this in the Discussion (Section 4):

The STORM future climate datasets were generated based on the high-end SSP585 scenario. While one can discuss the likelihood of this emission scenario, as current developments are steering away from this scenario, the average climate conditions over the 2015 – 2050 time period do not differ substantially between the different forcing scenarios. We therefore believe that the SSP585 input dataset as was used for Bloemendaal et al., (2022) can be seen as a good proxy for changes in TC characteristics over the aforementioned time period. While this study does not consider TC impacts beyond 2050, we alert readers that the average climate conditions past 2050 do start to deviate and that the approach as used in Bloemendaal et al., (2022) does not hold then.

P6, l153: this citation to Yum (2021) is not sufficient, please explain exactly what was done (see major comments above).

We agree and as replied in earlier comments to Reviewer 1 and 2, we have tried to address this.

P7, l183: as in major comments, please clarify how wind speed at each plantation was obtained. It appears here that it was assumed to be the maximum sustained wind for the storm, but surely this is incorrect.

We have replied and reflected on this in an earlier reply.

Table 2: please give units for wind speed (presumably m/s).

Thank you, we have addressed this in the table.