Review 1

This study is highly relevant to the scope of the journal and well-written, making it easy to read. The analysis is comprehensive, and the datasets and methodologies used are appropriate, including innovative approaches. Additionally, I particularly appreciated the high-quality graphics, which enhance the manuscript's clarity and visual appeal. My main concerns involve the lack of detailed information in certain parts of the methodology. Overall, I recommend a minor revision to address these clarifications and provide additional information.

We appreciate the reviewer's thoughtful assessment of our study and we are grateful for the constructive feedback to improve the manuscript. In the revised version of the manuscript, we added information and restructured parts of the methodology. Below, we address each of the reviewer's comments and questions in blue.

Main points:

1. The objectives and added value of the study could have been better framed in the introduction.

Parts of the introduction has been rephrased in the revised version to emphasis our objectives.

2. L154-156: Some additional information on this approximation is needed here.

The actual vapour pressure is approximated using Equation 48 from "Crop evapotranspiration - Guidelines for computing crop water requirements" (Allen et al. 1998). The equation and reference have been added.

3. L179-180: Please provide some information on the methods used by the CRU for the calculation of Eto. If I am not mistaken, they used the Penman-Monteith method. This is just to avoid giving the wrong impression that this is a measured parameter.

Yes, they did, but with slightly different coefficients (short crop assumption). We decided to include another pre-calculated ET0 dataset as some sort of sanity check for our implementation. A sentence has been added for clarity and preventing an impression of ET0 being measured.

4. A sub-section on the methods used to evaluate the CMIP6 models is missing (e.g., pattern correlations, inter-model comparison using root mean squared distance, etc.). Some of this information is provided in the results (e.g., Fig. 1. Caption); however, I recommend providing this information in a brief sub-section of Methods.

We are trying to present all methods, used throughout the study, in a clear and accessible way. Following the reviewers recommendation, a methods subsection for model evaluation has been added, that provides equations and details on our application of pattern correlation, normalized centered root mean squared distance and seasonal cycles.

5. The same applies to the harvest areas. The first information is provided in L255. These need to be specified in the Methods/Data sections, while some context should also be provided in the Introduction.

The paragraphs regarding selection of harvest area (and corresponding figure) have been moved to a dedicated subsection of the methods section. Further, we emphasized our focus on this particular subset of regions in the introduction.

Minor points:

1. L123: The numbering of figures should be consistent with their appearance in the text For example, Fig.6 should be Fig. 1 or just skip the reference to this figure, since you already provide another reference.

Fig 6 became Fig 1, which corrects the order. (See main point 5)

2. L145-150: Please just mention if these projected warming levels are with respect to the preindustrial period.

Yes, they are and since it seems not to be obvious to the potential reader, we added this to the first bullet point.

3. Table 3: Given that the reanalysis/observational datasets are described in the text, I believe this table is redundant and can be removed.

Even though tables can provide better visual guidance, we admit three datasets that have been mentioned before might not be worth their own table. The table has been removed and a reference for the crop mask dataset has been added in the manuscript instead.

4. Figure 5 (6): Please provide the scenarios in the three panels (I assume it is SSP1, SSP2, SSP5 from left to right?) This Figure could also merge with Figure 4 (5).

The reviewer's assumption is correct. There clearly is a lack of information regarding Figure 5 (now 6). The scenario names for each panel have been added to the figure caption. There was meant to be a paragraph between the figures, therefore they should not be merged, unless it improves readability in the final layout.

5. Figure 6: Since these are not results generated in the present analysis, I would move this earlier in the text, where harvest areas and IPCC regions are first mentioned.

The IPCC regions and harvest area selection are moved to a subsection of methods (see main point 5).

6. Figure 7: Please provide units in the y-axis of panel (c). The same applies to panel (b), which I assume is the SPEI value per decade?

Panel (b) is labelled next to the colorbar. It is indeed SPEI/decade. Figure 7 (now 8) has been recreated with additional axis labels for a) and c).