General comments:

This manuscript is devoted to the analysis of an extreme cold spell in early April 2021 that occurred in a vast area of Western-Central Europe, including France. This outstanding event was preceded by an anomalously warm March, both months with record-breaking temperatures of reverse sign in France. The rapid heat accumulation (GDD) until the end of March led to an advancement of phenology (e.g. grapevines and temperate fruit trees), which significantly expose buds/flowers to chilling conditions and late frosts. This two-fold effect (phenology advancement & higher late frost risk) has been reported by several authors, including in studies of viticulture worldwide (a recent revision highlights this issue: doi:10.3390/app10093092). Furthermore, the authors explore, through an attribution analysis using climate model ensembles, the potential relationship between this event and anthropogenic forcing. Opposite trends were identified, either using fixed periods for the minimum temperatures or GDD-based periods, thus highlighting the importance of using heat accumulation as a time frame instead of the conventional DOY. Overall, I found that the results are scientifically sounding but highlight a still very large uncertainty in climate projections, particularly concerning extreme events like late frosts. The data and methods are also adequate for the purposes of the study. The manuscript is generally well written but deserves some improvements as is outlined below. Hence, I recommend its acceptance after some revisions.

The authors thank the reviewer for the time spent and the thorough review. We will address all points below.

Specific comments:

1. Fig.1 The symbols are not clear. Please remove the icons within the circles to better render the colour scale.

We will improve the figure

2. Ln 68: "The trend..." this sentence is unclear. Please either remove or better explain the opposite relationship between this cold spell and the projected intensification of the westerlies.

This sentence is removed, as it is not useful in this context.

3. Fig2c: this panel should be only for France, allowing a better resolution of the target area. Please revise.

The figure will be improved but we think it is interesting for the readers to see the pattern at a larger scale.

4. Equation 1: Please edit and improve quality.

This will be done

5. Ln 130-141: the attribution method should be more clearly explained for a general reader not familiar with it. Please develop a bit further.

The text will be improved. Please note that Reviewer #2 asked for restructuring the sections

6. Ln 155: The reference to Fig. 4 is not appropriate at this stage. It needs some preliminary explanation beforehand.

This will be done

7. Tables 1 and 2 are barely explained. Please develop their explanation, as there are several indicators that are not even mentioned in the text.

This will be done.

8. Table 2 caption: "Red color indicates a warming change and blue color a cooling change". No colours are shown. Please revise.

This will be done

9. Section 4.1: You have used different anthropogenic radiative forcing scenarios in the different model ensembles: SSP2-4.5, RCP8.5, SSP3-7.0, which correspond to very different GHG emissions and concentration pathways. Please explain how these changes may influence your findings. Further, the spatial resolution of the models is not equal. Have you averaged all datasets within the selected domain? I suggest improving and rephrasing this whole section to improve clarity, as several options were taken and they need to be duly justified.

We use all projections in terms of degree of warming, and arguments showing that this is possible (as in IPCC reports) will be presented.

We indeed average all datasets over the selected domain. We will write this more clearly in the event definition section.

10. Ln 233-236: This paragraph is awkward. You mention that only some model simulations should be considered after the evaluation approach, but you eventually decided to use all of them. Please clarify.

This is explained in Section 5 but we now clarify also here, the group of sentences is now:

"Given this evaluation for this index, for the final model "weighted average" (see Philip et al., 2020), only Euro-Cordex and HighResMIP-SST should in principle be considered for the statistical evaluation of probability ratio and intensity change, while for the TNnGDD250 index, all ensembles can be considered. However, we have here considered all model ensembles even for the TNnApr-Jul index (see discussion in Section 5) for consistency across indices, and because results are qualitatively similar, keeping all models or retaining only the compatible models."

11. In general, the quality of the figures and tables can be significantly improved. The physical units are not always shown and the resolution is poor, being some of their elements difficult to read. For instance, in Fig.5 caption there is no reference to the geographical area that is being considered. The same applies to other figures. Fig. 7 and 8 are very interesting and informative but difficult to read. I suggest adding labels and an improvement in the captions. Their description in the text can be significantly enhanced to facilitate their interpretation by a larger audience.

This will be done

12. English is fine. Only minor spell checking is necessary (e.g., 229 "The").

This will be corrected