We would like to warmly thank the Referee for their thorough review of our paper. The comments and suggestions provided will contribute significantly to improving the quality of our paper, making it more effective and clearer. Please find below our point-by-point responses (in red text).

This is an interesting study on understanding better the precipitation paradox in the Mediterranean (decreased mean precipitation/increased extremes). It falls within the scope of HESS, and I believe it could attract the interest of the scientific community. While there are different approaches and sound datasets used, there are no straightforward linkages between the various parts of the analysis.

We thank the Referee for the positive feedback and acknowledge that further effort is needed to harmonize different parts of the analysis (and of the manuscript). Below, we attempt to address the suggested concerns and comments.

1. The overall presentation is well structured and clear. One exception is the inclusion of discussions in the results. I would include any discussion in a separate section or present it with the conclusions. High-quality visualizations are used for the presentation of results. Some more effort could be put into making the language style more fluent.

We will better separate results and the discussion, devoting a specific section to the latter. Indeed, Section 3.4 is already a discussion section, specifically addressing certain issues. We will restructure and expand it.

2. In the title, please mention that you refer to the “Mediterranean Sea Warming”.

We agree with the Referee’s comment and will modify the title accordingly; moreover, the same suggestion was provided by Referee #4 in comment no. 7.

3. Overall, the introduction section is informative, however, the list of references is not exhaustive. Topics such as future extreme precipitation trends in the Mediterranean or why the region is characterised as a climate change hotspot could be better covered. Any research gaps and main objectives of the present analysis could be more emphasized.

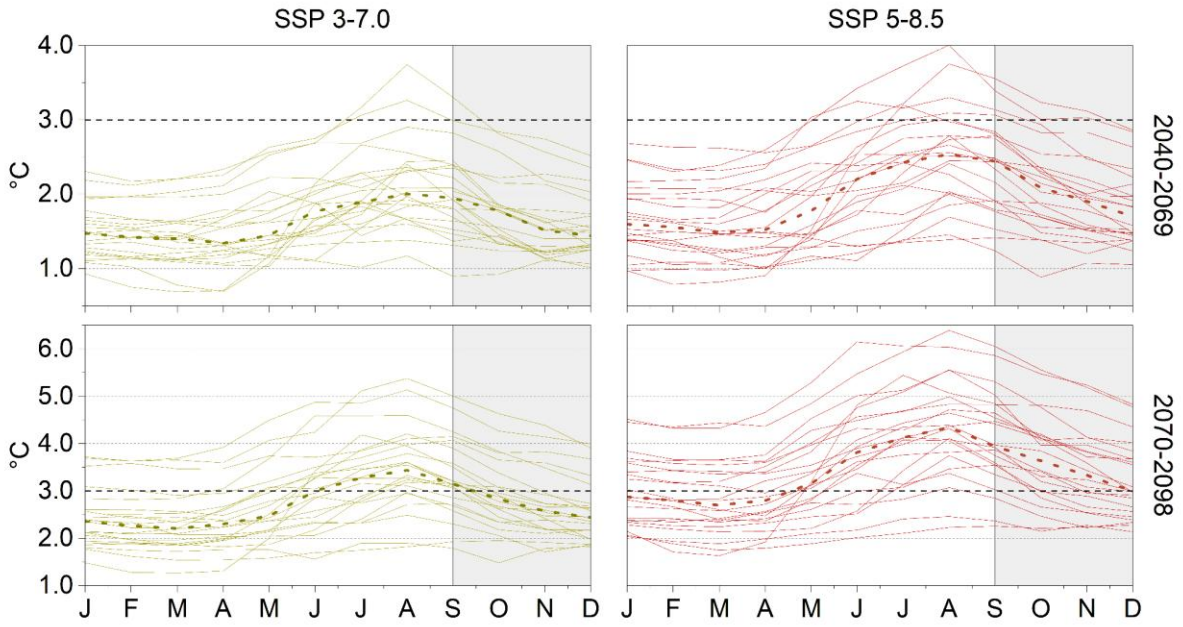
We agree that the introduction section could be improved with references specifically addressing the topic discussed in the paper. Indeed, we considered several of these references in the Section 3.4 (Comparison with previous studies), but we will consider to cite at least part of them in the introduction, as well as to add other references, e.g. the quite famous paper of Giorgi (2006), stating the Mediterranean as a prominent hotspot due to amplified warming and precipitation decline, and other references on regional future extreme precipitation trends (e.g., Zittis et al. 2021; Babaousmail et al. 2020).

4. EURO-CORDEX is mentioned several times in the text, however, the only linkage with this regional initiative is the selection of the domain. Please mention this only once in the definition of your domain of analysis.

The text will be modified according to the Referee's comment, which combines with Referee #2's major comment no. 2, in which it is asked to focus this part of the results on the Mediterranean area only.

5. Since the findings presented in Figures 7 and 8 are mostly used for estimating a reasonable warmer-SST scenario, I strongly recommend moving these two figures to the Appendix. The number of visualizations is already large.

We agree with the Referee. Concerns about Figs. 7 and 8 were also raised by other referees (Referee #1, Results and Discussion comment no.6, Referee #2, comment no.5, and, partially, Referee #4, minor comment no. 15). Following Referee #2's suggestion, the representation of projected SST increase will be changed entirely, using only one multipanel figure with four spaghetti graphs, showing the SST increase compared to 1985-2014 in the periods 2040-2069 and 2070-2098, considering SSP3-7.0 and SSP5-8.5 scenarios, respectively. Additionally, according to Referee #1's comment, the area on which we will base our calculations is no longer the entire Mediterranean basin, but the external domain D01. The new figure is shown below (in the spaghetti graphs, the dotted line represents the median behavior). We observed a slight increase in projected SST. Further details will be provided in the revised text.



6. In the methods section, it is not clear how future SSTs were taken into account in the WRF simulations. Some information is presented in the results (L262-269), however, this approach should be demonstrated in more detail.

In the Data and Methods section, we presented only the datasets used for the SST analysis (LL114-131), including the extent of the area analyzed (L120). Then, in the Results section, we provided more details about the perturbation approach (LL262-269), including the magnitude (from -1 °C to +3 °C compared to current conditions) and the spatial pattern and implementation (e.g., we claimed a homogeneous change). We agree that the SST

perturbation approach can be presented in a clearer and more organic way in the Data and Section method, as pointed out also by the other Referees (e.g., Referee #1 comment “Data and Methods” no. 1), and will change the manuscript accordingly.

7. Some additional explanation of the methods used to derive Figure 12 should also be included in the methods.

We provided details on how we calculated the centers of mass shown in Figure 12 in Section 2.4. We will clarify and expand this section, providing more details about the figure built in the revised manuscript.

8. For increased confidence, I strongly recommend repeating the analysis of Figure 13 for an additional event. For example, for event 15, which is characterised by extreme rainfall, underestimated by the SST0 simulation.

We will follow the suggestion of the Referee and repeat the analysis shown in Figure 13 (which will be expanded according to other referees' comments, specifically Referee #2's major comment no. 7) for event 15 as well. In the next steps of the review process, we will consider whether to include the results in the manuscript or the supplementary material.

Minor comments are provided in the attached PDF document.

comment #1 title modification

We will modify the title according to the Referee’s comment, and following the same suggestion provided by Referee #4.

comment #2 degrees C per decade is a more common way of presenting temperature trends

We will modify the manuscript according to the Referee's comment and will use °C per decade.

comment #3 Please spell out numbers under 10

We will carefully check all the numbers under 10 and spell them out.

comment #4 This should be defined here.

We will explicitly define the GCM acronym here. We thank the Referee for pointing out that.

comment #5: “on”

We will modify the manuscript according to.

comment #6: anomaly

We will modify the manuscript according to.

comment #7: use plural precipitations

We will modify the manuscript according to.

comment #8: remove some

We will modify the manuscript according to.

comment #9: Please be consistent in the use of units (degrees C or K)

We will use °C and modify the manuscript to ensure consistency in units of measurement.

comment #10: “such as in the case of”

We will modify the manuscript according to.

comment #11: remove “pan”

We will modify the manuscript according to.

comment #12: remove EURO-CORDEX

The text will also be modified according to our reply to comment no. 4.

comment #13: modify “future scenario” to “an increased SST scenario”

We will modify the manuscript according to.

comment #14: remove the first sentence of section 2.1

We will remove the first sentence according to the Referee's suggestion.

comment #15: modify trend analysis to historical trend analysis

We will modify the manuscript according to.

comment #16: remove “of the European Commission”

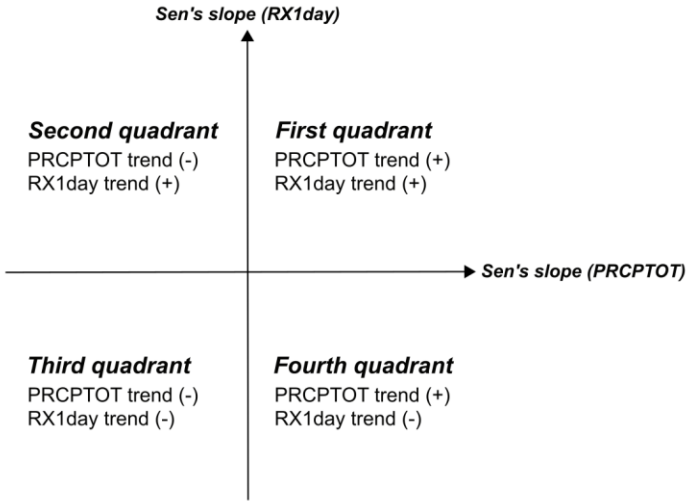
We will remove this part of the sentence.

comment #17: remove “Skamarock et al., 2021”, the WRF extended name and “limited area model”

We thank the Referee for pointing out that. We will remove the citation and modify the sentence according to the Referee's comment since it has already been presented before.

comment #18: Interesting way of presenting results, but should have been explained in methods

The quadrant classification is a method for highlighting the combined trends of two different variables. We already explained it in Methods (LL141-145), but we will strive to explain it more clearly, even with a simple diagram like the one below. However, the representation of the results (Figs. 3 and 5) will be modified according to the comments of other referees (Referees #2, specific comments).



comment #19: I assume that this is the case, but please clarify if these numbers and percentages refer to land-only grid cells.

The achieved results were obtained using ERA5-Land gridded data, which is limited to land areas. This statement will be clarified and pointed out in the manuscript.

comment #20: I would include discussions in a separate section or merge with conclusions.

We thank the Referee for bringing this to our attention. As we stated in our reply to comment no. 1, we will devote a separate section to the discussion.

comment #21: This is not results material.

We agree with the Referee's comment and will move these sentences to the 2.1 section “Dataset and study area”.

comment #22: modify “2” to “two”

We will carefully check all the numbers under 10 and spell them out.

comment #23 (Figure 6 caption): modify “yearly” to “annual”

We will modify 'yearly' to 'annual' in the revised manuscript.

comment #24: This is more of an Introduction material

According to the Referee's comment, we will move this part to the introduction section.

References

Babaousmail, H., Hou, R., Ayugi, B., Sian, K. T. C. L. K., Ojara, M., Mumo, R., ... & Ongoma, V. (2022). Future changes in mean and extreme precipitation over the Mediterranean and Sahara regions using bias-corrected CMIP6 models. International Journal of Climatology, 42(14), 7280-7297.

Giorgi, F. (2006). Climate change hot-spots. *Geophysical research letters*, *33*(8).

Zittis, G., Bruggeman, A., & Lelieveld, J. (2021). Revisiting future extreme precipitation trends in the Mediterranean. Weather and Climate Extremes, 34, 100380.