For review article

Response to Reviewer 2 Comments

1. Summary

Thank you very much for taking the time to review this manuscript. Please find detailed responses below and the corresponding revisions/corrections highlighted in the re-submitted files.

2. Questions for General Evaluation	**Reviewer's Evaluation**	**Response and Revisions**
Does the introduction provide sufficient background and include all relevant references?	Can be improved	The authors addressed the reviewer comments
Is the research design appropriate?	Yes	No response is required
Are the methods adequately described?	Yes	No response is required
Are the results clearly presented?	Yes	No response is required
Are the conclusions supported by the results?	Yes	No response is required
Are all figures and tables clear and well-presented?	Yes	No response is required

3. Point-by-point response to Comments and Suggestions for Authors

Comments 1: I have carefully reviewed the manuscript *A comprehensive Comparative study on the Evapotranspiration in Mainland Portugal Based on Climate Reanalysis Data.* Overall, the manuscript is scientifically sound, methodologically robust, and well aligned with the scope of Atmosphere. The methodological approach is appropriate and clearly described. The figures and maps are informative, well designed, and effectively support the results.

Response 1: The authors thank the reviewer for their positive assessment.

Comments 2: Conceptual clarification (Ep vs Eto) – Although technically correct, the manuscript would benefit from more explicitly stating, particularly in the Abstract and Introduction, that Eto is interpreted as a measure of atmospheric evaporative demand rather than an agronomic variable.

Response 2: The authors clarified in lines 27, 51, 506, and 629 that Eto was interpreted as the evaporative demand of the atmosphere. Nevertheless, the following clarification was introduced in line 127:

"As previously mentioned, it should be emphasized that Eto is considered an indicator of atmospheric demand rather than an agronomic variable".

Comment 3. Atmospheric framing in the Discussion - Some parts of the Discussion and Conclusion place strong emphasis on hydrological management aspects (e.g., reservoirs,

irrigation, water planning). These aspects are relevant but should remain secondary and clearly framed as consequences of atmospheric processes, to maintain a strong atmospheric/climatological focus.

Response 3: The following sentence was added in line 630 aiming at clarifying the issue**:**

"…Iberian Peninsula [43,63], presumably as a consequence of changes in atmospheric processes, an issue that nevertheless requires further research".

Comment 4: Physical interpretation of trends – The observed strengthening of Eto trends, particularly in summer and early autumn during the recent period (2002-2023), would benefit from slightly deeper discussion of potential atmospheric drivers (e.g., increased net radiation, rising temperatures, persistence of summer circulation patterns).

Response 4: The reviewer's comment is well taken. The authors considered introducing additional maps showing the trends of the most relevant variables related to Eto. However, this proved to be a very time-demanding task. Additionally, it could only be properly addressed through spatial mapping. Given the already large number of figures included in the manuscript, the addition of further maps was considered unsuitable. As the authors intend to continue this line of research, this issue will be taken into account in future work.

4. Response to Comments on the Quality of English Language: No improvement is required.

5. Additional clarifications: The authors would like to emphasize that the revised text includes additional corrections and changes resulting from the other reviewers' comments, which have changed the line numbering in the revised document. The line numbers mentioned above are the original ones.