

## **Reply to the Editor**

Dear authors, thank you for submitting the revised manuscript. One reviewer has pointed out some areas of improvement. I request you to address these issues and submit a revised version.

We would like to thank the editor for handling our manuscript. Below, we address the referee comments. We have included an additional figure in the Supplementary Material (Figure S14) as part of our response and made minor changes to the color bar in Figures 3c,d to improve interpretability. We also performed a final light proofreading of the manuscript and made minor wording changes, all of which can be tracked in the marked-up manuscript version.

Sincerely,

A. Serkan Bayar (on behalf of all authors)

## Reply to the Referee

The authors have provided detailed and careful responses to all points raised in the first review. The revisions are thorough, and I observe more clarity in the revised manuscript. The addition of burned area climatology (Figure 1b), the new composite analysis section (Section 2.2.6), the sensitivity tests across multiple FWI percentiles (Figures D1–D5) all strengthen the study. I am satisfied that most of my concerns have been adequately addressed.

I recommend accepting the manuscript subject to two minor residual clarifications as below.

We would like to thank the referee for evaluating our manuscript and their constructive feedback, which helped improve the manuscript significantly. Below, we address the remaining concerns:

### Comment 1 (original Point 3)

The authors acknowledge that the proxy combination overestimates the Europe-wide average FWI<sub>95d</sub> trend by ~17%. Is this a single domain-wide number? Given the large climatological differences between the Mediterranean and northern Europe, this overestimation is unlikely to be spatially uniform. I ask the authors to add one or two sentences in the discussion clarifying whether this bias is broadly uniform or concentrated in specific regions.

We agree with the reviewer that the spatial pattern of this difference should also be mentioned. In order to address this comment, we have included the following text in the revised manuscript, together with Figure S14 in the Supplementary Material:

We also calculated the difference between the trends from the original calculation and those from the proxy combination selected at daily resolution, and found that the daily combination overestimates the trend in FWI<sub>95d</sub> by an area-weighted domain average of 17.7%. This difference shows spatial heterogeneity across the domain, with the strongest signal concentrated in regions such as the Iberian Peninsula and western France (Figure S14).

## Comment 2 (original Point 4)

The composite analysis and VPD-FWI spatial correlation ( $\sim 0.85$ ) are compelling, and Section 2.2.6 is a valuable addition. However, the northward expansion signal is reported at the ensemble median level, and it is unclear whether individual model chains agree on this shift. The authors may add a brief statement on confidence. According to me, this is necessary because this statement is an important claim the manuscript makes.

We agree with the reviewer that the ensemble range should also be reported. Therefore, in the revised manuscript, we have included the following sentences:

The pattern of changes in extreme FWI (mean FWI on days when  $\text{FWI} > \text{FWI}^{99}$ ) shows a high spatial correlation with changes in VPD on these days, higher than the individual correlations with maximum temperature and relative humidity. Specifically, the ensemble median field correlation between changes in VPD and FWI composites is 0.85 at 2 °C GWL and 0.87 at 3 °C GWL, with ensemble ranges of 0.51-0.91 and 0.71-0.91, respectively (at 2 °C, only two models show correlations below 0.67).

## Final Recommendation

The manuscript is well-revised and makes a meaningful contribution to the fire–climate literature. The two residual comments above are minor and do not affect the main conclusions. I recommend acceptance upon incorporation of these minor clarifications.