

Please find below the answers to the comments point-by-point. For clarity, all reviewer comments are in **black** and responses in **blue**. Modifications in the manuscript are indicated with underlined text.

Comments by Anonymous Referee #1

I thank the authors for their careful revision of the manuscript. The specific points I raised in my previous comments have been fully addressed. The authors' work towards comments 4 (relative merits of wNAO and wWEPA) and 5 (statistical significance), in particular, has been comprehensive.

However, a number of technical corrections may further improve the readability of the manuscript. Most of these reduce to simply correcting typos, but one point might deserve more attention.

Author Response: We thank the reviewer for their thoughtful comments, which have helped further improve the manuscript.

My main point concerns Fig. 8 and the accompanying description: the numbers reported for the percentages of significant grid points seem to be inconsistent with those plotted in Fig. S9.2, in a way which is generally unfavourable to the authors' results. For example, for ACC and RCC, it looks like results relative to the severe test $FDR = \alpha$ are shown in Fig. 8 rather than to the more permissive (and appropriate) $FDR = 2\alpha$. This pattern does not seem to apply to CRPSS though. Please double check the consistency of the numbers and hatched areas shown in Fig. 8 with Fig. S9.2.

Author Response: We thank the reviewer for identifying this inconsistency. All results have been updated accordingly in the revised manuscript to ensure full consistency between Fig. 8 and Fig. S9.2.

Also, it looks like the values plotted in Fig. 8 (color shading) are different between the original and the revised manuscript for wWEPA. For example, ACC is positive in Corsica in the original manuscript and negative in the revised one. In my understanding the only difference should be in the hatched areas, due to the new method used to evaluate statistical significance. Please double-check this aspect too.

Author Response: During the revision process, a small bug fix was applied to the analysis code. We apologize for not having caught this error earlier. The effect on skill scores is negligible and the results are essentially unchanged, except for subsampling based on wWEPA and sNAO alone. The wWEPA-based subsampling is more sensitive to this correction: while the main areas of significant skill remain, southern France is no longer significant in the revised version, and the sign of the ACC changes in some regions such as Corsica. This greater sensitivity likely reflects the weaker and less spatially coherent skill of

wWEPA-based subsampling compared to other configurations, making it more susceptible to small numerical adjustments. The overall conclusions of the study are unaffected.

Apart from that, a few very minor typos can still be found in the manuscript. These are listed below, with line numbering referring to the revised version.

L37: "Variations ... is [are]".

L48 "DCPs focuses [focus]".

L221 check syntax.

L309 "preventing [the] prediction ensemble"

L358 There is no bibliography entry for Swingedouw et al., 2013b.

L363 "and is correlated with a positive wWEPA pattern". Please double check: my understanding –based on the authors' description of a positive WEPA pattern at L364-365– is that figure 3a shows a negative WEPA pattern.

L439 References to panels are not consistent with the new version of Figure 7

L451 Same as above

Fig. 7 The unit measure of uAMV is still hPa instead of degrees Celsius.

Fig. 8 There is no "Fig. 8" in the caption.

Author Response:

We thank the reviewer for carefully identifying these remaining errors. All listed corrections have been applied in the revised manuscript.

Regarding L363, the confusion arises from the fact that the wWEPA index used in this study is reversed in sign relative to the definition of Castelle et al. (2017), as the index is defined here as the southern minus the northern box for consistency with the wNAO sign convention (see L178). As a result, what Castelle et al. (2017) describe as a positive WEPA pattern corresponds to a negative wWEPA value in our notation. The following clarifications have been added to the revised manuscript:

- L178: "Note that the sign is reversed relative to Castelle et al. (2017), defined here as the southern minus the northern box, for consistency with the wNAO sign convention."
- L368: "A negative wWEPA corresponds to an intensification and southward shift of the Icelandic Low–Azores High dipole."

Comments to Anonymous Referee #2

I am okay with the current version of the manuscript, but please double check the methods section(s) about forecast years.

1) For example, If you use forecast year 2-10, does this mean you are using 9 year averages instead of 8 year averages. It is likely that I may have misunderstood this.

Author Response: We thank the reviewer for this comment. To improve clarity, the following revised text has been included in the manuscript:

L222: "Here, the method is applied using lead times 2–10 rather than 2–9 as in Alkama et al. This does not extend the 8-year averaging window, but increases the number of hindcast members contributing to each calendar year within that window, thereby marginally increasing the effective ensemble size and potentially improving skill."

2) A key study that showed potential for predictions on decadal timescales using observation based ensemble selection is somehow still ignored by authors: <https://doi.org/10.5194/esd-13-1437-2022>

Author Response: We thank the reviewer for drawing our attention to this study. It has now been incorporated into the revised manuscript.

Editor:

Dear Authors,

Both Reviewers recognise the improvements in your manuscript, yet note some remaining points that should be addressed. Based on this, I expect that your manuscript may be acceptable for publication in Earth System Dynamics following minor revisions. Also note that the final version of your manuscript should not reference works submitted to, in preparation, or in review. Only material which is published, accepted for publication, or available as preprint with a DOI may be cited.

Best Regards,

Gabriele Messori

Author Response: We thank the editor for this feedback. The Alkama et al. reference, previously cited as "in press," has now been published and the citation has been updated accordingly:

Alkama, R., Swingedouw, D., Mignot, J., Gastineau, G., and Ogée, J.: Clearing the noise to predict the rhythm of the North Atlantic climate, Science Advances, 12, eaed8616, <https://doi.org/10.1126/sciadv.aed8616>, 2026.

References:

Alkama, R., Swingedouw, D., Mignot, J., Gastineau, G., and Ogée, J.: Clearing the noise to predict the rhythm of the North Atlantic climate, *Science Advances*, 12, eaed8616, <https://doi.org/10.1126/sciadv.aed8616>, 2026.

Castelle, B., Dodet, G., Masselink, G., and Scott, T.: A new climate index controlling winter wave activity along the Atlantic coast of Europe: The West Europe Pressure Anomaly, *Geophysical Research Letters*, 44, 1384–1392, <https://doi.org/10.1002/2016GL072379>, 2017.