

# A quasi-Lagrangian perspective on the role of dry and moist processes in the formation of blocked North Atlantic-European weather regimes

Hauser et al.

We thank the editor and the two anonymous reviewers for their very positive feedback on our manuscript. Please find our reply to one remaining comment of reviewer 2 below, as well as a note to the editor about some further minor changes in the manuscript.

## Reviewer 2

The authors have addressed all issues that I raised in my last review. They did an excellent job revising the manuscript. The revision help significantly improve the level of the confidence of their conclusion. The authors have improved the presentation of the manuscript and the current version of the manuscript reads well.

The only minor suggestion would be to consider discussing and citing a relevant perspective article that reinforces and aligns with the findings of this paper (see below). This would help position this excellent paper within the broader context of the community's recognized knowledge gaps.

Wang, L., Lu, J., Breeden, M.L. et al. Gaps and ways forward in atmospheric blocking and extreme weather research. *Nat Commun* 17, 2873 (2026). <https://doi.org/10.1038/s41467-026-70487-z>

Thanks for this comment. We have added a sentence in the first paragraph in Section 4.4, when talking about the relevance of our results: *“Notably, these findings directly address multiple key challenges and knowledge gaps in understanding the physical processes linked to atmospheric blocking, which were recently identified in the perspective review by Wang et al. (2026).”*.

## Editor

We would like to inform the editor upon the upload of the production files, that some minor changes to the manuscript have been made, which are listed below:

- There has been a mix-up in the units listed in the captions of Figures 8 and 11. These have been corrected (PVU m<sup>2</sup> s<sup>-1</sup> was changed to PVU s<sup>-1</sup>).
- In the figure caption of Figure 6, we forgot to include the apostrophe for the wind fields to be consistent with the notation in Equation 1.
- We adjusted the sentence in L. 342ff, such that it is clear we talk about one part of the divergence-linked PV tendency:

