General comments

I read this interesting and well-written study with great interest. I would like to use the opportunity of open community comment to ask for clarification of certain less clear points. Some of these questions are resonating with some points raised already by Mathieu Casado but proposed from a different perspective.

So, links between firn and ice core stable isotope time series from Greenland and weather/climate variability over Europe have been intensively studied during the past decades. Several excellent results were delivered just right from the team of the authors of the current paper, as well.

In this study a relatively new stacked $\delta^{18}O$ record is tested as a proxy European hydroclimatic extremes driven by atmospheric blocking. The firn and ice cores used to compile the stacked $\delta^{18}O$ record were actually distributed across north and central Greenland (Hörhold et al., 2023). The spatial extent of the ice core array scratches from ~71 to 80N and from ~30 to 50 W. However, different regions of the Greenland Ice Sheet experience distinct changes in the average moisture source locations, which is manifested in the stable isotopic signal of ice/firn (Sodemann et al., 2008 https://doi.org/10.1029/2007JD008503). Different regions of the Greenland Ice Sheet experience distinct changes in average moisture source locations, with the strongest variability observed in north and west Greenland. This strong sensitivity of Greenland winter precipitation to the NAO has a substantial impact on the stable isotope composition of Greenland precipitation, which is crucial to consider when interpreting ice-core $\delta^{18}O$ records.

These isotope-hydrometeorological domains reflect the major regions of the Greenland delineated based on a synoptic survey of precipitation and possible effects of orography on moving cyclones (Chen et al., 1997 https://doi.org/10.1175/1520-0442(1997)010<0839:POGRBA>2.0.CO;2).

However, the employed stacked $\delta^{18}O$ record amalgamates distinct regions considering the isotope-NAO relationship. My question is whether a subset of the firn/ice core $\delta^{18}O$ records of Hörhold et al., 2023, rather than the NGT-2012 composite, might provide a better proxy for the European hydroclimatic extremes driven by atmospheric blocking?

Supporting the regionalization approach a previous study (Ortega et al., 2014, which is already cited in this manuscript) evaluated a set of shallow ice core derived $\delta^{18}O$ series from Greenland also pointed out spatially variable depletion/enrichment in the isotopic composition of ice/firn depending on the dominant NAO mode. In addition, ice core d18O records across Greenland exhibited distinctive spatial arrangements regarding change points, all corresponded to changepoints in the NAO, indicative of a consistent atmospheric influence over the past millennium (Hatvani et al., 2022 https://doi.org/10.3390/atmos13010093).

We would like to thank the reviewer for the appreciation/suggestions/comments/feedback that will help us improve our manuscript, and for taking the time to read and review our paper.

The interesting point of view of stacking a subset of ice cores used for NGT-2012 is unfortunately beyond the scope of the paper. However, we agree with the comment that a ad-hoc selection of ice cores may be a better proxy for atmospheric blocking events over Europe.

Specific comments

The ”Results” section actually contains some discussion so section title could be changed. In addition, to improve the discussion the results, beside the previously mentioned studies, a very recent paper (Brönnimann, et al. (2025). https://doi.org/10.1038/s41561-025-01654-y) largely overlapping with the current one could be compared.

We are going to discuss the recent paper as suggested.

The “main set of extremely consecutive positive years between 1927 and 1932” mentioned in line 115 corresponds well with the changepoint identified around 1933 in ice-core $\delta^{18}O$ records from southern and central Greenland (Hatvani et al., 2022).

We thank the reviwer and we will include in this in the discussion.

The last comment on this part is that the text in lines 182-188 that could fit better to Methods. In addition, region names and citations of Fig 6 panels might need careful checking in the subsequent paragraphs (e.g. “Scandinavia” should be replaced with “Baltic” in line 192 however then

We are going to modify the text as suggested.

Minor technical issues with the reference list are:

- Authors’ name for the !rst reference (line261) should be checked
- One of the duplicated items (lines 321-325; lines 349-352) should be removed from the reference list

In the revised version of the manuscript we are going to correct the aforementioned technical issues.