This particularly fascinating article proposes to go back 600 years in the past of Europe in order to identify, using proxy and instrumental data, reanalyses, and numerical simulations, whether the combination of certain spring weather / climate conditions is, significantly, heralding hot summers (a terribly topical subject!).

Given the quality of this work, I have no negative criticism to make. I would just like to ask a few questions and propose some suggestions to the authors, which may possibly improve the understanding of certain points and results that seem particularly interesting to me.

1) Would it be possible to specify what is the influence of the climatic context of the Little Ice Age (and its more or less severe / attenuated internal oscillations) on the frequency of atmospheric circulation types and their manifestations in terms of weather conditions highlighted in this study?

- NAO+ and NAO- phases;

- blocking patterns;

- occurrence of megadrought events.

If the Little Ice Age (LIA) is seen as a low-frequency climatic anomaly, then there should not be a dependence since our analyses are based on high-pass filtered data. Furthermore, extreme summer droughts can be traced back to 1252, i.e. before the start of the LIA around 1350. However, the LIA was also a period with more frequent volcanic eruptions. They can lead to cool summers, which is an additional forcing unrelated to winter-spring precipitation. This is captured in the regression model used.

The NAO (for which we have many reconstructions, including ModE-RA) shows a cluster with negative values in the second half of the 17th century, but overall does not exhibit a particular behaviour during the LIA. For blocking this is more difficult as our reconstructions do not allow analysing centennial scale changes. Note that both the NAO and blocking are relevant mainly for the cold-season circulation.

To address the link to the LIA, we first of all will introduce it in the Introduction ("We thus cover the Little Ice Age (LIA) as well as the transition to the era of anthropogenically caused global warming.") Then we will discuss the results in the light of the LIA mainly in the Discussion section.

"No direct connection to the LIA is seen. Extreme summer droughts can be traced back to 1252, i.e. before the start of the LIA around 1350. However, the LIA was also a period with more frequent volcanic eruptions, which cause cool summers due to direct forcing unrelated to winter-spring precipitation. This could make the composite statistics worse, but is included in the regression model. The NAO showed a cluster with negative values in the second half of the 17th century, but overall does not exhibit a particular behaviour during the LIA, neither do EA or SCA (Brönnimann et al., 2024) or the jet indices."

Brönnimann, S., Filipiak, J., Chen, S., and Pfister, L.: The weather of 1740, the coldest year in central Europe in 600 years, Clim. Past, 20, 2219–2235, https://doi.org/10.5194/cp-20-2219-2024, 2024.

As to megadroughts, we cite Cook in the paper as to the 15th century dry period. We will now also add the "megadrought" around 1800 from the same paper: "They also address the period around 1800 as a megadrought."

2) Climatic conditions (interannual variability and multi-year alternately warm / cool oscillations) and atmospheric circulation that occurred during the transition between the end of the Little Ice Age and the period of contemporary global warming, did they influence certain results?

The last phase of the LIA was strongly affected by a series of volcanic eruptions in the early 19th century, to which the Earth system reacted strongly and perhaps with delayed effects. Volcanic activity remained high throughout the 19th and early 20th century. The transition to the modern period of global warming therefore was a continuation of volcanic forcing and slow recovery from the cluster of eruptions in the early 19th century. We will take this up in the discussion and add the sentence:

"The last phase of the LIA was caused by a series of volcanic eruptions in the early 19th century, to which the Earth system reacted strongly (Brönnimann et al. 2019). The following decades might still have been characterized by recovery, while volcanic activity remained high throughout the 19th and early 20th century. There are no notable dry-spring-hot-summer events in this period."

Brönnimann, S., J. Franke, S. U. Nussbaumer, H. J. Zumbühl, D. Steiner, M. Trachsel, G. C. Hegerl, A. Schurer, M. Worni, A. Malik, J. Flückiger, and C. C. Raible (2019) Last phase of the Little Ice Age forced by volcanic eruptions. *Nature Geoscience,* **12,** 650-656

3) Possibility of an influence of the type of data used and analyzed on the results?

Compared to proxy data, what impacts and what importance could have precisely the measurements carried out from the seventeenth century onwards and their development (increasingly numerous across Europe) over the following centuries, in the analyses and on the results obtained in this work?

The reviewer is right that we try to rely on measurements as much as possible. We have no alternative (e.g., tree-ring only) within our reconstruction family. From the late 17th century onwards, mega-droughts can potentially be identified on the basis of temperature and precipitation measurements, initially in Paris (Rousseau, 2022; Pliemon et al., 2023; Slonosky, 2002) and soon afterwards in other regions. The main impact of the increasing number of measurements is an increase in the reconstruction skill, along with a decrease in the reconstruction spread. The influence of the prior (i.e. the model simulations ModE-Sim) becomes weaker.

We will add the following sentence to the Methods: "From the late 17th century onward, ModE-RA is increasingly using measurements, leading to an increase in the reconstruction skill (a decrease in the ensemble spread), while the influence of the prior (i.e. the model simulations ModE-Sim) becomes weaker."

4) Among the questions asked by the authors themselves about highlighting characteristics specific to South-Eastern Europe climatology in the interpretation and understanding of the results, maybe the classification of atmospheric circulation patterns used in this work is not precise enough? If the classification used is relevant at the scale of the European continent, it is probably less so at smaller scales. Would the use of a more detailed classification such as that of Hess-Brezowsky circulation types (Großwetterlagen), if possible in the context of this work, be better suited to this regional scale?

Yes, the addition of a specific south-eastern European weather type classification would be beneficial, but we do not have that. In our paper we used the specific CAP9 weather types for Switzerland back to 1728. The only alternative we have are the Lamb weather types back to 1781, but they also do not specifically cover southeastern Europe. In the revised paper, we will add a sentence in the discussion section: "To further study the interaction over southeastern Europe it would be useful to have long reconstructions of

daily weather types over this region, or types relevant for entire Europe. Our blocking reconstruction is based on Swiss weather types and may not well capture southeastern Europe.”