Reply to the Editor and all reviewers on egusphere-2023-2523, doi:10.5194/egusphere-2023-2523 (Sippel et al.)

We thank the reviewers and the Editor for the careful and positive evaluation of our manuscript.

Referee#1:

"As noted previously this study has investigated the likelihood of a reoccurrence of the extremely cold European winter of 1963 under present climate conditions and what such a winter would look like using a range of techniques, some accounting for the dynamical features which gave rise to the extremely cold winter while others are statistical in nature. On further consideration, I note that surface temperature variability is expected to decrease under global warming which, all other things being equal, would also contribute to cold Eurasian winters becoming less frequent. There was a nice perspective on this shifting of probabilities in a recent synthesis paper by Outten et al. 2022. On the issue of decreasing surface temperature variability, I realised the Blackport and Kushner 2016 paper was not mentioned, although there is reference to the Schneider et al. 2015 and Holmes et al. 2016 papers, so perhaps it is not needed.

Overall however, the authors have been extremely thorough in responding to all the general and specific comments that I raised in my first review of their work. I do feel that the paper has been improved by their efforts, and I hope they concur with this assessment. The references I mention above are only raised as suggestions to the authors for the sake of completeness but I am delighted to recommend the paper for publication, with or without the addition of these two reference.

Outten, S., Li, C., King, M. P., Suo, L., Siew, P. Y. F., Cheung, H., Davy, R., Dunn-Sigouin, E., Furevik, T., He, S., Madonna, E., Sobolowski, S., Spengler, T., and Woollings, T.: Reconciling conflicting evidence for the cause of the observed early 21st century Eurasian cooling, Weather Clim. Dynam., 4, 95–114, https://doi.org/10.5194/wcd-4-95-2023, 2023.

Blackport, R. and Kushner, P. J.: The transient and equilibrium climate response to rapid summertime sea ice loss in CCSM4, J. Climate, 29, 401–417, https://doi.org/10.1175/JCLI-D-15-0284.1, 2016."

Thanks for these references, which are indeed very relevant. We have added both references to our discussion of Arctic influences on mid-latitude wintertime climate, around l. 224 and l. 230.

Referee#2:

"I thank the authors for fully addressing my previous comments and concerns. I think the manuscript is now very clear and it represents a valuable contribution to the topic of extreme events attribution. Hence, I recommend this manuscript for publication in its current form."

Thank you for the positive evaluation.