

## Review 1

We kindly thank the anonymous reviewer for reviewing the manuscript a second time. We believe that the suggestions have helped improve the quality of the study.

### General comments

The authors chose to delete the section about the potential predictability drivers of dry and hot summers in Europe. Even if this reduces somewhat the scope and impacts of the study, it does improve the quality of the manuscript.

The comments have been adequately addressed by the authors. I only regret that the authors do not evaluate the contribution of the ensemble spread in the highest values of SNR, with respect to that of the deviation from the mean.

We may have missed this comment in the first round. We have added a new figure (new Figure 2) and discussion, which aim at singling out from the SNR the impact of ensemble coherence on skill. We believe this new figure 2 brings an interesting perspective to the study and helps form a better understanding of how the two aspects of SNR (deviation from mean and ensemble coherence) relate to skill.

Overall I think the manuscript can now be published, if possible after addressing the minor comments indicated below.

### Minor points:

Caption figure 5 : a word is missing "Skill metrics are provided separately"

Added

Figure 5: A visualisation of the 6 domains on a map would be appreciated. Either by adding a dedicated map, or by overlaying the 6 boundary rectangles on top of a map from figure 4.

Added

Figures 5 et 6 : It would be worth assessing the statistical significance of the correlations in each focus region. This significance is important in your manuscript since you subsample your 24-year period into a reduced sample of years.

Added the p-values of the linear correlation coefficients.

The year for the "Batté et al." reference is 2021, not 2017 (It was my mistake in the first round of review)

Changed

## Review 2

We kindly thank the anonymous reviewer for reviewing the manuscript a second time. We believe that the suggestions have helped improve the quality of the study.

First of all I would like to thank the author to reduce the manuscript and focus on the statistical section. Whether it still fits the scope of the journal is a different question, which I am not able to answer.

I think that the manuscript has to be seen as the observation of a phenomena rather than its explanation. It lacks currently the theoretical argumentation for the described phenomena, but it has to be acknowledged, that the general foundations around the signal-to-noise paradox are shaky. Consequently, another observation contributing to the collection of observations around this phenomena might be acceptable at the moment. I currently cannot see any major flaws in the manuscript themselves, so an acceptance of it might be appropriate from that perspective. Nevertheless, as the authors created here a purely statistical paper, it would be wise for them to at least attempt a theoretical explanation to connect ACC with SNR. Therefore, small corrections at this point.

89: Here it is advised to see whether a mathematical explanation for the connection between ACC and SNR can be found.

Although not directly a mathematical explanation, we have added a new figure (new Figure 2) and discussion, which in our opinion helps form a better understanding of how SNR relates to skill. We do so by separating the impact of the multi-system ensemble coherence on ACC. It clearly shows that in the tropics and sub-tropics the ensemble coherence is an important indicator of skill, especially for T2m. This result, in our view, may help shape future research dealing with the still obscure signal to noise phenomenon in climate science.

168: "Overall precipitation predictability is lower than T2m predictability in the regions analyzed, since skill scores for precipitation are generally lower than those of T2m."

That is the symptom, not the cause. Reason is of course the problem to predict complex dynamical, highly spatially variable variables like precipitation with an ESM. So reformulating it would be appropriate (so either with correct cause, or the statement, that you identify predictability by difference in skill scores)

We consider this comment valid, therefore we have rephrased the sentence as suggested by the reviewer.