

Author's response to RC1

We thank Referee 1 for their suggestions. Our responses are listed below.

Major

Reviewer Point P 0.1 — The treatment of internal variability legitimately relies on the assumption that models adequately represent internal variability, I would recommend stating that explicitly.

Reply: We have added the recommended statement to Section 2.9 which elaborates on the treatment of internal variability (L418).

Reviewer Point P 0.2 — More importantly, is the internal variability computed by considering each ensemble member and each winter within that ensemble member separately, or is the entire period 2010–2014 considered as one realisation? Only considering each year separately would do justice to the fact that the observational time series only covers one winter. Either way, I recommend explaining this more explicitly in the manuscript.

Reply: We acknowledge the reviewer's comment that the treatment of the model period (including several years in the historical simulations) is not explained sufficiently. It is as the reviewer says, each year in the comparing model period is considered separately when deriving the range across model realisations as an estimate of simulated internal variability. We added the explanation to the figure caption in Appendix B.

Reviewer Point P 0.3 — l. 416f: It might be more precise to say that differences between the subsets are due to the inter-model differences in the response to forcing (as the forcing should be the same across all models)

Reply: Agreed, we adapted the sentence accordingly.