

## ***Interactive comment on “How wrong are climate field reconstruction techniques in reconstructing a climate with long-range memory?” by Tine Nilsen et al.***

**Tine Nilsen et al.**

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Response to reviewer 2

Thank you for providing general comments on the manuscript. The title and abstract of the revised manuscript will be changed, see the general response posted.

Reviewer: p.1 I.2 Citation needed for unsuitability of the CE and RE metrics. Response: see our reply to reviewer one, who has similar concerns.

Reviewer: Figure 3 caption doesn't explain what each of the (a)-(b) panels are uniquely showing. Response: The figure caption will be revised to make this clear.

C1

Reviewer: I would recommend highlighting in both the abstract and the conclusions how the authors very nicely were able to test the issue of long-range memory in isolation by constructing the spatial fields statistically rather than through climate models. I think this is important to highlight because it's not usually (or ever yet?) done. Response: Thank you for this feedback, we will bring the novelty of the data generation into focus as requested. The equations in Sect.2.2 will be moderately rewritten to avoid confusion and misconceptions. The methodology for data generation is unconventional but not unique, Werner and Tingley (2015) generate pseudo proxy data in a similar way, except the target data are formulated directly according to the BARCAST model equations.

References: J. P. Werner and M. P. Tingley. Technical Note: Probabilistically constraining proxy age-depth models within a Bayesian hierarchical reconstruction model. *Climate of the Past*, 11(3):533–545, 2015. doi: 10.5194/cp-11-533-2015.

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