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Interactive comment on "Influence of proxy data uncertainty on data assimilation for the past climate" *by* Anastasios Matsikaris et al.

Anonymous Referee #2

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General comments:

A technique for dynamically downscaling continent-scale average temperature is explored using the MPI-ESM model and two sources for the average temperature field: PAGES2K reconstruction and HadCRUT3v. Downscaling proceeds by identifying the ensemble member that best matches the continent-average temperature. While skill is identified for continent-scale temperature, little to no skill is found at smaller scales, consistent with previous studies by the authors. The new finding here is that this lack of skill is not attributable to the source of continent-average temperature. Rather it appears that either continent-scale temperature is not a sufficient constraint on small-scale temperature, or that the model lacks skill on these spatial scales for the timescales considered.

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Discussion paper

The paper is generally clearly written and makes a specific, if modest, point. It should be publishable with minor revisions.

Specific comments:

p. 4, line 21: I do not understand the point of this sentence.

p. 7, line 28: how do you know this?

p. 8 line 15: An alternative explanation is that weakly constrained large-scale patterns do not constrain small scales.

p. 8, line 18: by this you mean that constraining continent scales is not sufficient?

Figure 3: I don't think a figure is need to convey this information

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Discussion paper