

## ***Interactive comment on “Atmospheric multidecadal variations in the North Atlantic realm: proxy data, observations, and atmospheric circulation model studies” by K. Grosfeld et al.***

**T. van Ommen (Editor)**

tas.van.ommen@utas.edu.au

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We have now a number of comments and suggestions raised by three thoughtful reviews of this paper. All reviewers suggest that the paper can be brought to publication, although two suggest that major revisions are necessary, with reviewer 2 indicating the most serious reservations regarding the content and structure. I agree that substantial revision will likely be necessary, but I think that the comments fairly clearly point the way forward.

I have sought and encouraged discussion with my colleagues on this interesting paper and have some further comments that I pass on for the authors' response. These

mostly echo comments made also in the official reviews.

There is a general thread of concern showing a need to look further at the role of the NAO, and the suggestion that the authors clarify whether the atmospheric pattern is barotropic, as raised by reviewer 1 seems a useful step towards doing so.

Also, in looking at 20th century data, there is a question of contamination of data by anthropogenic forcing. If the authors were to explore the correlations, the significance and presence or otherwise of preferred multidecadal timescale for the variability in the data with 20th century excluded, this issue could be at least be probed. Mann and Emanuel are noted by Greatbatch in review three as questioning the existence of the AMO. In fact, it is not the existence or otherwise of the AMO, as I read it, but the role of the AMO relative to anthropogenic forcing that is questioned. Also, any argument about AMO and its relation to SST should account for seasonal variations, and it should be borne in mind that the Mann and Emmanuel analysis is for August-October. Still, it would be useful for the authors of the paper in consideration here to comment on this, as reviewer 1 suggests.

I look forward to the authors' responses to these and the other issues raised in this series of reviews. I also encourage authors and reviewers to make use of the CPD interactivity and participate in the ongoing discussion here that will bring the work to suitable form for inclusion in *Climate of the Past*.

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