

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

Anonymous Referee #1

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The paper "Atmospheric multidecadal variations in the North Atlantic realm: proxy data, observations, and atmospheric circulation studies" by Grosfeld et al. investigates the long-term variability over the last couple of 100 years in the Atlantic region by use of various observational data and two circulation models of different complexity.

General comments: This paper makes an interesting contribution to the understanding of Atlantic climate variability by using both proxy and observational data as well as model experiments. I recommend publication of the paper after my detailed comments have been satisfactorily addressed by the authors.

Detailed comments: - Delworth and Mann (2000) show that the AMO has a equivalent

barotropic vertical structure. Is this also the case in the model experiments used in this study? If Atlantic SSTs contribute to the forcing of this mode, then I would expect a baroclinic response close to the SST anomalies and the barotropic response downstream. This makes me wonder if the AMO is remotely forced and not locally.

- Is the SLP pattern over the North Atlantic also predictable if only Atlantic SST can be predicted? If the models would be only forced with the observed SST over the Atlantic and with constant climatological SST elsewhere, would this produce the same climate variability over the Europe/Atlantic region?

- The authors are using filters to isolate low-frequency variability. How sensitive are the results on the filter parameters, like cut-off frequencies?

Interactive comment on Clim. Past Discuss., 2, 633, 2006.

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