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Interactive comment on “Recent summer Arctic atmospheric circulation anomalies in a historical perspective” by A. Belleflamme et al.

Anonymous Referee #3

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This paper presents a novel and interesting look at role of atmospheric circulation in driving sea ice change over the last century. I like the paper, and recommend publication once minor reviewer comments are addressed. I do not have additional points on most of the methodology that differs from that of other reviewers. The one thing that I think is missing, however, is a discussion of the attribution of the observed circulation anomalies. The authors pose the question as to whether the observed/reconstructed anomalies are a forced response or not, and conclude that "circulation conditions similar to 2007–2012 have occurred in the past, despite a higher uncertainty of the reconstructed circulation before 1940. But the recent anomalies largely exceed the interannual variability of the atmospheric circulation of the Arctic region." This implies a forced component to the variability, as might be expected. Yet a number of recent papers have shown that there is a strong role played by recent tropical changes, and whether

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those are forced or not remains a very open question. I am thinking here in particular of the following three papers:

Ding et al., 2014, Tropical forcing of the recent rapid Arctic warming in northeastern Canada and Greenland. <http://dx.doi.org/10.1038/nature13260>

Screen, J. A., Deser, C. & Simmonds, I. Local and remote controls on observed Arctic warming. *Geophys. Res. Lett.* 39, L10709 (2012).

There is also a recent paper by Trenberth et al (*Science*) that is largely derivative of these too, but might be looked at as well.

A brief comparison of results with these papers, and a brief discussion of whether the results presented here are consistent (or not) with the thinking in the others, would be a valuable addition to this paper.

Interactive comment on *The Cryosphere Discuss.*, 8, 4823, 2014.

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