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Atmospheric Chemistry and Physics Discussions

Interactive comment on "The thermodynamic state of the Arctic atmosphere observed by AIRS: comparisons during the record minimum sea-ice extents of 2007 and 2012" *by* A. Devasthale et al.

Anonymous Referee #2

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The authors use satellite data to contrast the atmospheric conditions associated with the sea ice minimum in 2012 versus 2007. I regret I must rate the scientific significance of this study as poor. Sea ice will fluctuate around its overall downward trend, and the community does not need a description of the atmosphere every time a negative anomaly from the trend sets a new record. The study would be more substantive if it determined conditions driving the set of years that are positive anomalies from the trend versus the set of years that are negative anomalies from the trend (where 2007 and 2012 are a sample of size two from the latter set).

I offer some technical comments below if the authors submit a more substantive study

at a later time building on these results:

1. The signs of the AO declared for months in Fig. 2 are not meaningful unless we know the method for calculating the index (CPC methods and loading patterns?) and how different the values are from zero.

2. Fig 2 caption states that anomalies are with respect to averages over 2003-2012. Presumably these baseline averages are only over the month for which the anomaly was calculated, otherwise we would see seasonality confound the results. Please clarify.

3. When writing about the vertical cross section figures, please provide an approximate longitude in addition to the region (e.g., Kara Sea; 71E) to guide the reader to the appropriate location on the figure panels.

4. Fig. 6: difficult to see vectors. Excellent publically available software exists to assist with spacing them for readability (e.g., http://www.ncl.ucar.edu/). Also, what is the color scale?

5. Please refer to figures in order they appear.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 177, 2013.

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Interactive Comment