

Interactive comment on “The early twentieth century warming and winter Arctic sea ice” by V. A. Semenov and M. Latif

J. OVERLAND (Referee)

james.e.overland@noaa.gov

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As mentioned by the authors the ETCW is an important climate feature to understand and their analysis supports the conclusion that the flat line of sea ice extent in HadISST before 1960 is not to be trusted. There are some issues that need to be made more clearly.

Recent sea ice loss and temperature increase are Arctic wide and consistent with greenhouse gas increases. The Arctic wide average temperature in the ETCW was nearly the same as the 1990s but the anomaly was probably more regionally focused in the Atlantic Arctic; data from Alaska does not indicate any major sea ice loss. The ETCW is consistent with regional intrinsic natural variability.

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I always liked the hypothesis that the ETCW was a regional interaction of atmospheric, ocean and sea ice processes that amplified and prolonged a natural event as mentioned by Bengtsson et al.(2004). Note that Wood and Overland (2010) did not imply that the atmosphere created the ETCW on its own. However, I do not think that multi-decadal Atlantic Ocean variability is an explanation in itself. In fact Wood et al. (2010) suggest that the ETCW was a unique North Atlantic event in the last 200 years.

Bengtsson, L., Semenov, V. A., and O. M. Johannessen (2004): The early twentieth-century century warming in the Arctic – a possible mechanism. *Journal of Climate* 17, 4045-4057.

Wood, K.R., J.E. Overland, T. Jónsson, and B.V. Smoliak (2010): Air temperature variations on the Atlantic Arctic boundary since 1802. *Geophys. Res. Lett.*, 37, L17708, doi: 10.1029/2010GL044176.

Interactive comment on The Cryosphere Discuss., 6, 2037, 2012.

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