

Interactive comment on “A long-term Northern Hemisphere snow cover extent data record for climate studies and monitoring” by T. W. Estilow et al.

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The authors wish to thank three anonymous referees for their helpful comments and time spent reviewing the manuscript. Detailed responses to comments from Anonymous Referee #3 follow:

[Comment] Data reliability must be checked with the utmost care. In particular, I am concerned by the comment of Brown and Derksen (2013) that the decrease in snow cover extent in autumn may be due to an artefact such as improved mapping. I recommend that the authors elaborate on this and address, possibly even in anticipation, all

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possible issues regarding potential artefact in time series. There has been changes in methods since 1966, and although the authors mention consistency checks, I am not sure all aspects have been addressed. It would also be useful if the authors mentioned the other SCE records and discussed any significant difference with their record

[Response] We have expanded the long-term trends section (4.2) to provide an assessment of uncertainties. The revised manuscript will also explain in more detail the caveats to using the data.

Minor Points

[Comment] The reference Bates and Privette (2012) is not easily accessible, as for example it does not show up in web of science. If possible, either give another reference or elaborate.

[Response] The text has been revised, removing “score of level three or higher” in favor of a description of the CDR’s maturity. The URL pointing to the maturity matrix in Bates and Privette (2012) no longer works. For reference the maturity matrix is available here: http://www1.ncdc.noaa.gov/pub/data/sds/cdr/Guidelines/Maturity_Matrix_Template.xlsx We will ask NCDC if they can make this document more easily accessible (e.g. assign a DOI).

[Comment] Page 672, lines 10-15, please elaborate or give a reference on the impact of time sequence satellite imagery in discriminating snow from clouds. Could such improvements have led to an artefact in trends in time series?

[Response] We have added references in this section to further describe the impact of time sequence satellite imagery in discriminating snow from clouds. Such improvements over time have impacted the product, and despite overall homogeneity these may have led to artifacts in trends in the time series. As mentioned in the first response we have elaborated on these caveats in the revised manuscript.

[Comment] Page 676, line 13, please mention that SD is standard deviation. Sure, it is

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mostly obvious, but one should keep to the sound practice of explaining all abbreviations

[Response] We submitted the manuscript with standard deviation spelled out, however when it was typeset the journal changed it to SD. The revised manuscript includes the text “standard deviation (SD)” at this location.

Interactive comment on Earth Syst. Sci. Data Discuss., 7, 669, 2014.

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