

Interactive comment on “Arctic sea ice variability and trends, 1979–2010” by D. J. Cavalieri and C. L. Parkinson

Anonymous Referee #2

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Summary

This paper presents updated trends and variability from the NASA Team algorithm. Hemispheric statistics are discussed along with regional estimates from seas surrounding the Arctic Ocean region. This paper updates previous published statistics in Parkinson and Cavalieri (2008) and Parkinson et al. (1999). The trends are mostly negative with the exception of an increasing trend during winter months in the Bering Sea.

Comments

Updated sea ice extent and area estimates are useful, especially in the Arctic where there has been a substantial declining trend. This is particularly true for this update in that it now includes the record low extent year of 2007 and subsequent anomalously

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low years since. Such statistics are now available in a variety of open, non-peer reviewed form. Given that results presented here represent a continuation of previously published methods and do not represent any new methodology, I question somewhat the need to publish these as a peer-reviewed article. Nonetheless, such an article is useful as a reference and because such peer-review has been the common method of releasing new data. However, in the future I think a better model is to provide peer-review credit for data sets and manuscripts would only need to be published upon initial release and substantial revisions.

In terms of an update on the previous papers, this presents all the relevant info, but it doesn't include the context of the previous results – i.e., how trends have changed over time. There are two issues here. First, the % per decade trend results cannot be directly compared because they represent a change of both the trend and the reference baseline for the % value. This should be clarified. For example, on page 967, lines 18-19 and 21-22, the authors state that extend trend became more negative compared to the previous 28-year period. However, no reference baseline period is given. I assume that it is simply the average over the entire timeseries. However, this period changed (28 years previously, now 32 years). Thus the “more negative trend” is due to a combination of the change in the absolute trend and a change in the mean of the reference period, correct? If this is not the case and the reference periods are the same, then this should be explicitly stated. If the reference periods are different, I would recommend using a common baseline period. One suggestion might be to use the NOAA climate normal period, 1981-2010.

This issue does not affect the absolute trends in square kilometers per year, which does allow a direct comparison to the previous periods. However, these earlier results are only referenced here, meaning one needs to go back to the earlier articles to compare how the numbers have changed. It seems to me that one benefit of publishing updated results is to analyze how trends have changed. Thus, I would suggest adding these in as an additional table or two accompanied by discussion. For example, following

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Tables 1 and 2, add a Table 3 and Table for extent and area respectively and just list the trend values (and trend st. dev.) for the period of the 1999 paper (1979-1996), the 2008 paper (1979-2006), and the current paper (1979-2010) – for space remove the R and the %/decade columns. I think this would be useful information that would put the current trend values in the context of the earlier work.

Interactive comment on The Cryosphere Discuss., 6, 957, 2012.

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