

## ***Interactive comment on “A spurious jump in the satellite record: is Antarctic sea ice really expanding?” by I. Eisenman et al.***

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A very compelling and important paper. I congratulate the authors.

I echo the previous commenter's view that clarity is needed on the implied significance of trends. It would help very much to give some examples: what is the trend and confidence level if V1 is used, including the suggested correction to V1?

It's not clear to me that the title is misleading, as Paul Holland suggests it is. A point of the paper seems to be that 1) there is no significant trend \*until\* one includes the most recent data (that are clearly biased) and 2) we don't actually know the size of the bias very well; and hence 3) we don't know if there is a significant trend or not. At the same time, one could make plausible arguments about the size of the correction needed, and

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if the resulting trend is indeed still significant, as Holland suggests, then this needs to be stated clearly. It doesn't follow that the title needs changing though: it is correctly posed as a question, and an important one.

I do have one major criticism. Arguing for version 1 on "physical grounds", as the authors do, is nonsensical. The authors nicely summarize the myriad physical explanations that have been published that purport to explain why Antarctic sea ice is (supposedly) increasing: wind changes associated with the ozone hole; changes in meltwater fluxes from the Amundsen Sea glaciers; etc. etc. At this point in the development of scientific understanding of Antarctic sea ice, a very plausible argument can be made that Antarctic sea ice \*should\* be expanding. Appealing to the overall "warming planet" doesn't help here, because those sectors of Antarctica (i.e. West Antarctica and the Peninsula) do see significant losses in sea ice also show significant warming (see Steig et al., 2009, Schneider et al., 2012; Bromwich et al., 2013), but East Antarctica, where the sea ice expansion is mostly (apparently) occurring, the temperature trends are only moderately significant, if at all (also shown in Steig et al., 2009 (see Figure 4)). I would strongly advise sticking to robust statistical arguments, not arguments about what "should" be happening.

A suggestion: it would be really interesting to know what the bias in the data may be on a sector-by-sector basis. I realize this may be considerably more work to evaluate, but suggest that at least the authors consider looking at this in future work.

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Interactive comment on The Cryosphere Discuss., 8, 273, 2014.