

Interactive comment on “Thin-ice dynamics and ice production in the Storfjorden polynya for winter-seasons 2002/2003–2013/2014 using MODIS thermal infrared imagery” by A. Preußner et al.

Anonymous Referee #2

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The MS presents an application of the previously developed algorithm (Adams et al., 2013) of deriving thin sea ice thickness (<20cm) from MODIS SIT products and other datasets, for the Storfjorden polynya for the winter season of 2002–2014 period. The tech is clear and results are compared with others, and showing clear advantage and reliability of the results. I can recommend the paper to be published only after authors address those comments below and maybe more in the revision stage. (1). In page 5767, line 1, you mentioned the MODIS SIT is for daytime only, no nighttime validation has been done. But you used this data for the winter season which is nighttime only (no daytime), right? so how you can use those data? am I wrong? I realized this same data was used in the Adams et al. (2013) paper. (2) In page 5768 line 20,

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there is an assumption of $Q_{atm} = Q_{ice}$, I would like authors to address this for possible error and why this assumption stands. (3) page 5771 equations 4,5, you have one assumption, assuming the polynya area has the same proportion under cloud cover and no cloud cover; and your correction was only applied to coverage (make clear what coverage?) over 0.5. I think both of these will cause errors and I hope you can discuss them. (4) page 5773 line 15, you mentioned years 2004, 2005, 2007 and 2011, but my checking with the figures, I found they should be 2003, 2004, 2005, 2009 and 2011. Please check. (5) fig 4 and 5, why only up to 50%? (6) I guess those areas of 0 TIT frequency in figure 4,5 are of thicker ice (>0.2m), I hope you can use the AMSR-E ice concentration maps to support you. (7) I hope to see more discussion and interpretation on the reasons or mechanisms for such pattern/trend you see from the 12 years of data.

Interactive comment on The Cryosphere Discuss., 8, 5763, 2014.