

Interactive comment on “Brief Communication: Trends in sea ice extent north of Svalbard and its impact on cold air outbreaks as observed in spring 2013” by A. Tetzlaff et al.

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General: The paper deals with the local sea ice extent in the Whaler’s Bay Polynia (WBP) north of Svalbard und with the consequences of a sea ice retreat there on the atmospheric boundary layer during cold-air outbreaks. The authors show that the WBP was especially large during the last three winters 2012–2014. They further demonstrate that a retreat of the ice edge is accompanied with larger fetches during cold-air outbreaks leading to a warmer and deeper boundary layer in the region north of Svalbard. The paper is well written and clearly structured. The authors restrict their conclusions on the sea ice retreat only to the deeper and warmer boundary layer (which they have

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documented by data). They may conclude a little bit further. A deeper boundary layer also means a deeper cloud layer and probably more snowfall. So, will there be more snowfall in the northern part of Svalbard? Could this lead to a growth of the glaciers? I suggest acceptance of the paper with some extension of the conclusions and some minor revisions.

Special points: 1. P 3059, line 23/24: “referred to in the following as the Western Nansen Basin (WNB)”. There is no further reference to this in the following text. 2. P 3060, line 7: “cumulative open water path”. Explain the calculation in more detail. 3. Section 2: The WBP in winter 2014 became smaller and smaller in the course of the three winter months J, F, M. The polynia is almost closed since April up to now (July 2014). You may add this speciality of the winter 2014. What causes the variability of the polynia extent? 4. P 3060, line18: “roll convection”. I am not sure if this term is generally known. 5. P 3061, line11: “the ABL height depends on wind direction”. Why wind direction? Do you mean fetch? 6. P 3061, line 18: “usual N-S orientation”. Replace “usual” by “most frequent”. 7. P3062, line 21: “general findings of Ivanov”. What are these findings? 8. P 3063, line 3: After the doi-number follow some non-understandable abbreviations. 9. Fig.1a: Encircle also the area for the ice extent calculation. 10. Fig. 3a: Minus sign missing for “64km”. 11. Fig. 3d: How did you calculate the polynia length for 2014 because (see above) the length decreased in the course of the winter.

Interactive comment on The Cryosphere Discuss., 8, 3057, 2014.

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