

## **Review on “The potential of sea ice leads as a predictor for seasonal Arctic sea ice extent prediction” by Zhang et al.**

Recommendation: Publish after revisions

This paper reports some interesting work that will be a valuable contribution to the literature of the study of Arctic sea ice. The authors try to use sea ice leads as a predictor for the future sea ice extent and show that July pan-Arctic sea ice extent can be accurately predicted from the area of sea ice leads integrated from mid-winter to late spring. I would recommend it to be published with revisions subject to the comments below:

1. There are many places where the English could be improved (also refer to the specific comments below).
2. The key finding of this work is “to use sea ice leads as a predictor for the future sea ice extent”, it would be useful if the authors can demonstrate that by using 2003-2015 data, they predict sea ice 2013-2015 sea ice extent and verify it. This would be more convincing.
3. Based on Figure 2, it seems that there is very large interannual variability of sea ice leads for January-April (for example, there is about 50% reduction from 2013 to 2014), it would be useful to add the sea ice extent for July, August, and September for 2003-2015 in Figure 2.

Specific comments:

- P1 Line 29: “north hemisphere” - change it to “northern hemisphere”.
- P2 Line 10: “parameters can significantly improve” - change it to “parameters can significantly contribute to the improvement in”.
- P2 Line 25: “depend strongly” - change it to “depends strongly”.
- P2 Lines 27-28: “In additional, the albedo of sea ice leads” - change it to “In addition, the albedo of leads”
- P6 Line 10: “black solid line” - there seems no black solid line in Fig. 4. Either change the word here or add the black solid line in Fig. 4.
- P14 Line 5: “2013-2015” – change it to “2003-2015”.