Novel methods to study sea ice deformation, linear kinematic features and coherent dynamic elements from imaging remote sensing data

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Final response to reviewer 1

I thank the reviewer for his/her investment in the review, generally very positive review and many valuable suggestions.

1. CDE definition:
I will improve the definition of the CDEs and how they are introduced in the text. CDEs are the coherently moving ice plates. The characteristics of these CDEs can be described by their geometry, and this is where the architecture of the shape terms is introduced. The improvements of the definitions of these geometrical shape terms will be improved as suggested in the review by Andy Mahoney. Also the schematic figure explaining the geometrical properties and showing examples od CDEs will be helpful. Furthermore, I will summarize the winter pack ice characteristics based on the CDE geometries in the conclusions in a better way.

2. Power law:
I disagree with the reviewer on this point. Power law is 'the bread and butter' of the sea ice deformation comparisons. The scale differences (in space and time) between the datasets do not allow for any other comparison (and for ship radar they were not even stored). I believe it is good that this analysis is in a separate chapter that those who want can look at it in detail, while the rest of the readers can focus on the other parts of the paper. I will however, improve also this text, so that it will be hopefully easier to read for everybody.

3. Lack of synoptic data:
The weather time series from Graham et al, 2018 (Scientific Reports) are available and could be used for interpretation of the N-ICE2015 data. They are the base of the shading on Figure 9. I will consider adding these synoptic data to Figure 9. If this will sidetrack the manuscript from the main purpose of the method description, all references to synoptic events will be removed from this paper.

4. Too many acronyms:
I will carefully review all the acronyms and see if any can be removed.

All minor comments are relatively easy to adapt and will be taken into account. Especially the link of the Abstract – Introduction – Conclusions will be reviewed to improve the readability of the paper and enhance its message.