The Cryosphere Discuss.,
https://doi.org/10.5194/tc-2018-207-RC2, 2019

The Cryosphere Discussions

Interactive comment on "Leads and ridges in Arctic sea ice from RGPS data and a new tracking algorithm" *by* Nils Hutter et al.

Anonymous Referee #2

Received and published: 14 January 2019

This paper improved and extended the lead and ridge detection method described in Linow and Dierking 2017, adding a new tracking algorithm. The LKF dataset derived in this study, therefore provides both spatial and temporal statistics of LKFs, which is of great advantage in evaluating sea ice model outputs. The manuscript can be published after minor revision.

General comments:

1. It should be explained in the text why leads and ridges are bounded together to LKFs. If it is impossible to distinguish leads and ridges based on the current ice drift and deformation data, what kind of additional data is needed to get separate information of leads and ridges?

2. The parameter optimization part (section 3.1.4) is not quite convincing. It might be beneficial to separate the hand-picked validation datasets into several randomly selected groups and repeat the parameter optimization procedure, to confirm that the same optimized values can be achieved from different evaluations.

Specific comments:

P1L7: based → based on P2L6: CryosSat-2 → CryoSat2 P3 section 2.1: provide a short description how deformation rate is calculated or give a reference. Also uncertainties in the deformation data should be mentioned. P3 section 2.2: As I understand, sea-ice deformation is calculated from ice drift information, and this same ice drift data is used to track the LKFs? P3L23: visual → visually P4L14: does this deformation rate include shear? It is known that shear is one of main factors to form leads. P6 section 3.1.3 Reconnection: It would nice to illustrate some examples of pairs of segments which could be connected to one LKF and which could not be connected to one LKF according to the three criteria. P8L11: I suppose the unit of D0 and Lmin are pixels? P9L12: Can this strong non-linearity problem be solved if more reference data are available?

Interactive comment on The Cryosphere Discuss., https://doi.org/10.5194/tc-2018-207, 2018.