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The Cryosphere Discussions

Interactive comment on "Seasonal changes in sea ice kinematics and deformation in the Pacific Sector of the Arctic Ocean in 2018/19" *by* Ruibo Lei et al.

Anonymous Referee #2

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Based on an array of buoy measurements in the Pacific sector of the Arctic Ocean (PAO), this study examine the Arctic sea ice kinematics with great details. The association with the evolution of sea ice is identified and the linkage to the large-scale atmospheric circulation, such as Arctic Dipole, is outlined. The analysis is reasonable and the results are encouraging. Overall, this study provides very useful knowledge in reinforcing the understanding the mechanisms that regulates the Arctic sea ice kinematics. Before the recommendation for the publication, I suggest minor revision is needed.

Major comments:

(1) Tide is an important contributor to sea ice deformation. Thus, the discussion about the effects of tide is of interest to improve the understanding of this study.

(2) The results of this study is insightful. However, to make the results more robust, some comparisons between results of this study and those of other regions or satellite observations are encouraging.

(3) Arctic sea ice decline is in a faster track and the ecological impacts are more apparent. Therefore, it would be useful to discuss the association between sea ice deformation and Arctic sea ice decreases and related ecological process.

Minor comments:

L29, "western parts" -> "eastern parts"? L37, "enhanced Arctic Dipole (Lei et al., 2016)-> some other references may be relevant, such as:

Bi, H., Yang, Q., Liang, X., Zhang, L., Wang, Y., Liang, Y., and Huang, H., 2019, Contributions of advection and melting processes to the decline in sea ice in the Pacific sector of the Arctic Ocean. The Cryosphere, 13, 1423-1439. Ding, Q., et al., 2017, Influence of high-latitude atmospheric circulation changes on summertime Arctic seaice. Nature Climate Change, 7, 289-295.

L97 "for example" -> ", for example," L116 "From" -> "of"

Figures 9 and 10 need rearrangement to make it clearer.

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