

Dear Editor,

Please see our second-time revised manuscript entitled “**Seasonal changes in sea ice kinematics and deformation in the Pacific Sector of the Arctic Ocean in 2018/19**” [Paper # tc-2020-211] to The Cryosphere. According to the comments from the anonymous reviewer, we made a minor revision of the manuscript by carrying out the following tasks:

- 1) We added additional calculation and discussion of the high-resolution temporal changes in inertial signals based on the 5-day time-window. Those materials are helpful to compare the difference of seasonal attenuation of inertial signals of sea ice motion among various regions.
- 2) In the conclusion, we added the discussion on the limitations of our study.
- 3) We further improved language of the manuscript.

Please find the following files in our submission package:

- 1) The clean manuscript, 2) the manuscript with tracked changes, and 3) the response letter.

Thank you for your time.

Sincerely,

Ruibo Lei and co-authors

Reply to reviewer

1 In general I am happy with the response to my review. As regards the signal to noise ratio, I still think this is an important topic of discussion that would be easier to have if some figures were clearer in the manuscript. In particular figure 9 does not have sufficient resolution to resolve the tidal/inertial peak.

We supplemented the calculation and discussion on the high-resolution temporal changes in inertial signals based on the temporal window of 5 days (Lines 405-419 and Figure 10, the line number refer to the revised manuscript with track changes), which is helpful to compare the difference of seasonal attenuation of inertial signals of sea ice motion among various regions and identify the potential peaks of tidal and inertial signals.

We would still prefer to keep the original Figure 9, because it can give a full picture of spatiotemporal variations of the semidiurnal signal of sea ice motion.

2 The significance of trends in β and c are also not so clear. It could be argued this is also the case in previous papers on this topic.

We believe this unclarity might be contributed by the complicity of ice field and limitation of our study. Therefore, in the conclusion, we added the discussions on the limitations of our study, such as the limited scale range of buoy array. Some suggestions have been given for the future plans of observation and study of Arctic sea ice deformation. (Lines 611-633)

3 There are a few places in the new text where grammar needs small adjustments. Make sure you proof read before publication. Overall the English is very understandable, but do check grammar.

We checked the language and grammar through the manuscript, and made the expressions clearer.