

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.

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Q: In some parts of the Arctic this peak is tidal as well as inertial. You should comment on the role of tides in the study region. Re: Inertial oscillations (in the northern hemisphere) are clockwise oscillations, in contrast to tidal oscillation, which can rotate clockwise or counter-clockwise. Amplitudes shown in Figure 9 are that at the local negative inertial frequency (about $-2.01 \sim -1.94$) after Fourier transformation of monthly time series of normalized ice velocity. At this frequency, there are also some energy caused by tidal forcing and high-frequency parts of wind and current forcing. In the revision, the amplitudes at the positive tidal frequency (+2) include the energy from tidal

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forcing and background noise of high-frequent parts of wind and current forcing. At positive tidal frequency (+2), the signal is very weak, which is obviously lower than the value of negative phase in any season, and there is no seasonal change. Therefore, we believe that the obvious regional and spatial changes of negative signal are caused by inertial forcing.

Q: Can you comment on how accurately you can estimate the area localization, $\delta_{15\%}$, given the sparse nature of the buoy array? Re: When we use the area fraction of 10% and 20% to estimate the area localization, the results are still robust, and similar with that obtained using 15%.

Q: I have one suggestion to make sure your results are robust: Is there sufficient data to identify beta in only one month? Re: We also calculate use the two-month temporal windows, i.e., Sep-Oct, Nov-Dec, Jan-Feb. Although the values show some differences, the seasonal change pattern for the beta is similar, thus we believe that the results are robust. We also comment that the values of calculated beta are sensitive to changes in temporal window.

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