Ocean Science
Discussions

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Interactive comment on "Surface waters properties in the Laptev and the East-Siberian Seas in summer 2018 from in situ and satellite data" *by* Anastasiia Tarasenko et al.

Anonymous Referee #3

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The presented observations of surface freshwater distribution is from an interesting area of the Arctic Ocean. The observations are presented in a nice manner. And there is plenty of figures, with many detailed results. This is all fine.

There is not much available knowledge on how the river-water spreads north along the shallow Siberian shelves, so this paper is potentially a significant contribution in that regard. Beside some issues already noted by the other reviewers, like language, I have two larger issue that made me tick the "major" box here.

My "major" science concern is the contribution from sea-ice melt. I think you need to do a somewhat better job at addressing this possible contribution. It is difficult, but it

can potentially explain much of the freshwater available. If delta-18 O samples where available, one could differ between these to sources perhaps, although I think much of the river-water from previous summers probably freeze-up, and some of the newly melted sea ice could thus just be old river water.

I also find that you mix Results and Discussion in the 3. Results section. This may be OK, but then you need to call this 3. Results and Discussion. And then the sections 4.X are somewhat also Results and discussion. And then you cannot have "Discussion and Conclusion" in section 6. See? A re-struction is needed. There is also no general conclusion drawn on what actually spreads the freshwater to the north. Is this wind driven mostly? Or not?

I also have a general suggestions: Provide the spatial mean vertical profile down to 100m for T and S, and use that to describe the mean stratification. THEN – AFTER-WARDS, you can present, the spatial and temporal changes from this mean profile.

Minor issues:

Abstract: Your main explanation for how the river water is transported out from the river mouth area should be lifted up into the abstrat. Is this all wind-driven?

We use the term "ice-free" not "free of ice" in general.

Page 3, Line 7: Add what products is "validated".

Page 5. Last line. "Ice sheet" is used for the large inland thick glaciated areas in Antarctica and Greenland. You probably mean "sea-ice" here??? Page 10 and other places. Is it ok to use PSS as salinity unit? Should it not be absolute salinity, or unit less?

Figure 5: Please provide the section in a map.

Page 16: 4.1.2. This section is really about "Wind Forcing" and nothing else. So it should have this name, and not "Mean Monthly Observations". The Ekman equations

should be in the method section.

Table 1: Use other "names" than 1-6. Cold and Warm, Fresh, Salty and Medium Salinity? SO 1=WF, 2=WMS, for example... (Numbers are more difficult to remember than names. . ..)

Page 18. Line 20: Why? Mixing with saltier water below? Or sea ice formation. When is the first onset of freezing? And what is the "normal/mean" for this freeze-up?

Page 19. Line 15-16. While there is "no evidence that "sea-ice melting can create such a layer of freshwater" – is there evidence that it can not? This is my major point #1.

Conclusion: The evaluation is OK, and described nicely. But what is the main message? What is learned of the river water flow? This still needs to be described. Main point#2.