Review of 'Ocean colour remote sensing in the Southern Laptev Sea: evaluation and application'

The manuscript presents new in situ measurements of optical parameters (CDOM, Chla, TSM) that are used to evaluate the quality of MERIS C2R algorithms products in the Laptev Sea. Due to the strong cloud cover in the area, the manuscript focuses not on the normal matchup of in situ data with remote sensing images but on a general evaluation of data quality. The manuscript also presents a series of images to discuss the applicability of these to the study of specific hydrodynamic process.

In general, my opinion is that the manuscript contains enough material of sufficient interest to be published as the Laptev Sea is not well studied overall. Use of remote sensing is clearly indicated in that remote location. However, the manuscript is seriously hampered by a lack of clarity as indicated by the numerous question marks I wrote on my paper copy. I thus recommend a serious revision of the manuscript to deal with this problem. There are many places where there is too much information while some other lacks information.

I believe the manuscript would gain in quality if the results were presented in a clearer manner. I suggest to the authors to reorganise section 4.3 with subsections devoted to each of the dynamical process they want to address. This manuscript cannot deal with temporal variability or with the intensity of features but it can certainly present case studies showing the interesting process visible on the images. I would also suggest that the Results and Discussion sections for C2R evaluation be merged together. This would generate a more concise manuscript. The discussion should focus on the capacity to detect significant bio-physical process in the Laptev Sea using remote sensing.

I thus conclude by saying that the manuscript has good content but its presentation is awful. This manuscript should be revised and resubmitted.

Specific comments:

1. P3850: lines 18-27: paragraph needs to be rewritten.
2. P3851: lines 17-18: replace sophisticated by specific.
3. P3852: lines 1-10: paragraph needs to be rewritten. Too much information. C2R is well known.
4. P3853: lines 19-20: That phrase (Elevated...) is not in the right paragraph.
5. Replace Transdrift-XVII by T17. The same way, Lena2008-2010 could be replace by L08 and L10.
6. P3854: line 24: please provide a reference for the 3.5x overestimation factor.
7. P3855: lines 1-14: Please provide more details on the analytical protocols. It seems that 2 different protocols were used for TSM. Why use 0.7 um filters for CDOM instead of the standard 0.2 um? Use of brown bottles is not prescribed by the optics protocols that prefer clear bottles. Need more detail for the Chla analysis. Was there a baseline correction for CDOM ? At such high absorption

values, there must be a residual signal at 650-700 nm where normally there is no absorption at all.

8. Tables 1 and 2 are not useful.
9. P3855: lines 17-19: that phrase about MODIS is not useful.
10. P3856: lines 11-23: C2R products are well known. That paragraph is way too long for nothing.
11. The next paragraph is also too complex for nothing. Please just state the parameters used in you study.
12. P3857: lines 20-24. Not really useful.
13. P3858: Section 4.1 results should be presented in a table and possibly with maps. The description of the spatial variability is very hard to understand. The whole section is hard to read with the presentation of the results moving from place to place and between the different cruises. It is really hard to get a sense of the parameters variability. I suggest the use of sub-sections for CDOM, chla and TSM and figures to show the results. Also, I don't understand why the authors speak about the data from the CDOM sensor. This is not important at all and should be discarded.
14. P3858: line 25. The authors should present the mixing relationship and compare it with other published results on the subject.
15. P3859: lines 20-29: There is no comparison between fluorimetry and fluorescence data to show if they are similar. The authors use a mix of both without proving they carry the same information. No real discussion about the vertical structure.
16. P3861: line 29: The exact overestimation is easy to calculate and should be provided instead of the 'one order of magnitude' estimate.
17. Captions for figure 1a and 1b should be merged together.
18. Idem for captions of figure 4a and b.
19. What does represent the line on figure 6?
20. Figures 2 and 8 are too small to be useful.
21. Page 3865: line 20: It is surprising that C2R does not produce better results than empirical algorithms. This should be discussed.
22. Discussion: the discussion of C2R evaluation lacks comparisons with other environments to better represent the Laptev sea particularities.
23. Page 3866, lines 4-10: I do not see the utility to present the results from the Kara sea. The whole paragraph needs to be rewritten to present the overestimation problem in arctic coastal seas.
24. There are mistakes with the years of some references.
25. Page 3869: line 4. Is it 'bench' or 'bank' or 'beach'?
26. Page 3869: I am not sure last 2 paragraphs are necessary. They should at least be modified to be smaller in length.
27. Page 3870: lines 15-18. Is it really necessary to speak about bottom transport?
28. Page 3871: The conclusion should be rewritten to concentrate on results and future work that would be needed to improve the results.
29. I am not sure the results really explain the heterogeneity of zooplankton.
30. Page 3872: line 15: The Envisat project is acknowledged twice.
31.