

Interactive comment on “First evaluation of MyOcean altimetric data in the Arctic Ocean” by Y. Cheng et al.

Anonymous Referee #2

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The main objective of the paper is to analyze the quality of new My Ocean Arctic Ocean altimetry reanalysis, thanks to a comparison with others altimetry products (DUACS, RADS), model (SODA) and in-situ data (tide Gauge). As Arctic Ocean is an area of great interest for climate studies, the subject presented here could interest a large part of scientific community. The methodology described by the author to analyze the performances of these new products is relevant and clearly written.

However, this paper is very basic and it corresponds more to a technical note rather than a scientific publication. Furthermore, there are several major issues. Firstly, the description of new MyOcean product is very poor. Author should give relevant information on all the improvements performed on this new product and also give external reference (author, publication...). My second concern deals with the poor

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robustness and reliability of statistics presented in this report. For instance the SLA variance indicator is not performed in similar conditions and the error of in-situ and altimetry comparison is not discussed which lead in both cases to wrong conclusions. My third point is the use of SODA model which is not justified. SODA as other models are weakly constrained on this region due the lack of data, and therefore do not provide accurate results at climate scales. The author should justify this choice and at least describe this limitation. Finally, the method described by the author to compare altimetry and tide gauge is not sufficient and unclear since the author mention that tide-gauge are not corrected with GIA whereas it is crucial at these latitudes (see Volkov Pujol, 2012: Quality assessment of a satellite altimetry data product in the Nordic, Barents, and Kara seas).

My conclusion is this paper is not suitable for publication.

Specific comments:

- 1) Chapter 2.1: The description of the dataset is not complete: To be detailed and reference to be added. The naming Myocean V2p is not suitable.
- 2) Chapter 2.3: Altimetry standards used in RADS has to be described in this paper.
- 3) Chapter 2.4: The choice of SODA model is not justified. SODA as other models are weakly constrained on this region due the lack of data. The author should justify this choice and at least describe this limitation.
- 4) Chapter 2.5: The description of the method alti/tide-gauge is poor and unclear: reference has to be added. Moreover, tide-gauge has to be corrected from GIA to be compared to altimetric-sea-level (Volkov Pujol, 2012: Quality assessment of a satellite altimetry data product in the Nordic, Barents, and Kara seas).
- 5) Chapter 3.1: Local SLA variance computed with each dataset: Explain what do they mean, improvement, degradation, why? A variance difference map (fig3a-fig3b) would

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help the reader.

6) Chapter3.1: As the new My Ocean product cover a larger area and the spatial resolution is higher, the SLA variance comparison give an statistically interesting information but not easily interpretable: the SLA variance can increase and lead to an improvement. . .

7) Chapter3.1: Fig 4: upper legend is not consistent with the bottom legend.

8) Chapter3.1: Fig 4: The two curves do not represent the same areas, what is the contribution of the new areas available in MyOcean V2p?

9) Chapter 3.2: A correlation difference map (fig5a-fig5b) would help the reader.

10) Chapter 3.2: P298-L13: improvement probably not significant compared to the error of the method.

11) Chapter 3.2: In order to calculate the correlation and estimate the intra-annual sea-level signal, it should be interesting to know if the periodic signals have been removed or not (annual-semi-annual). The Author has to discuss of this item.

12) Chapter 3.3: What is the main conclusion of this part?

13) Chapter 3.4: P300-L1: Phrasing.

14) Chapter 3.4: P300-L2: "Moreover" to be changed.

15) Chapter 3.4: P300-L4: reference to fig 8 not consistent.

16) Chapter 3.4: P300-L9: MyOcean V2p and Duacs are not models.

17) Chapter 3.4: P300-L12: Soda not on the same period: sensivity to the period to be given.

18) Chapter 3.4: P300-L13: A trend of 2.2m/year is given for the tide gauges. Which tide gauges enter in the calculation? The comparison with MSL averaged on an area and the MSL averaged from "some" tide gauges is not consistent. What is the error associated to the given trends. The conclusion "better agreement with Rads might be" reviewed in regards of the error numbers.

19) Chapter 3.4: P300-L20: "overestimated" by 0.1mm/yr => Value not significant enough to conclude anything.

20) Chapter 3.4: P300-L20: Analyses with Rads and Soda missing.

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21) Chapter 3.4: P300-L25: Investigation of the GIA effect: comment not pertinent.

22) Chapter 4: P301-L5: "has problem with trend" conclusion not justified. The numbers given are not pertinent at all.

23) Chapter 4: P301-L6: "higher linear sea level trend": conclusion not justified. The numbers given are not pertinent at all.

Interactive comment on Ocean Sci. Discuss., 9, 291, 2012.

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