

***Interactive comment on* “A multi-year timeseries of observation-based 3D horizontal and vertical quasi-geostrophic global ocean currents” by Bruno Buongiorno Nardelli**

Anonymous Referee #2

Received and published: 22 June 2020

A review of the paper A multi-year timeseries of observation-based 3D horizontal and vertical quasi-geostrophic global ocean currents submitted for publication in ESSD by Bruno Buongiorno Nardelli

The paper provides a short present of the OMEGA3D ocean product distributed by the CMEMS, and a comparison of vertical and horizontal velocity fields with other global data sets and in-situ observations of 15-meter and deep currents. This is a short, rather simple and well targeted piece of work, which I think can be published provided the following questions are properly addressed.

Section 2.4: Are there guarantees that the solving procedure actually converges toward

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the correct solution? Is this procedure standard? Why not using a classic, iterative procedure of the Gauss-Seidel or SOR type?

Section 3.4: Figure 4 shows that OMEGA3D velocities are more biased than DUACS geostrophic velocities close to the tropical band. It is to my opinion necessary to investigate this and provide some explanation.

L294: "Mean biases computed...": please modify the phrasing to make the sentence more explicit

All datasets present negative biases wrt SVP, and positive biases wrt YOMAHA. Any comment on that? Are there known biases in the observations? Or missing processes in the models?

Please check the URLs.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-73>, 2020.

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