Ocean Science Discussions

Ocean Sci. Discuss., referee comment RC1
https://doi.org/10.5194/os-2020-117-RC1, 2021

Comment on os-2020-117

Anonymous Referee #1

Referee comment on "The new CNES-CLS18 global mean dynamic topography" by Sandrine Mulet et al., Ocean Sci. Discuss., https://doi.org/10.5194/os-2020-117-RC1, 2021

Overview

This very well written manuscript describes how the newest version of the CNES mean dynamic topography product is calculated, and is a straightforward read for those familiar with the 2009 and 2013 versions. As a user of the 2018 product already, I am happy to see this published in the peer-reviewed literature. The authors have produced a product of great value to the community, and I particularly enjoyed the case studies in Section 8 to validate the results and demonstrate the improved performance. Many of the results and figures in this section, such as Fig. 12, are very striking. As the authors note in their conclusions, many different factors went into these improvements; while one certainly wonders about the relative impact of improved techniques vs. higher data density/higher spatial resolution, in the end a user wants all of these improvements.

I have only very minor comments, and recommend that the manuscript be published with only minor reivions.

Specific comments

94: there should be a citation or acknowledgement for the SD-DAC.

113: what does "section 0" mean? Should this say section 5?

168: is there a reason why the undrogued drifters were not used for z=0m? Is this due to slippage (noted later in the manuscript)?

170-172: no lowpass is applied to the Argo data, because the floats aren't at the surface long enough to allow for this. The authors should note that explicitly, and that these data thus include much more noise from high frequency motion. This again makes me wonder why the ~hourly undrogued drifter data wasn't used for z=0m. [NOTE: the authors address this on lines 265-268. I left this comment as a notice that readers may be wondering about this earlier.]

201-205: this is a great result! Very well presented.

263: how does this work at very low latitudes? Wouldn't max(Pi, 24h) go to infinity?

Technical issues

65, 178: misplaced ().

226: font size change.