Earth Syst. Sci. Data Discuss., referee comment RC2
https://doi.org/10.5194/essd-2021-311-RC2, 2021

Comment on essd-2021-311

Anonymous Referee #2

Referee comment on "Application of a new net primary production methodology: a daily to annual-scale data set for the North Sea, derived from autonomous underwater gliders and satellite Earth observation" by Benjamin R. Loveday et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-311-RC2, 2021

This paper by Loveday et al presents a method to estimate in situ net primary production based on automous gliders deployed for 17 months during the AlterECO project, and the subsequent data set.

I found the manuscript well written and clearly explained explained. In particular I appreciated the discussion about the different methods to correct non-photochemical quenching, their comparison and the discussion about the reason why a method clearly outperfoms the other ones.

I believe this data set is relevant for the community and important as well from a methodological point of view. Therefore I recommend the manuscript to be published in Earth System Science Data after some minor revisions.

Comments:
Without being an expert of the field, I am reflecting on the relevance of such a method forthe open-ocean domain. I would like this question to be tackled in the manuscript in order to provide a generalizing view of the method. Some work on existing autonomous plaforms (Argo floats, glider) exist (eg Lavigne et al., 2012) to correct in situ fluorescence with surface satellite chlorophyll-a measurements. Could such an approach be used to contraint the glider based chlorophyll-a data? Would it be beneficial in the present case? Would another method for correcting the quenching perform better than the one used in the present paper?
(ref : Lavigne, et al. "Towards a merged satellite and in situ fluorescence ocean chlorophyll product." Biogeosciences 9.6 (2012): 2111-2125.)

Technical corrections :
l14 : To introduce the glider technology, please cite the community paper of Testor, et al.

"OceanGliders: a component of the integrated GOOS." Frontiers in Marine Science 6 (2019): 422.
l99 : Is the 151 points correspond to a particular physical scale?
l154 : (Saulquin et al., 2013)
l158 : (Lee et al. 2007)
l354 : while discussing limitation of the method, the case of offshore waters could be also discussed regarding the application of a similar approach to compute NPP estimates, and the required potential tuning of the method.