

Biogeosciences Discuss., author comment AC1  
<https://doi.org/10.5194/bg-2021-78-AC1>, 2021  
© Author(s) 2021. This work is distributed under  
the Creative Commons Attribution 4.0 License.

## Reply on RC1

Jesse M. Vance et al.

---

Author comment on "An empirical MLR for estimating surface layer DIC and a comparative assessment to other gap-filling techniques for ocean carbon time series" by Jesse M. Vance et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-78-AC1>, 2021

---

Dear Dr. Sutton,

Thank you very much for your thorough and thoughtful comments on this work and manuscript. There was some overlap in the comments between reviewers and so we have combined them and created a spreadsheet to address each comment individually. Here we are attaching a pdf of this spreadsheet in which we have responded to each comment. Some minor issues have already been address and others will be handled through further investigation and revision.

A common criticism of this manuscript was the use of CO<sub>2</sub> flux in the overall assessment because this introduces many sources of error. CO<sub>2</sub> flux was initially chosen as a common application of DIC time series and one that would address the impacts on annual scale budgets. However, we see how this assessment detracts from the utility of this paper and so we will remove the CO<sub>2</sub> flux aspect from the work. This will remove concerns and any confusion about the uncertainty budgets and provide space for quantification of imputation impacts on the seasonal structure and long-term trends.

Thank you again for all the feedback and the strength it will provide to this manuscript. We look forward to sharing our revisions in the coming weeks.

Kind regards,

Jesse Vance

Please also note the supplement to this comment:

<https://bg.copernicus.org/preprints/bg-2021-78/bg-2021-78-AC1-supplement.pdf>