

June 21 2023

To: Giuseppe M.R. Manzella

Re: Manuscript ESSD-2023-62

Giuseppe Manzella and ESSD Editors,

Thank you for the opportunity to revise our manuscript, "Routine monitoring of western Lake Erie to track water quality changes associated with cyanobacterial harmful algal blooms." Both reviewers provided useful comments to improve our manuscript, and those are reflected in our revised document. Please find the new version of our manuscript with markup and our responses to reviewer comments attached.

We look forward to your assessment of our revisions,

Anna Boegehold, corresponding author

Burtner, A. M., Camilleri, A. C., Carter, G., DenUyl, P., Fanslow, D., Fyffe Semenyuk, D., Godwin, C. M., Gossiaux, D., Johengen, T. H., Kelchner, H., Kitchens, C., Mason, L. A., McCabe, K., Palladino, D., Stuart, D., Vanderploeg, H., and Errera, R., co-authors

<https://essd.copernicus.org/preprints/essd-2023-62/#discussion>

Reviewer 1 Comment 1

This is essentially a data report on Western Lake Erie environmental/water quality conditions from 2012-2020. The paper is well written and organized and data (which are useful) have been made available via a website as well. Frankly, I don't see the point in publishing this, as there are no interpretations and conclusions as to trends and changes in WQ conditions in W. Lake Erie, and any interpretation is left to the readers. Why not just convey the data availability via the NOAA-GLERL website? The article should at least undertake some interpretation of the data, which can be done in a revision.

Response in Online Discussion:

This manuscript serves as reference material for those who would benefit from the use of this dataset and introduces it to a broader audience. The paper does not contain interpretations or conclusions on the data because that is outside of the aims and scope of this journal (https://www.earth-system-science-data.net/about/aims_and_scope.html). The aims and scope states "Articles in the data section may pertain to the planning, instrumentation, and execution of experiments or collection of data. Any interpretation of data is outside the scope of regular articles." Interpretation of this dataset will continue to appear as standalone articles in appropriate journals, and we do take care to cite analytical papers that use a portion of this dataset in our manuscript so readers can see how others have interpreted this data.

Through this publication in ESSD, we are establishing an official and permanently archived record that can be continuously updated as we add more data and update sampling parameters. Publication on the NOAA-GLERL website is insufficient as NOAA-GLERL is not an operational center so products on the website are considered experimental. This dataset is also permanently archived through National Centers for Environmental Information (NCEI), NOAA's data repository; however, NCEI does not support detailed methods or background. Thus, we determined that publishing the history and methods of this sampling program in a peer-reviewed, data focused journal would be the best way to distribute and cite the details associated with this dataset. While this dataset is available to the public, this manuscript allows us to accurately track use of the data and ensure that the public is aware of methods used to collect the data. Tracking use of the dataset ensures we are providing useful data to the scientific community and the public, which is central to the mission of NOAA.

Response to Reviewer 1 comments from annotated PDF

Line 21: We changed the term "nutrient loading" to "phosphorus loading" to be more descriptive and accurate, following advice from Reviewer 1.

Lines 22-25: Reviewer 1 asks what year the monitoring program was started, and we describe the dates of the dataset on lines 25-26.

Line 30: We changed the word “enable” to “influence” based on the suggestion from Reviewer 1.

Lines 31-34: The reviewer questioned the presence of a conclusion at the end of the abstract. We acknowledge that this abstract is similar, yet different than an abstract for a research paper. Instead of having the conclusion as the last sentence in the abstract, it is the penultimate sentence with the citation for the described dataset as the ultimate sentence. We structured it this way to emphasize the dataset, which is the crux of this manuscript.

Lines 63 and 74: We added the term “point-source” to describe pollution discharge and phosphorous loading in response to Reviewer 1’s comments.

Lines 164-166 (now line 169): We do not calculate N & P loading rates from the Maumee River or any other tributary as part of our water quality monitoring program. However, we added in-text citations for Rowland et al. 2020 and NCWQR 2022 as they provide loading calculations and estimates (Rowland et al. 2020) as well as contain raw water quality data for the Maumee River tributary (NCWQR 2022).

Table 2 and all other mentions of Ammonia/Ammonium: It is correct that “ammonia” should be written as “ammonium” and we have changed it in all instances.

Line 343: Now line 355. We changed “closer” to “closest” per suggestion of Reviewer 1.

Line 418: Nutrient loads were not calculated from the dataset described in this manuscript.

Line 427: We changed the subheadings on lines 308 and 440 to say “photopigments” as suggested by Reviewer 1.

Reviewer 2 Comment 1

My recommendation on this paper likely reflects that I don't think publication of a data report is appropriate for Earth System Science Data. If the journal does support a data report then my recommendation may be different. It is not clear to me why the authors would not submit the paper to a dedicated data science journal or simply post the data on a web site, in a data repository and/or with a DOI to provide a permanent record. In view of the style of paper, there is a mismatch between the somewhat detailed information in the Introduction (similar to a regular paper) and the highly abbreviated (combined) Results and Discussion section, which provides highly abbreviated text that is adequate to support the data in figures and tables. There is little or no discussion of the data. Documentation of the methodology may be useful but again this is something that could be done through the mechanisms mentioned above, rather than through a submission to ESSD. There are a few minor issues in Table 2 which reports on the variables monitored and their units:

Response in Online Discussion: In response to your first comment, please see our reply to Referee Comment 1 above (AC1 posted on 06 April) as well as the "Aims and Scope" (https://www.earth-system-science-data.net/about/aims_and_scope.html) and "Manuscript Types" (https://www.earth-system-science-data.net/about/manuscript_types.html) sections of the ESSD website. We thank you for your technical comments pertaining to Table 2 and we will address these during revision.

- would it be useful to include a n (number of samples) beside the parameter (should be variable) that is monitored, relating to surface, mid-column and benthic samples.

Response: Thank you for this suggestion. We added the number of samples taken at each depth category to Table 2.

- Station depth in meters?

Response: This information is contained in Table 1 and the units (m) was added to Table 2.

- Why are Imperial units being used: knots, ft, etc.? SI units surely?

Response: Wave height (ft) and wind speed (knots) are obtained through moored buoy continuous monitoring systems as described on lines 226-235. We report this data exactly as it appears on the data portals for the buoys and do not manipulate or convert it in any way. We added an explanation of this to the description of Table 2.

- - Not clear what unit is used for cloud cover (octaves, percent or fraction cover?)

Response: Lines 210-211 describe that cloud cover is reported at the discretion of the field technicians. We updated the table to display the methods for this parameter as “qualitative description”.

- CTD beam attenuation is presumable light extinction coefficient - similarly with CTD transmission

Response: Yes, these are different expressions of the same measurement. The transmission is over a 25 cm path length and correcting for this to get an extinction coefficient gives exactly the same values as extinction. We elected to include both of these since 1) those are provided in the publicly available dataset described by this manuscript and 2) one being the reciprocal of the other has some utility in interpretation from table form.

- PAR should use units of μmol not μE

Response: We report PAR in the units the CTD instrument uses, which is in micro-Einsteins, as we do not convert or manipulate the data described in this manuscript. Further, the mole was not an SI unit until 2019 and our dataset begins in 2012 when the mole was not standard for light measurement.

- Microcystins should clarify if this is total microcystins

Response: The table has two fractions of microcystins reported - dissolved and particulate. Detailed description of microcystin analysis can be found on lines 324-350, where lines 344-349 describe that our analysis includes all microcystins and nodularins with the ADDA moiety.

- Ammonia is probably Ammonium-N. Similarly, Nitrate-N + nitrite-N and urea-N. This is a small but important distinction because the expression of concentration is as N (by atom) rather than the molecule.

Response: We thank Reviewer 2 for pointing out this discrepancy and we have adjusted the text in Table 2 to reflect the changes suggested.

- Colored dissolved organic material is not expressed as a concentration as the variable name would suggest. This is presumably DOC absorbance.

Response: We had some difficulty following the reviewer's point and after consulting several colleagues we are still not sure we understand. The variable name does not reference a mass or concentration and the units are those of optical attenuation. We suspect that this issue might arise from the common observing system measurement of DOC as CDOM (or measured as fluorescent DOM), which is often expressed as a concentration. We do not see this variable name as being ambiguous and so we will leave it as it is currently to match the form used in the dataset.