

Peer Review Report

Review Report on Fossil diatoms reveal natural and anthropogenic history of Jackson Lake (Wyoming, USA)

Original Research, Earth Sci. Syst. Soc.

Reviewer: Andrew Medeiros

Submitted on: 15 Sep 2022

Article DOI: 10.3389/esss.2023.10065

EVALUATION

Q 1 Please summarize the main findings of the study.

This study examines the response of a large lake in the midwestern United States to dam construction. It provides an interesting overview of how the morphology and productivity of the lake was influenced over the past millennia with a principle shift in diatom assemblages when the dam was constructed. An index of diatoms that are responsive to shifts in nutrients was compared to known climate records and observations made over the last few decades.

Q 2 Please highlight the limitations and strengths.

The paper is extremely detailed, perhaps a bit too much so. I do not think the authors need 9 figures in the main paper. Many of these could be moved to a detailed supplementary file. The length of the paper made it difficult to capture the main points at times, with unnecessary details in some areas and a lack of specific details in others. For example, the methods include information that has become fairly standard in paleolimnological studies that can be left to a reference, while the results section consistently lacked specific information behind the main trends observed. The discussion was equally long, and while it was well researched it gave too much attention to the results and not enough focus to the larger importance of the work itself relative to the literature.

Q 3 Please comment on the methods, results and data interpretation. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

As previously noted, the methods contained far too many details. A supplementary section would help move some of the more common methods and data to help the paper become more concise. The results lack specific details on the main trends, some of those details are found in the discussion – which then inflates the discussion with details that should be noted in the results. The entire paper is a bit unfocused and long, and efforts to shorten the paper and be more to the point are needed. At the same time you still need to be specific in the results section.

Q 4 Check List

Is the English language of sufficient quality?

Yes.

Is the quality of the figures and tables satisfactory?

Yes.

Does the reference list cover the relevant literature adequately and in an unbiased manner?

Yes.

Are the statistical methods valid and correctly applied? (e.g. sample size, choice of test)

Yes.

If relevant, are the methods sufficiently documented to allow replication studies?

Yes.

Are the data underlying the study available in either the article, supplement, or deposited in a repository? (Sequence/expression data, protein/molecule characterizations, annotations, and taxonomy data are required to be deposited in public repositories prior to publication)

No.

Does the study adhere to ethical standards including ethics committee approval and consent procedure?

Not Applicable.

If relevant, have standard biosecurity and institutional safety procedures been adhered to?

Not Applicable.

Q 5 Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List):

The title is a bit obtuse. Is the date range necessary?

Line 14: 'water level elevation' is a particularly strange way to describe the lake level.

Line 15: 'investigate paleolimnological changes' is an odd way to describe the study, you are specifically looking at changes in diatoms using paleolimnology.

Line 16: 'develop new diatom and geochemical data' should be rephrased, you undertook a biostratigraphic analysis of diatoms and XRF.

Line 20: planktic species? or planktonic

Line 20: owing to conditions including? this needs to be rephrased

Last line of your abstract should focus on why your study is important.

Line 31: The first line of your introduction should be a topic sentence, and introduce the topic with some reason of importance. The line here should support your topic line.

Lines 31–38 from this first part of your introduction I would assume your paper was entirely about the history of dam's in the pacific northwest. You have to outline the specific topic more and then support that topic with background afterwards. This is more than just the first line topic sentence, but continuing that line of thought forward so the reader has a sense of what is going to come.

Lines 39–53: Perhaps this is better suited for a study area description?

Line 55–56 This is a strange line, I suggest deleting it; "historical records of temp.. provide context.."

Line 57: missing a period before 'Snowpack'

Line 77: will be employed? you already completed the study, so you conducted the analysis – past tense.

Line 85: Add some line about why this is important.

It seems to me you could rephrase a purpose and objective statement to be specific about examining how the dam influenced lake biota. Perhaps even a hypothesis statement since it is pretty clear.

Line 87: a map reference should be made here

Line 106: the ammonia values as written do not make much sense. <0.4 to 0.05? is this a typo? if not, switch order from least to greatest as you have in the next line.

Line 110: "similar to, or lower than, those of the Snake River" – amend with commas

Line 134: Was the core collected by boat? was the tube diameter of your uwitec 8.4cm ? please state it

Line 137: How was the core subsampled? every 0.5cm interval or other?

Line 151: How was the threshold value used? e.g., was this just to describe dominant taxa? or did you remove everything below 5% from the study?

Line 163–165: I've not seen the use of the word 'perhaps' in methods before, probably should rephrase this.

Line 187–190: This is not needed, simply referencing Appleby and Oldfield is sufficient.

Line 211–223: A Table in either the supplementary or paper showing the 14C analysis (sample, error, date, etc) is needed

Line 224: remove 'they' from 'core (Fig 4) and are characterized'

Lines 224–235: I can see extra spaces after a period in some lines, check paper for extra spaces after periods and remove.

Lines 224–268: It is very difficult to read this section. Amend to indicate the species that increase from X to Y during DATE to DATE (or depth). Saying 'increasing' or 'peak' is insufficient.

Line 275: similar to above, this section is difficult. An example is the line that says 'a slight positive trend'. What does that mean? be more specific here and elsewhere.

Lines 314: are often coeval? I do not understand this statement

Line 327–332: When comparing other data sources start the line with the reference of whom collected that data. e.g., Rochner et al. (2021) suggest that most of the decade between 1717–1724 was warmer and drier than preceding years based on tree ring analysis. Same suggestion for next

Line 472: I would suggest removing 'this is critical' from the beginning of this sentence.

QUALITY ASSESSMENT

Q 6	Originality	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q 7	Rigor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q 8	Significance to the field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q 9	Interest to a general audience	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q 10	Quality of the writing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q 11	Overall quality of the study	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>