

## 1) General remarks

We again appreciate the thorough review of our manuscript and the detailed advice from the reviewers. Our detailed response is listed below.

## 2) Reviewer comments and our responses.

Review 1:

| Reviewer's comment  | Our response   |
|---|--|
| I would recommend some basic grammar editing, as there are a few instances where the wrong preposition or verb form is used. Overall, the writing is still understandable, so this is not a major concern, but it would improve the reading experience.   | We have checked grammar and style and edited the text. These minor corrections constitute the majority of the current revisions. |
| At line 19 in the abstract, it states the study spans 6000 years, while in the introduction at line 122, it states 7000 years.  | We changed the abstract accordingly.   |
| When referring to "Atlantic climate" or "sub-boreal climate," as in lines 30 and 31, I would recommend explicitly noting that these are specific periods during the Holocene with different climate regimes, as simply saying "Atlantic climate" may be misread as a regional climate type rather than a Holocene climate period. For example, you could rephrase to "during the warm and wet Atlantic period" and "during the colder and drier Sub-Boreal period." | We agree and follow this suggestion.   |
| Define H <sub>2</sub> S and DIN at first occurrence, lines 44 and 85, respectively.   | We introduced both abbreviations as:<br>1) However, hydrogen sulfide (H <sub>2</sub> S) in euxinic environments reduces the      |

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|  | <p>degradability ...</p> <p>2) ... a substantial decrease of the Danube load of dissolved inorganic nitrogen (DIN), which is now below...</p> |
| Please add a citation to lines 240-243 regarding the increased transport of sand from the Sfântu Gheorghe branch.      | We added a reference to Constantinescu et al. (2023).   |
| Additionally, make sure that Sfântu Gheorghe is spelled consistently here and when it is referenced in the discussion. | We made sure that the Name Sfântu Gheorghe is now spelled consistently throughout the text.   |

Review 1:

| Reviewer's comment  | Our response  |
|---|---|
| For figure 6 A, $R^2$ is 0.98, which is much higher than figure 6 C ( $R^2$ is 0.64) that have similar data distribution. Please check the statistic results. | <p>We thoroughly checked the results from both linear regressions, and the <math>R^2</math> values are stated correctly.</p> <p>The observation data for Models 1 and 2 are identical, the only difference is the applied linear model. Model 1 is without y-intercept, Model 2 is with y-intercept. The differences in the <math>R^2</math> values are also reflected in slightly higher residuals in Model 2 than in Model 1.</p> |
| And I would suggest make consistent expression with figure 6 ( $R^2$ ) and text (line 300-301 Pearson's R)  | We agree and have changed R in the text to now $R^2$ .  |