

Interactive comment on “Source, composition, and environmental implication of neutral carbohydrates in sediment cores of subtropical reservoirs, South China” by Dandan Duan et al.

Anonymous Referee #2

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Source, composition, and environmental implication of neutral carbohydrates in sediment cores of subtropical reservoirs, South China

This paper by Duan et al. compared organic matter characteristics ($\delta^{13}\text{C}$, C/N) and monosaccharide distributions in sediment cores from three lakes with different depths (3 m, 17 m, and 36 m) and trophic states (mesotrophic vs. oligotrophic). The neutral sugar data is nicely presented and discussed in the context of source and changes in productivity and climate, making this a useful addition to the field. However, connections between the carbon isotopic data and the neutral sugars are not clear in the text though correlation between them is mentioned in the abstract and

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displayed in table S4. The manuscript would benefit from expanding on the utility of combining these types of measurements rather than discussing the data and their implications separately. After revising this and the minor (but numerous) issues below, I would recommend the paper for publication in Biogeosciences. In addition to these comments, the manuscript should be checked carefully for small grammatical errors such as missing or incorrect articles and singular/plural subject/verb issues.

Minor comments:

- pg 2, lines 44-48: Phytoplankton is plural so the verbs should be ‘remove,’ ‘deplete,’ and ‘discriminate.’ Line 48 should be values.
- pg 2, line 52: O’Reilly et al. (2005)
- pg 2, line 53: Verburg reference should be 2007
- pg 2, line 55: It is not clear what ‘it’ in this sentence is referring to, please revise
- pg 3, line 58: Kirk et al. (2011)
- pg 3, lines 66-67: Typo, add ‘in’ after ‘help’; also ‘Besides’ is not correctly used here, please revise
- pg 4, line 94: is this actually V-PDB?
- pg 4, line 94: from where is ‘Product ID: GBW 04408’ sourced?
- pg 4, lines 107-113: Michael et al., 2015 is not listed in the references
- pg 6, line 192: Also not clear what ‘it’ refers to in this sentence, please clarify
- pg 7, line 243: In this section (and in a few other places throughout the manuscript) the monosaccharide names are strangely capitalized?
- pg 8, line 281: Hernes et al. (1996)
- pg 8, line 292: Keil et al. (1998)
- pg 9, line 308: Should be no ‘et al.’ for Handa, 1969 reference
- pg 9, line 316: Another unclear ‘it’ usage, please revise
- pg 9, line 329: Gasse et al. should be 1991 as listed in the references
- pg 9, lines 331-332: The use of ‘algae-dominated’ and then ‘usually dominated

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in ... algae' is redundant. Additionally, the wording of 'dominated in' as a verb is grammatically incorrect (perhaps 'are usually dominant in'?) and 'algae' is plural without the 's'

- pg 9, line 332: should be Haug and Myklestad, 1976
- pg 9, line 334: typo '... the a...'; remove either 'the' or 'a'
- pg 10, line 340: the / between 'no/or' is not needed; alternatively the 'or' could be removed ('no/weak correlations')
- pg 10, line 367: this should be changed to 'neutral sugars ... are'
- pg 11, line 379: change 'are' to 'is'
- pg 11, line 385: insert 'the' before 'last six decades'
- Figure 1: Is it possible to use the same scale for all three isotope profiles? Perhaps with a range from -28 to -18 so that the reader can easily compare the three sites visually
- Figure 2: The concentration range on the x-axis is quite large for the data, making it difficult to see variations with depth. Aside from the single outlier in the LA glucose profile, could these be changed to more appropriate ranges for the data?
- Borch et al. 1997, Gu et al. 2004, Kaiser and Benner 2000, Marchand et al. 2008, Philben et al. 2015, Mopper et al. 1992, Ran et al. 2007, and Wakeham et al. 1997 are listed in the references but not cited in the text.

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