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Climate of the Past Discussions

Interactive comment on "Leaf wax *n*-alkane distributions record ecological changes during the Younger Dryas at Trzechowskie paleolake (Northern Poland) without temporal delay" *by* Bernhard Aichner et al.

Anonymous Referee #1

Received and published: 23 April 2018

Review of Manuscript CP-2018-6 entitled "Leaf wax n-alkane distributions record ecological changes during the Younger Dryas at Trzechowskie paleolake (Northern Poland) without temporal delay"

General Comments:

Overall, I think the manuscript is an important contribution to the fields of organic geochemistry and paleoenvironmental reconstruction. The conclusions regarding the risks associated with using oversimplified alkane-based metrics to reconstruct vegetation

and the lack of a delay between the alkane and pollen proxies are important to the broader discipline. The issue of 'pre-aging' of waxes is particularly troublesome in lacustrine settings and I think it deserves more attention in the discussion as it is currently limited to just a couple of paragraphs. I recommend adding references to this section including:

Gierga, M., Hajdas, I., van Raden, U.J., Gilli, A.,Wacker, L., Sturm, M., Bernasconi, S.M., Smittenberg, R.H., 2016. Long-stored soil carbon released by prehistoric land use: evidence from compound-specific radiocarbon analysis on Soppensee lake sediments. Quat. Sci. Rev. 144, 123e131.

Lane, C.S., Horn, S.P., Taylor, Z.P., Kerr, M., 2016. Correlation of bulk sedimentary and compound-specific d13C values indicates minimal pre-aging of n-alkanes in a small tropical watershed. Quat. Sci. Rev. 145, 238e242.

Uchikawa, J., Popp, B.N., Schoonmaker, J.E., Zu, L., 2008. Direct application of compound-specific radiocarbon analysis of leaf waxes to establish lacustrine sediment chronology. J. Paleolimn 39, 43e60.

The document would generally benefit from improved conciseness and clarity, this includes the abstract that is much too long for such a short paper.

It is my opinion that the study is worthy of publication in Climate of the Past, but considerable effort will be required to improve the conciseness of the presentation and to focus the paper more effectively on the most significant conclusions (lack of diagnostic capability based on widely-applied chain-length metrics and rapid response of alkane proxies to vegetation change). Too much of the

General editing that should be applied to the entirety of the text:

1. The use of conjunctive adverbs (however, thus, nevertheless, etc.) are excessive throughout the text. The paper would be much more concise if sentences were restructured to omit the conjunctive adverbs altogether. 2. The authors are flipping between

active and passive voice throughout the document. (Lots of examples, but see lines 28-30 on page 7 for one example: switch from ‘have been reconstructed’ to ‘our observations’. 3. Throughout, commas should be placed before ‘which’ and ‘but’. 4. Compound-specific needs to be hyphenated when used as an adjective. 5. The word ‘this’ is used too frequently in sentence strings where it is often difficult to decipher what precisely ‘this’ is referring to (e.g. page 2, line 28; 6. Shouldn’t results and methods be in the past tense? 7. Throughout, need to be careful when designating species vs. genera. For example, page 9 Betula spp. would be a genus, not a species.

Specific comments:

1. Page 5, line 9: grammar ‘hexane as solvent’ 2. Page 5, line 20: Delta V Plus should be spaced 3. Page 5, line 26: should this be a permille sign? 4. Page 7, line 10: should be ‘concentrations’ 5. Page 7, line 14: great example of a sentence that could be much more concise. . .Source allocation of n-alkane homologues can also be derived from the carbon isotope composition. 6. Page 7, line 26: semicolon should be period. 7. Page 8, line 6-7: low concentrations of aquatic macrophyte pollen specifically? Needs to be specified. 8. Page 8, line 7: remove ‘also’ 9. Page 8, line 17: just say ‘are likely of terrestrial origin’. 10. Page 8, line 25: remove ‘mainly’ 11. Page 9, line 5: no need for a colon here. 12. Page 9, line 13: recommend different word choice for ‘mainly expanding’ 13. Page 9, lines 14-16: no need for ‘in the. . .’ openings to both sentences 14. Page 10, line 16: need to specify what exactly is being correlated; also change from ‘each other’ to ‘one another’. 15. Page 10, no need to capitalize ‘Mid-chain’ 16. Page 11, line 20: specify which data. . .avoid ‘as discussed’. 17. Page 12, line 3: awkward phrasing ‘has been discussed to be probably equivalent’

Figure 2: I am not sure that overlaying all of the homologues in the bottom panel is effective. . .there are too many lines making it difficult to decipher the trends of any one individual homologue in the plot.

Figures 4 and 5: latin names need to be italicized.

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