

## ***Interactive comment on “A 150-year record of phytoplankton community succession controlled by hydroclimatic variability in a tropical lake” by K. A. Yamoah et al.***

### **Anonymous Referee #1**

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General comments: The manuscript by K. A. Yamoah et al. presents phytoplankton community succession and geochemical variations over the past 150 years in a tropical lake in southern Thailand. Overall, the authors comprehensively collected DNA, lipid, elemental data, and drew relevant conclusions. But, there are specific and technical problems that should be resolved, so I think that the manuscript doesn't meet the requirements for publication on GB.

Specific comments: The authors concluded that hydroclimate change and anthropogenic activities played an important role in phytoplankton succession. However, the authors just mentioned “hydroclimate” in the title, but I suggest “anthropogenic activities” should be also included in the title.

C1

Some more specific comments as follows: Page 3, line 18-19: Please specify “external” and “internal” ecosystem regulators. Page 4, line 19: it may be better to change “chemical environment” to “chemical and physical environment”. Page 10, line 9-13, authors show wet/dry conditions in parenthesis. Pls explain how the results “wet/dry condition” were inferred, and include appropriate inferences. Page 11, line 3, change “Eukarya” to “eukaryotic”. Page 11, line 16-17, “as observed in many other systems (Emerson and Hedges, 2003)”, two or more references should be cited here. Page 12, line 2-3: references cited here suggested that  $\delta^{13}\text{C}$  enriched is in residual organics. However, in Unit III,  $\delta^{13}\text{C}$  was more negative, while mcrA abundance was relatively high. Please explain the inconsistency. Page 12, line 4-5, the sentence is obscure, i.e. “eukarya” doesn't represent all “primary productivity”, which includes both cyanobacteria and eukaryotic algae. Please clarify it. Page 12, line 20, does “microbial activity by anaerobic microbial methane cyclers” mean “methanogenesis”? Page 13, line 7-8: Cartapanis et al. 2014 used opal other than total Si elemental concentration to infer nutrient dynamics. I'm not sure if it is appropriate to use Si concentration in this study. Page 13, line 25, “which confirms that the C17 n-alkanes were produced mainly by Cyanobacteria” seems too arbitrary. I suggest to change it to “which suggested that the C17 n-alkanes may be produced mainly by cyanobacteria” Page 14, line 2, it's better to replace “race” with “lineage” or “subgroup”. Page 14, line 8, “likely results” should be “is likely resulted”. Page 14, line 10, replace “within” with “in”. Page 14, line 13, replace “in” with “during”. Paragraphs within “Summary and conclusion” from page 14, line 14 to page 15, line 16 are just a repeat from the last section. I suggest that these sentences should be deleted.

Technical corrections: A lot of terms should not be italic or capitalized. For examples Bacteria, Cyanobacteria, Eukarya, sp. Pls check. Page 3, line 22-25, the sentence is confusing. Please revise it. Change “factors that” to “which”. Page 12, line 22-23, the sentence is hard to understand. Pls rewrite it. Page 13, line 23, “photosynthetic bacteria such as Cyanobacteria” can be changed into “cyanobacteria”. Page 11, line 3, change “Eukarya” to “eukaryotic”. Page 11, line 5, “and” should not be italic.

C2

C3