

Interactive comment on “Ubiquitous production of branched glycerol dialkyl glycerol tetraethers (brGDGTs) in global marine environments: a new source indicator for brGDGTs” by Wenjie Xiao et al.

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The manuscript is well written. Even most of the data were organized from previous studies, the authors called an attention using IIIa/IIa ratio as a alternative or even better proxy to differentiate soil and marine production of brGDGTs. This manuscript also calls the attention to further look at the the 5-methy and 6-methyl brGDGTs based ratio (IIIa, IIIa', IIa or IIa'). Overall the finding of this manuscript is novel and of great relevance to the scientific communities. Most of the interpretation of the data in this study appears sound to me. I see the merit of this work as a general organic geochemist,

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even I am not a GDGT expert. I checked the authors' response to the Anonymous Referee #1 and did see they address them well. There are only a few points of weaknesses identifiable and listed below which needs to be addressed. After that, I wholly support the publication of the manuscript.

Note: I didn't see the updated (corrected) version of manuscript after the authors' response to Anonymous Referee #1 so I am still referring to the original manuscript that I downloaded from <http://www.biogeosciences-discuss.net/bg-2016-235/bg-2016-235.pdf>

Minor comments

Line 170, when you say significantly is it $P < 0.05$ or 0.01 . Please make this clear. Line 230, 220 kg/m^3 (use superscript for 3) Line 238-241, is there any additional evidence to support the different terrestrial organic matter input from your previous work? Such as n-alkane based proxy or triterpenoids etc. It would be great if you can find additional evidence to further support your claim. Line 241-242, it will also be great if you can find additional evidence of land erosion. I know there is a few suit of biomarkers related to land erosion such as some hopanoid series. If you don't have this data available, this could be part of the future work. Line 271, when I wrote " $P < 0.05$ ", I prefer to use italic script for "P" in order to differentiate the abbreviation of Phosphor Line 279, should be "litle" instead of "litter" Line 280, "water salinity up to 41", 41 PSU or ppt, I suggest make this clear. Line 285, you are using $2.6 \sim 5.1$, but sometimes you also use $0.4 - 0.9$ (line 269). Please be consistent Line 322, should be written as "Ila/Ila" instead of "Ila/II"

Please check your references because I did see a few typos and non-consistent format Lines 387, 391, 460, 529, et not Et Line 421, delete "-93" Line 441, "Peng, P.A." not "Peng, P.a." Line 457, delete "-90" Line 467, "and" not "&" Line 513, add " 17" after "Communications" Line 568, delete "-90" Line 681, add a space after "Sparkes et al."

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