Biogeosciences Discuss.,
https://doi.org/10.5194/bg-2018-119-RC1, 2018

Biogeosciences Discussions
Open Access
EGU

Interactive comment on "Diversity of intact polar lipids in the oxygen minimum zone of the Eastern Tropical North Pacific: Biogeochemical implications of non-phosphorus lipids" *by* Florence Schubotz et al.

Anonymous Referee #1

Received and published: 26 March 2018

This study aims to determine the intact lipids in suspended particles in the water column using samples collected from ocean oxygen minimum zones from the east/north pacific. OMZs are important marine ecosystems particularly with regard to oceanic N cycles. The comprehensive data presented in this study has significantly advanced our understanding of IPLs in this unique environment. This reviewer has no major concerns. Some specific comments are listed below for further improvement of the manuscript.

L93, it would be very useful to specifically discuss previous IPL studies on OMZ sam-

Printer-friendly version

Discussion paper

ples, e.g ETNP, ETSP, Arabian Sea etc in discussions.

L101 and throughout the MS, most previous studies have used MGDG, DGDG and SQDG to refer to mono- and di glycosyl- DAG and sulfoquinovosyl DAG, please change to these commonly used acronyms for the sake of consistency in literature.

L104-5 , l307-9; this may be a little misleading since DGTS has been found in a wide range of marine heterotrophic bacteria.

L116, please refer to recent study of Hunter et al., AEM doi: 10.1128/AEM.02034-17 for novel diglycosylceramides found in Thalassiosira.

L214-215, the authors have referred to previous studies for mass spectral interpretation and IPL assignments. It would be very useful to summarize and synthesise these information in a table (or in the supplementary information) and to detail the criterial for IPL identification. Presumably IPL assignment is based on comparing to retention time of standards (where applicable) and characteristic MS/MS patterns, representative characteristic ions or characteristic neutral loss. How has DGTS but not DGTA been conclusively assigned in this study? Has DGTA been found in any samples?

L223, for unknown aminolipids AL1 AL2, do the authors have any hypothesis of their structures based on MSn fragmentation patterns (suppl fig 4)? What are the possible amino head group structures? Have accurate ms of AL1, AL2 been obtained?

The authors mentioned CSRD FISH data in supplementary dataset but did not mention how this was done in the materials and methods.

My general impression for discussion is that it can be shortened significantly.

It is a pity that no microbial diversity data were obtained in this study as one would like to see the correlation between specific microbial groups and IPLs, which may provide clues for the origin of these lipids, particularly w.r.t. to AL1 and AL2.

Section 4.1.1 two recent papers (Carini et al, Sebastian et al) have shown marine

Printer-friendly version

Discussion paper

heterotrophic bacteria are also abundant in MGDG. These need to be discussed here in line with these new evidence.

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2018-119, 2018.

Printer-friendly version

Discussion paper