Biogeosciences
Discussions

Open Access

Interactive comment on "An experimental study on the effects of nutrient enrichment on organic carbon storage in western Pacific oligotrophic gyre" *by* J. Liu et al.

Anonymous Referee #1

Received and published: 31 March 2014

General comments: The paper addresses the consumption of DOC by bacterioplankton in the western Pacific gyre in 20L microcosm experiments. Several treatments were established with glucose or algal exudates with and without nitrate and phosphate. The authors found that nitrate and phosphate additions led to a higher consumption of DOC (glucose-treatment) than without N+P additions. This conclusion has been reached before in similar experiments (see Malfunction of the microbial loop-Thingstad, L&O and numerous other papers). Hence, the finding presented here is not new. As shown by Goldman, J. C., D. A. Caron, and M. R. Dennett (1987. Regulation of gross growth efficiency and ammonium regeneration in bacteria by substrate C:N ratio. Limnol. Oceanogr. 32:1239-1252) the utilization of C depends on the availability of N (and

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

P) as shown also by Thingstad and others. The present paper is not building on these papers nor citing these findings. Hence the paper critically lacks novelty. Also, the English needs major revision.

Specific comments: on p 10, line 17 and following: deep ocean RDOC may become bioavailable when enriched with (inorganic) nutrients. This is not true since in the deep ocean there is plenty of inorganic nutrients but nevertheless, the DOC remains recalcitrant.

Interactive comment on Biogeosciences Discuss., 11, 2973, 2014.