

Interactive comment on “Microbial food web dynamics during spring phytoplankton blooms in the naturally iron-fertilized Kerguelen area (Southern Ocean)” by U. Christaki et al.

U. Christaki et al.

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Received and published: 23 October 2014

Christaki et al. Response to reviewer 1. We thank the reviewer’s positive disposition about our work. All the changes made are highlighted in red in the ms to facilitate reading.

Regarding her /his concerns:

1. I not like the terminology since this, strictly speaking is an observational study and not an experiment.

The word ‘experiment’ was replaced by ‘studies’ when referring also to natural fertiliza-

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2. It is a bit easy as reviewer to wish for more things that could have been done, but I have always wondered whether bacteria in the HNLC areas are limited by organic-C or by Fe. Bioassays or other tests for this were apparently not included and the authors can therefore not conclude whether the stimulation of bacteria is direct (Fe-limitation) or indirect (organic-C produced by Fe-stimulated phytoplankton). To determine the role of DFe for bacterial heterotrophic activity bottle-incubation experiments have been realized on board during KEOPS-1 and KEOPS-2 and made the subject of separate papers (Obernosterer et al. 2008; Obernosterer et al., this issue) During KEOPS1, the results were obtained from light incubations of natural seawater performed at the bloom station. These results indicated that iron had no direct but an indirect effect on heterotrophic bacterial activity, due to the stimulation by phytoplankton-derived dissolved organic matter. Within the Kerguelen bloom, bacterial carbon demand accounted for roughly 45% of gross community production. These results indicate that heterotrophic bacteria processed a significant portion of primary production, with most of it being rapidly respired. (Obernosterer, 2008; see also our Fig. 6). During KEOPS 2, the question on whether Fe or C was the limiting element was investigated in more detail, on 3 contrasting sites in the Fe fertilized region and at the HNLC site. These results will be presented in Obernosterer et al. in the same Special Issue. the following was added in section 4.2 of the discussion "Fe-fertilization stimulates BP; either directly or indirectly, through phytoplankton derived DOM. For the KEOPS2 study region, bottle incubation experiments revealed that both single additions of Fe and C, in the form of glucose, stimulated bacterial heterotrophic production and growth, suggesting co-limitation by these elements (Obernosterer et al. this volume)."

3. The authors have chosen to put their data into the text rather than using tables or graphs). We took care summarizing all the data in 8 figures (2 of the suppl) and 7 tables (one of them suppl).

4. Typo p. 7004: " Substracting" corrected

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