Dear editor
Thank you for handling our paper

please find below our answers to the reviewer's comments. All the comments were taken into consideration in the revised version of the ms. All the changes made are highlighted in red in the ms to facilitate reading.

Best regards

Urania Christaki

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 fertilization

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

Christaki et al.
Response to reviewer 2.
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:

Comments
1. Which was the composition of the phytoplankton bloom? I think this information should be included in the ms.
The Kerguelen bloom is dominated by diatoms, this is now added in the introduction
"A pronounced shift to larger phytoplankton cells, in particular diatoms, has been generally observed resulting upon natural (Blain et al., 2007; Pollard et al., 2009) or artificial (Boyd et al., 2007; Smetacek et al., 2012) iron additions."
and the result sections.
However, we would like to point out that different diatom species were dominant at the stations we visited. A detailed description of the phytoplankton community composition will be presented in a separate paper by Lasbleiz et al. (in prep.). We therefore have included in our manuscript only a brief overview of the dominant species.
"According to KEOPS2's microscopical observations and pigment analyses, Bacillariophyceae dominated the phytoplankton community in the blooms (Sackett et al., this volume, Lasbleiz et al., this volume). In particular, *Fragilariopsis kerguelensis*, *Pseudonitzschia* spp., *Eucampia antarctica*, and *Chaetoceros* spp. were found to be the four dominant diatom taxa (Sackett et al., this volume)."

2. I do not think you should use the term Fe-fertilized unless you provide concentrations of Fe, could you think of another term to refer to those areas?
We used the term 'iron fertilized' for the stations in the blooms since- the blooms ARE a result of Fe fertilisation, this has been clearly shown during KEOPS and CROZEX cruises and published in papers since 2007. Regarding Fe concentrations we hesitated to put them in table 2 and we finally decided not to do it for the simple reason that concentrations can be confusing. Fe stock is rapidly used and it is not necessarily relevant. If the reviewer finds it necessary we will add them, it looks as follows:

Station	DFe (nM)[c]
R	0.08±0.07
A3-1	nd
FL	0.22±0.06
E4W	0.17±0.03
A3-2	0.16±0.03
E1	na
E2	0.08
E3	0.35±0.08
E4E	na
E5	0.08±0.02

[c] Closset et al. (this volume), na: not available

3. Why do you calculate the volume of each of the size classes of HNF after cell sorting and by epifluorescence microscopy. The cytometer can provide cell size estimations for each individual cells, which might be more accurate than a mean of the population.
We apologize of not being aware of cytometers that measure the size of each cell as it passes in front of the laser. The cytometry analysis method we used could not do this. It provides cytograms based on fluorescence and light scatter (which is not the size although it can be used as a broad proxy for it). This means that on fluorescence and light scatter we can probably have an idea of the size range of each cytometric group. What we did is much more accurate since we measured hundreds of cells in each cytometric population, in order to define size classes, dominant size classes in each population. We took the time to do these measurements because we wanted to calculate as closely as possible their potential consumption based on their biovolumes. Besides, cell sorting is a very good way to guarantee that the cytometric signatures indeed belonged to HNF.

P 7004 L3-4. Importance and important repeated in the same sentence

corrected
Table 3 legend. L4. Fluorescence
it should be epifluorescence

Fig3. Units in the upper left pannels lack the 1 of the 1000.
corrected

P7011 Wrong order of references: Zubkov, Zhou
Zhou is no more a ref of this paper
