

Distribution and stoichiometry of dissolve nitrogen and phosphorus in the iron fertilized region near Kerguelen (Southern Ocean)

The authors describe and analyze the concentrations of the inorganic and total organic species of nitrogen and phosphorus and their correlations in the Kerguelen area. Some stations were located at HNLC sites, others at an area naturally fertilized by iron, and at the meanders at the polar front, representing different systems.

As a whole, the paper is well written although some English editing should be performed (see below for examples). However, revisions are needed before the manuscript is accepted for publication.

1. Materials and Methods.

- a. There are no explanations as to when and where the sampling took place. The only mention appears in Figure 1 and it is not enough. For example, stations A3 were occupied twice during the experiment and then again in February 2013. This section should be expanded
- b. There is no explanation as to how the water was sampled (except that Niskin bottles were used). Which CTD, rosette were used? Who collected the physical data and where are they presented? The authors also use in the text theta and sigma (I assume potential temperature and density anomaly) but there are no explanation as to what they represent. Explanations should be added.
- c. There is no explanation or reference as to the methods used for the determination of nitrate, nitrite and phosphate. Aminot, 2007 is referred to in the DON-DOP analysis.
- d. In addition to Skalar, it should be mentioned that the method used is colorimetry, using a segmented flow analyzer .
- e. Considering the DON-DOP analysis. It should be explained that DON and DOP are actually calculated values from TDN-TDP minus the inorganic species. This should be changed across the manuscript
- f. A paragraph should be added explain the quality control/quality assurance of the nutrient determination, including detection limit and uncertainty.
- g. The authors stated that they did take duplicates to be run in the laboratory at home but it was not needed due to “the good quality and analysis performed aboard”. Please explain how that was determined. This is very important in particular when minima or maxima in the depth profiles were determined based on one point only (for example figures 4 and 5)

2. Results

- a. First paragraph. The author state the chlorophyll concentrations were low/ high. Please give concentrations. I assume that the values appear in Queroue et al 2014- reference that is missing and in Lasbleiz et al., 2014 – submitted to the special issue?
 - b. Figures 2-3. Please consider exchanging the legend to vertical section or Cross section instead of two dimensional distribution
 - c. Section 3.2.1, third line. Instead of the name of the section, add 3.3
 - d. Section 3.2.1, ninth line. There is no percentage in figure 4
 - e. Section 3.2.1, 13th line. It should be rephrased. TDN is the measured parameter and DON the calculated one. The correction should be performed across the whole manuscript.
 - f. Section 3.2.2, 2nd line. Is 0.39 uM significantly different from 0.22 uM NO₂?
 - g. Section 3.2.2. Figure 5 is unclear. Please check if correct. F-L appears in one panel and F-S in three. Also, in the text there is a reference to Figure 5b and in the figure, the panels are not marked with a, b, c, etc.
 - h. The separation of section 3.2 and 3.3 (Dissolved nitrogen alone and nitrate and phosphate, respectively) is confusing. I suggest to combine the two sections into one.
 - i. Section 3.3.1. The KEOPSMOOR profile (Feb 2013) should appear in the Methods section or given a reference as the ANTARESS 3
 - j. Section 3.3.1. The authors should explain why the NO₃ concentrations from ANTARESS 3 are acceptable/intercomparable with the present study. They mention only why PO₄ is not.
3. Discussion.
- a. Second paragraph. Please add reference to Redfield's ratio
 - b. Page 9960, paragraph starting in line 19. The authors argue about the necessity to look at TDN vs TDP ratios. However, the contribution of the organic part to the total concentration is small. A sentence should be added explaining why this contribution is necessary
 - c. Figure 9b. Please make the line notations as in 9a, - which line corresponds to which N.
 - d. Page 9962 – First paragraph – the English should be reviewed
 - e. Page 9962 – First paragraph. The anomalies at stations A3 and E-4W should be shown in Figure 9.
 - f. Page 9962 – The Sampling during Feb 2013 should appear in the methods.