

Interactive comment on “Sedimentary response to sea ice and atmospheric variability over the instrumental period off Adélie Land, East Antarctica” by P. Campagne et al.

Anonymous Referee #1

Received and published: 26 February 2016

General Comments

Diatom has been used as a proxy of paleoenvironmental information based on large-scale diatom ecological studies, whereas little is known about local-scale diatom ecology. The authors attempted to solve this issue namely understanding the relationship between diatom communities and local environmental conditions using the principal component analyses (PCA) and the Pearson correlation test.

Although I appreciate authors efforts, the criteria that authors set for categorizing environmental influences seems not fully quantitative. I think the paper requires restructuring since some sections are lacking information, whereas other sections are lengthy description that may be put into the supplement. Therefore I believe the current version

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of the manuscript is not satisfied the requirements to be published in the journal.

I describe specific comments below:

Introduction

Authors are needed to review previous studies on similar topics and discuss the problems remaining in the topic discussing in the paper. Some information is available in the text but in more comprehensive manner is requested.

Environmental settings

Authors should provide the detailed description of the quantitative criterion. Also raw data of meteorological data need to be provided so that readers can evaluate them.

Material and methods

Information is lacking how the measurements of ^{210}Pb chronology and biomarker analyses are conducted. Again raw data of ^{210}Pb measurements and diatom assemblages are required either in the main text or in the Supplement.

A question is also raised how to standardize different sort of data (diatom, proxies and meteorological parameters) in PCA? It seems that there is no need to do PCA using 67 diatom species data. Authors should conduct PCA using only abundant species.

Results and discussion

Some re-organization of the section is required. The section 4.1 and 4.2 are too long, a part of these sections can be moved to the Supplement. It is appropriate to discuss the axis interpretation (subsection 4.2.1) first then discuss the relationship between sedimentary proxies (section 4.1). A part of the second paragraph of the section 4.1.1 should be moved to the Methods section.

The genus of diatom that has been mentioned is spelled out and abbreviate in the following sections.

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Figure

The figures would be required for some editing. Sites discussed in the text should be added in the figure 1. Also add the dominant direction of winds. Photographs and stratigraphic columnar sections of core should be presented. Figure 5 is too small to decipher and bigger figure is needed. Authors should describe details of figures such as the meaning of black arrows in the Figure 7? What does dashed line in the Figure 8 mean? Moreover, authors should write environmental information (e.g. east winds, south winds) outside the graph to make the figure clear and concise.

Supplement

Some re-organization of the supplement text is required with “Results and Discussion” section. Authors should adjust the table size appropriate for publication. Table S2 is too large (continued 7 pages!!), and Table S3 is illegible for the small size.

Page 13, Line26: tri unsaturated -> tri-unsaturated

Page 14, Line 3: co occurrence -> co-occurrence

Page 21, Line 12: Corethron spp. are -> Corethron spp.) are

Figure 7: Add the unit of y-axis.

Figure S2: Add the unit of x-axis and y-axis.

Table S1: Add the description of each meteorological parameters to the table caption.

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