

Interactive comment on “Sources of Fe-binding organic ligands in surface waters of the western Antarctic Peninsula” by Indah Ardiningsih et al.

Indah Ardiningsih et al.

indah.ardiningsih@nioz.nl

Received and published: 21 January 2021

Reply: Thank you for the suggestions to improve the presentation of the results. We have revised the figures as suggested with details below.

1.) The yellow coastal current arrow blends in to the pale blue bathymetry in Figure 1 (also the “CC” triangle in Fig.2). I would have liked to see actual surface current data (maybe LADCP or something?) at the station locations, and how they compare to the broad-brush arrows used to mark the ACC jets.

Reply: We have changed the color into darker yellow and changed the color scheme of the map. Arrigo et al. (2017) has described the velocity profiles (section 2.7 and Figure 6), which are calculated from Acoustic Doppler Current Profiler (ADCP) data

Printer-friendly version

Discussion paper



and CTD measurements. They found a current in the direction of ACC flow (eastward) about 100 – 250 km from the shelf break. the broad-bush arrows in Fig.1 were only an approximation of the ACC flow. The transect in this study is the sampling line 300 in Arrigo et al. (2017), where SACCF and SB were 100-150km apart. We have referred to Arrigo et al. (2017) in the caption of Figure 1 for the details of ACC flow

Figures 2-6 use a rainbow color palette that is firstly not universally accessible to those with color vision deficiency, and secondly creates a perceptually non-uniform color space that can create misleading gradients in continuous data such as temperature and salinity, as well as dissolved iron and ligand concentrations (e.g. <https://blogs.egu.eu/divisions/gd/2017/08/23/the-rainbow-colourmap/> or <https://www.nature.com/articles/s41467-020-19160-7>).

Reply: Thank you for the additional information in the links and your thoughtful suggestions. We have changed the color scheme of the figures to the viridis color palette as this should be universally accessible to those with color vision deficiency.

2.) The use of “Ocean Data View” section plots is an issue for me, both because of the colormap, but also because of the variable size of each colored “blob” for bottle data. In Fig.5a for example, station 84 has wide circles while station 90 has narrower circles (and 96 has even narrower), yet it is not true that station 84’s concentrations are applicable on a larger spatial scale than station 90’s (or even station 96’s) – the fluorescence data in Fig.5b clearly has much shorter spatial variability (from more stations/continuous CTD cast data?) that is similar at all stations. ODV’s “patchiness” really emphasizes the sparsity of the ligand and iron measurements here, which is a shame to detract from a precious dataset that clearly has interesting information within it – perhaps horizontally-stacked line profiles might work better than contours? As I said, in general I found the TS plots were more interesting and useful. Finally, a minor point is that I found the station ordering to be a bit confusing because they are presented in chronological order, while the manuscript suggests an order that is more geographically orientated. I wonder whether the authors could use an alphabetical

scheme for this paper with a key in Fig.1 relating the letters back to station number for posterity (so, the stations would be A (72) to E (90) according to distance from the coast)?

Reply: Thank you for the thoughtful suggestions to improve the presentation of the results. We have changed the station number into alphabetical scheme according to distance from coast. The section figure in ODV is best to describe data along a transect, thus we would like to keep the section figures. However, in order to avoid ODV's patchiness, we used color dots to present the data from Figure 3 to 6. Below is an example of the revised figures.

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2020-357>, 2020.

BGD

Interactive
comment

Printer-friendly version

Discussion paper



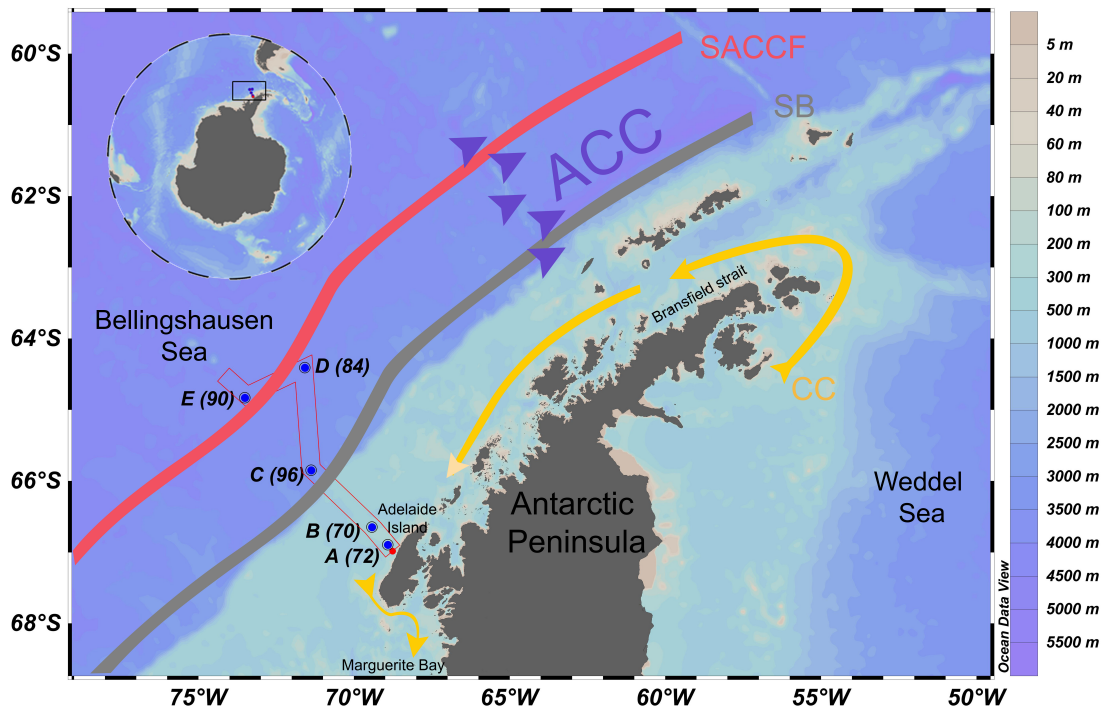


Fig. 1.

[Printer-friendly version](#)[Discussion paper](#)

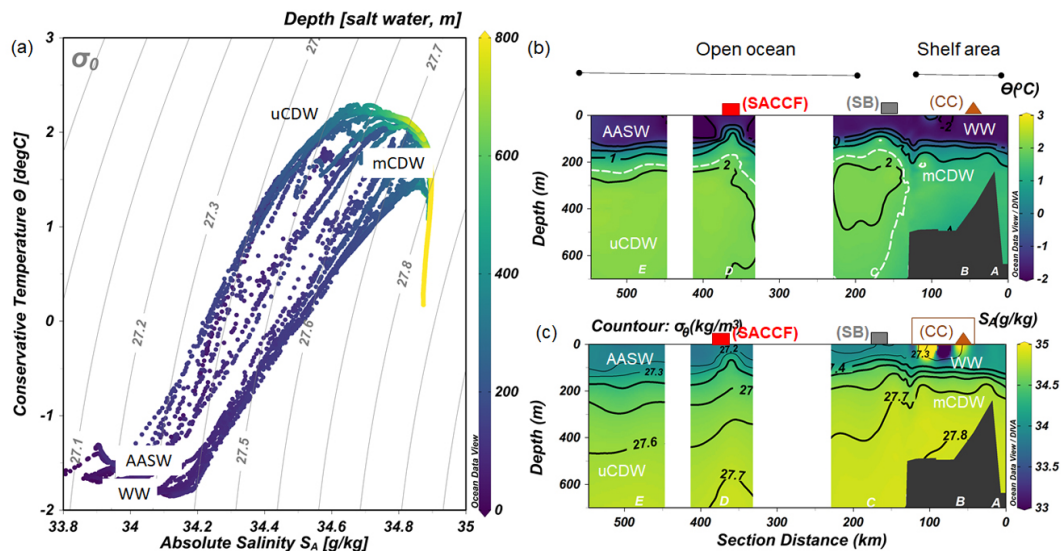


Fig. 2.

Printer-friendly version

Discussion paper



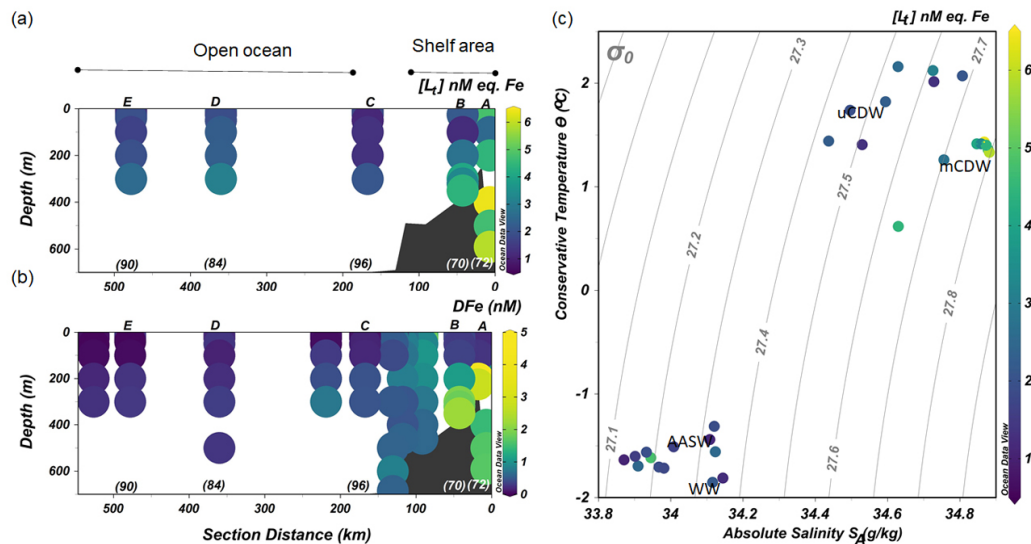


Fig. 3.

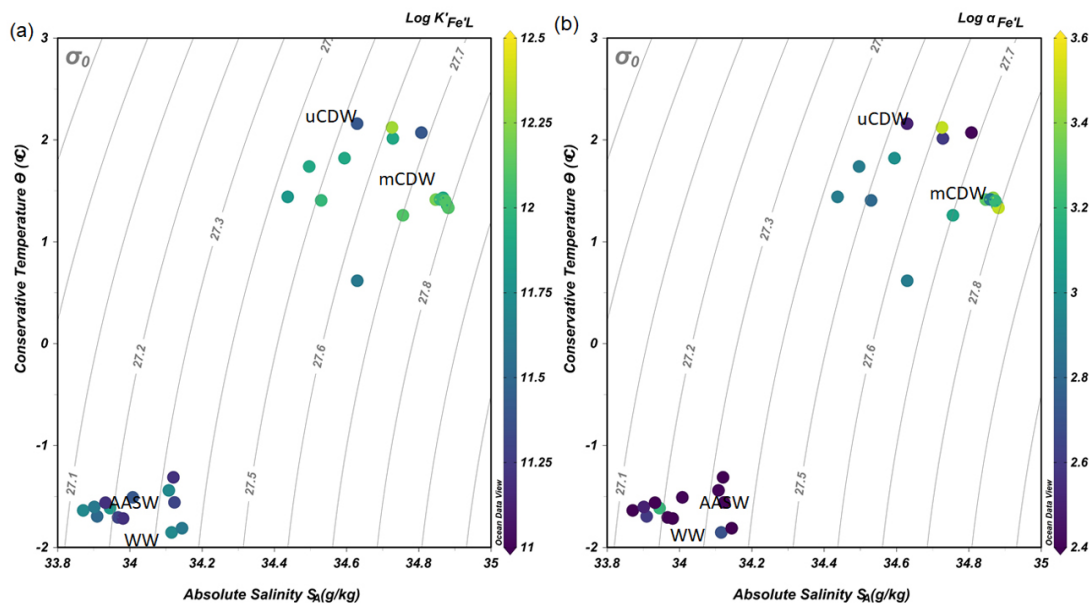


Fig. 4.

Printer-friendly version

Discussion paper



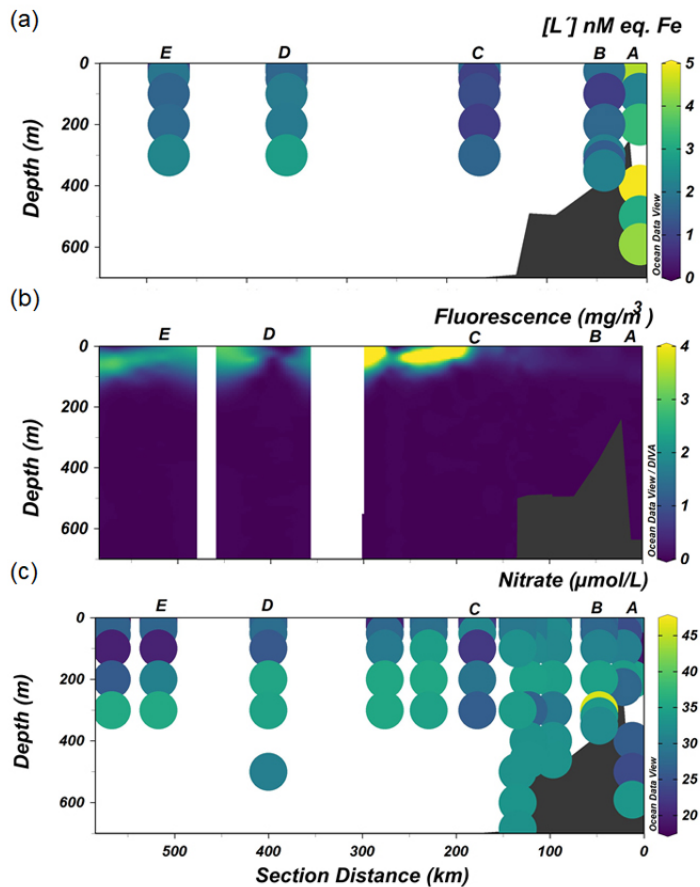


Fig. 5.

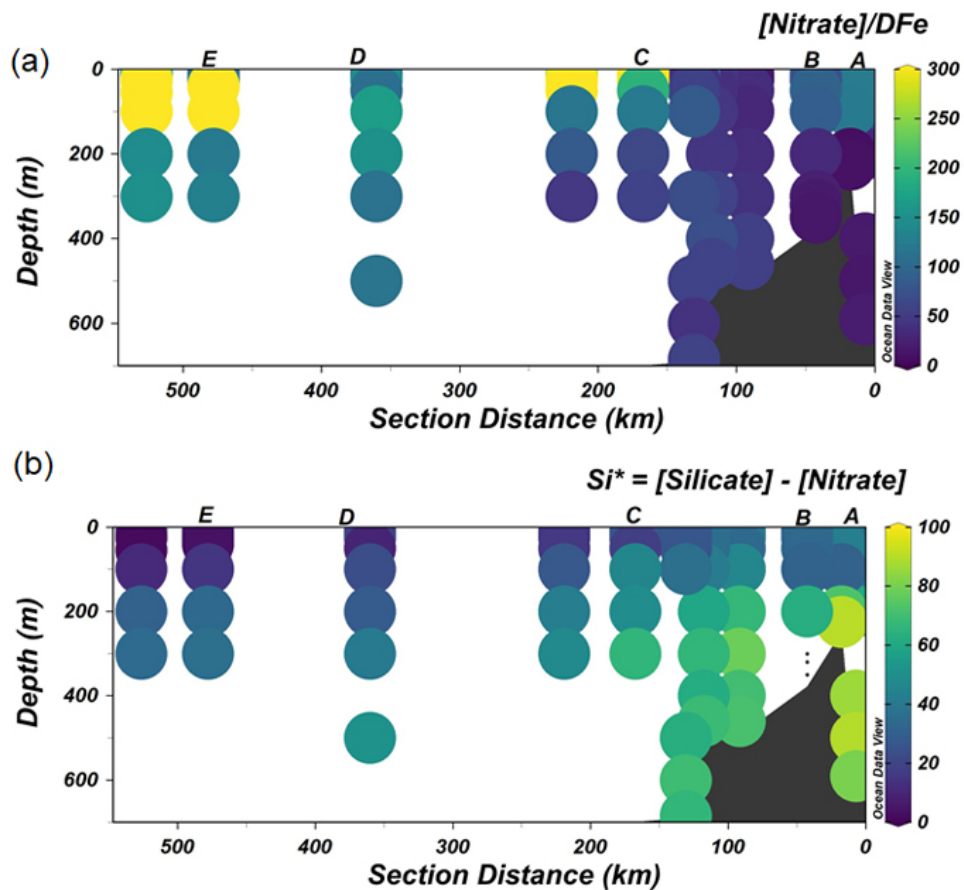


Fig. 6.

Printer-friendly version

Discussion paper

