

## Reply on RC2

Michael J. Whitehouse et al.

---

Author comment on "A database of marine macronutrient, temperature and salinity measurements made around the highly productive island of South Georgia, the Scotia Sea and the Antarctic Peninsula between 1980 and 2009" by Michael J. Whitehouse et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2022-244-AC2>, 2022

---

We were most gratified to read the very positive comments on our paper from both Reviewers. Below we set out our explicit responses to all of their comments.

Both Reviewers have suggested that the paper would be improved with the addition of more data description. Earlier we detailed the problems with climatological mapping and mentioned that a number of subsets of the dataset have already been published. These vary from seasonal considerations of the data around South Georgia and across the Scotia Sea, along with nutrient utilization by phytoplankton and physiological regeneration by zooplankton. Because of these previous analyses, we feel it would be most beneficial (and efficient) to:

1. describe the regional variation in the surface waters associated with the full array of watermasses present in the study area
2. draw the readers' attention to previous data descriptions and broader relevant topics (e.g. ocean warming and the changing abundance of krill)
3. detail additional regional information where pertinent

To achieve this, we will subsample 0 - 30 m summer profile data from 8 regions in distinct oceanographic regimes: northwest South Georgia; northeast South Georgia; north Scotia Sea; mid-Scotia Sea; south Scotia Sea; Bransfield Strait; north Bellingshausen Sea; and south Bellingshausen Sea (a new figure will illustrate the locations of these regions). We will present regional statistics (median, upper and lower quartile, minimum and maximum) in a new figure.

Specific Comments:

RC2: In the Methods section, are descriptions the same both of the vessels (JB and JCR)? For example, the depth of the underway seawater supply and time taken for seawater to pass through the ship.

AC2: Line 138, 139 delete "or the underway non-toxic ship's seawater supply" and insert "or, additionally on the James Clark Ross, the underway ship's non-toxic seawater supply".

RC2: Usage of (a) and (b) in figures: in figure 1 and 2 the (a) and (b) have small boxes around and in figures 5 and 6 they have no boxes.

AC2: Delete boxes in Figs 1 & 2.

RC2: Line 48 how do the eddies "... influence..." the region? One or two examples would complement the statement

AC2: From line 47, delete sentence: "There is some evidence, for example, that warm water eddies of Polar Frontal Zone origin (i.e., from north of the PF) influence the South Georgia region from the west (Atkinson et al., 1990; Whitehouse et al., 1996b)." Insert: "There is some evidence, for example, that eddies from north of the PF input warmer water to the island and introduce physical structure to the water column that facilitate the resupply of nutrients from deeper to surface waters (Atkinson et al., 1990; Whitehouse et al., 1996b)."

RC2: Line 76 insert 'marine environment' after 'South Georgia'

AC2: OK, corrected

RC2: Line 107 insert 'phytoplankton' before 'bloom'

AC2: OK, corrected

RC2: Line 110-111 repetition of the phrase 'play a role'

AC2: Substitute "likely play a role in" with "influences"

RC2: Line 111 is the word 'and' after 'nutrient cycling' a typo?

AC2: insert "," after cycling

RC2: Line 241 is the word 'ship' after 'compiled with' a typo?

AC2: From line 241 delete sentence "The non-toxic ship's seawater supply data were compiled with ship, ship identification information, cruise number, geographic location, temperature and salinity, and each timestamp reformatted as a date vector, a serial date number, and a datetime string (DD-MMM-YYYYThh:mm:ssZ)." Insert "The ship's non-toxic seawater supply data were compiled with ship identification information, cruise number, geographic location, temperature and salinity, and each timestamp reformatted as a date vector, a serial date number, and a datetime string (DD-MMM-YYYYThh:mm:ssZ)."