Dear Dr Woulds,

Thank you for your support in improving our manuscript. In the revised version we addressed your point as follows:

Firstly, please make sure that your sampling depths are stated in the methods section in much more detail (i.e. give the depth range over which each set of measurements was made). If necessary, please add a table to the methods section showing sampling depths. Currently the depths are only available by looking at the supplementary material, which is not acceptable.

- ➔ We added a table for the N_2 and C fixation rates as recommended (and removed the respective table from the supplementary material). Please note that we also made all data available on Pangaea and added the respective doi numbers. This should help to facilitate a better accessibility of the datasets as I feel it is inconvenient to extract them from a pdf.

- ➔ We further added depth ranges for

  - o N_2/C-fixation rate measurements, POC and PON: 'Seawater was collected from depth between 60 and 280 m water depth.' (l. 105)

  - o DNA: 'Nucleic acid samples were collected at stations 1, 4 and 5 (Fig. 1) from water depths between 10 and 560 m.' (l. 131)

  - o Bulk isotopes in the caption of Fig. S3: Both, (A) $\delta^{15}N\text{-}NO_3^-$ (data from Bristow et al., 2017) and (B) $\delta\ ^{15}N$-PON show slightly lighter isotope signatures in the upper 100 m of the water column (samples were collected between 3 and 2300 m water depth), however, this signal does not clearly indicate N_2 fixation.

Secondly, during the results section please specify what depth range is meant by 'surface waters' and other non-quantitative terms, and re-state the depth of the DCM.

- ➔ We added depth ranges to surface waters, which we defined as the mixed layer depth between 0 and 60 m water depth as now indicated in l. 181 'surface waters refer to water depths shallower than the mixed layer depth of 60 m'.

- ➔ The deep chlorophyll maximum was now re-stated in l. 198 'at the depth of the DCM (Fig. 2, 84 m)'.

Thirdly, please add a short paragraph early in the discussion to answer the reviewer's point, and to justify why the data that you have, over the depth range that you have, are a sufficient basis for the conclusions you have reached.

We added the following section, in line with the reviewer's suggestion of basing the conclusions equally strongly on the high-resolution profiles of the $\delta^{15}NO_3^-$ isotope and on the N_2 fixation rates.

'This nitrogen limitation would be expected to create a niche for N_2 fixation, but except for two samples for which in both cases only one out of three technical replicates showed an isotope enrichment, N_2 fixation rates were below the detection limit (Tab. 2). In this context, it is important to note that our rate measurements only cover water depths between 60 and 280 m, thus excluding the upper part of the euphotic zone. However, the absence of N_2 fixation even in waters shallower than 60 m is consistent with the observed $\delta^{15}N$ signatures (data available from 3 to 2300 m water depth) of both the nitrate and the particulate organic nitrogen (PON) pool. $\delta^{15}N$ signatures were only slightly decreased in the top 100 m of the water column to 5-8‰ (Fig. S3), thus not speaking for the presence of active N_2 fixation which would be expected to create substantially lighter $\delta^{15}N$ signatures of -2- 2‰ (e.g. Dähnke and Thamdrup (2013)).' (l. 222 ff)

Please also add further detail to the S1 caption, or provide additional text, to indicate how different groups of phytoplankton were derived from the satellite data.

We added the highlighted information; the caption now reads:

'Figure S1: Phytoplankton distribution in the BoB during the time of the cruise: (A) diatoms, (B) chlorophytes, (C) coccolithophores, and (D) cyanobacteria in mg m^{-3}. Data obtained from a combination of the Sea-viewing Wide Field of view Sensor (SeaWiFS), the Moderate Resolution Imaging Spectroradiometer (MODIS-Aqua), and the Visible Infrared Imaging Radiometer Suite (VIIRS) satellite product as available from https://giovanni.gsfc.nasa.gov have been averaged from 15 Jan to 15 Feb, 2019. The combination of those sensors allows for covering a range of different wavelengths useful to identify different phytoplankton clades. The maps have been generated using the NASA Ocean Biogeochemical Model (NOBM, Gregg and Casey (2007)) using the most recent version of NASA ocean color data product (R2014), which represents circulation/biogeochemical/radiative processes in a 2/3° latitude spatial resolution as described in Gregg, Rousseaux, and Franz (2017). NOBM is designed to represent open ocean areas, with water depths greater than 200 m. It contains four phytoplankton groups, diatoms, chlorophytes, cyanobacteria, and coccolithophores, to represent diversity in the global oceans. Total chlorophyll is the sum of the phytoplankton groups.'

I hope these additions could improve the manuscript and make it clearer.

All the best

Carolin Löscher