

Data Paper

Ryosuke Makabe and Kunio T. Takahashi. Chlorophyll *a* and macronutrient concentrations during the icebreaker *Shirase* cruise of the 62nd and 63rd Japanese Antarctic Research Expedition. Polar Data Journal. 2023, 7, p. 50–57.
<https://doi.org/10.20575/00000048>.

(Received 4/12/2023; Accepted 6/25/2023)

1st submission

Editor Start Date: 4/12/2023

Editor Stop Date: 5/17/2023

Reviewer #1 (4/16/2023–5/17/2023)

Reviewer #2 (4/17/2023–4/30/2023)

Reviewer #1: Anonymous

The manuscript reports data of chlorophyll *a*, macronutrient concentrations and photosynthetically active radiation collected from the Southern Ocean during the icebreaker *Shirase* cruise of the 62nd and 63rd JARE. The dataset has good format and the documentation on the data is well written. Therefore, I recommend accepting it for publication in Polar Data Journal after very minor revisions.

Specific remarks

Background & Summary

1. Lines 33-34: Change 'Indian Sector of' to 'Indian sector of'.
2. Line 36: Change 'macronutrients' to 'the concentration of macronutrients'.
3. Line 38: Change 'to capture interannual variation' to 'to capture the those interannual variation'.
4. Lines 42-45: Change to 'Chlorophyll *a* has been measured as part of the research program "Marine Ecosystem Monitoring" since 38th Japanese Antarctic Research Expedition (JARE) as a routine observation (previously entitled "Biological Oceanography").
5. Line 48: Change 'JARE52' to 'JARE-52'.
6. Line 54: 'Shirase' is to be italic.
7. Lines 56-57: Change to '~', documents the chlorophyll *a* and macronutrient concentrations, water temperature, salinity, and PAR, measured ~'.

Study sites

8. Line 61: Change 'Indian Sector of' to 'Indian sector of'.
9. Lines 64-68: Change to 'In 2020/21 season, all vertical observations were canceled because of change in cruise track. In 2021/22 season, the conductivity-temperature-depth (CTD) cast and vertical water sampling was conducted at two sites (L4&5) located in meridional transects along 110E (Fig. 1b). Three vertical sampling stations (L1-3) were ~'.

Materials and Methods

10. Line 78: Change 'SBE19 plus' to 'SBE 19plus'.
11. Line 84: Change to 'a salinometer'.
12. Line 98: Change to 'Makabe et al. (2020a)'.
13. Lines 125-126: Change to 'data was not obtained due to ~'.

Data records

14. Line 132: Which three files are you referring to?

Reviewer #2: Anonymous

In the manuscript entitled "Chlorophyll a and macronutrient concentrations during the icebreaker Shirase cruise of the 62nd and 63rd Japanese Antarctic Research Expedition", authors provide data and details for water temperature, salinity, chlorophyll a concentration, size fraction of chlorophyll a, macro-nutrients, and photosynthetically active radiation (PAR) data obtained in the Southern Ocean. These parameters provide essential information to describe variability of phytoplankton biomass in the changing Southern Ocean. The manuscript also provides clear descriptions of provided parameters. I thus consider that both the manuscript and provided data substantially benefit the readers. The manuscript is almost ready for publication, although being subject to minor revision. I have a few minor comments as listed below.

1. L.23-L.26 The final sentence in the manuscript sounds awkward. Delete ", " before presents. Add "and" before is.
2. L. 67-68 Does the sentence refers to 2021/22 season? It was unclear in the context.
3. L. 72-76 Can authors provide details of data (e.g., accuracy)? Also, does the SBE 38 placed near the water intake? Location where SBE 38 is placed should also be provided because there should be warming along the flow path after leaving the intake.
4. L. 77-80. Same as above comment. Can authors provide details of data (e.g., accuracy)?

5. L. 77-80. Details for dissolved oxygen sensor and derived data should also be mentioned if they are included in provided data.
6. L. 95. Can authors explain reason for this?

Authors Response:

Dear editor of Polar Data Journal,

Thank you for many constructive comments. We revised the MS according to reviewer's comments as followings (in red).

Sincerely,

Ryosuke Makabe

Response to reviewer #1;

The manuscript reports data of chlorophyll a, macronutrient concentrations and photosynthetically active radiation collected from the Southern Ocean during the icebreaker Shirase cruise of the 62nd and 63rd JARE. The dataset has good format and the documentation on the data is well written. Therefore, I recommend accepting it for publication in Polar Data Journal after very minor revisions.

Specific remarks

Background & Summary

1. Lines 33-34: Change 'Indian Sector of' to 'Indian sector of'.

Changed.

2. Line 36: Change 'macronutrients' to 'the concentration of macronutrients'.

Changed.

3. Line 38: Change 'to capture interannual variation' to 'to capture the those interannual variation'.

Changed.

4. Lines 42-45: Change to 'Chlorophyll a has been measured as part of the research program "Marine Ecosystem Monitoring" since 38th Japanese Antarctic Research Expedition (JARE) as a routine observation (previously entitled "Biological Oceanography").

Changed.

5. Line 48: Change 'JARE52' to 'JARE-52'.

Changed.

6. Line 54: 'Shirase' is to be italic.

Changed.

7. Lines 56-57: Change to '~', documents the chlorophyll a and macronutrient concentrations, water temperature, salinity, and PAR, measured ~'.

Changed.

Study sites

8. Line 61: Change 'Indian Sector of' to 'Indian sector of'.

Changed.

9. Lines 64-68: Change to 'In 2020/21 season, all vertical observations were canceled because of change in cruise track. In 2021/22 season, the conductivity-temperature-depth (CTD) cast and vertical water sampling was conducted at two sites (L4&5) located in meridional transects along 110E (Fig. 1b). Three vertical sampling stations (L1-3) were ~'.

Changed.

Materials and Methods

10. Line 78: Change 'SBE19 plus' to 'SBE 19plus'.

Changed.

11. Line 84: Change to 'a salinometer'.

Changed.

12. Line 98: Change to 'Makabe et al. (2020a)'.

Changed.

13. Lines 125-126: Change to 'data was not obtained due to ~'.

Changed.

Data records

14. Line 132: Which three files are you referring to?

Sorry for incorrect number of files. It has been changed to “six files” described above.

Response to reviewer #2;

In the manuscript entitled "Chlorophyll a and macronutrient concentrations during the icebreaker Shirase cruise of the 62nd and 63rd Japanese Antarctic Research Expedition", authors provide data and details for water temperature, salinity, chlorophyll a concentration, size fraction of chlorophyll a, macro-nutrients, and photosynthetically active radiation (PAR) data obtained in the Southern Ocean. These parameters provide essential information to describe

variability of phytoplankton biomass in the changing Southern Ocean. The manuscript also provides clear descriptions of provided parameters. I thus consider that both the manuscript and provided data substantially benefit the readers. The manuscript is almost ready for publication, although being subject to minor revision. I have a few minor comments as listed below.

1. L.23-L.26 The final sentence in the manuscript sounds awkward. Delete "," before presents. Add "and" before is.

Changed.

2. L. 67-68 Does the sentence refers to 2021/22 season? It was unclear in the context.

We have added the sentence "In 2021/22 season, the conductivity-temperature-depth (CTD) cast and vertical water sampling was conducted at two sites (L4&5) located in meridional transects along 110E (Fig. 1b)." before the sentence according to the reviewer 1.

3. L. 72-76 Can authors provide details of data (e.g., accuracy)? Also, does the SBE 38 placed near the water intake?

Location where SBE 38 is placed should also be provided because there should be warming along the flow path after leaving the intake.

We cannot provide data accuracy for these data during observation, but all sensors calibrated by Sea-Bird Scientific before the cruise. SBE38 was placed near the water intake. We has added a sentence "The SBE 38 was placed near water intake to avoid warming."

4. L. 77-80. Same as above comment. Can authors provide details of data (e.g., accuracy)?

We cannot provide data accuracy for these data during observation, but all sensors calibrated by Sea-Bird Scientific before the cruise.

5. L. 77-80. Details for dissolved oxygen sensor and derived data should also be mentioned if they are included in provided data.

I'm sorry that CTD data include "CTDOXY", but the sensor was used by another program. We have removed the CTDOXY from the data file.

6. L. 95. Can authors explain reason for this?

Chlorophyll *a* at 200 m depth was usually low (mostly under detection limit) through our monitoring sites, so our program only measure bulk chlorophyll *a*.

2nd submission

Editor Start Date: 6/20/2023

Editor Stop Date: 6/25/2023

Editor comments to the Author: Norio Kurosawa

The authors revised the paper appropriately according to the reviewers' comments.

Editorial Office's note

Calculate checksum date: 6/27/2023

Algorithm:SHA256

Hash link: <http://id.nii.ac.jp/1434/00000048> > hash list