

Data Paper

Ryosuke Makabe, Shintaro Takao, Kunio T. Takahashi and Tsuneo Odate. Chlorophyll a and macro-nutrient concentrations and photosynthetically active radiation during the training vessel Umitaka-maru cruise of the 60th Japanese Antarctic Research Expedition in January 2019. *Polar Data Journal*. 2020, 4, p.169–180. <https://doi.org/10.20575/00000021>.

(Received 8/31/2020; Accepted 11/18/2020)

1st submission

Editor Start Date: 9/1/2020

Editor Stop Date: 10/23/2020

Reviewer #1 (9/8/2020–9/18/2020)

Reviewer #2 (10/7/2020–10/23/2020)

Reviewer #1: Anonymous

In the manuscript entitled “Chlorophyll a and macro-nutrient concentrations and photosynthetically active radiation during the training vessel Umitaka-maru cruise of the 60th Japanese Antarctic Research Expedition in January 2019”, authors provide chlorophyll a concentration, size fraction of chlorophyll a, macro-nutrients, and photosynthetically active radiation (PAR) data obtained from sub-tropical to polar regions 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.

L. 33-36: I suggest the sentence to be modified as “During the cruise, water samples for chlorophyll a and macro-nutrient concentrations were obtained from underway pump twice a day, and”

L. 37: “while” might be suitable than “although”.

L. 117-118: Is the number 0.360 determined by chlorophyll a standard (Wako Chemical Co.)?

Also, if determined fluorescence was lower (or higher) than this value, does it mean that accuracy of determined fluorescence cannot be authorized by the calibration? If so, there should be upper limit (800) too. Is my understanding

correct?

If this is correct, I recommend the sentence to be modified so that readers can understand the point such as “Fluorescence of all samples presented in this MS was within range validated by calibration.”

L. 126: delete “Shimada et al.,” in the brackets.

Fig. 1: Label “Latitude (°N)” on vertical axis should be modified to “Latitude (°S)”.

Fig. 5: Because meridional ranges are different among the panels, horizontal axis of (A) and (B) would be better be labeled by “Latitude (°S)” to increase readability. Also, label “Latitude (°N)” on horizontal axis of (C) should be modified to “Latitude (°S)”.

Fig. 6: Label “Latitude (°N)” on horizontal axis should be modified to “Latitude (°S)”.

Reviewer #2: Naho Miyazaki

The datasets in this study are expected to continuously quantify the size of primary producers in the Indian Ocean sector of Southern Ocean. It would not only provide an interpretation of the size diversity of predators and prey at this T/V Umitaka-maru cruise, but also important information needed to elucidate and predict Antarctic ecosystem. I recommend publication on Polar Data Journal after addressing one specific comment and some English writing rule.

A specific comment

I am wonder that why did the authors present surface nutrient data only. Is there vertical nutrient data? If you have the surface and vertical data, both the data should be present in one paper.

Background & Summary

Line 43 "oceanic" , I think "marine" is preferable.

Study sites

Line 90 Spaces are required at the beginning of the sentence.

Line 96 Please describe NiPR database "DID "and Vol" or "Filename and description" for same cruise dataset.

Materials and methods

Line 109 Need a space before "N-dimethylformamide"

Line 113 Delete manufacture address "Sunnyvale, California, USA".

Line 117 "Fluorescence of all samples presented..."

The chemical resistance of the membrane filter is not shown in manufacturer's instruction PDF below. For my confirmation, please state if the filter blank for DMF was zero.

Competing interests

Line 169 Spaces are required at the beginning of the sentence.

Acknowledgments

Line 173 A comma need "and" officers could make it cleaner.

Line173 Use plural form of "crew".

References

Line 199 Correct bold typeface "975"

Line 206 Correct bold typeface "46"

Line 212 Correct bold typeface "39"

Figure legends

Line 217, 220, 223, 225, 228, 231, and 234. Unify the number of spaces after the numbers in the figure.

Line 225 Remove a single space before "KC4"

Line 232 Remove a single space after "phosphate"

Authors Response:

We revised the MS according to reviewer's comments as followings (in red).

Response to reviewer #1;

In the manuscript entitled "Chlorophyll a and macro-nutrient concentrations and photosynthetically active radiation during the training vessel Umitaka-maru cruise of the 60th Japanese Antarctic Research Expedition in January 2019", authors provide chlorophyll a concentration, size fraction of chlorophyll a, macro-nutrients, and photosynthetically active radiation (PAR) data obtained from sub-tropical to polar regions 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.

L. 33-36: I suggest the sentence to be modified as “During the cruise, water samples for chlorophyll a and macro-nutrient concentrations were obtained from underway pump twice a day, and”

Corrected accordingly.

L. 37: “while” might be suitable than “although”.

Corrected accordingly.

L. 117-118: Is the number 0.360 determined by chlorophyll a standard (Wako Chemical Co.)?

Also, if determined fluorescence was lower (or higher) than this value, does it mean that accuracy of determined fluorescence cannot be authorized by the calibration? If so, there should be upper limit (800) too. Is my understanding correct?

If this is correct, I recommend the sentence to be modified so that readers can understand the point such as “Fluorescence of all samples presented in this MS was within range validated by calibration.”

It is correct. We changed the sentence to “Fluorescence of all samples presented in this MS was within range validated by calibration (0.360–762).”

L. 126: delete “Shimada et al.,” in the brackets.

Corrected accordingly.

Fig. 1: Label “Latitude (°N)” on vertical axis should be modified to “Latitude (°S)”.

We had already published the series of data paper unifying to “degree N”. We decided to show it in current manner to avoid confusions for user of this series.

Fig. 5: Because meridional ranges are different among the panels, horizontal axis of (A) and (B) would be better be labeled by “Latitude (°S)” to increase readability. Also, label “Latitude (°N)” on horizontal axis of (C) should be modified to “Latitude (°S)”.

We had already published the series of data paper unifying to “degree N”. We decided to show it in current manner to avoid confusions for user of this series.

Fig. 6: Label “Latitude (°N)” on horizontal axis should be modified to “Latitude (°S)”.

We had already published the series of data paper unifying to “degree N”. We decided to show it in current manner to

avoid confusions for user of this series.

Reponse to reviewer #2;

The datasets in this study are expected to continuously quantify the size of primary producers in the Indian Ocean sector of Southern Ocean. It would not only provide an interpretation of the size diversity of predators and prey at this T/V Umitaka-maru cruise, but also important information needed to elucidate and predict Antarctic ecosystem. I recommend publication on Polar Data Journal after addressing one specific comment and some English writing rule.

A specific comment

I am wonder that why did the authors present surface nutrient data only. Is there vertical nutrient data? If you have the surface and vertical data, both the data should be present in one paper.

Vertical profiles of nutrients at the same occasions were conducted by the another project, which will be published soon.

Background & Summary

Line 43 "oceanic" , I think "marine" is preferable.

Corrected accordingly.

Study sites

Line 90 Spaces are required at the beginning of the sentence.

Line 96 Please describe NiPR database "DID "and Vol" or "Filename and description" for same cruise dataset.

Corrected accordingly.

Materials and methods

Line 109 Need a space before "N-dimethylformamide"

Line 113 Delate manufacture address "Sunnyvale, California, USA".

Line 117 "Fluorescence of all samples presented...

The chemical resistance of the membrane filter is not shown in manufacturer's instruction PDF below. For my confirmation, please state if the filter blank for DMF was zero.

Competing interests

Line 169 Spaces are required at the beginning of the sentence.

Corrected accordingly.

Acknowledgments

Line 173 A comma need "and" officers could make it cleaner.

Line173 Use plural form of "crew".

Corrected accordingly.

References

Line 199 Correct bold typeface "975"

Line 206 Correct bold typeface "46"

Line 212 Correct bold typeface "39"

Corrected accordingly.

Figure legends

Line 217, 220, 223, 225, 228, 231, and 234. Unify the number of spaces after the numbers in the figure.

Line 225 Remove a single space before "KC4"

Line 232 Remove a single space after "phosphate"

Corrected accordingly.

2nd submission

Editor Start Date: 11/15/2020

Editor Stop Date: 11/18/2020

Editorial Office's note

Calculate checksum date: 11/16/2020

Algorithm:SHA256

Hash link: <http://id.nii.ac.jp/1434/00000021> > hash list