

Data Paper

Sakae Kudoh, Yukiko Tanabe, Kentaro Hayashi, Morimaru Kida, Nobuhide Fujitake, Masaki Uchida, Satoshi Imura. Meteorological data from ice-free areas in Yukidori Zawa, Langhovde and Kizahashi Hama, Skarvsnes on Sôya Coast, East Antarctica during December 2014–December 2016. *Polar Data Journal*. 2019, 3, p. 37–45. <https://doi.org/10.20575/00000008>.

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1st submission

Editor Start Date: 2/13/2018

Editor Stop Date: 9/2/2018

Reviewer #1 (3/16/2018–3/31/2018)

Reviewer #2 (3/29/2018–4/8/2018)

Reviewer #3 (4/9/2018–5/27/2018)

Editor Comments to the Author:

Reviewer #1 : anonymous

ユキドリ沢データファイル (10-min\_data\_Yukidori2014D-2016D.csv) の風向に何度か検出されているマイナスの数値はエラー値ではないでしょうか (下記4)。その場合、エラー値を省くか、注釈を加えるなどすべきだと思います。それ以外に大きな問題は無いように思いました。

1. Table: An example of the 10-min and 1-hr data format とあるが、1 h のデータが無いように見える。
2. Table 1 の数値が左詰めになっているようだが中央揃えにして項目と揃えた方が良い。
3. 引用文献に番号を振る必要がある。本文中に引用する際、著者名は記入せず番号を上付き文字で記入する。

モニタリングデータに関して :

4. ユキドリ沢 AWS の風向データ (10 分ごと) にマイナスの数値が存在するが、有り得ない数値であるならデータ上から省き、1 時間、1 日平均の値を計算しなおすべきではないか。
5. Wind speed 欄の WVC とは何の略か。Ave の間違いではないか?

Reviewer #3 : anonymous

This paper compiles meteorological data obtained at the two stations in ice-free area in Soya Coast, East Antarctica. The data has been collected since 2009 and is worth while archiving. I have rated this paper "major revision" but it is very much close to "reject" because of the following points.

1. Most of the manuscript were copied from Kudoh et al. 2015a and b. I don't know the standard of PDJ on this matter, but I recommend authors to refer to previously published papers and avoid repetition.
2. A part of the data in this paper (from Dec. 1, 2014 to Jan. 31,2015) has been already published in Kudoh et al., 2015b. You must explain why they are repeated.
3. The specification of the sensors is in the Table 1 in Kudoh et al., 2015a, but the converting equations are shown for radiation sensors, which is not the precision.
4. There are many digits after decimal point in the data. You must make them short reflecting the precision.
5. Knowing the data logger CR1000, 10 min, 1 hour and 1 day data are mean values, not instantaneous values. The scanning interval and how the mean value is calculated must be described. The functions of CR1000 must be carefully explained.
6. How to obtain the averaged values of wind speed and wind direction must be explained.
7. There is negative values in wind direction. Needs explanation.
8. How was missing data treated? It must be explained. In the data set there is a "NAN". Explain what it is.
9. No technical validation was written in "5. Technical validation" but the explanation of data files. The calibration method and frequency must be described.
10. English must be improved substantially. There are also several typos.

#### Specific comments

11. Abstract: It is too short and there is not enough information of the paper. "Abstract" must be written so that reader can know the data set without reading the main part of the manuscript. Items of meteorological data, types and period of data set, etc.
12. 1. Background and Summary: History of the monitoring in the stations must be described.
13. 3rd line from the bottom in "1. Background and Summary": "these data" must not be the data set in this paper, but readers would wrongly think so.
14. 3rd line from the bottom in "2. Locations": Explain the maker, type and precision of "GPS".
15. How often those sensors were renewed? It must be written in "3. Methods".
16. 3rd line from the bottom in "3. Methods": "prebious report" must be "previous report".
17. All sentences in "4. Data Records" must be moved to "3. Methods".
18. The functions of CR1000 must be described carefully as pointed out in "5." above, including the way of compiling the data in "10 min", "1 hour" and "1 day", and their relations (e.g. how the data of "10 min" is compiled to "1 hour").
19. All sentences in "5. Technical Validation" must be moved to "4. Data Records."

20. In "5. Technical Validation", the calibration methods and their frequency must be described. The history of renewal of sensors must be added if any.
21. Fig.1: Red arrows with distance are not necessary to show here.
22. Fig.2: Check the zero value in the Solar radiation graph at the end of Jan. 2015.
23. Fig. 2: "expressions" must be "expressions". The same is seen in Fig.3.
24. Table 1.: The number of digits after decimal point must reflect the precision of the sensors and loggers.

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Authors Response:

I enclosed our revised manuscript entitled "Meteorological data from ice-free areas in Yukidori Zawa, Langhovde and Kizahashi Hama, Skarvsnes on Sôya Coast, East Antarctica during December 2014 - December 2016 By Kudoh et al." We fully checked the text and data, and revised according to the comments of both reviewers. The followings are our reply;

To Reviewer #1

**General:** 雪鳥沢データファイル中の「風向」データに出現するマイナス表示に関して、ご指摘感謝します。このマイナス値はデータロガーに記録されていた風向(磁北に対して記録しておりました)を真北方向に補正した際に発生したものでした。例えば-30° というデータは真北から反時計回りに 30° という意味合いで、必ずしもエラー値ではありません。しかしながら、読者に対する混乱を与えうる表示でしたので、風向データはすべて真北に対し、「時計回りに正の整数表示」としました。混乱を与えてしまい申し訳ございませんでした。この修正は **Reviewer#3** の方へのコメントと共通した回答です。

1. ご指摘の通り **Table 1** は 10 分値データの表示例を示したもので、1 時間値表示例は示しておりません。ここで伝えたかったのは「1 時間値データ表示」も同様のフォーマット(カラム数・配置・データの単位)であることでした。説明文を書き換えました。
2. 中ぞろえにして、有効数値を考慮して数値表示しました。センサーの精度を考慮し、データファイル中の数値表示桁数等も整理しております。
3. 引用文献の表示を修正しました。
4. 冒頭のとおり、マイナス値に関し修正しております。
5. データファイル中にある意味が分かりづらい略号に関しては排除し、極力わかりやすい記述・表示単位を付しました。

To Reviewer #3

1. I fully revised the previous text in sections of Abstract, Background, Location, and so on, according to the suggestions of both reviewers, as much as possible.
2. Yes. These data files contains nearly 2 months data which had been published in previous our report. We would like to check and show the data before/after our maintenance (include exchange of some photo sensors), to confirm no significant change of the data quality (continuity). I wrote the reason to repeated publication in these data in "4. Data Record".
3. I added the information of the accuracy of the sensors in "3. Methods"
4. I changed
5. I checked carefully the data logger CR1000, and revised: 10-min and 1-hr data tables are listed mean values of wind and radiation sensors for 10-min and 1-hr interval, respectively, and the data of temperature, humidity, air pressure are instantaneous ones at recorded time. Explanation in "4. Data Record" have been revised.
6. Revised
7. Revised
8. Explained in "4. Data Record"
9. Explained in "5. Technical Validation"
10. I checked typos and corrected. I would like to check our English by native speaker after this revision
11. Changed
12. Described
13. Corrected
14. Added
15. Added
16. Typos were checked and corrected
17. Moved as your suggestion
18. Explained
19. Moved
20. Descriptions were added
21. I removed them as your suggestion
22. Zero value in January 2015 occurred when we did maintenance. I explained in the text and figure legend.
23. Typos were corrected
24. Corrected.

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2nd submission

Editor Start Date: 11/21/2018

Editor Stop Date: 2/10/2019

Reviewer #3 (12/27/2018–1/22/2019)

Editor Comments to the Author:

Reviewer #3 : anonymous

I have read the revised manuscript and found out that all responses from the authors were appropriate, and I now rate the paper is worth publishing. The small but important corrections needed are described in the "comments to authors."

1 **Meteorological data from ice-free areas in Yukidori Zawa, Langhovde and Kizahashi Hama,**  
2 **Skarvsnes on Sôya Coast, East Antarctica during December 2014 - December 2016**

3  
4 Sakae Kudoh<sup>1,2</sup>, Yukiko Tanabe<sup>1,2</sup>, Kentaro Hayashi<sup>3</sup>, Morimaru Kida<sup>4</sup>, Nobuhide Fujitake<sup>4</sup>, Masaki  
5 Uchida<sup>1,2</sup> and Satoshi Imura<sup>1,2</sup>  
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12 Organization, 3-1-3 Kannondai, Tsukuba, 305-8604

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15

16 **Abstract:** Meteorological data recorded by automatic weather stations (AWSs) installed at ice-free  
17 areas in the middle of Yukidori Zawa and near the coast of Kizahashi Hama during the JARE-56 and  
18 58 (2014-2016) was summarized in tables and figures. Almost 2 year data of air temperature, relative  
19 humidity, air pressure, wind conditions, solar radiations including photosynthetically active radiation,  
20 and ultra violet radiation were compiled in 3 text files from each AWS; 10-min, 1-hr and daily.

21  
22  
23 **1. Background and summary**

24 This report presents meteorological data recorded by automatic weather stations (AWSs) in  
25 Yukidori Zawa (Yukidori Valley), Langhovde, and in Kizahashi Hama, Skarvsnes on the Sôya Coast  
26 of East Antarctica, between the Japanese Antarctic Research Expedition 56 (JARE-56) in December  
27 2014 and JARE-58 in December 2016. This study, part of the National Institute of Polar Research  
28 (NIPR) project “Monitoring of terrestrial ecosystems (mission code; AMB)” had recorded  
29 environmental conditions for terrestrial organisms [research](#) in several major ice-free areas of Syowa  
30 Oasis since 2009. The AWSs continuously monitored wind speed and direction, air temperature,  
31 relative humidity, solar radiation, [photosynthetically active radiation \(PAR\)](#), [ultra violet radiation](#)  
32 [\(UV\)](#), and air pressure, and [logged](#) them automatically at intervals of 10 min, 1 h, and 1 day.  
33 Previously we reported these data in JARE Data Reports<sup>1,2,3</sup>. Using the meteorological data obtained  
34 from the previous observations and those at Syowa Station, meteorological features in the ice-free  
35 areas had also been discussed<sup>4</sup>.  
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削除: summarized data tables were presented.

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## 2. Locations

49 Yukidori Zawa, name of a valley in central Langhovde, is Antarctic Specially Protected  
50 Area No. 141, where a relatively rich community of mosses and lichens distributes ice-free areas  
51 along a seasonal stream in Syowa Oasis<sup>3</sup>. An AWS was installed at a flat site beside the middle  
52 stream of the valley at 69 °14 '28 "S, 39 °44 '21 "E as determined by a handy GPS (GPS Map62,  
53 Garmin), approximately 53 m above sea level (Fig. 1). Another AWS was installed at a coastal site in  
54 the southeastern part of Kizahashi Hama, a sandy beach in central Skarvsnes, at 69 °28 ' 25 " S,  
55 39 S, 39 °36 ' 43 " E at an elevation of ca. 3 m (Fig. 1).

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57

## 3. Methods

58 Each AWS consisted of a data logger (CR1000-4M-XT, Campbell Scientific, USA), an  
59 anemometer (05103, Young, USA), a hydro-thermometer (HMP155D, Vaissala, Finland), a solar  
60 radiation sensor (PCM-01(L), Prede, Japan), a PAR sensor (PAR-01(L), Prede, Japan), a UV-sensor  
61 (CUV5, Kipp & Zonen, Germany), a barometer (PTB210, Vaissala, Finland), and six sets of lithium  
62 ion batteries (TL5930/T, 3.6 V, four cells connected in series for a total of 14V) capable of supplying  
63 3 years of electric power (19Ah) to the system. The logger, barometer and batteries were stored in a  
64 plastic container (Pelican Products, USA), and the other sensors were mounted on a tripod. All  
65 sensors had been pre-calibrated by a manufacturer (CS Tokki Co., Sapporo, Japan), and confirmed  
66 the accuracy within the specifications of each sensor, which had been listed in the table of the  
67 previous report<sup>1</sup>. The accuracy the anemometer was  $\pm 0.3$  m/s (range: 0-60 m/s) [in wind speed](#) and  
68  $\pm 3$  degree [in wind direction](#), the hydro-thermometer was  $\pm 0.2^{\circ}\text{C}$  and  $\pm 2\%$  at  $22^{\circ}\text{C}$ , the solar  
69 radiation sensor was  $\pm 3\%$  (range: 0 - 1000 W/m<sup>2</sup>), PAR sensor was  $\pm 5\%$  (range 0-3000  
70  $\mu\text{mol/m}^2/\text{s}$ ), UV sensor was  $\pm 5\%$  (range: 0-400 W/m<sup>2</sup>), and the barometer was  $\pm 0.30$  hPa at  $20^{\circ}\text{C}$   
71 (range: 800-1060 hPa). The AWS at Yukidori Zawa was installed on 25 December 2009; that at  
72 Kizahashi Hama was installed on 2 February 2010, and the data [retrieval](#), maintenance of the AWSs,  
73 and exchange of the sensors had been carried out occasionally when serious damages were found.  
74 Data collection and changing the batteries had been done at least within every two years since 2010.

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## 4. Data Records

77 Every 10 min, the logger compiled a data file containing 10-min average of wind speed,  
78 vector wind direction, and radiations (solar radiation, PAR and UV), and instantaneous values of  
79 temperature, relative humidity and air pressure. Every 60 min, it compiled 60-min averaged wind  
80 speed, vector wind direction and radiation data, and instantaneous values of temperature, humidity  
81 and air pressure at recorded time. In addition, every 24 h it created a summary of daily average wind  
82 speed and vector wind direction, temperature, humidity, solar radiation, PAR, UV and air pressure.  
83 This file also included the daily maximum wind conditions (speed and direction) with a time stamp,

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86 the maximum and the minimum values of temperature, humidity, air pressure with time stamps. The  
87 data files were retrieved by the authors during the JARE-58 summer party. We have converted the  
88 10-min, 60-min and 24-h data from the AWS data loggers to CSV files from 1 December 2014 to 31  
89 December 2016 for Yukidori Zawa, from 1 December 2014 to 25 December 2016 for Kizahashi  
90 Hama, respectively. Nearly two months data from 1 December 2014 to 31 January 2015 of Yukidori  
91 Zawa, and the data from 1 December 2014 to 10 January 2015 of Kizahashi Hama have been  
92 reported<sup>2</sup>, however, we listed here again to check the continuity of the data before/after our  
93 maintenance which had been conducted on 31 January 2015 at Yukidori Zawa, and on 13 January  
94 2015 at Kizahashi Hama.

95 [Following is the list of data files.](#)

96 [1. Data from Yukidori Zawa AWS](#)

97 [1-1. 10-min\\_data\\_Yukidori2014D-2016D.csv](#)

98 [1-2 1-hr\\_data\\_Yukidori2014D-2016D.csv](#)

99 [1-3 1-day\\_data\\_Yukidori2014D-2016D.csv](#)

100 [2. Data from Kizahashi Hama AWS](#)

101 [2-1. 10-min\\_data\\_Kizahashi2014D-2016D.csv](#)

102 [2-2 1-hr\\_data\\_Kizahashi2014D-2016D.csv](#)

103 [2-3 1-day\\_data\\_Kizahashi2014D-2016D.csv](#)

104 **5. Technical Validation**

105  
106 When we were carrying out the maintenance (on 31 January 2015 at Yukidori Zawa, 13  
107 January 2015 at Kizahashi Hama), some **photo sensors** were removed for a short time and changed  
108 new sensors, then, no data period was occurred (flagged as NAN, in the daily averaged data tables  
109 because of data lacking for the calculation of daily average). We noticed the data of vector wind  
110 direction at Yukidori Zawa had been recorded against magnetic north (49° shifted westward to true  
111 north), then we corrected the data by subtracted 49 degree.

112 Examples of quick look results, such as air temperature, solar radiation and wind  
113 conditions for two years using the daily averaged data from both sites, are [shown](#) in Figures 2 and 3.

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115 **6. Usage Notes**

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117  
118 Before using the data for publication or presentation in any media, please request  
119 permission in writing. Inquiries should be addressed to:  
120

削除: .

コメントの追加 [A1]: Radiation sensors??

削除: a

削除: drawn

書式変更: インデント : 左 : 0 mm, 最初の行 : 0 mm

削除: Following is the list of data files. .

Data from Yukidori Zawa AWS .

1-1. 10-min\_data\_Yukidori2014D-2016D.csv .

1-2 1-hr\_data\_Yukidori2014D-2016D.csv .

1-3 1-day\_data\_Yukidori2014D-2016D.csv .

Data from Kizahashi Hama AWS ,

2-1. 10-min\_data\_Kizahashi2014D-2016D.csv .

2-2 1-hr\_data\_Kizahashi2014D-2016D.csv .

2-3 1-day\_data\_Kizahashi2014D-2016D.csv



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3rd submission

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Editor Comments to the Author:

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Editorial Office's note

Calculate checksum date: 2/25/2019

Algorithm:SHA256

Hash: c047f57ba2a328056603c8696c84d63c8aca7b2585be05bea14ac9d5e9b9c306

Path:<https://ads.nipr.ac.jp/portal/kiwa/ProductsSelect.action?referer=summary&downloadList=ADS%3AA20190603-001%3A1.00#>

Original Data

Sakae Kudoh, Yukiko Tanabe, Kentaro Hayashi, Morimaru Kida, Nobuhide Fujitake, Masaki Uchida, Satoshi Imura. Meteorological data from ice-free areas on Soya Coast, East Antarctica. 1.00, Arctic Data archive System (ADS), Japan, 2019. <https://doi.org/10.17592/001.2019060301>