

**Meteorological data from ice-free areas in Yukidori Zawa, Langhovde and Kizahashi Hama,
Skarvsnes in Sôya Coast, East Antarctica during 2009–2014**

Sakae KUDOH^{1,2}, Yukiko TANABE^{1,2}, Masaki UCHIDA^{1,2} and Satoshi IMURA^{1,2}

¹ National Institute of Polar Research, Research Organization of Information and Systems,
10–3, Midori-cho, Tachikawa, Tokyo 190-8518.

² Department of Polar Science, School of Multidisciplinary Sciences, SOKENDAI (The Graduate
University for Advanced Studies), 10–3, Midori-cho, Tachikawa, Tokyo 190-8518.

*Corresponding author. E-mail: skudoh@nipr.ac.jp

1. Introduction

This report presents meteorological data recorded by automatic weather stations (AWSs) in the Yukidori Zawa (Yukidori Valley), Langhovde, and in Kizahashi Hama, Skarvsnes, on the Sôya Coast of East Antarctica, between Japanese Antarctic Research Expedition 51 (JARE-51) in 2009 and JARE-55 in 2014. This study, part of the National Institute of Polar Research (NIPR) project “Monitoring of terrestrial ecosystems (AMB06),” recorded environmental conditions for terrestrial organisms in ice-free areas of Syowa Oasis. The AWSs continuously monitored air temperature, relative humidity, solar radiation, photosynthetically active radiation (PAR), ultraviolet radiation (UV), wind speed and direction, and air pressure, logging them automatically at intervals of 10 min, 1 h, and 1 day.

2. Materials and methods

Observation sites: Yukidori Zawa, in central Langhovde, is Antarctic Specially Protected Area No. 141, where a relatively rich community of vegetation occupies ice-free areas in Syowa Oasis (Kosugi *et al.*, 2015). An AWS was installed at a flat site in the middle of the valley at 69°14'28" S, 39°44'21" E approximately 53 m above sea level, as determined by GPS ([Fig. 1](#)). Another AWS was

installed at a coastal site in the southeastern part of Kizahashi Hama, a sandy beach in central Skarvsnes, at 69°28'25"S, 39°36'43"E at an elevation of 3 m ([Fig. 1](#)).

Observation systems: Each AWS consisted of a data logger (CR1000-4M-XT, Campbell Scientific, USA), an anemometer (05103, Young, USA), a hydrothermometer (HMP155D, Vaissala, Finland), a solar radiation sensor (PCM-01(L), Prede, Japan), a PAR sensor (PAR-01(L), Prede, Japan), a UV sensor (CUV3, Kipp & Zonen, Germany), a barometer (PTB210, Vaissala, Finland) and six sets of lithium ion batteries (TL5930/T, 3.6 V, four cells connected in series for a total of 14 V) capable of supplying 3 years of electric power (19 Ah) to the system. The logger, barometer and batteries were stored in a watertight plastic container (Pelican Products, USA), and the other sensors were mounted on a tripod. Specifications of each sensor are listed in [Table 1](#). The AWS at Yukidori Zawa was installed on 25 December 2009; that at Kizahashi Hama was installed on 2 February 2010.

Data logger settings: Every 10 min, the logger compiled a data file containing 10-min average of continuous measurements of wind speed, wind direction, and radiation (solar radiation, PAR and UV), and instantaneous values of temperature, humidity and air pressure. Every 60 min, it compiled 60-min average wind and radiation data with instantaneous values of temperature, humidity and air pressure. In addition, every 24 h it created a summary of daily average wind speed and direction, temperature, humidity, solar radiation, PAR, UV and air pressure. This file also included maximum and minimum values for all parameters and time stamps for all of these values except for solar radiation, PAR and UV. These data were retrieved by the authors during the JARE-51 winter party, the JARE-53 summer party and the JARE-55 summer party.

3. Data

We have converted the 10-min, 60-min and 24-h data from the AWS data loggers to CSV files representing each year from 27 December 2009 to 5 January 2014 for Yukidori Zawa, and from 3 February 2010 to 29 January 2014 for Kizahashi Hama, respectively.

During a check of the 10-min data for sudden abnormal variations, we found problematic PAR data for Kizahashi Hama from 1 August 2013 to 29 January 2014. We noted during our maintenance

visit in 2014 that the opaque cosine correct plate on the PAR sensor was broken. Therefore we removed this portion of the PAR data from Kizahashi Hama in all summary files for 2013 and 2014.

Seasonal and annual trends of the meteorological parameters from these sites were shown and discussed by Kudoh *et al.* (2015).

Following is the complete list of data files.

1. Data from Yukidori Zawa AWS

1-1. 10-min summary files

[10-min_data_Yukidori_2009.csv](#)

[10-min_data_Yukidori_2010.csv](#)

[10-min_data_Yukidori_2011.csv](#)

[10-min_data_Yukidori_2012.csv](#)

[10-min_data_Yukidori_2013.csv](#)

[10-min_data_Yukidori_2014.csv](#)

1-2. 60-min summary files

[60-min_data_Yukidori_2009.csv](#)

[60-min_data_Yukidori_2010.csv](#)

[60-min_data_Yukidori_2011.csv](#)

[60-min_data_Yukidori_2012.csv](#)

[60-min_data_Yukidori_2013.csv](#)

[60-min_data_Yukidori_2014.csv](#)

1-3. 24-h summary files

[24-hrs_data_Yukidori_2009.csv](#)

[24-hrs_data_Yukidori_2010.csv](#)

[24-hrs_data_Yukidori_2011.csv](#)

[24-hrs_data_Yukidori_2012.csv](#)

[24-hrs_data_Yukidori_2013.csv](#)

[24-hrs_data_Yukidori_2014.csv](#)

2. Data from Kizahashi Hama AWS

2-1. 10-min summary files

[10-min_data_Kizahashi_2010.csv](#)

[10-min_data_Kizahashi_2011.csv](#)

[10-min_data_Kizahashi_2012.csv](#)

[10-min_data_Kizahashi_2013.csv](#)

[10-min_data_Kizahashi_2014.csv](#)

2-2. 60-min summary files

[60-min_data_Kizahashi_2010.csv](#)

[60-min_data_Kizahashi_2011.csv](#)

[60-min_data_Kizahashi_2012.csv](#)

[60-min_data_Kizahashi_2013.csv](#)

[60-min_data_Kizahashi_2014.csv](#)

2-3. 24-h summary files

[24-hrs_data_Kizahashi_2010.csv](#)

[24-hrs_data_Kizahashi_2011.csv](#)

[24-hrs_data_Kizahashi_2012.csv](#)

[24-hrs_data_Kizahashi_2013.csv](#)

[24-hrs_data_Kizahashi_2014.csv](#)

4. Members who carried out the field study

The AWSs were installed by Sakae Kudoh, Yukiko Tanabe, Masaki Uchida and Takashi Osono (JARE-51 summer). Data acquisition was done by Sakae Kudoh (JARE-51 winter); Yukiko Tanabe, Makoto Hori and Hide Akiyoshi (JARE-53 summer); and Sakae Kudoh, Kunio Takahashi and Tomoko Ishihara (JARE-55 summer).

5. Data policy

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

Sakae KUDOH

Inter-university Research Institute Corporation Research Organization of Information and Systems,
National Institute of Polar Research, 10–3, Midori-cho, Tachikawa-shi, Tokyo 190-8518, Japan.

Telephone +81-42-512-0739 / Facsimile +81-42-528-3492

E-mail skudoh@nipr.ac.jp

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References

- Kosugi, M., Kurosawa, N., Kawamata, A., Kudoh, S. and Imura, S. (2015); Year-round micrometeorological data from the habitats of terrestrial photosynthetic organisms in Langhovde, East Antarctica, during 2013. JARE data reports, **333** (Terrestrial biology **8**), 99 p.
- Kudoh, S., Tanabe, Y., Uchida, M., Osono, T. and Imura, S. (2015); Meteorological features of ice-free areas on the Sôya Coast, East Antarctica. Nankyoku Shiryô (Antarctic Record) (Japanese with English abstract) (in review).

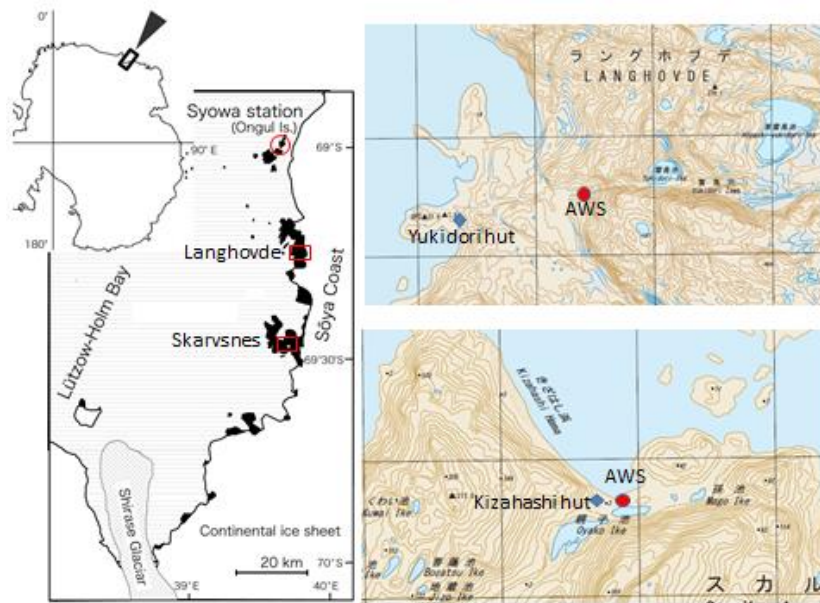


Fig. 1. Maps of AWS sites. Left panel is a location map of Syowa Oasis (ice-free areas shown in black) on the Sôya Coast, East Antarctica. Right panels indicate the positions of Yukidori (top) and Kizahashi (bottom) AWSs. Locations are outlined in red in the left panel.

Table 1. Specifications of the AWS logger and sensors

Name	Maker	Model	Precision	Range of measurement
Data logger	Campbell	CR-1000-4M-XT		
Anemometer	Young	05103-47	0.3 m s ⁻¹	0–60 m s ⁻¹
Barometer	Vaissala	PTB210	0.30 hPa	800–1060 hPa
Solar radiation	Prede	PCM-01(L)	7 mV / 1 kW	315–2800 nm
PAR sensor	Prede	PAR-01(L)	10 mV / 3000 μ mol / W m ⁻²	400–700 nm
UV sensor	Kipp & Zonen	CUV3	345 μ V / W m ⁻²	290–385 nm
Hydrothermometer	Vaissala	HMP155D	0.1% (temperature) 1% (humidity)	–40° to 60° 0–100%