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Session 7

GRUAN Site Report for Tateno, Syowa, Minamitorishima

(Submitted by Kenji Suzuki)

Summary and Purpose of this Document

Report from the GRUAN sites Tateno, Syowa, Minamitorishima for the period January to December 2018.

GRUAN Site Report for Tateno, Syowa, Minamitorishima (TAT, SYO, MTS)

Reporting for the period January to December 2018

Date: 29-March-2019

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Overview

Tateno, operated by the Japan Meteorological Agency (JMA), conducts surface observation, upper-air observation up to about 30 km by using radiosondes, ozone vertical distribution observation using ozonesondes, total column ozone observation by using a Dobson ozone spectrophotometer and Brewer spectrophotometers, ultraviolet observation by using Brewer spectrophotometers, radiation observation and GNSS precipitable water vapor observation. Syowa conducts surface observation, upper-air observation up to about 30 km by using radiosondes, ozone vertical distribution observation by using ozonesondes, total column ozone observation by using a Dobson ozone spectrophotometer, ultraviolet observation by using a Brewer spectrophotometer and radiation observation. Minamitorishima conducts surface observation, upper-air observation up to about 30 km by using radiosondes, total column ozone observation by using a Brewer spectrophotometer, radiation observation and greenhouse-gases observation. Radiosonde sounding data at these three sites are operationally provided to the GRUAN Lead Centre.

Change and change management

Tateno started to provide GNSS data to the Lead Centre (by month). The GNSS data from January 2017 are available. Tateno switched a Dobson ozone spectrophotometer to Brewer spectrophotometers in operational total column ozone observation in February 2018, but the Dobson ozone spectrophotometer is used continually for the for the purpose of research and study. Syowa started operational providing radiosonde sounding data to the Lead Centre since December 2018. The radiosonde sounding data from March 2018 are available. Minamitorishima has started operational providing radiosonde sounding data to the Lead Centre since July 2018. The radiosonde sounding

data from January 2018 are available. JMAs new central processing system has been operated since February 2018. This system is a centralized data management system including following functions as data monitoring, data quality management, data storage and data reporting to the GTS for JMA's all upper-air observation sites.

Resourcing

NIL

Operations

Tateno cant operate dual-flight or special radiosondes like CFH because of safety problem that balloon/equipment fall to urban in the summer. Tateno can launch CFH only two more times because R23 cryogen for CFH is no longer available in Japan. Tateno have to set up RS41 equipment because RS92-SGP will be used up in 2019.

Site assessment and certification

Tateno was certified on 18 April, 2018.

GRUAN-related research

The paper about comparison between GRUAN data products for Meisei RS-11G and Vaisala RS92-SGP radiosondes at Tateno was submitted to the Atmospheric Measurement Techniques (see below).

- Publications: Kobayashi, E., S. Hoshino, M. Iwabuchi, T. Sugidachi, K. Shimizu, and M. Fujiwara, 2019: Comparison of the GRUAN data products for Meisei RS-11G and Vaisala RS92-SGP radiosondes at Tateno (36.06N, 140.13E), Japan., Atmos. Meas. Tech. Discuss., 2019, 134, doi:10.5194/amt-2018-416.

WG-GRUAN interface

NIL

Items for ICM-11 plenary discussions

NIL

Other archiving centres

The observation data at Tateno, Syowa and Minamitorishima are submitted to GUAN, GAW and BSRN.

Participation in campaigns

NIL

Future plans

Radiosonde sounding:

- JMA will review the Meisei radiosonde's GDP algorithm to develop the next version.
- JMA will conduct a study to establish QC method for the Meisei Radiosonde's GDP.
- Comparison between GRUAN Data Products for the iMS-100 and RS92-SGP using the dual sounding data at Tateno is under study and will be reported.

Operational data stream:

- Each site is going to prepare to provide the following data to the GRUAN Lead Centre.
- Tateno: Ozonesondes
- Syowa: Ozonesondes and GNSS
- Minamitorishima: GNSS

GRUAN Site Report for Tateno (TAT), 2018

Reported time range is Jan 2018 to Dec 2018
Created by the Lead Centre
Version from 2019-05-09

1 General GRUAN site information

Object	Value
Station name	Tateno
Unique GRUAN ID	TAT
Geographical position	36.0581 °N, 140.1258 °E, 27.4 m
Operated by	JMA | Japan Meteorological Agency
Main contact	Abo, Toshihiro
WMO no./name	47646 TATENO
Operators	currently 24, changes +2 / -3
Sounding Site	1
GNSS	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
TAT-GN-01	GNSS Site TATN	GNSS	0	not operational
TAT-RS-01	Tateno Radiosonde Launch Site	Sounding Site	9	736

1.2 General comments from Lead Centre

1.2.1 General

Good communications between station and GRUAN LC.

For the ECC ozone sondes it is recommended that the site submits the meta-data and raw data to the Lead Centre in preparation for the planned ozone GRUAN data product.

2 System: GNSS Site TATN (TAT-GN-01)

Object	Value
System name	GNSS Site TATN
Unique GRUAN ID	TAT-GN-01
System type	GNSS (GN - GNSS)
Geographical position	36.0573 °N, 140.1265 °E, 67.0 m
Operated by	JMA | Japan Meteorological Agency
Instrument contact	Abo, Toshihiro
Started at	-
Defined setups	-
Possible streams	-

2.1 Lead Centre comments

2.1.1 Dataflow

Dataflow of GNSS data to GRUAN LC and the GRUAN GNSS processing centre at GFZ has started in December 2018. The current dataflow includes manufacturer raw data, converted raw data (RINEX) and instrument logs, containing all equipment changes.

At moment, data are available from 2017.

3 System: Tateno Radiosonde Launch Site (TAT-RS-01)

Object	Value
System name	Tateno Radiosonde Launch Site
Unique GRUAN ID	TAT-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	36.0581 °N, 140.1258 °E, 24.8 m
Operated by	JMA | Japan Meteorological Agency
Instrument contact	Abo, Toshihiro
Started at	-
Defined setups	9 (ROUTINE, COMPARE, ROUTINE2, DUAL, DUAL2, DUAL3, ROUTINE3, DUAL4, RESEARCH)
Possible streams	CFH, IMS-100, RS-11G, RS41, RS92

3.1 Lead Centre comments

3.1.1 Change management

Weekly dual launches of RS92-SGP and IMS-100 are performed and submitted to the GRUAN LC.

3.1.2 Dataflow

Sonde dataflow to the GRUAN LC is operational since June 2011.

Now, the dataflow includes streams of Meisei IMS-100, RS-11G and Vaisala RS41-SG, RS92-SGP. All launches are promptly submitted using the RsLaunchClient.

3.1.3 General

Routine soundings are performed two times per day. Vaisala RS92 have been used as redundant sonde during weekly dual soundings since January 2015. Various sonde combinations have been flown through the reporting period.

Current operational radiosonde is the Meisei IMS-100.

3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI

3.2.1 Stream: CFH

CFH		3	3	

3.2.2 Stream: IMS-100

IMS-100		669	669	
IMS-100-BETA	001		668	

3.2.3 Stream: RS-11G

RS-11G		69	69	
RS-11G-GDP	001		68	

3.2.4 Stream: RS92

RS92		44	44	
RS92-RAW	001		44	
RS92-RAW	002		44	
RS92-EDT	001		44	
RS92-GDP	002		41	27

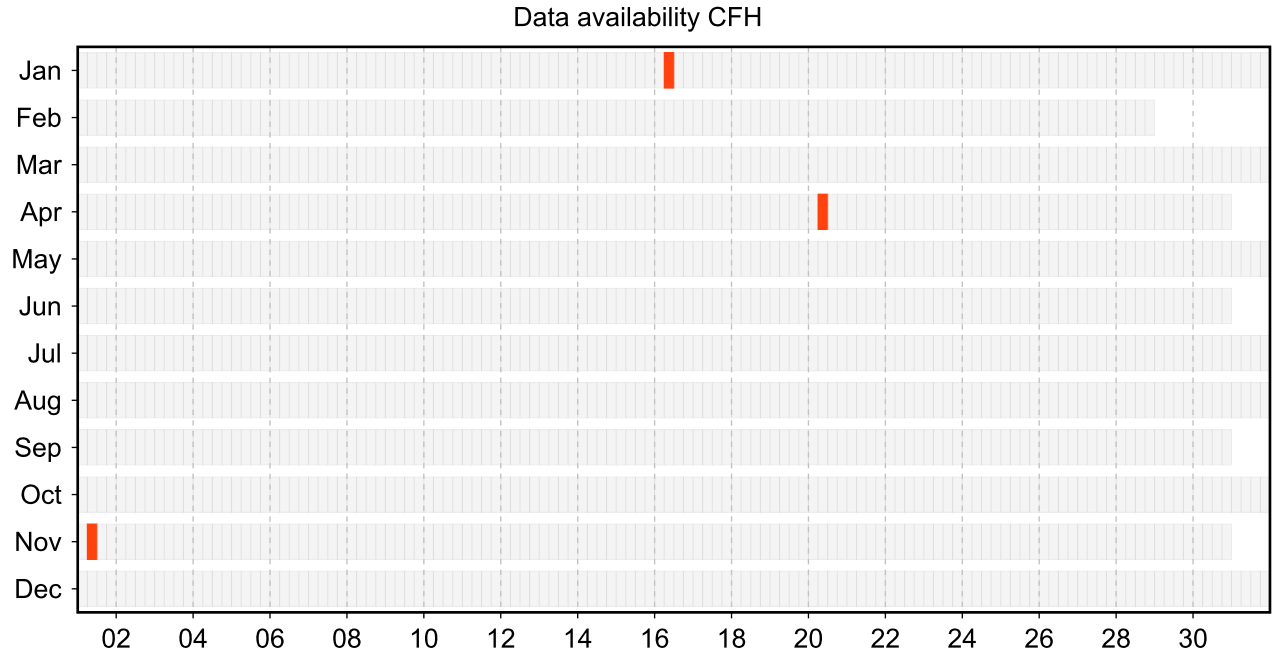
3.3 Data availability of data products

Available (green): All steps of processing have been successfully completed. The data file is available at LC (e.g. unapproved or uncertified GRUAN data products) and at NCEI (approved and certified GRUAN data products).

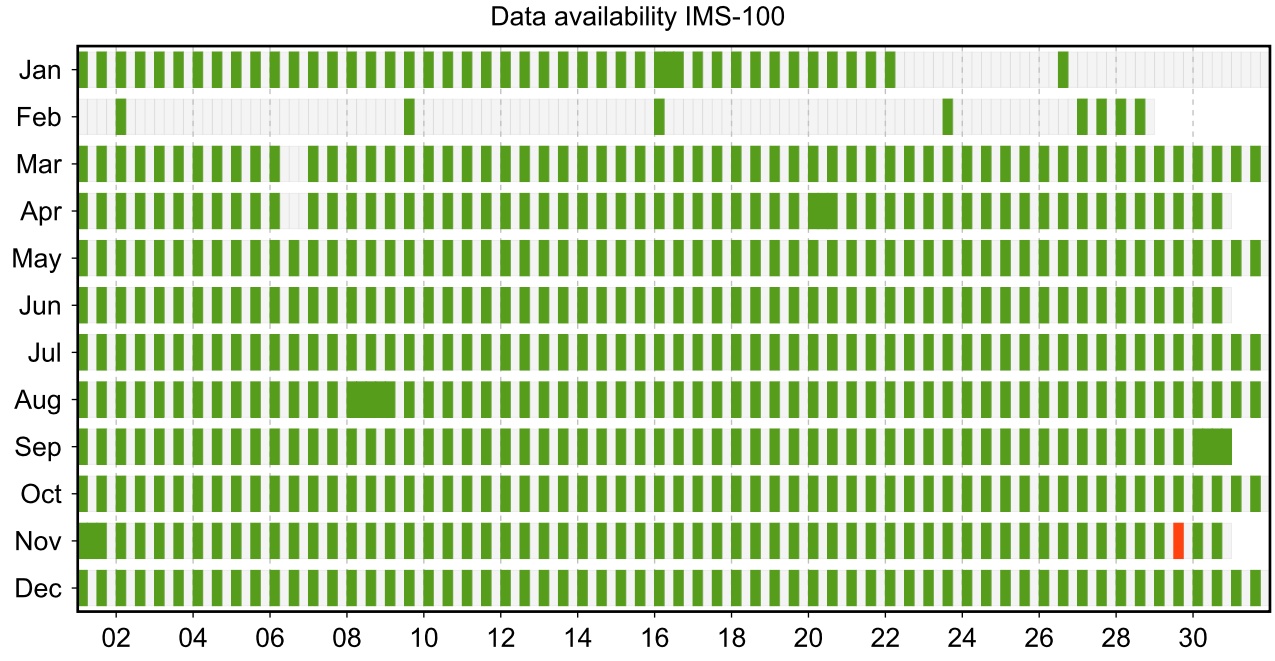
Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing (e.g. GRUAN data processing) has not yet been done, or has not been completed. Reason may be a processing routine which does not yet exist, or software errors.

Original (red): The original raw data file is available (e.g. MWX). The raw data file was not converted to a GRUAN standardized raw data file format (NetCDF). Reason may be a converting routine which does not yet exist, or a corrupt original raw data file, or software errors.

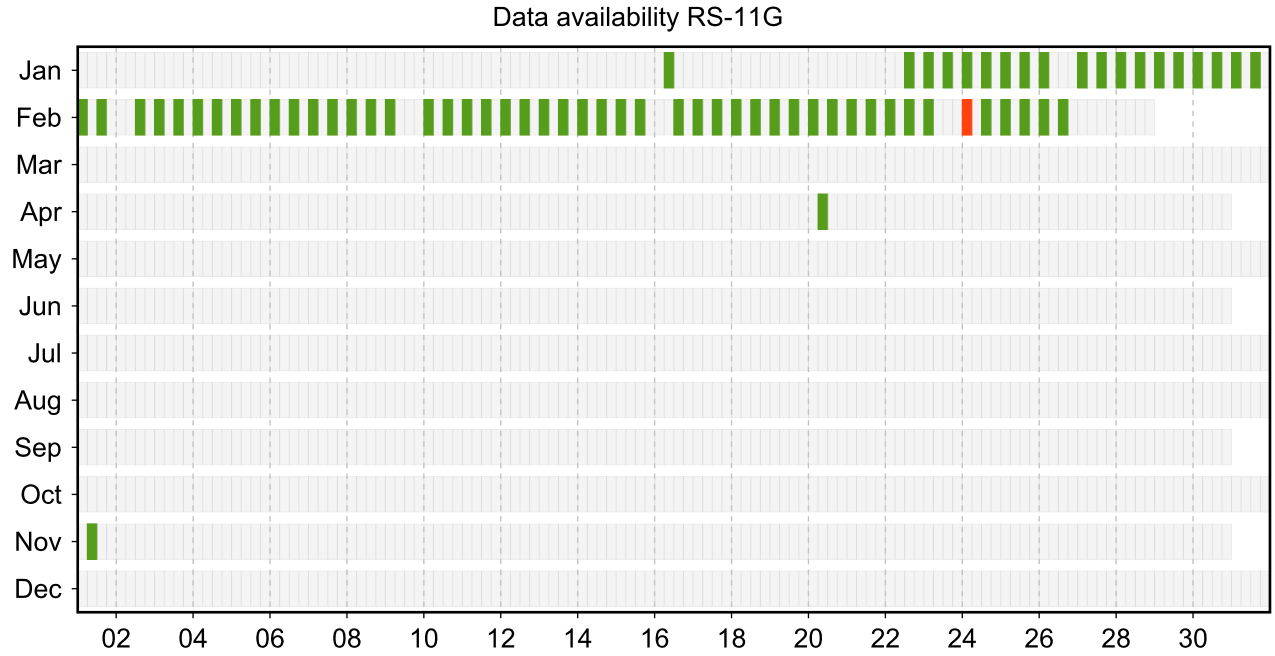
3.3.1 Stream: CFH



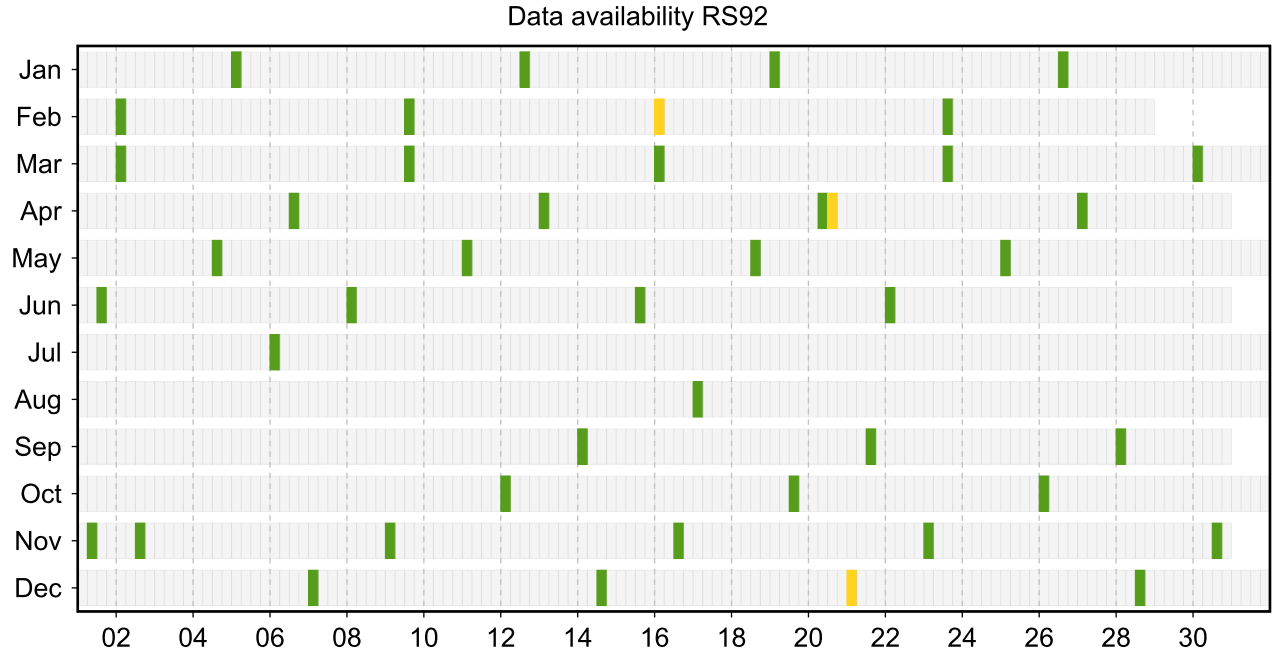
3.3.2 Stream: IMS-100



3.3.3 Stream: RS-11G



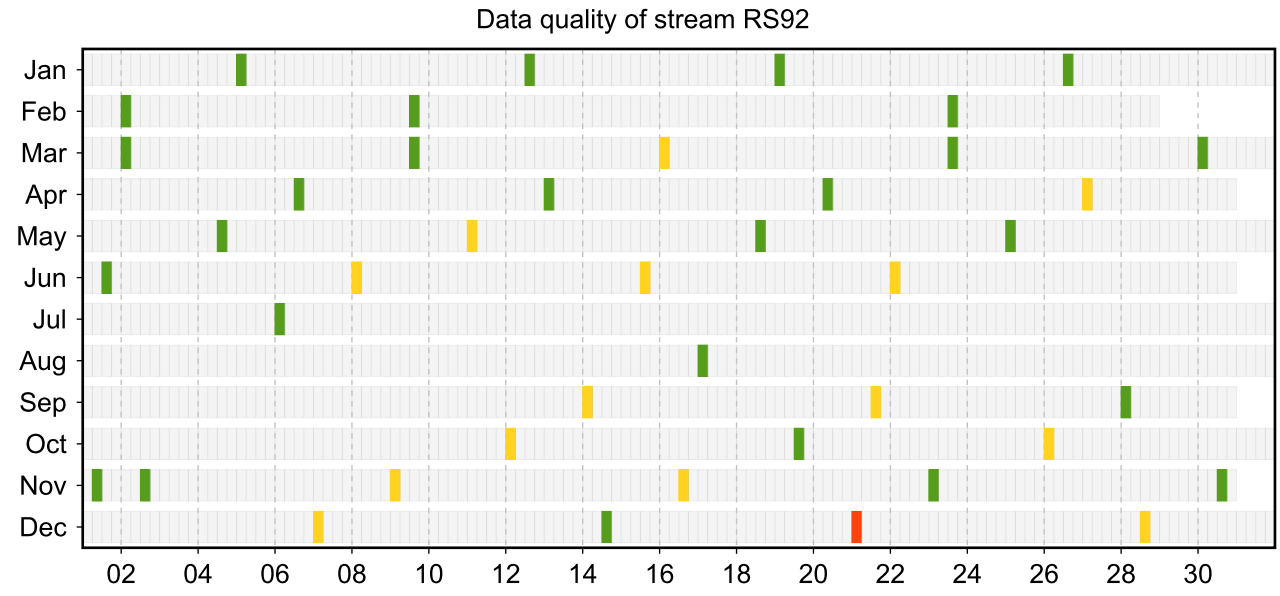
3.3.4 Stream: RS92

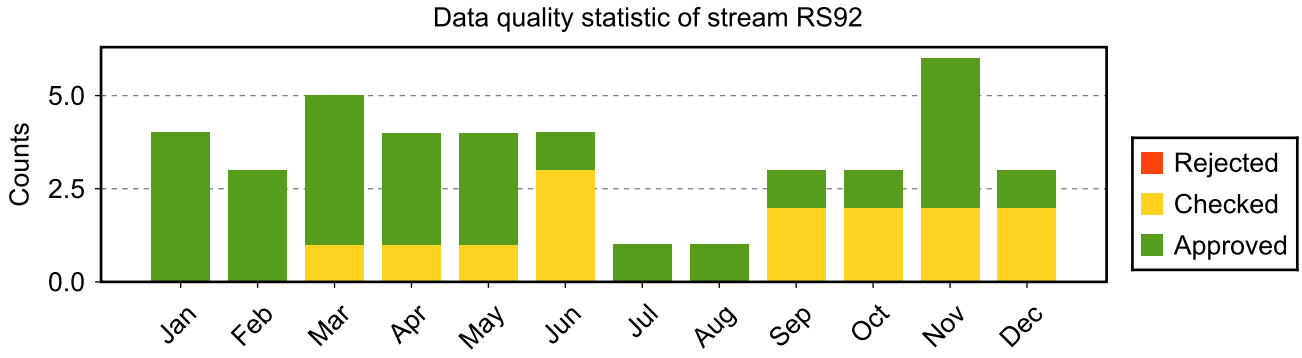


3.4 Data quality of current GRUAN data products

3.4.1 Stream: RS92 (Product: RS92-GDP-002)

Month	Total	GRUAN Data Quality			Issues				
		Approved	Checked	Rejected	Meta-data	Process.	Press	Temp	RH
Jan	4	4							
Feb	3	3							
Mar	5	4	1						1
Apr	4	3	1						1
May	4	3	1				1		1
Jun	4	1	3						3
Jul	1	1							
Aug	1	1							
Sep	3	1	2						2
Oct	3	1	2				1		1
Nov	6	4	2						2
Dec	3	1	2				1		1
Sum	**41**	**27**	**14**				**3**		**12**





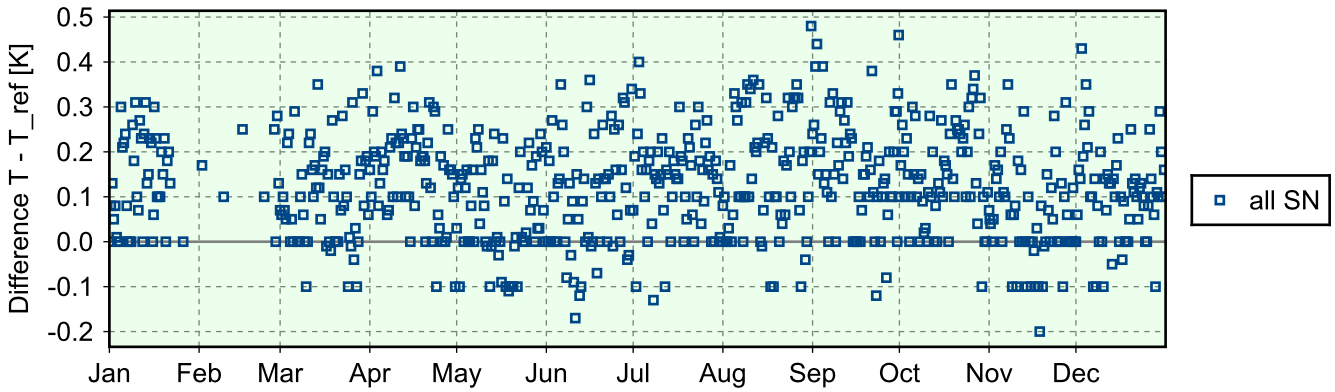
3.5 Instrument combinations of TAT-RS-01

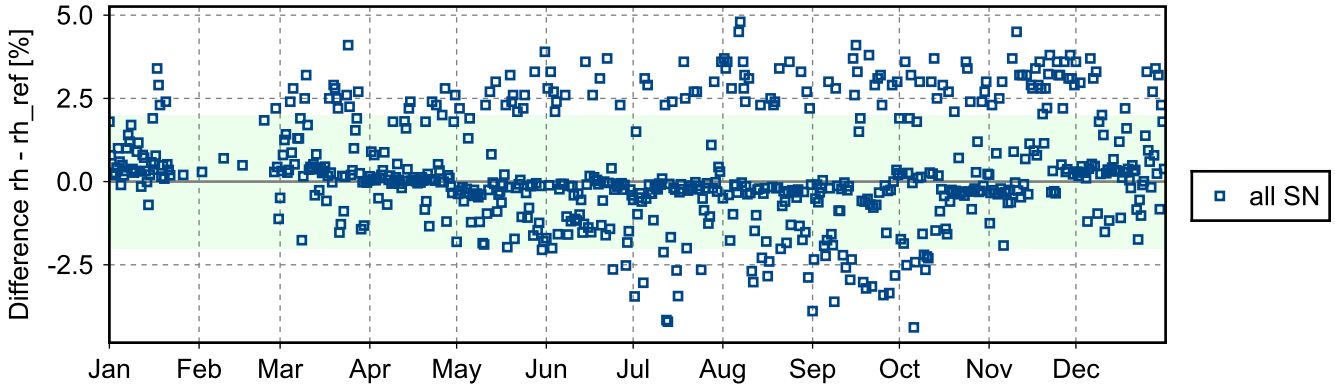
Count	Instrument combination
1	CFH, IMS-100, RS-11G
2	CFH, IMS-100, RS-11G, RS92
625	IMS-100
41	IMS-100, RS92
66	RS-11G
1	RS92

3.6 Instrument ground check

3.6.1 Stream: IMS-100

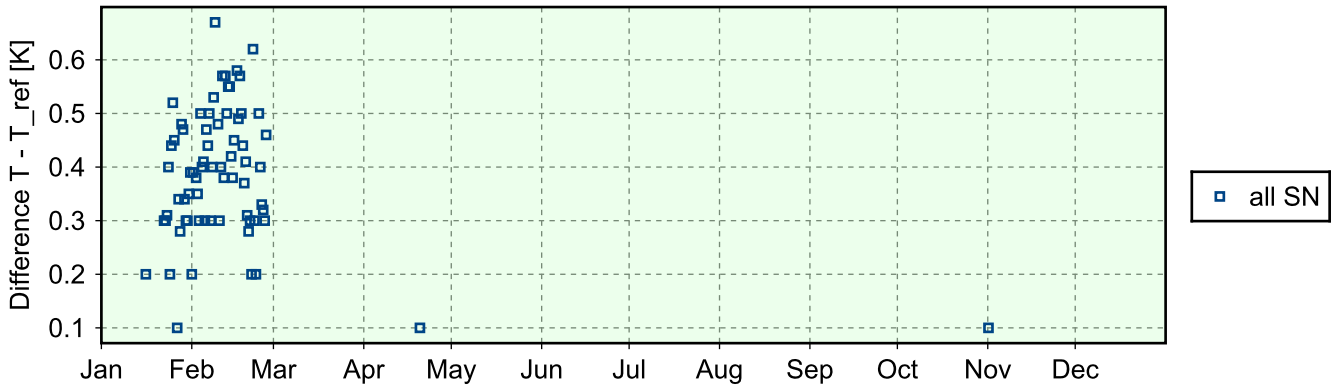
(1) GroundCheck: GC-TU

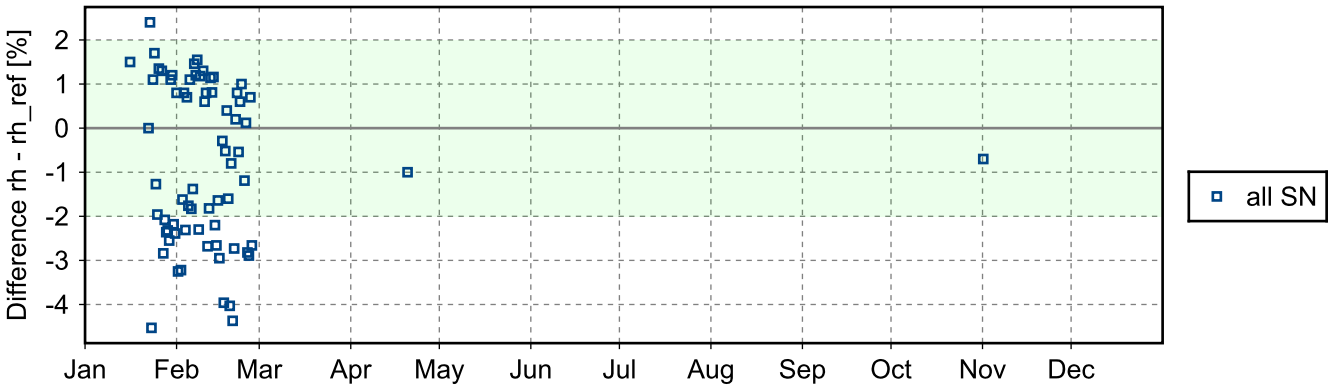




3.6.2 Stream: RS-11G

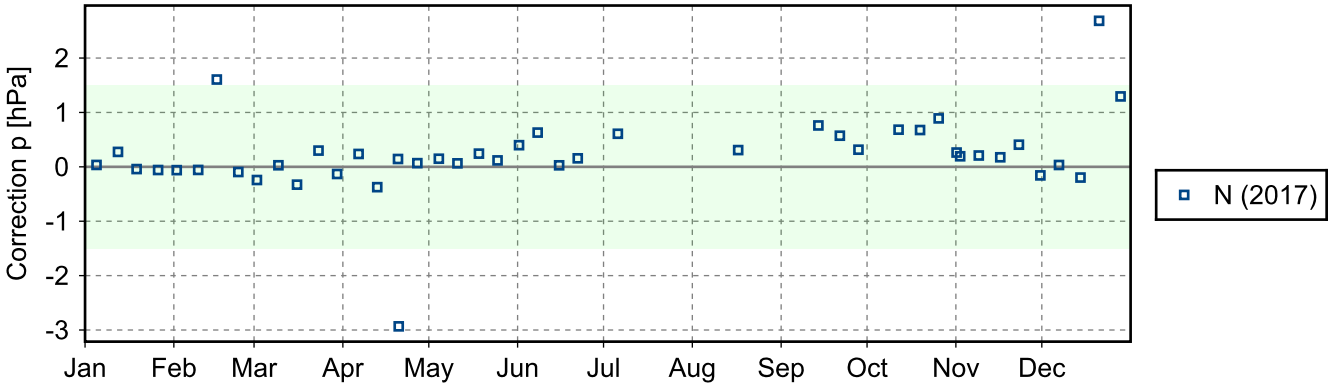
(1) GroundCheck: GC-TU

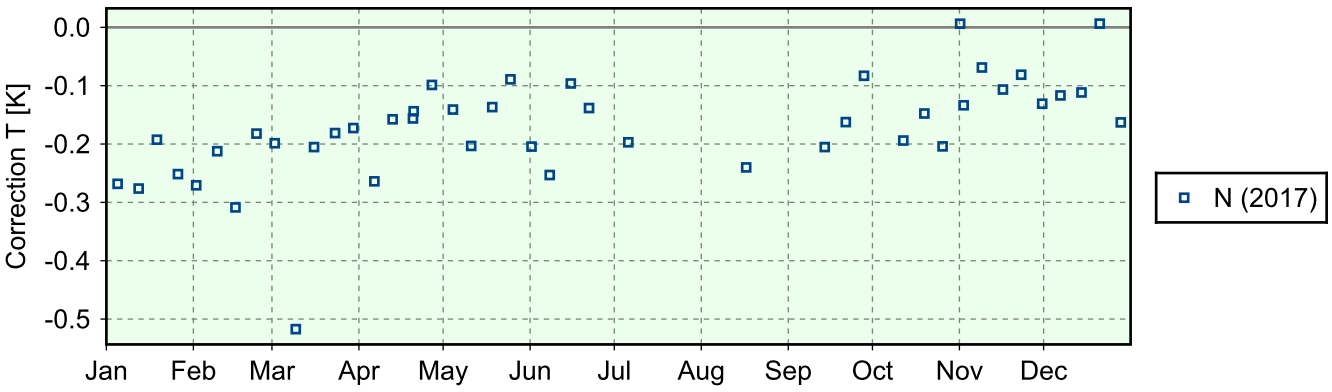


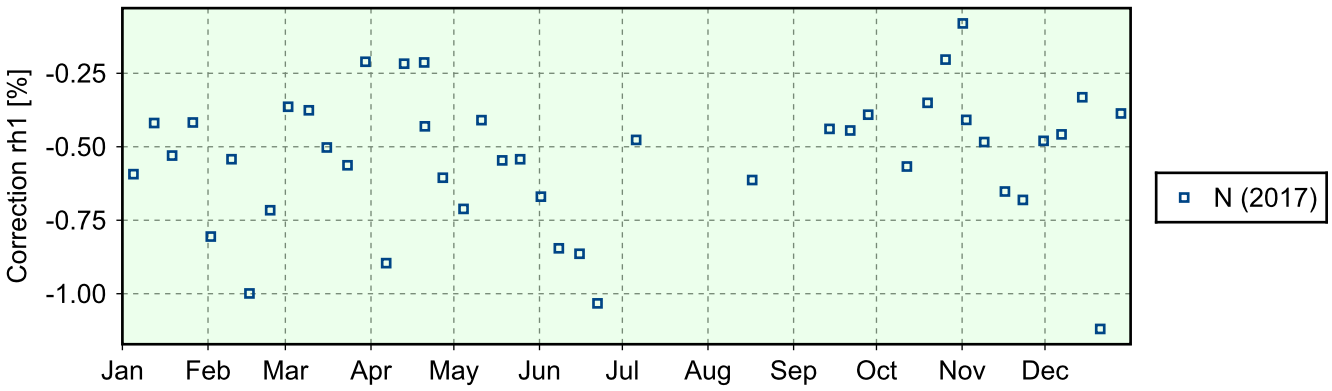


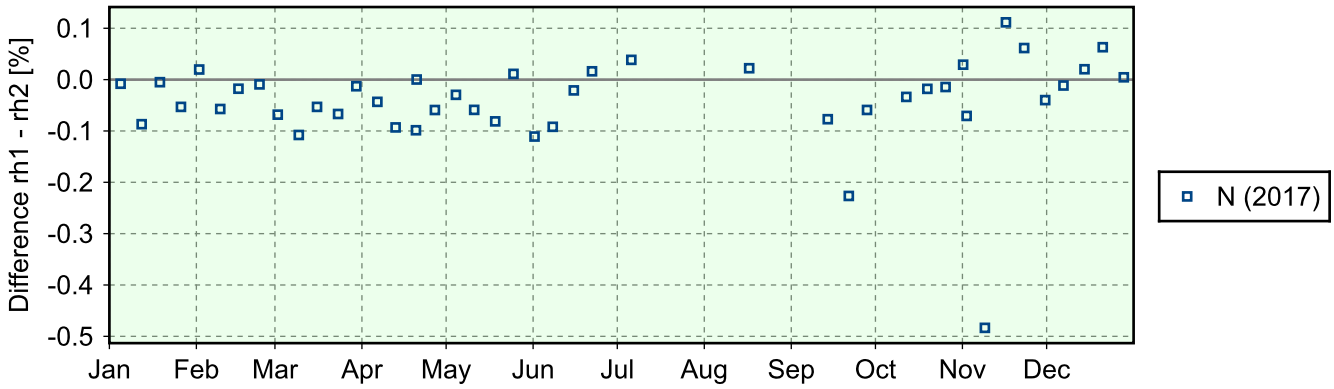
3.6.3 Stream: RS92

(1) GroundCheck: GC-GC25

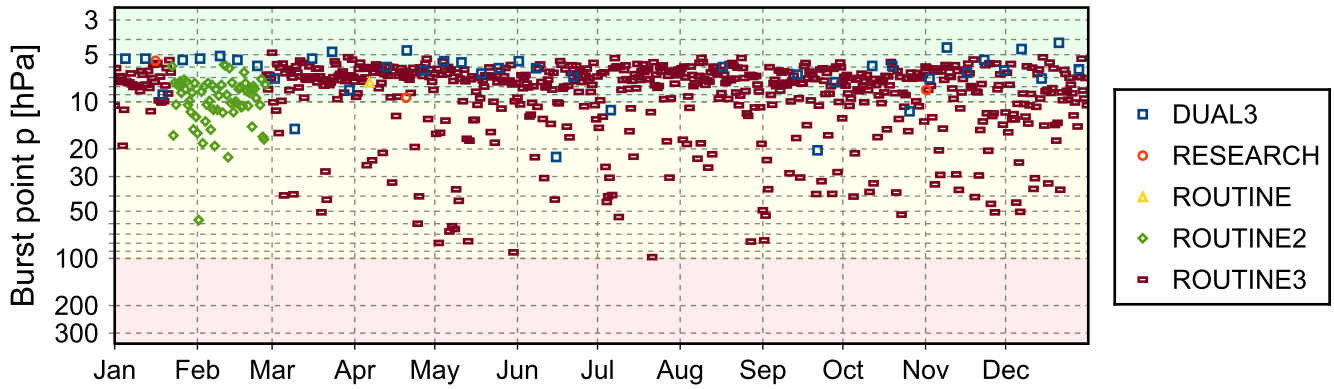








3.7 Measurement events



GRUAN Site Report for Minamitorishima (MTS), 2018

Reported time range is Jan 2018 to Dec 2018
Created by the Lead Centre
Version from 2019-05-09

1 General GRUAN site information

Object	Value
Station name	Minamitorishima
Unique GRUAN ID	MTS
Geographical position	24.2900 °N, 153.9800 °E, 9.0 m
Operated by	JMA | Japan Meteorological Agency
Main contact	-
WMO no./name	47991 MINAMITORISHIMA
Operators	currently 5, changes +0 / -0
Sounding Site	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
MTS-RS-01	Minamitorishima radiosonde launch site	Sounding Site	1	724

1.2 General comments from Lead Centre

1.2.1 Dataflow

For this remote site a sporadically dataflow was established in 2018. Data packages of several months are submitted to the GRUAN LC.

2 System: Minamitorishima radiosonde launch site (MTS-RS-01)

Object	Value
System name	Minamitorishima radiosonde launch site
Unique GRUAN ID	MTS-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	24.2900 °N, 153.9800 °E, 9.0 m
Operated by	JMA | Japan Meteorological Agency
Instrument contact	Suzuki, Kenji
Started at	-
Defined setups	1 (ROUTINE)
Possible streams	IMS-100

2.1 Lead Centre comments

2.1.1 Dataflow

Sonde dataflow to the GRUAN LC is operational since May 2018.

2.1.2 General

Routine soundings are performed two times per day.

Current operational radiosonde is the Meisei IMS-100.

2.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI

2.2.1 Stream: IMS-100

IMS-100		724	724	
IMS-100-BETA	001		585	

2.3 Data availability of data products

Available (green): All steps of processing have been successfully completed. The data file is available at LC (e.g. unapproved or uncertified GRUAN data products) and at NCEI (approved and certified GRUAN data products).

Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing (e.g. GRUAN data processing) has not yet been done, or has not been completed. Reason may be a processing routine which does not yet exist, or software errors.

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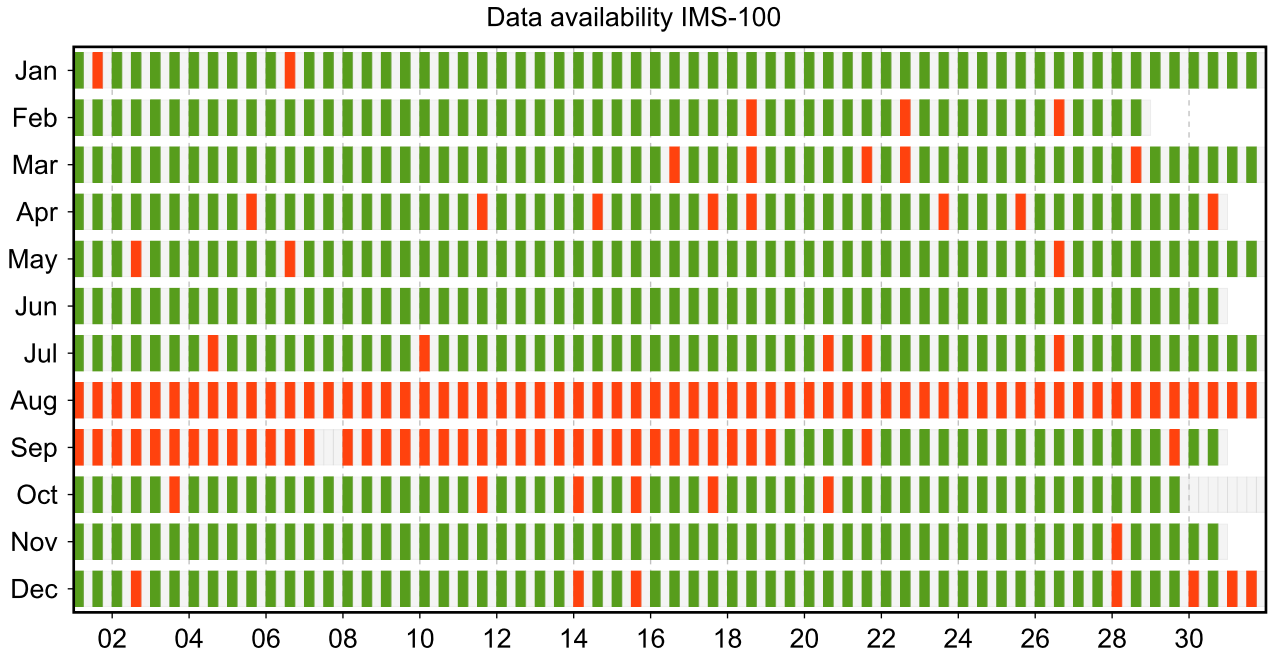
2.3.1 Stream: IMS-100



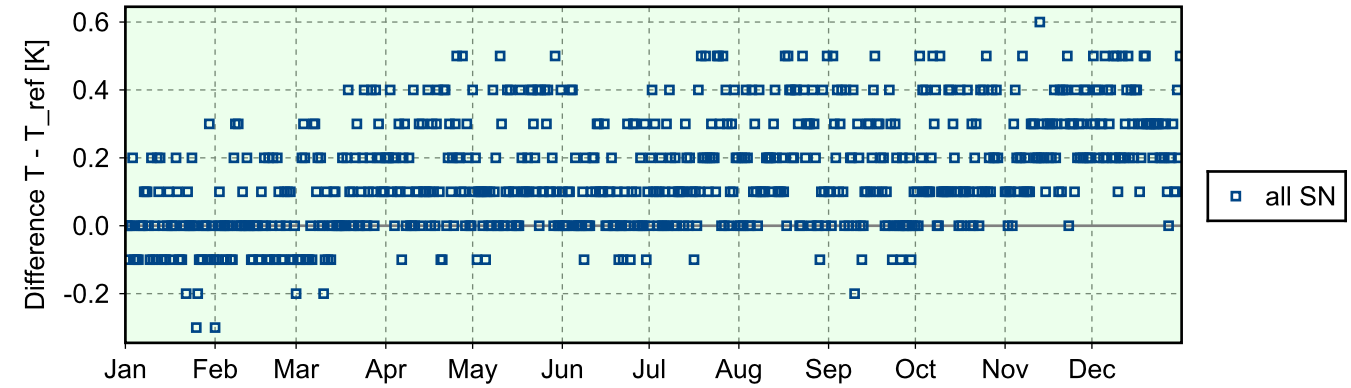
2.5 Instrument combinations of MTS-RS-01

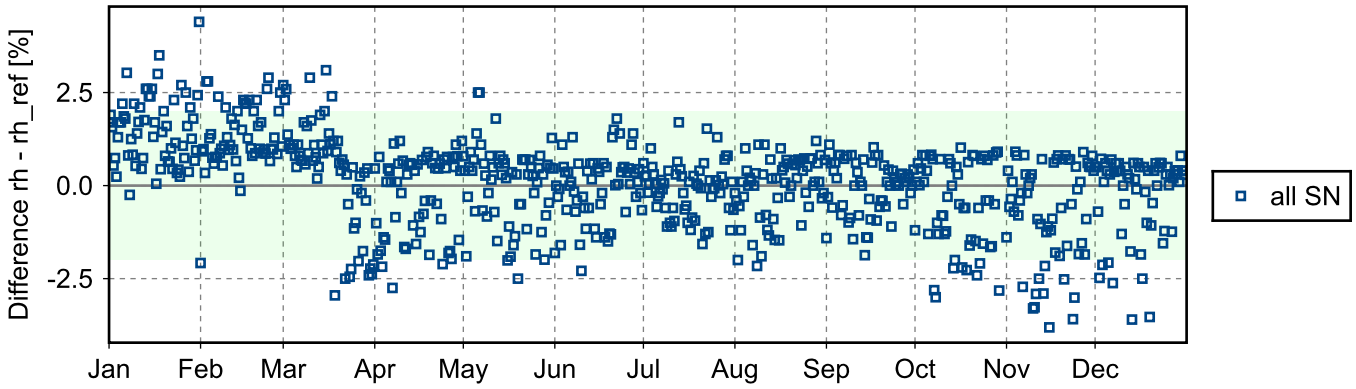
Count	Instrument combination
724	IMS-100

2.6 Instrument ground check

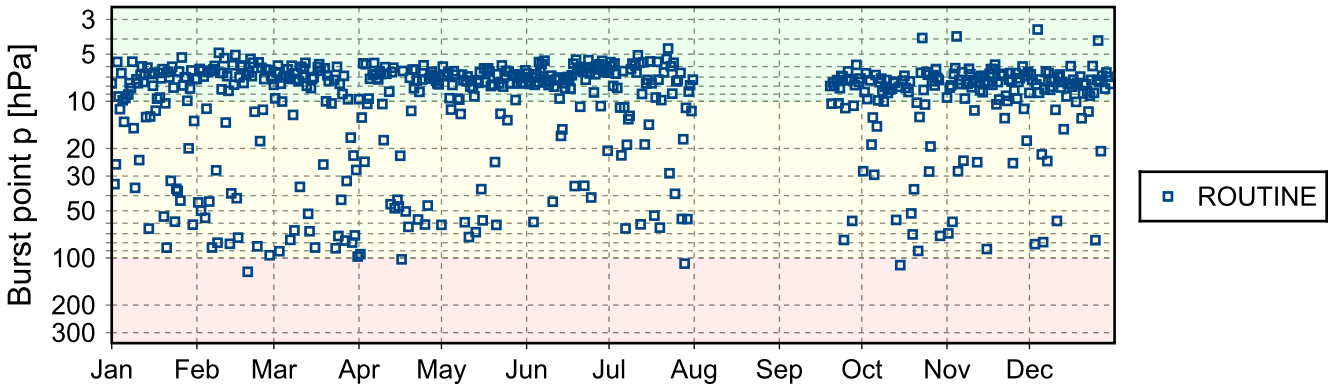
2.6.1 Stream: IMS-100

(1) GroundCheck: GC-TU





2.7 Measurement events



GRUAN Site Report for Syowa (SYO), 2018

Reported time range is Jan 2018 to Dec 2018
Created by the Lead Centre
Version from 2019-05-09

1 General GRUAN site information

Object	Value
Station name	Syowa
Unique GRUAN ID	SYO
Geographical position	-69.0100 °S, 39.5800 °E, 18.4 m
Operated by	JMA | Japan Meteorological Agency
Main contact	Ogihara, Hiroyuki
WMO no./name	89532 SYOWA
Operators	currently 6, changes +0 / -0
Sounding Site	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
SYO-RS-01	Syowa Station Radiosonde Launch Site	Sounding Site	2	571

1.2 General comments from Lead Centre

1.2.1 Dataflow

Dataflow was established in 2018.

2 System: Syowa Station Radiosonde Launch Site (SYO-RS-01)

Object	Value
System name	Syowa Station Radiosonde Launch Site
Unique GRUAN ID	SYO-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	-69.0053 °S, 39.5811 °E, 18.4 m
Operated by	JMA | Japan Meteorological Agency
Instrument contact	Ogihara, Hiroyuki
Started at	1959-01-01
Defined setups	2 (ROUTINE, ROUTINE2)
Possible streams	RS-11G

2.1 Lead Centre comments

2.1.1 Dataflow

Sonde dataflow to the GRUAN LC is operational since September 2018.

2.1.2 General

Routine soundings are performed two times per day.

Current operational radiosonde is the Meisei RS-11G.

2.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI

2.2.1 Stream: RS-11G

RS-11G		571	571	
RS-11G-GDP	001		557	

2.3 Data availability of data products

Available (green): All steps of processing have been successfully completed. The data file is available at LC (e.g. unapproved or uncertified GRUAN data products) and at NCEI (approved and certified GRUAN data products).

Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing (e.g. GRUAN data processing) has not yet been done, or has not been completed. Reason may be a processing routine which does not yet exist, or software errors.

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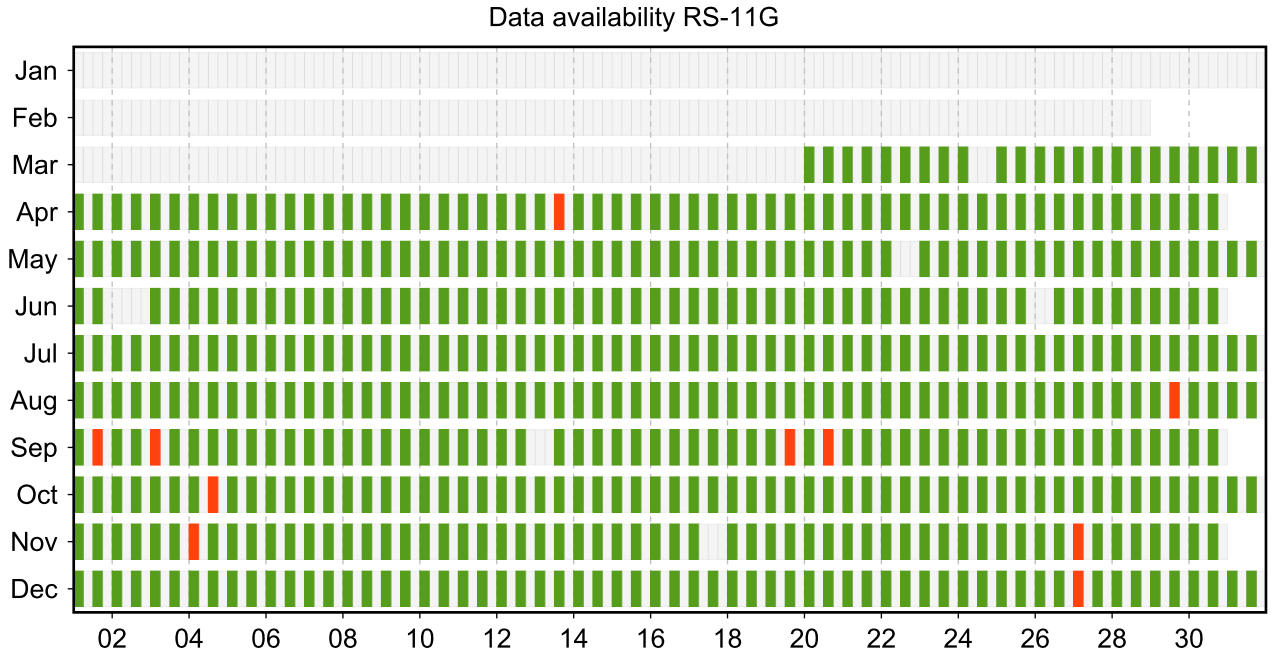
2.3.1 Stream: RS-11G



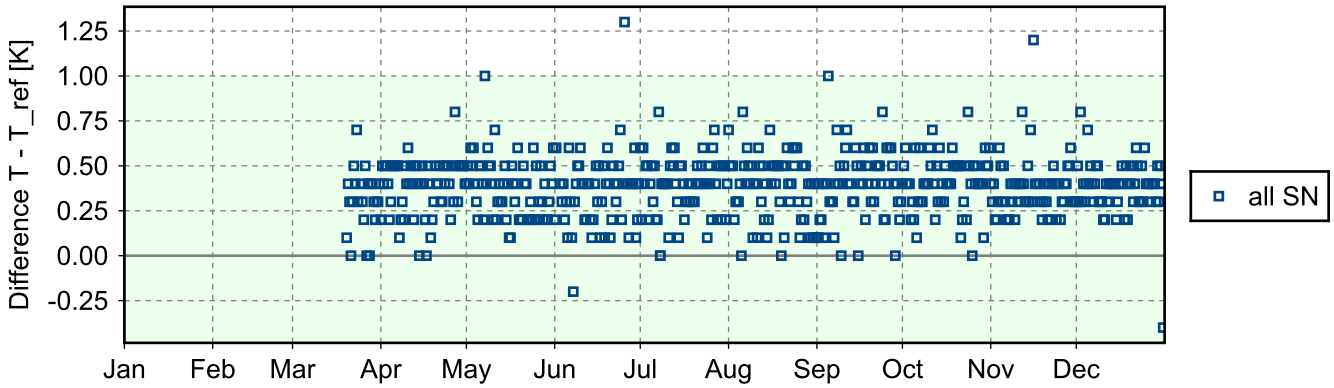
2.5 Instrument combinations of SYO-RS-01

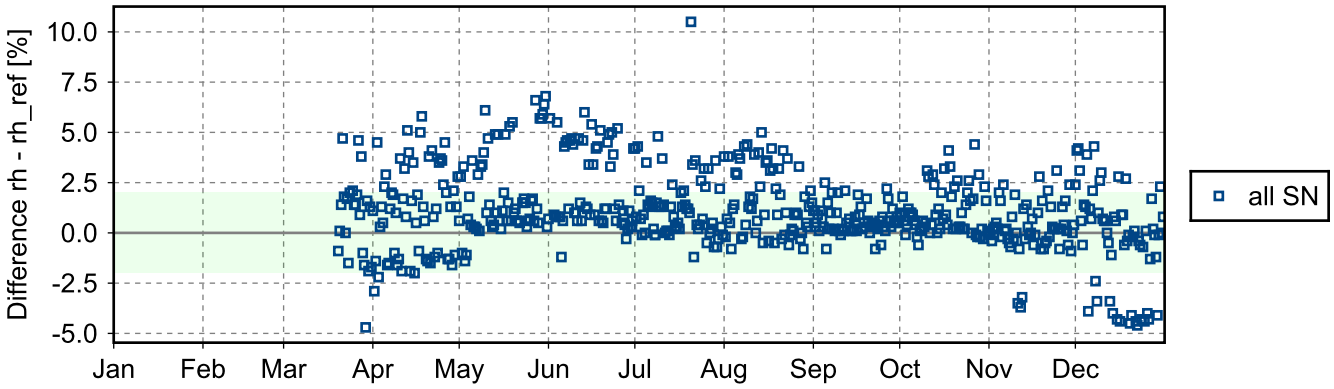
Count	Instrument combination
571	RS-11G

2.6 Instrument ground check

2.6.1 Stream: RS-11G

(1) GroundCheck: GC-TU





2.7 Measurement events