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SYSTEM (GCOS)

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**12th GRUAN Implementation-
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Session 1

Virtual

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GRUAN Site Report for Tateno, Syowa, Minamitorishima

(Submitted by Hisamitsu Junji)

Summary and Purpose of this Document

Report from the GRUAN sites Tateno, Syowa, Minamitorishima for the period January to December 2019.

GRUAN Site Report for

Tateno, Syowa, Minamitorishima (TAT, SYO,
MTS)



Reporting for the period January to December 2019

Date: 15-October-2020

Primary author: Hisamitsu Junji
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Overview

Tateno, Minamitorishima and Syowa operated by the Japan Meteorological Agency (JMA). Tateno contributes to GRUAN with the following operational data streams: iMS-100 radiosonde (2 times per day), RS92-SGP radiosonde (1 time per week as dual-flight), RS-11G (several times per year as multiple-payload-flight for research), CFH (2 times per year for research flight) and GNSS IPW. Tateno additionally conducts surface observation, ECC ozonesonde observation, total column ozone observation by using a Dobson ozone spectrophotometer and Brewer spectrophotometers, ultraviolet observation by using Brewer spectrophotometers and radiation observation. Minamitorishima contributes to GRUAN with the operational data streams of iMS-100 radiosonde (2 times per day) and GNSS IPW. Minamitorishima additionally conducts surface observation, radiation observation and greenhouse-gases observation. Syowa contributes to GRUAN with the operational data streams of RS-11G radiosonde (2 times per day) and GNSS IPW. Syowa additionally conducts surface observation, ECC ozonesonde observation, CFH observation, total column ozone observation by using a Dobson ozone spectrophotometer, ultraviolet observation by using a Brewer spectrophotometer, radiation observation and greenhouse-gases observation. RS-11G and iMS-100 are conducted manufacturer-independent ground check in SHC at 0% and 100%RH before launching at all of 3 sites. RS92-SGP are conducted manufacturer-independent ground check in SHC at 100% RH before launching at Tateno.

Change and change management

Tateno changed vaisala sounding system DigiCORAIIII into MW41 in September 2019. At Syowa, a new observation building was built in November 2019. But the observation location has not changed

yet.

Resourcing

We continue to be asked to significantly reduce the cost of observations.

Operations

Tateno can't 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.

The altitude reached by radiosondes tends to decline. Reach rate to 10 hPa in Tateno is down to 48% in 2019 from 66% in 2018.

Site assessment and certification

Tateno was GRUAN-certified (for the RS92 measurement program) in April 2018. Preparations continue to be made to obtain site certification for Minamitorishima and Syowa Station. The request will be made as soon as the necessary preparations are made.

GRUAN-related research

- Intercomparison of iMS100-RS92 (1 time per week except summer)
- Intercomparison of CFH-SKYDEW-iMS100-RS11G-RS92 in 22 March 2019
- Preparations are underway for the revision of GRUAN-TD-5 and certification of the iMS-100.

GRUAN related publications:

Kobayashi, E., Hoshino, S., Iwabuchi, M., Sugidachi, T., Shimizu, K., and Fujiwara, M.: Comparison of the GRUAN data products for Meisei RS-11G and Vaisala RS92-SGP radiosondes at Tateno (36.06°N, 140.13°E), Japan, *Atmos. Meas. Tech.*, 12, 3039-3065, <https://doi.org/10.5194/amt-12-3039-2019>, 2019

WG-GRUAN interface

Tateno is a center that processes the GDP of RS-11G and iMS-100. SUZUKI Kenji is a member of GRUAN task team sites. IWABUCHI Masami is a member of GRUAN task team radiosondes.

Other archiving centres

TATENO

- Total ozone and ozonesonde observation: WOUDC (GAW)
- Radiation observation: WRMC (BSRN), WRDC (GAW)

MINAMITORISHIMA

- Aerosols observation: WDCA (GAW)
- Surface ozone observation: WDCRG (GAW)

SYOWA

- Total ozone and ozonesonde observation: WOUDC (GAW)
- Surface ozone observation: WDCRG (GAW)
- Radiation observation: WRMC (BSRN)

Participation in campaigns

NIL

Future plans

Tateno will switch from RS92-SGP to RS41-SGP in 2020. Tateno will start using SKYDEW in 2020. Syowa will change position of some observation in 2020 for relocation to a new observation building.



GRUAN Site Report for Tateno (TAT), 2019

Reported time range is Jan 2019 to Dec 2019

Created by the Lead Centre

Version from 2020-11-05

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	Hisamitsu, Junji
WMO no./name	47646 TATENO
Operators	currently 26, changes +4 / -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	1	operational
TAT-RS-01	Tateno Radiosonde Launch Site	Sounding Site	12	728

1.2 General comments from Lead Centre

1.2.1 General

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	Hisamitsu, Junji
Started at	-
Defined setups	1 (HOURLY)
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.

Meteorological data is missing, therefore the operational processing as GNSS-PW-GDP cannot be performed at moment.

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	Hisamitsu, Junji
Started at	-
Defined setups	12 (ROUTINE, COMPARE, ROUTINE2, DUAL, DUAL2, DUAL3, ROUTINE3, DUAL4, RESEARCH, DUAL5, DUAL6, ROUTINE4)
Possible streams	CFH, IMS-100, RS-11G, RS41, RS92

3.1 Lead Centre comments

3.1.1 Change management

Regularly twin soundings with 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.

Currently, the dataflow includes streams of Meisei IMS-100, RS-11G, Vaisala RS92-SGP, and CFH water vapor. All launches are promptly submitted using the RsLaunchClient.

3.1.3 Data quality

The ground checks for the RH sensor are occasionally beyond limits (> 2.5%RH).

3.1.4 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
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3.2.1 Stream: CFH

CFH		1	1	
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3.2.2 Stream: IMS-100

IMS-100		728	728	
IMS-100-BETA	001		706	

3.2.3 Stream: RS-11G

RS-11G		2	2	
RS-11G-GDP	001		2	

3.2.4 Stream: RS92

RS92		40	40	
RS92-INT	001		13	
RS92-RAW	001		27	
RS92-RAW	002		40	
RS92-EDT	001		40	
RS92-GDP	002		39	

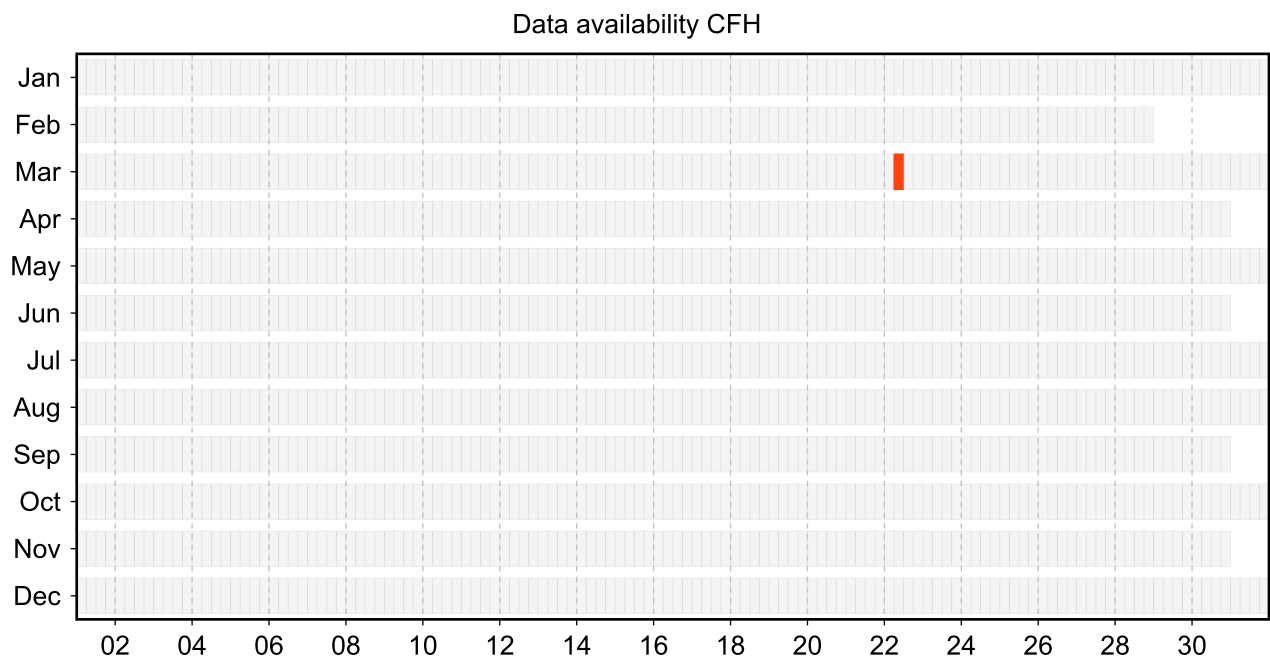
3.3 Availability of data products

Available (green): All steps of data processing have been successfully completed. The data product file is available at LC (e.g. files that didn't pass QA/QC or uncertified GRUAN data products) and/or at NCEI (a certified GRUAN data product file that did pass QA/QC).

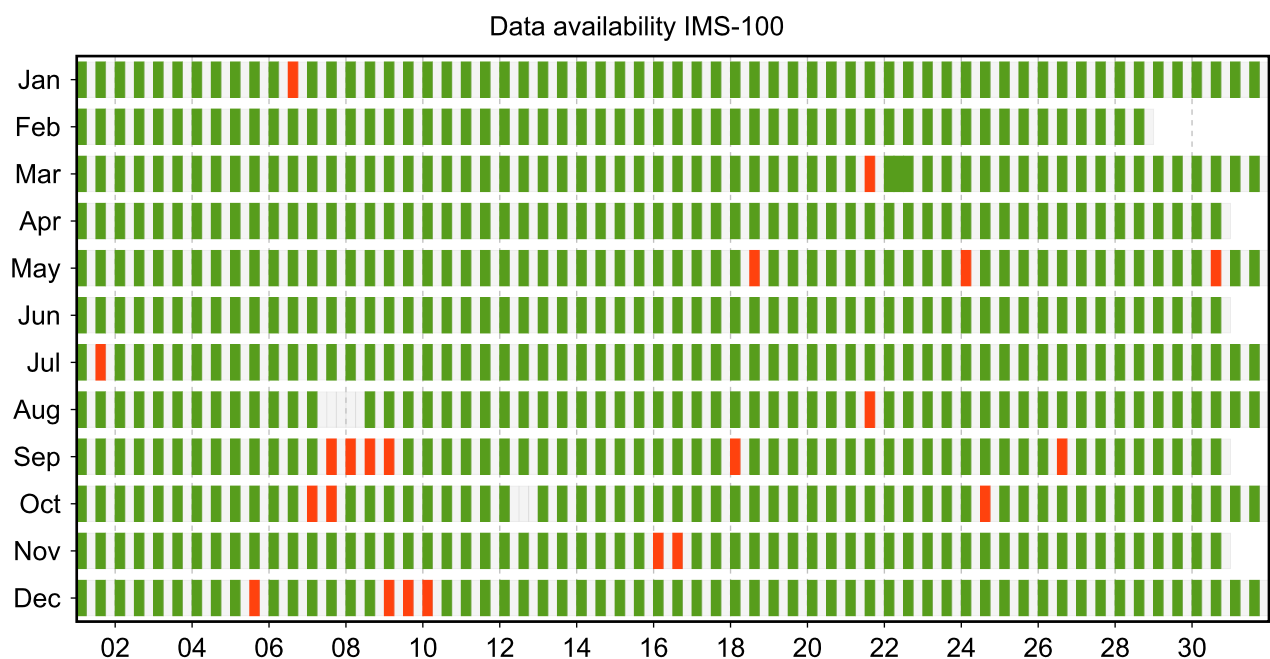
Unprocessed (yellow): The manufacturer-produced file with raw measurement data has been successfully converted into a GRUAN-standardized raw data format (NetCDF). The GRUAN data processing has not been performed or was aborted. Reasons for this may be a still missing GRUAN data processor or a processing-software error.

Original (red): The original, manufacturer-produced, raw data file is available (e.g. MWX data file) but was not converted into a GRUAN-standardized raw data format (NetCDF). Reasons for this may be missing data conversion software, a software error, or a corrupt data file.

3.3.1 Stream: CFH

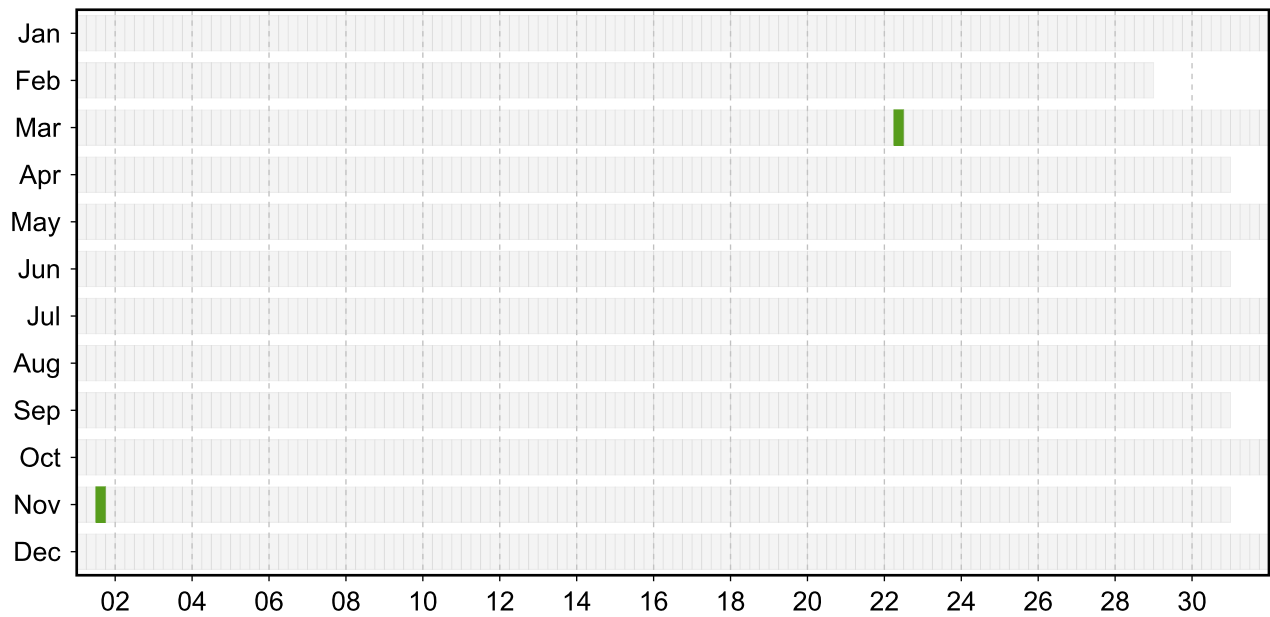


3.3.2 Stream: IMS-100



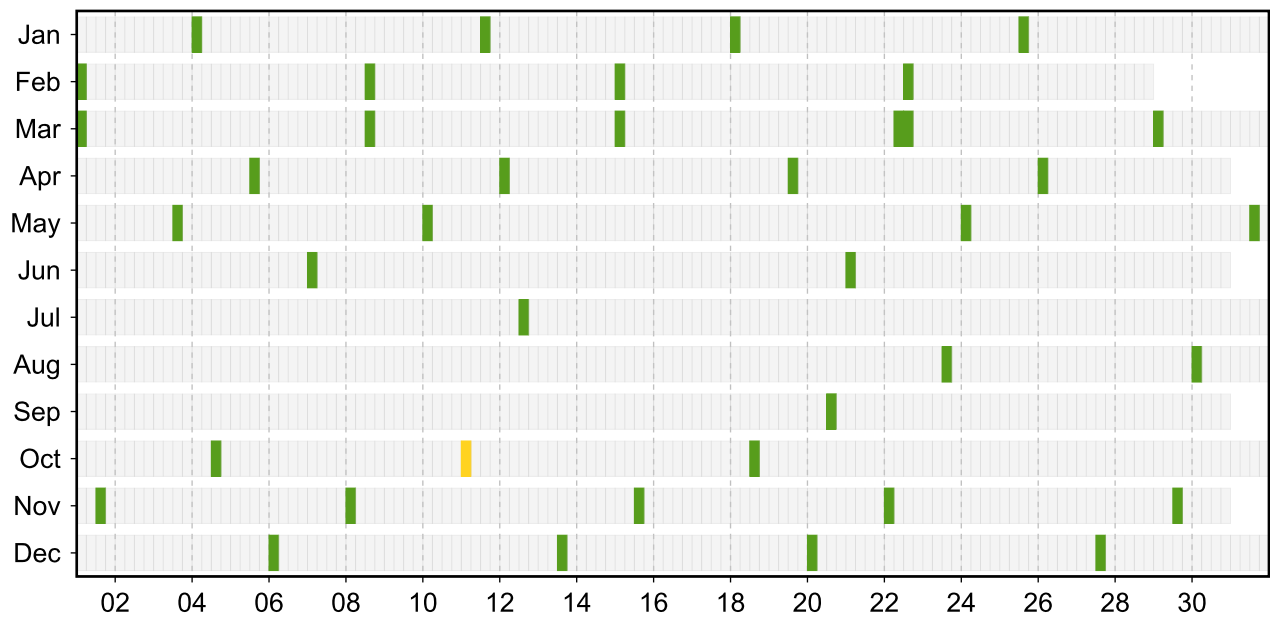
3.3.3 Stream: RS-11G

Data availability RS-11G



3.3.4 Stream: RS92

Data availability RS92



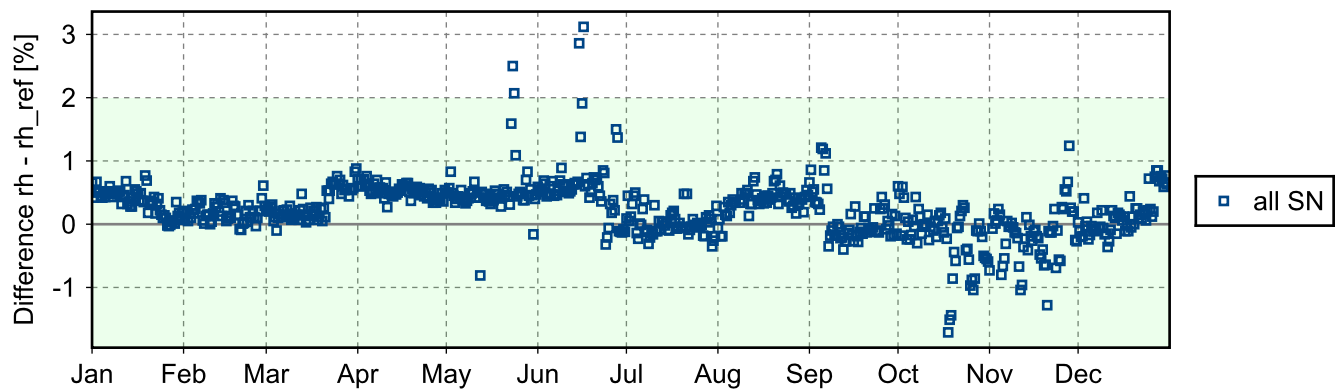
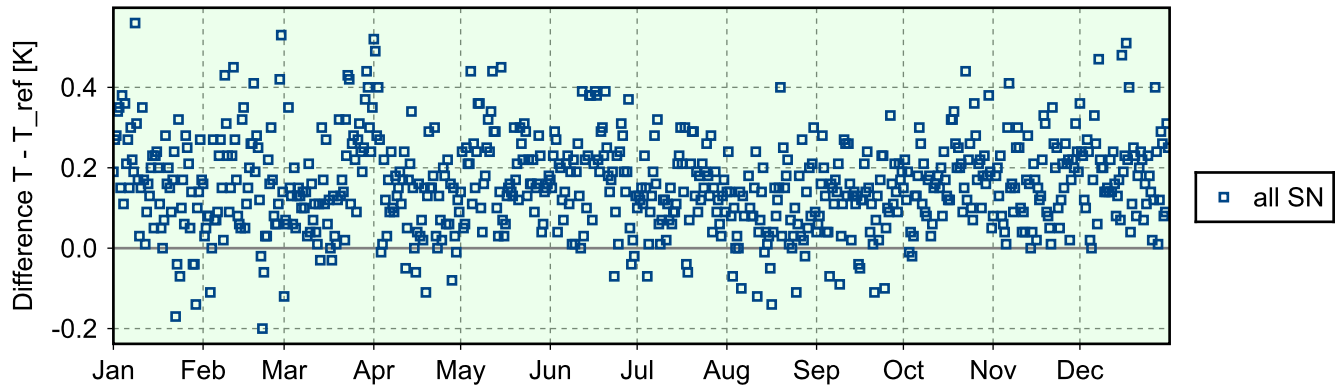
3.4 Instrument combinations of TAT-RS-01

Count	Instrument combination
1	CFH, IMS-100, RS-11G, RS92
688	IMS-100
1	IMS-100, RS-11G, RS92
38	IMS-100, RS92

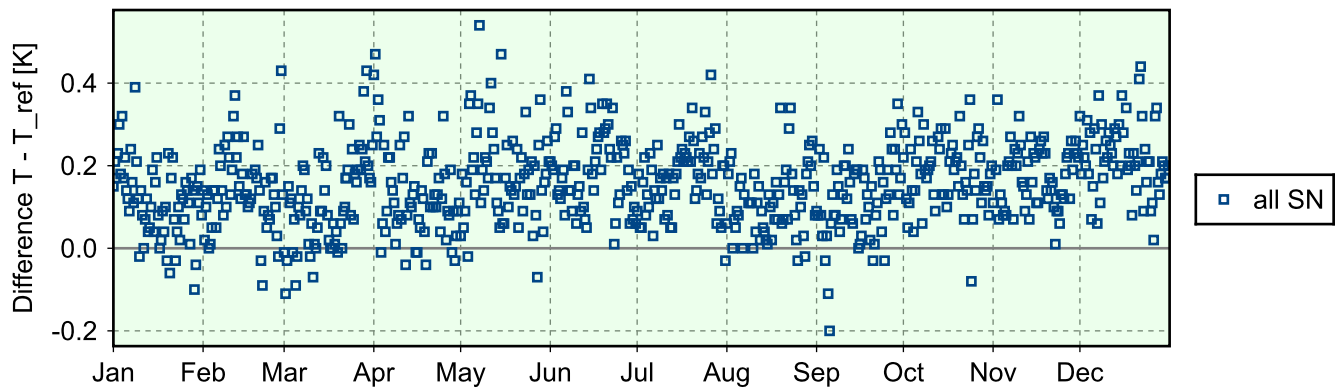
3.5 Instrument ground check

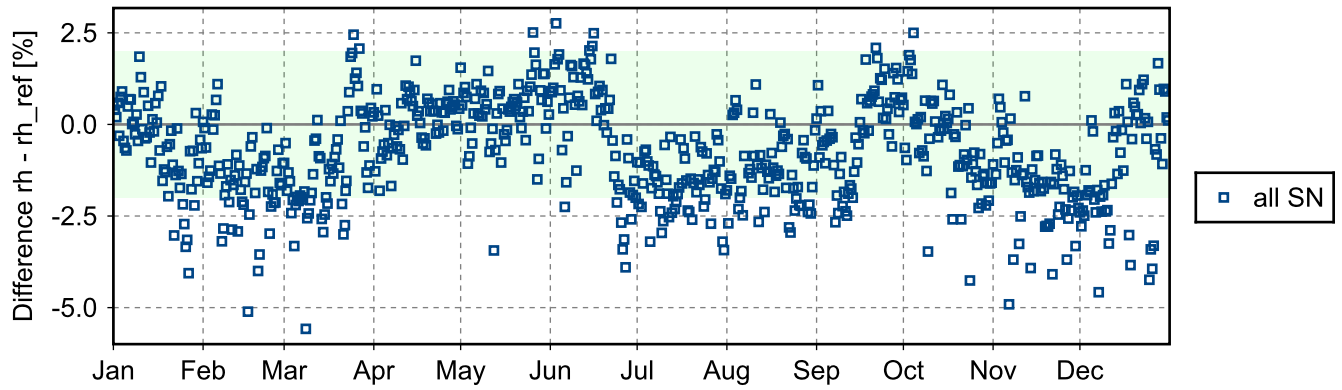
3.5.1 Stream: IMS-100

(1) GroundCheck: GC-TU(0)

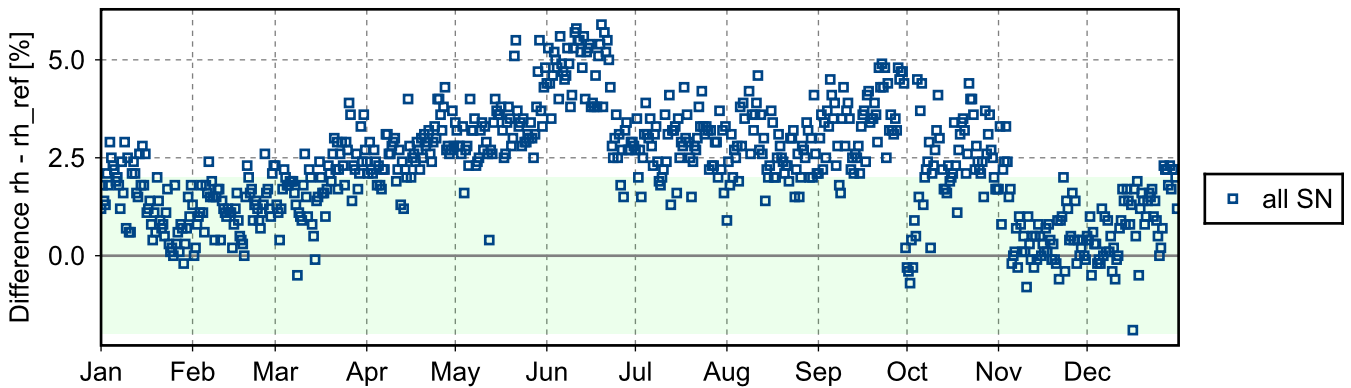
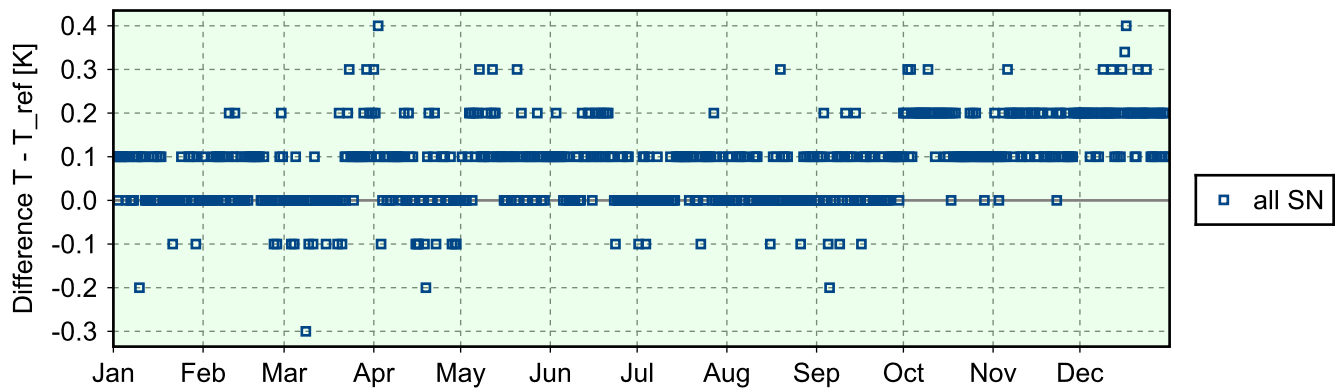


(2) GroundCheck: GC-TU(100)



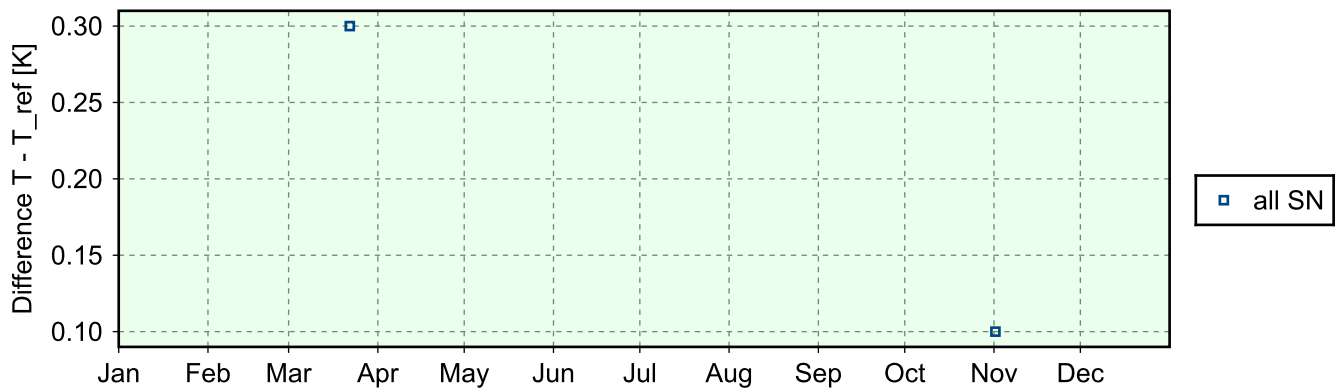


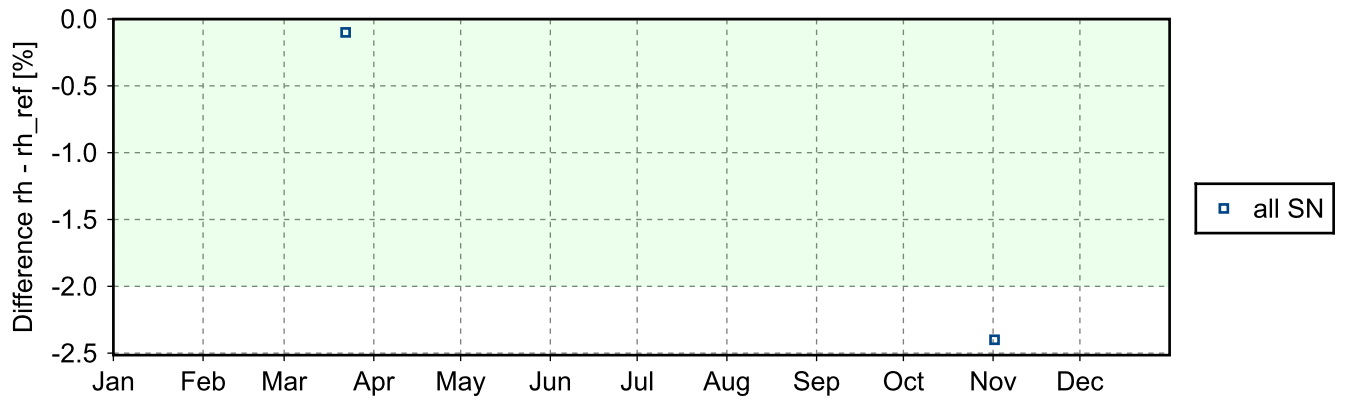
(3) GroundCheck: GC-TU(room)



3.5.2 Stream: RS-11G

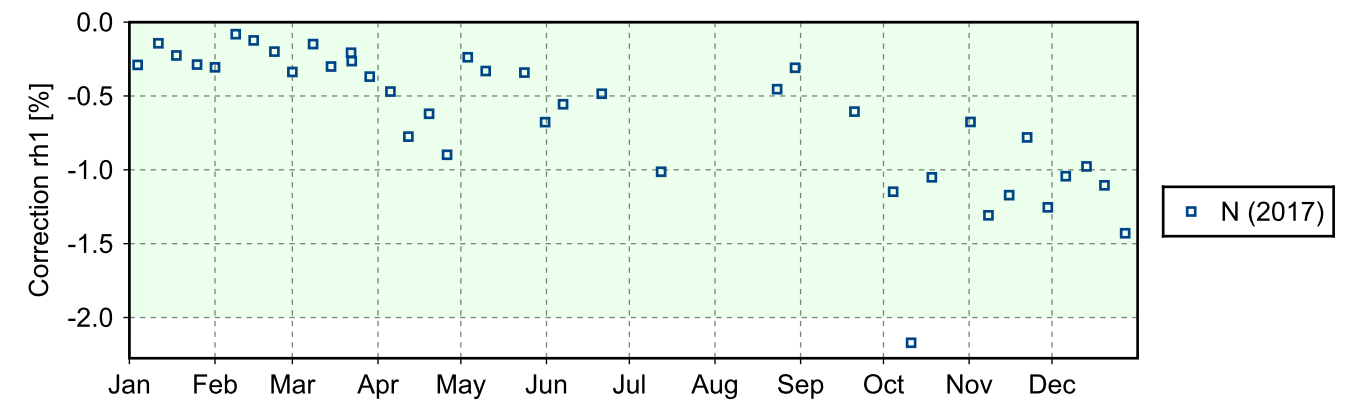
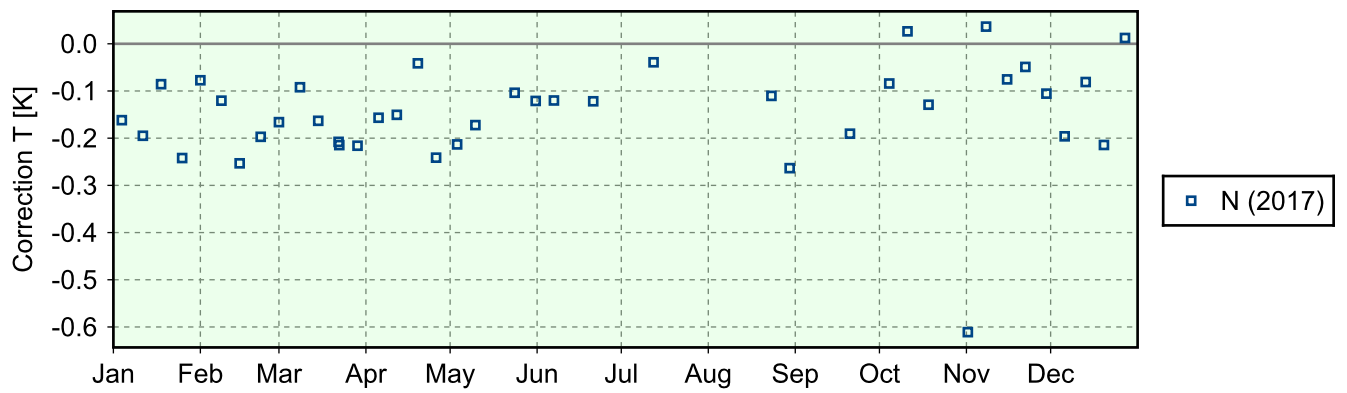
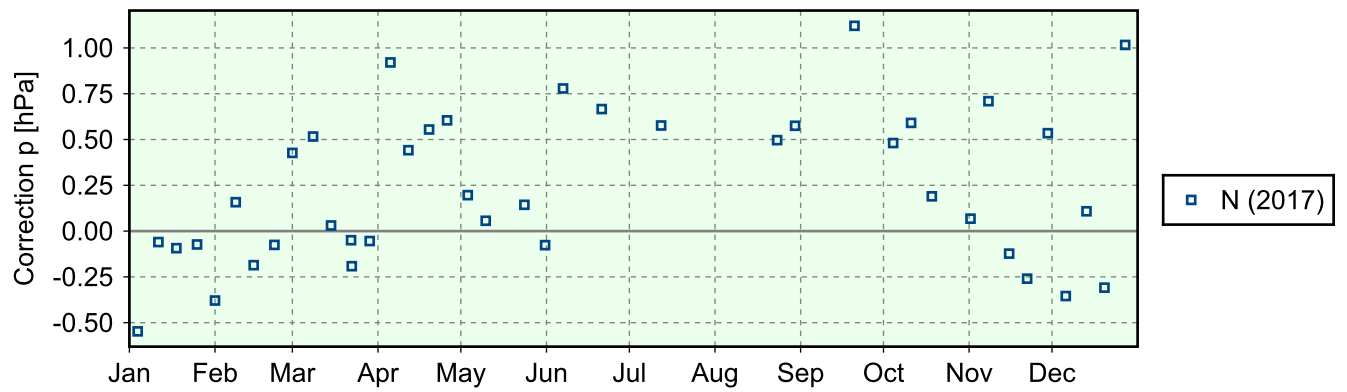
(1) GroundCheck: GC-TU(room)

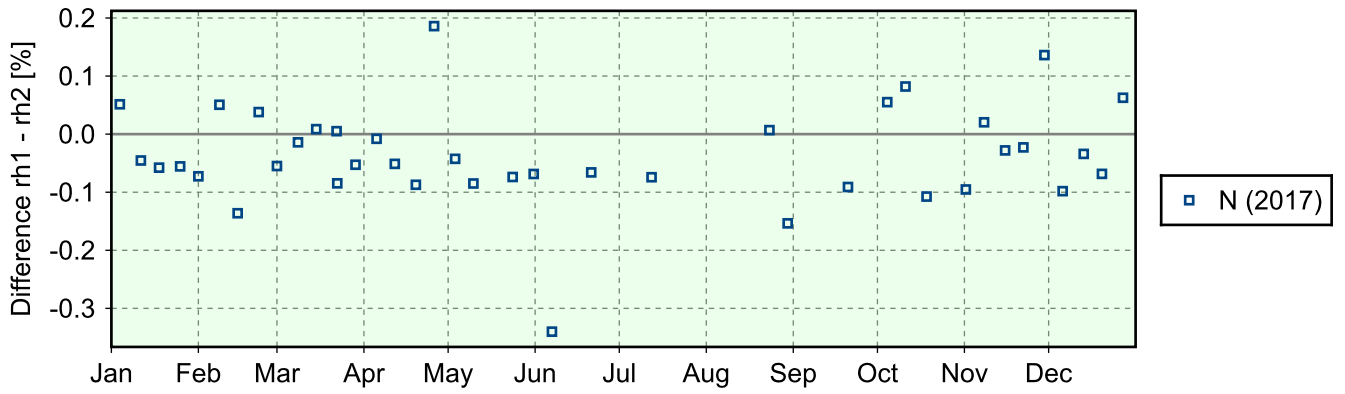
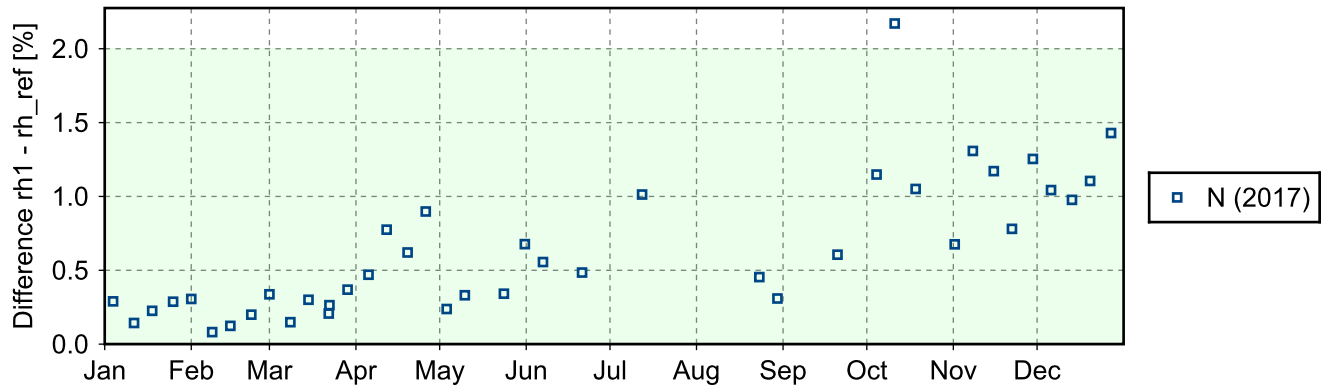




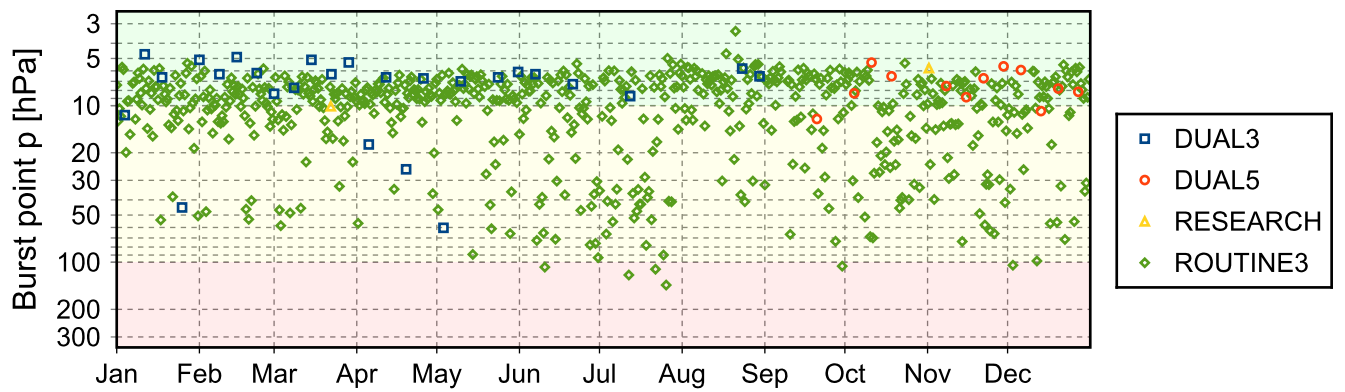
3.5.3 Stream: RS92

(1) GroundCheck: GC-GC25





3.6 Measurement events





GRUAN Site Report for Minamitorishima (MTS), 2019

Reported time range is Jan 2019 to Dec 2019

Created by the Lead Centre

Version from 2020-11-05

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	Hisamitsu, Junji
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	730

1.2 General comments from Lead Centre

1.2.1 Dataflow

For this remote site an intermittent (batch-like) dataflow was established in 2018. Data packages of approximately one month 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	Hisamitsu, Junji
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
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2.2.1 Stream: IMS-100

IMS-100		730	730	
IMS-100-BETA	001		644	

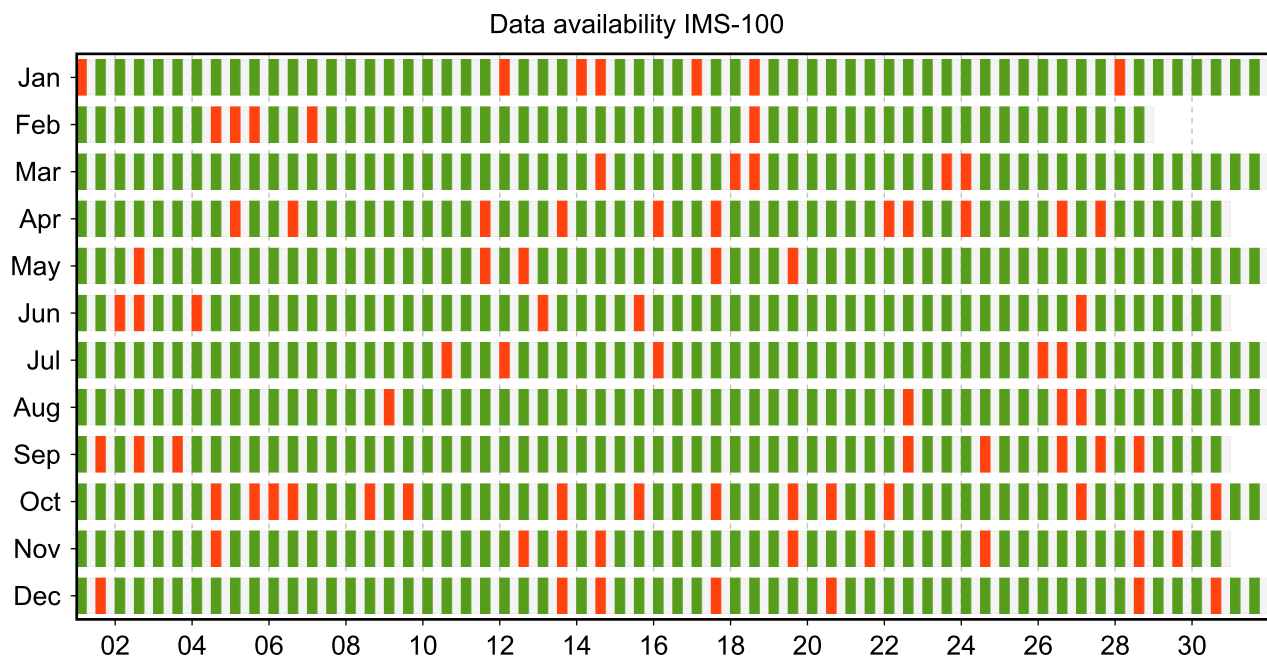
2.3 Availability of data products

Available (green): All steps of data processing have been successfully completed. The data product file is available at LC (e.g. files that didn't pass QA/QC or uncertified GRUAN data products) and/or at NCEI (a certified GRUAN data product file that did pass QA/QC).

Unprocessed (yellow): The manufacturer-produced file with raw measurement data has been successfully converted into a GRUAN-standardized raw data format (NetCDF). The GRUAN data processing has not been performed or was aborted. Reasons for this may be a still missing GRUAN data processor or a processing-software error.

Original (red): The original, manufacturer-produced, raw data file is available (e.g. MWX data file) but was not converted into a GRUAN-standardized raw data format (NetCDF). Reasons for this may be missing data conversion software, a software error, or a corrupt data file.

2.3.1 Stream: IMS-100



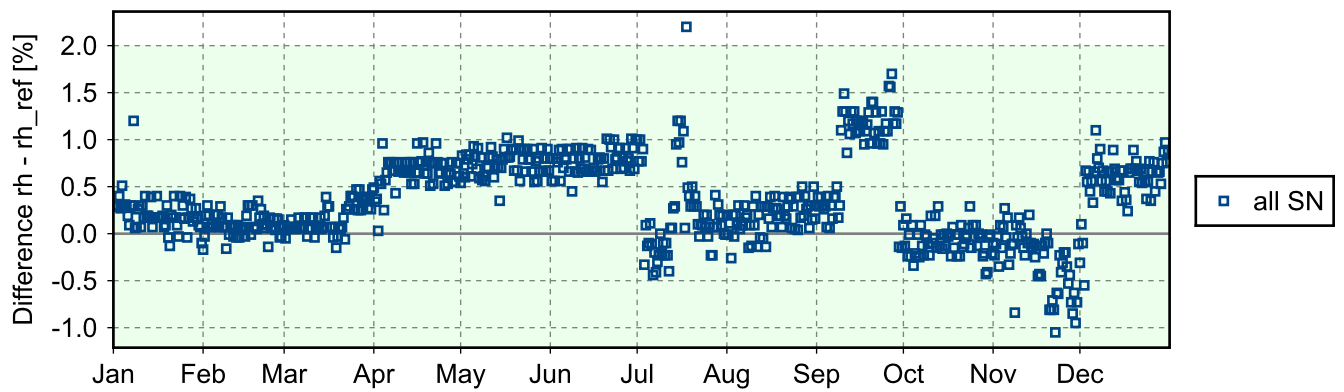
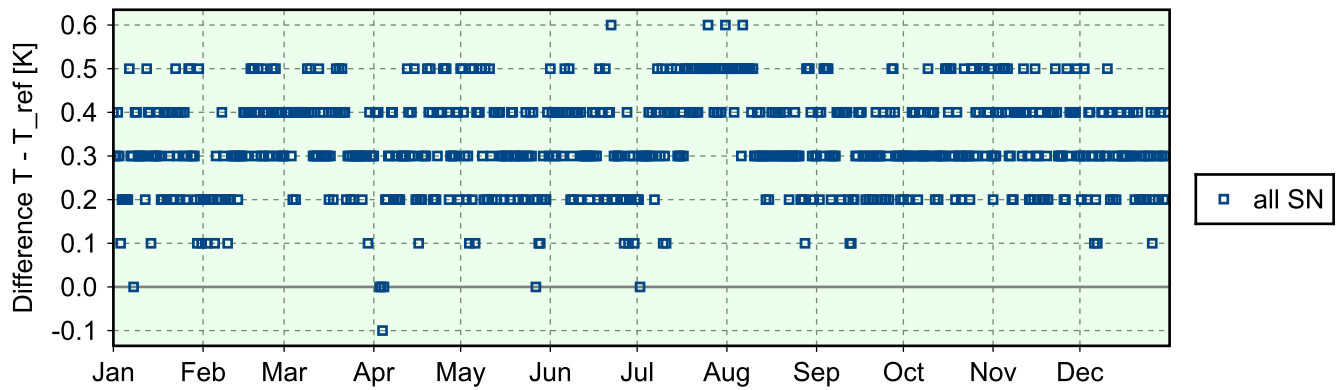
2.4 Instrument combinations of MTS-RS-01

Count	Instrument combination
730	IMS-100

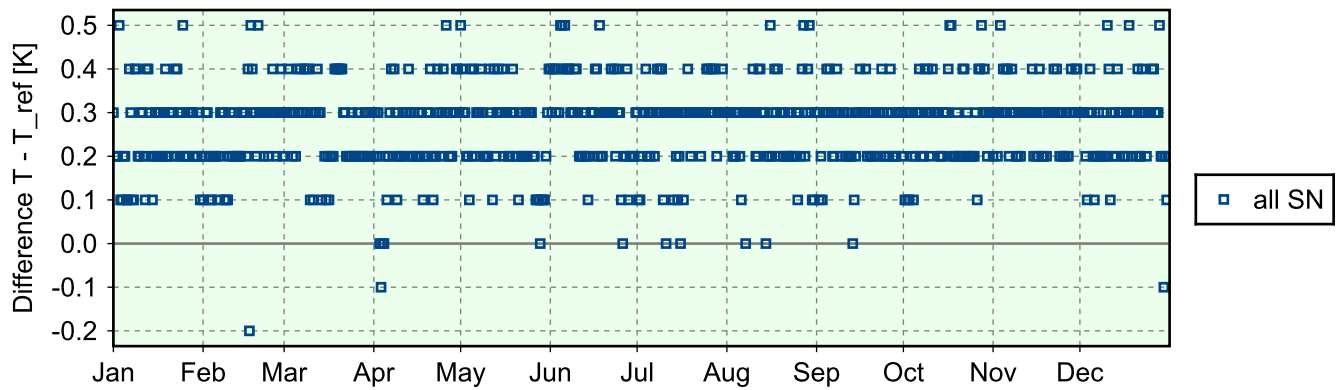
2.5 Instrument ground check

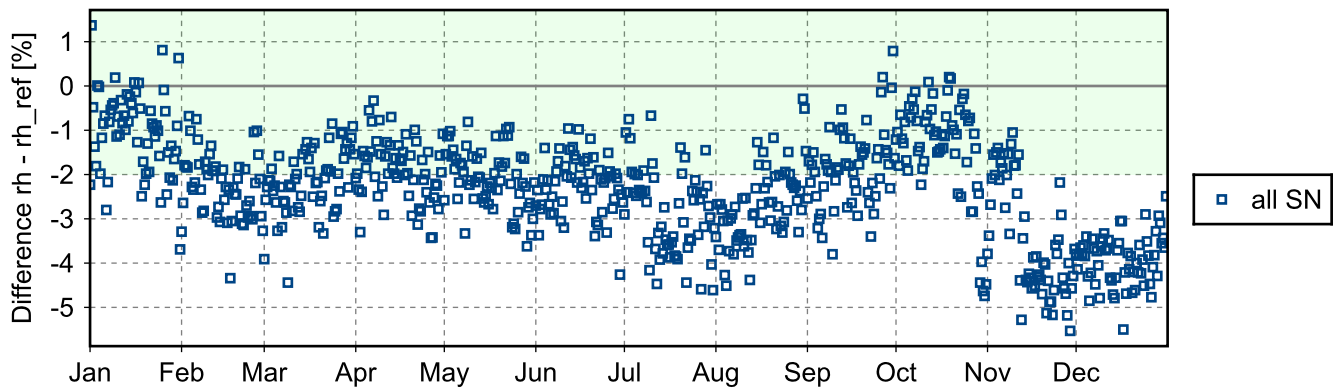
2.5.1 Stream: IMS-100

(1) GroundCheck: GC-TU(0)

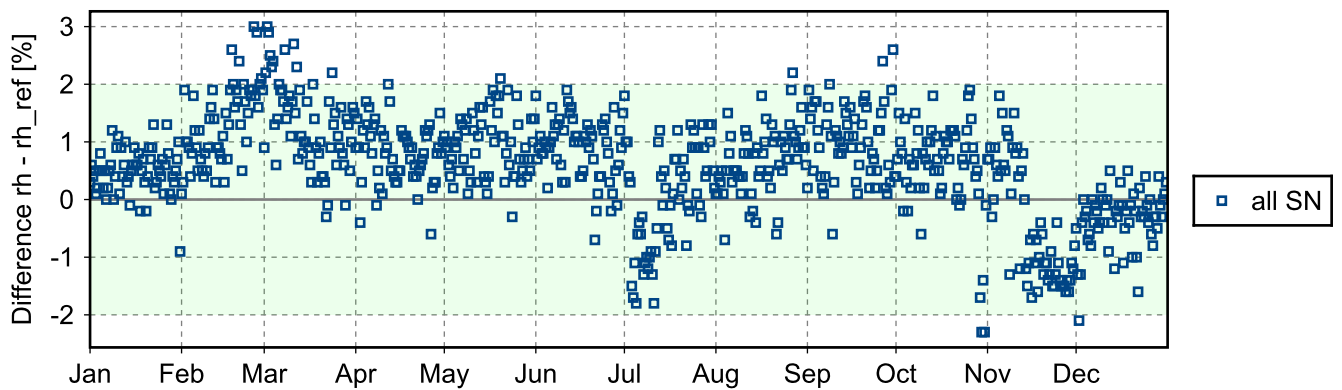
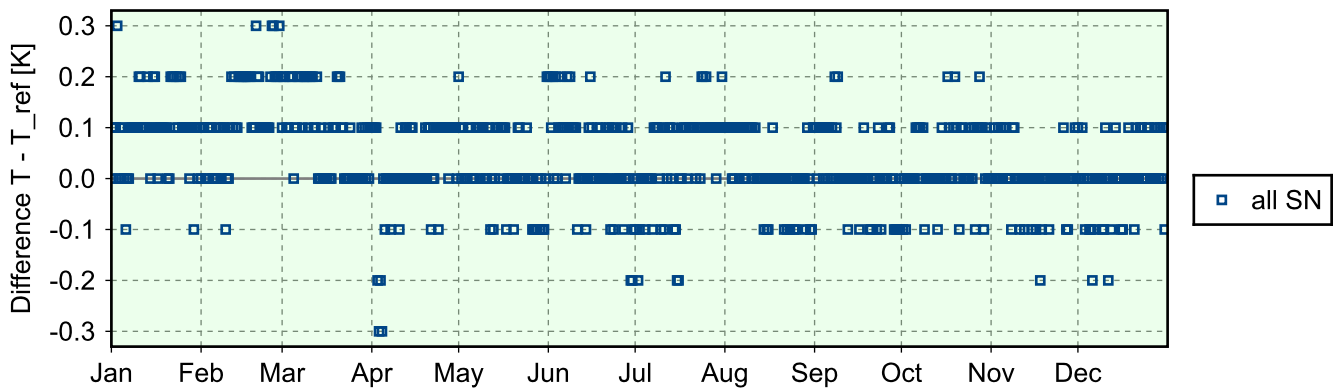


(2) GroundCheck: GC-TU(100)

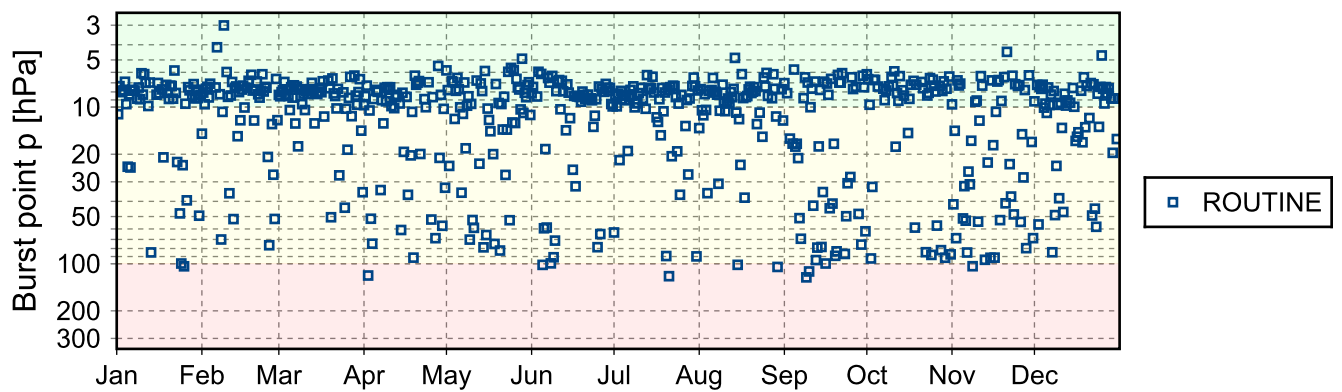




(3) GroundCheck: GC-TU(room)



2.6 Measurement events





GRUAN Site Report for Syowa (SYO), 2019

Reported time range is Jan 2019 to Dec 2019

Created by the Lead Centre

Version from 2020-11-05

1 General GRUAN site information

Object	Value
Station name	Syowa
Unique GRUAN ID	SYO
Geographical position	-69.0100 °S, 39.5800 °E, 25.5 m
Operated by	JMA Japan Meteorological Agency
Main contact	Tanaka, Yoshinobu
WMO no./name	89532 SYOWA
Operators	currently 11, changes +5 / -0
Sounding Site	1
GNSS	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
SYO-GN-01	GNSS site SYOG	GNSS	1	operational
SYO-RS-01	Syowa Station Radiosonde Launch Site	Sounding Site	2	727

1.2 General comments from Lead Centre

1.2.1 Dataflow

Dataflow was established in 2018.

2 System: GNSS site SYOG (SYO-GN-01)

Object	Value
System name	GNSS site SYOG
Unique GRUAN ID	SYO-GN-01
System type	GNSS (GN - GNSS)
Geographical position	-69.0025 °S, 39.3501 °E, 50.1 m
Operated by	JMA Japan Meteorological Agency
Instrument contact	Tanaka, Yoshinobu
Started at	-
Defined setups	1 (HOURLY)
Possible streams	-

2.1 Lead Centre comments

2.1.1 Dataflow

No GNSS dataflow to LC has been established yet.

3 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	Tanaka, Yoshinobu
Started at	1959-01-01
Defined setups	2 (ROUTINE, ROUTINE2)
Possible streams	RS-11G

3.1 Lead Centre comments

3.1.1 Dataflow

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

3.1.2 Data quality

Ground check results are sometimes not within expected limits for both temperature (rarely) and humidity (more often).

3.1.3 General

Routine soundings are performed two times per day.

Current operational radiosonde is the Meisei RS-11G.

3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI
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3.2.1 Stream: RS-11G

RS-11G		727	727	
RS-11G-GDP	001		700	

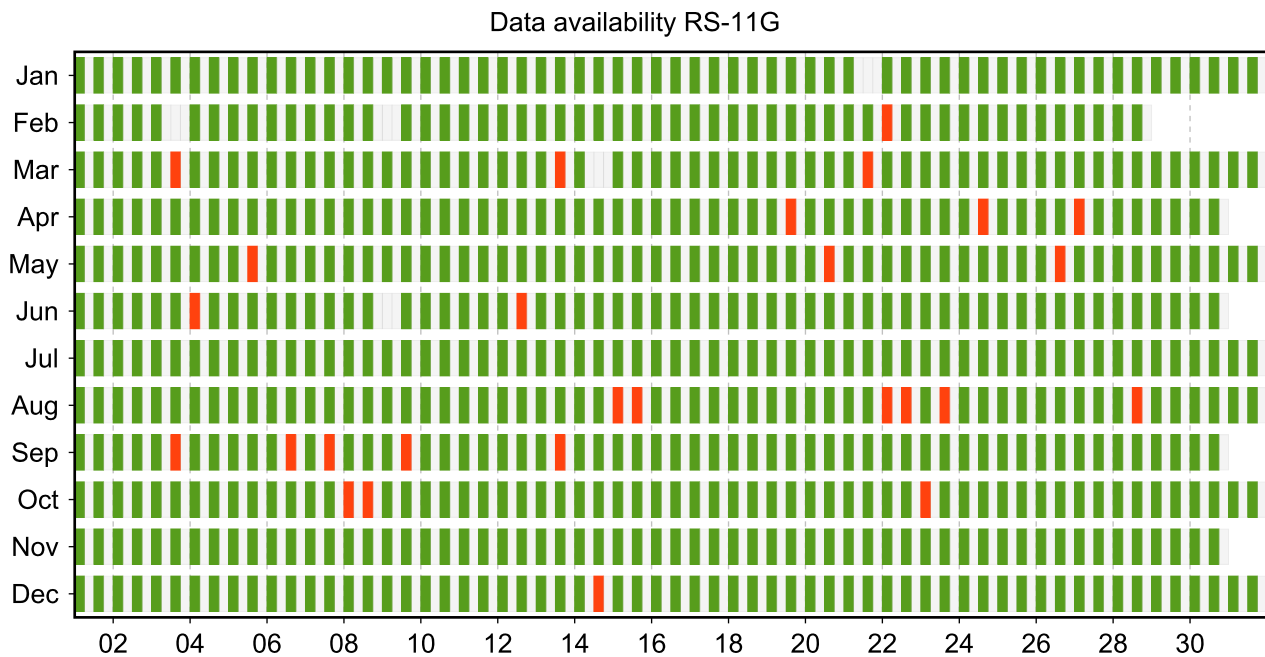
3.3 Availability of data products

Available (green): All steps of data processing have been successfully completed. The data product file is available at LC (e.g. files that didn't pass QA/QC or uncertified GRUAN data products) and/or at NCEI (a certified GRUAN data product file that did pass QA/QC).

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3.3.1 Stream: RS-11G



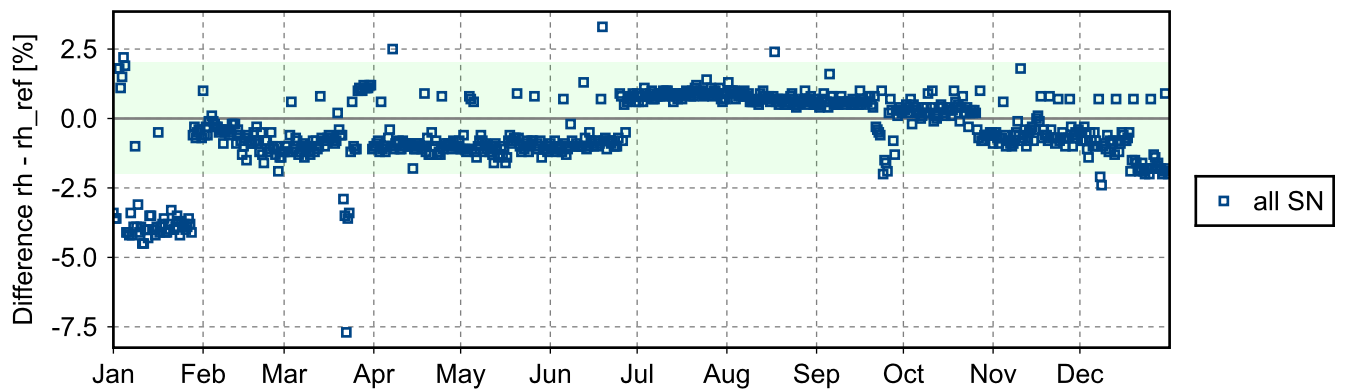
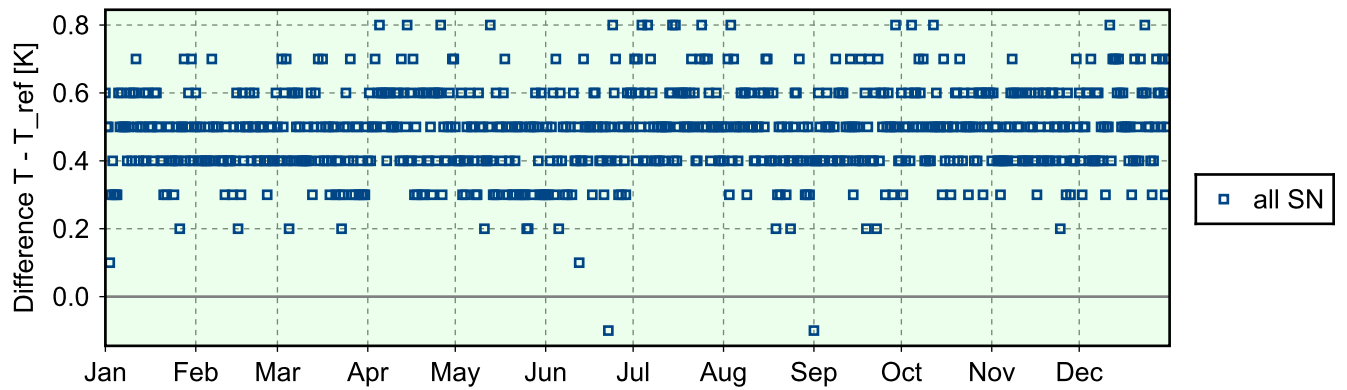
3.4 Instrument combinations of SYO-RS-01

Count	Instrument combination
727	RS-11G

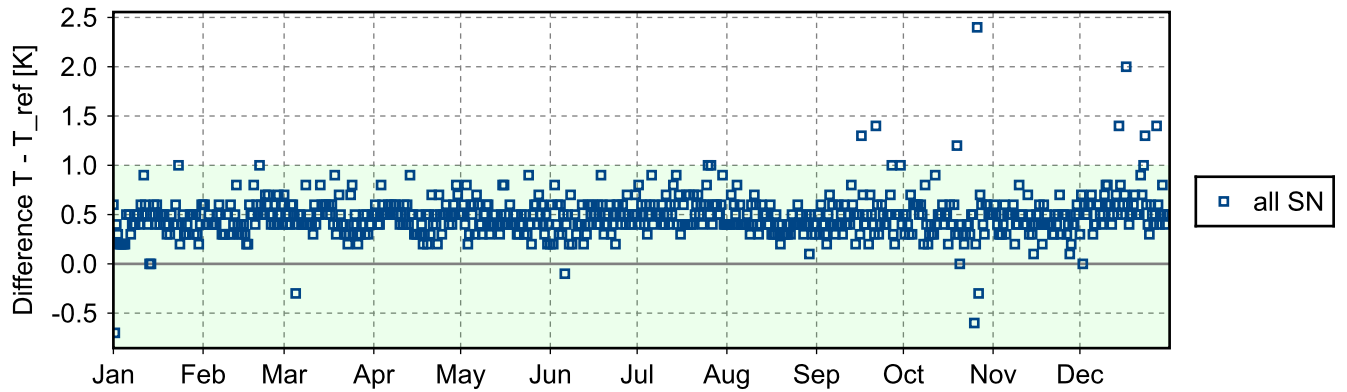
3.5 Instrument ground check

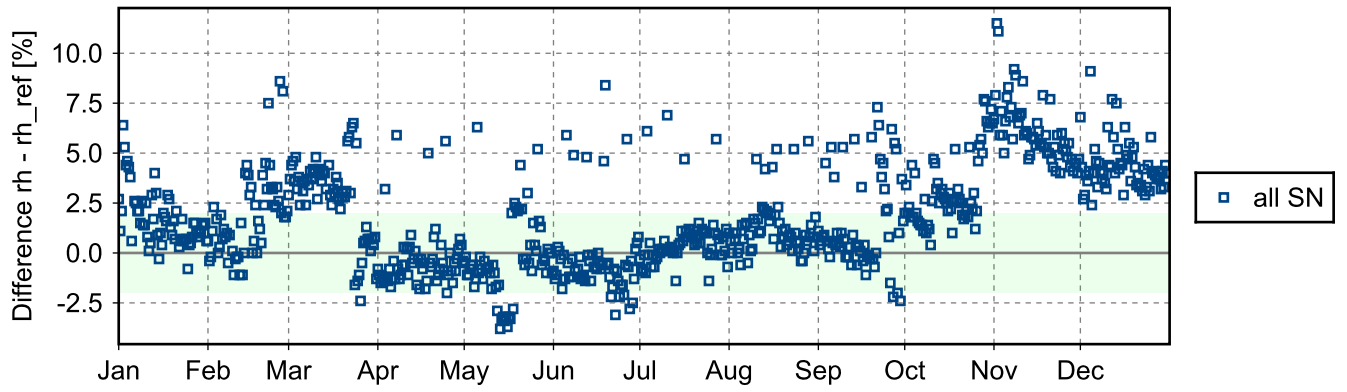
3.5.1 Stream: RS-11G

(1) GroundCheck: GC-TU(0)

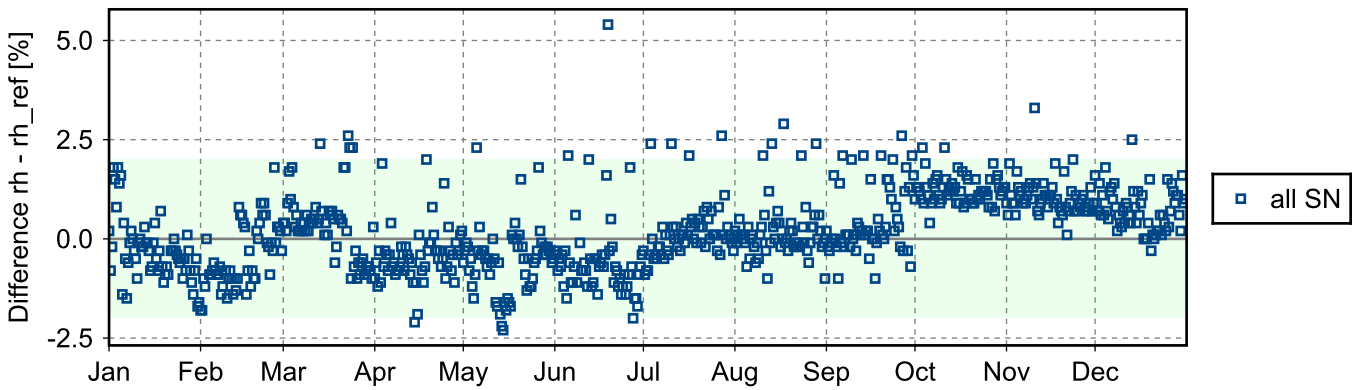
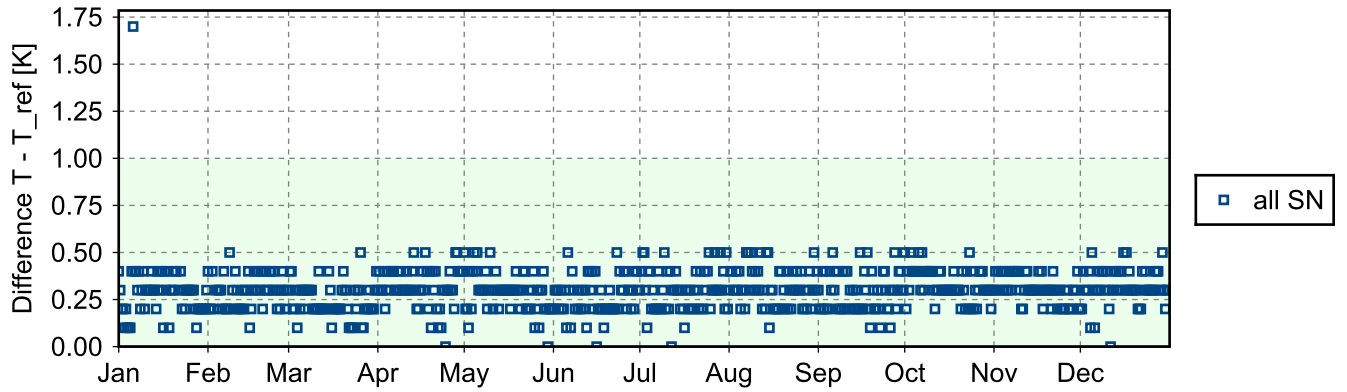


(2) GroundCheck: GC-TU(100)





(3) GroundCheck: GC-TU(room)



3.6 Measurement events

