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Session 5

GRUAN Site Report for Tateno

(Submitted by Hisamitsu Junji)

Summary and Purpose of this Document

Report from the GRUAN site Tateno for the period January 2022 to December 2023.

Overview

Tateno contributes to GRUAN with twice-daily radiosonde observations, weekly dual-flight observations with Meisei and Vaisala radiosondes, several times a year multi-payload flight observations. The type of radiosonde for daily use is iMS-100, radiosondes for comparison are iMS-100, RS41-SGP, RS41-SG, RS-11G, SKYDEW or MTR. Other activities at Tateno include ground-based meteorological observations, ECC ozone sonde observations, ozone observations using the Dobson ozone spectrophotometer and Brewer spectrophotometer, UV observations using the Brewer spectrophotometer, and radiation observations. RS41 and iMS-100 are subject to manufacturer-independent ground checkperformed in an SHC at 0%RH and 100%RH prior to launch.

Change and change management

The type of radiosonde for daily use was switched over from RS41-SG to iMS-100 on June 7th, 2022. The routine sounding with iMS-100 was changed from manual to automatic launches on March 31st, 2023, and cloud observations were terminated except for ozonesonde and comparison soundings. RS41-SGP observations were terminated in March 2023.

Resourcing

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

Operations

Tateno can't operate dual-flight or special radiosondes like SKYDEW in the summer because of safety problem that balloon/equipment fall to urban. The 10 hPa reaching rate has been decreased remarkably after the routine sounding was changed to automatic launches. It is considered to be caused by an inside parachute of balloon. We are investigating for improvement of ability to reach satisfactory heights.

Covid-19

NIL

Site assessment and certification

Tateno was GRUAN-recertified in July 2022.

GRUAN-related research

- Intercomparison observations between iMS-100 and RS-41-SG were conducted once a week except for the summer period.
- Intercomparison of SKYDEW with iMS-100, RS-11G, and RS41-SG twice a year.
- The revision of GRUAN-TD-5 is under review.

WG-GRUAN interface

- Tateno is a data processing center of the GDP for RS-11G and iMS-100.
- KAMATA Yoshihiro was a member of GRUAN TT-sites from April 2022 to March 2023.
- KAWAGUCHI Toshiyuki is a member of GRUAN TT-sites since April 2023.
- IWABUCHI Masami is a member of GRUAN TT-radiosondes.

Other archiving centres

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

Participation in campaigns

NIL

Future plans

The propeller vane for surface wind direction and wind speed monitoring is going to be transferred in 2024.

GRUAN Site Report for Tateno (TAT), 2022

Reported time range is Jan 2022 to Dec 2022
Created by the Lead Centre
Version from 2024-03-01

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	Kawaguchi, Toshiyuki
WMO no./name	47646 TATENO
Operators	currently 25, changes +3 / -3
Sounding Site	1
GNSS	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
TAT-GN-02	GNSS Site TSK2	GNSS	1	operational
TAT-RS-01	Tateno Radiosonde Launch Site	Sounding Site	12	743

1.2 General comments from Lead Centre

1.2.1 General

The operational radiosonde was changed from the RS41 to the iMS-100 in June.

1.2.2 Request

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 TSK2 (TAT-GN-02)

Object	Value
System name	GNSS Site TSK2
Unique GRUAN ID	TAT-GN-02
System type	GNSS (GN - GNSS)
Geographical position	36.1056 °N, 140.0871 °E, 70.0 m
Operated by	GSI | Geospatial Information Authority
Instrument contact	Kawaguchi, Toshiyuki
Started at	2020-11-01
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 January 2020. The current dataflow includes instrument logs, containing all equipment changes.

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	Kawaguchi, Toshiyuki
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, SKYDEW

3.1 Lead Centre comments

3.1.1 Change management

Regularly twin soundings with RS41 and iMS-100 were performed and submitted to the GRUAN LC since February 2020.

3.1.2 Dataflow

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

Currently, the dataflow includes streams of Vaisala RS41, Meisei iMS-100 and RS-11G. All launches are promptly submitted using the RsLaunchClient.

3.1.3 Data quality

Relatively large fluctuations of differences in 0% RH ground check are present, at several 'modal' levels rather than with the expected statistical distribution. This may indicate systematic variations of the quality of 0 %RH reference environment.

The RH ground check (iMS-100) at room temperature shows deviations up to -5 %RH with a strong trend over time.

The 100 %RH ground check (iMS-100) shows deviations exceeding -5 %RH. Seems to be batch-related.

3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI

3.2.1 Stream: IMS-100

IMS-100		449	449	
IMS-100-GDP	002		446	

3.2.2 Stream: RS-11G

RS-11G		3	3	
RS-11G-BETA	002		2	
RS-11G-GDP	001		2	

3.2.3 Stream: RS41

RS41		342	342	
RS41-RAW	001		341	
RS41-EDT	001		338	
RS41-GDP	001		341	

3.2.4 Stream: SKYDEW

SKYDEW		1	1	

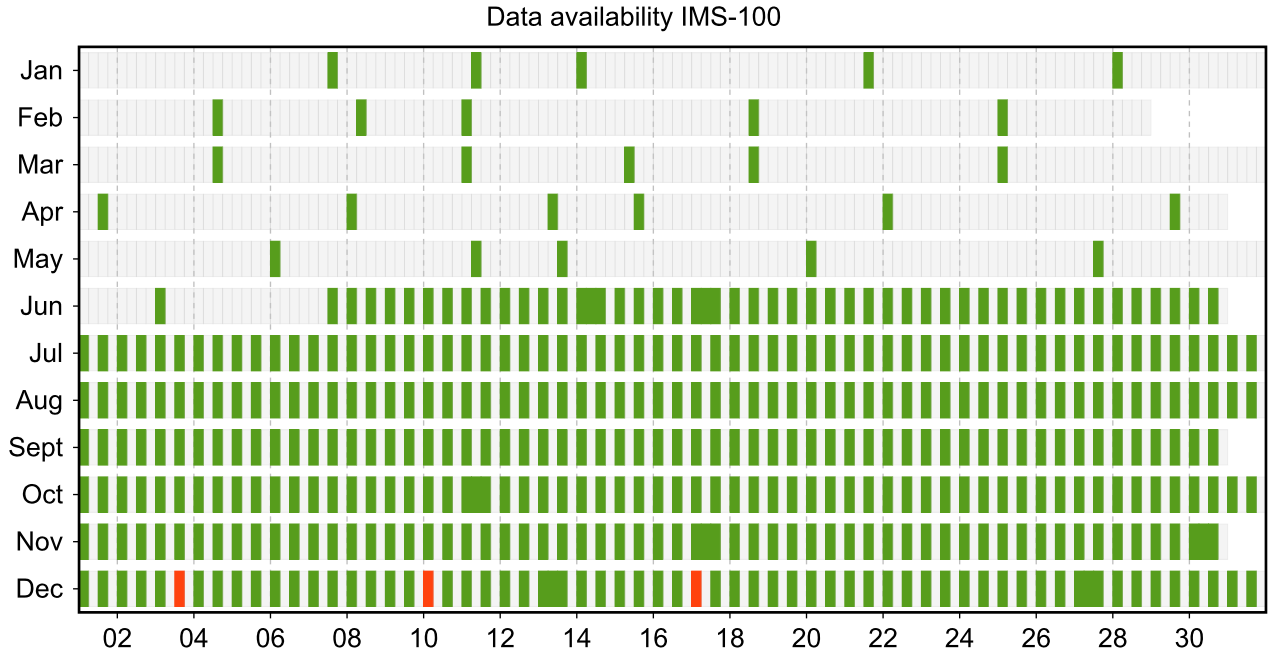
3.3 Availability of data products

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).

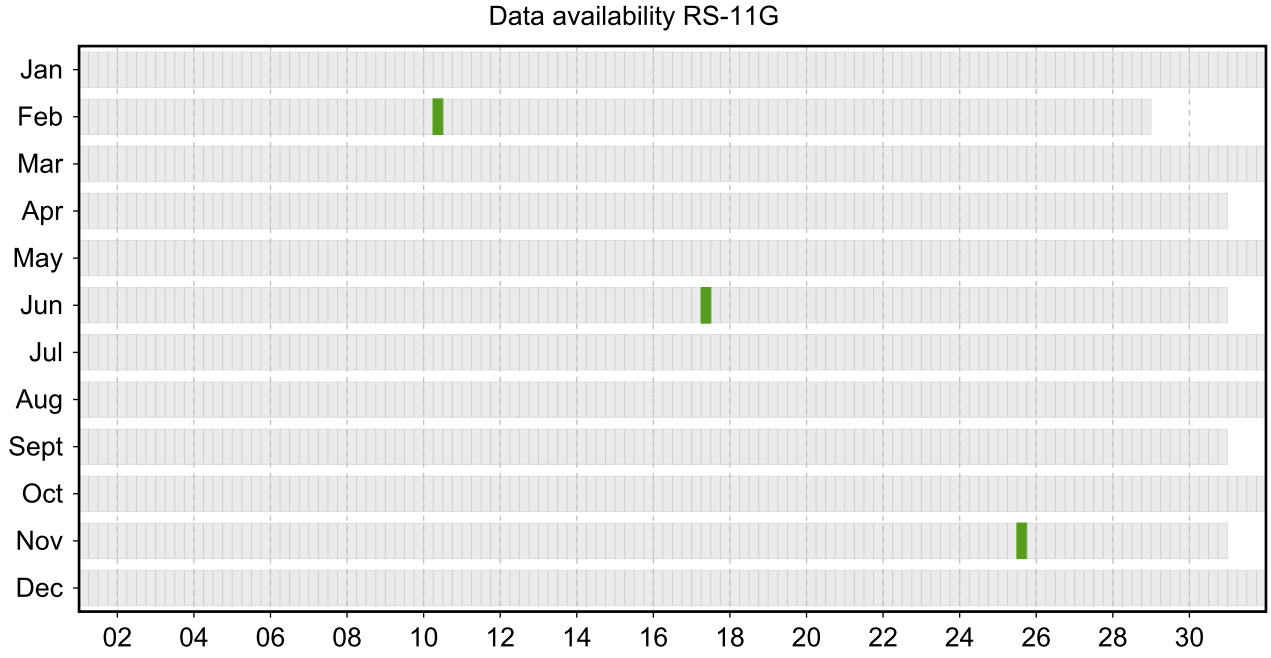
Unprocessed (yellow): The manufacturer-produced file with raw measurement data has been successfully converted into a GRUAN-standardized raw data format (NetCDF). The GRUAN data processing has not been performed or was aborted. Reasons for this may be a still missing GRUAN data processor or a processing-software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

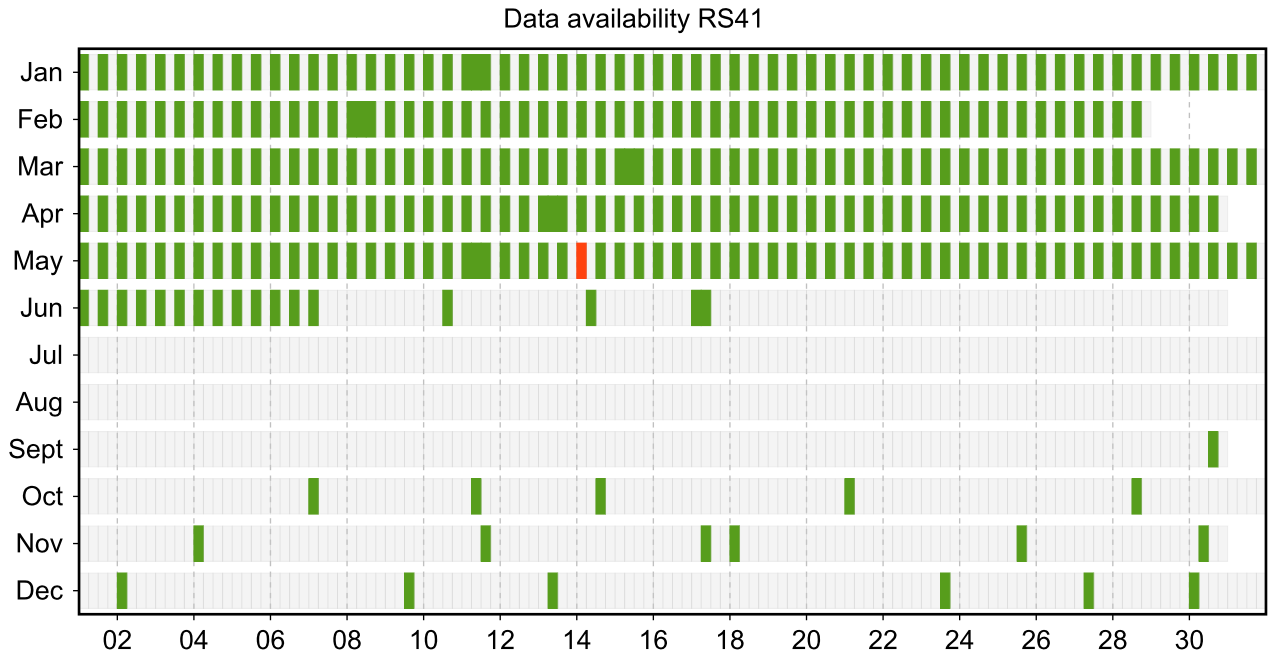
3.3.1 Stream: IMS-100



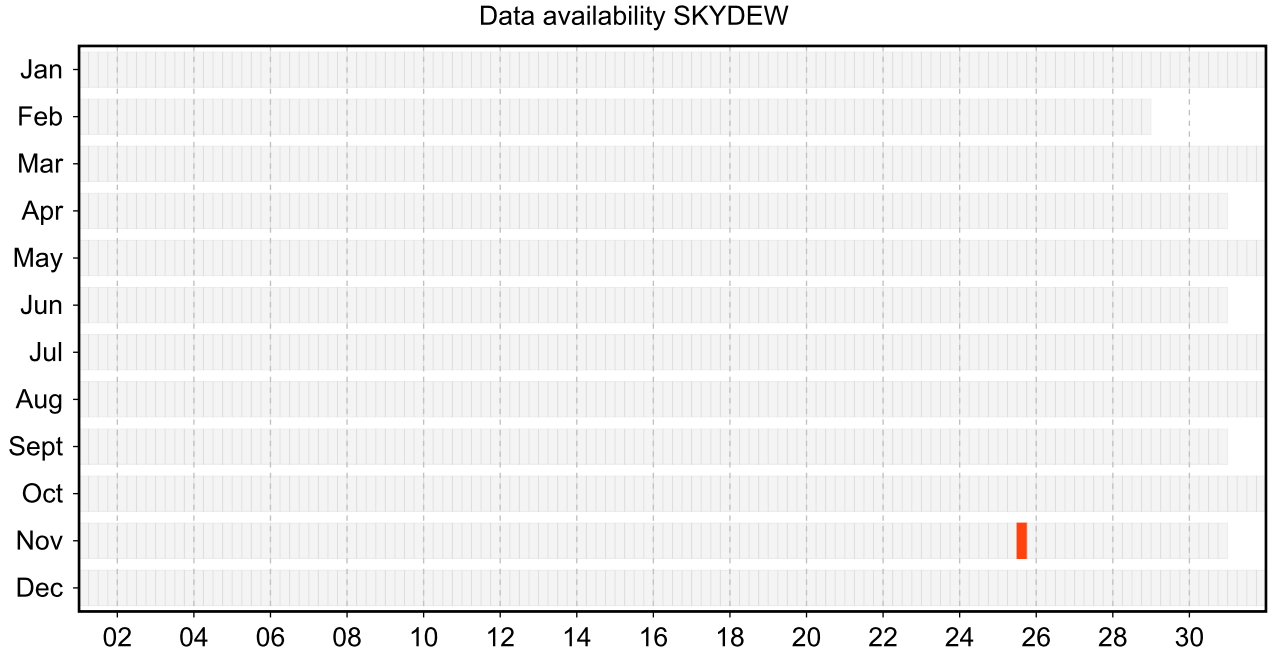
3.3.2 Stream: RS-11G



3.3.3 Stream: RS41



3.3.4 Stream: SKYDEW



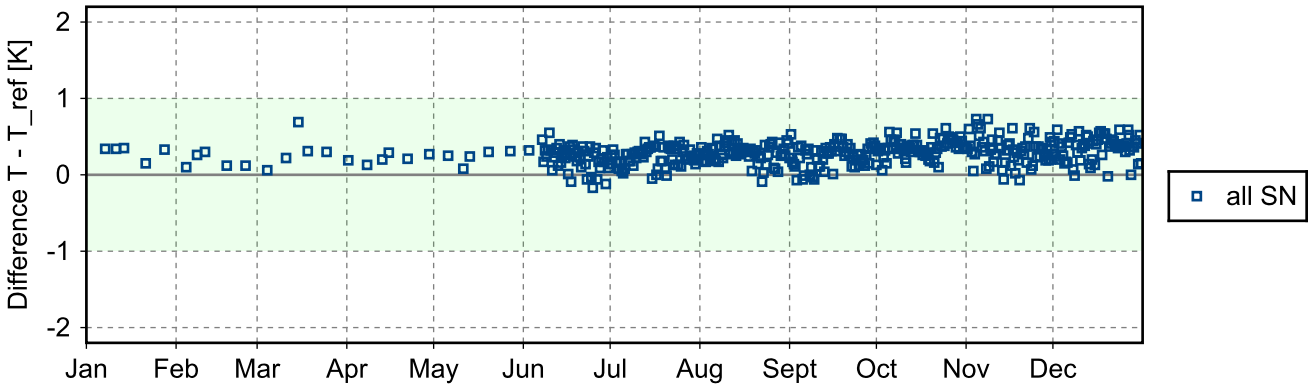
3.4 Instrument combinations of TAT-RS-01

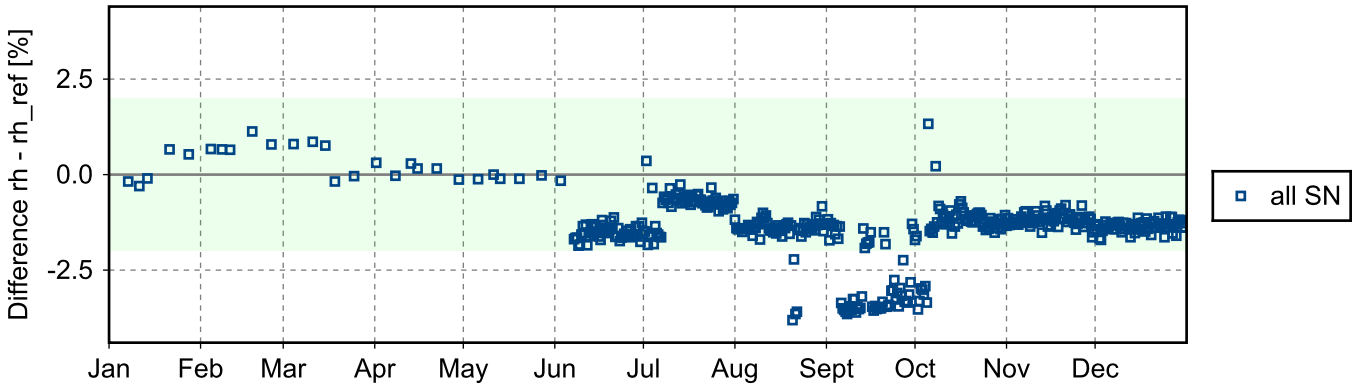
Count	Instrument combination
400	IMS-100
1	IMS-100, RS-11G, RS41
1	IMS-100, RS-11G, RS41, SKYDEW
47	IMS-100, RS41
1	RS-11G
293	RS41

3.5 Instrument ground check

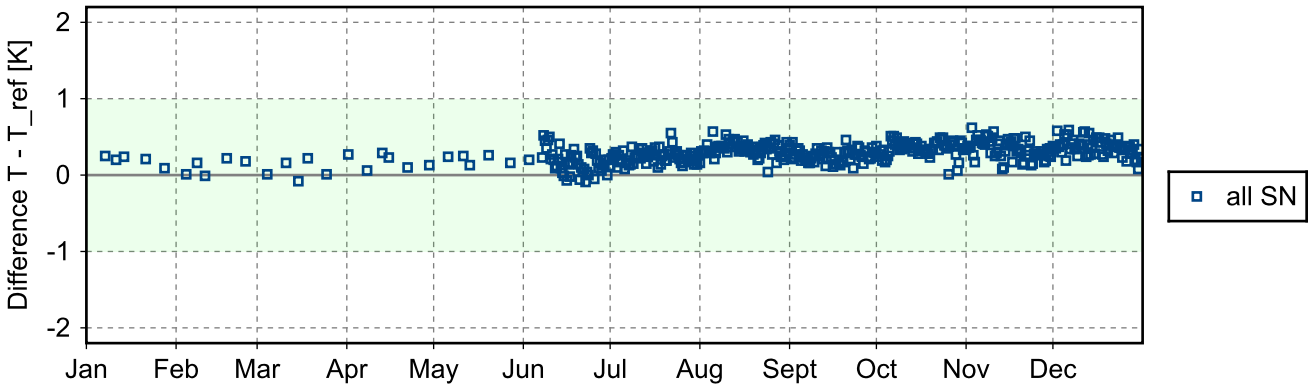
3.5.1 Stream: IMS-100

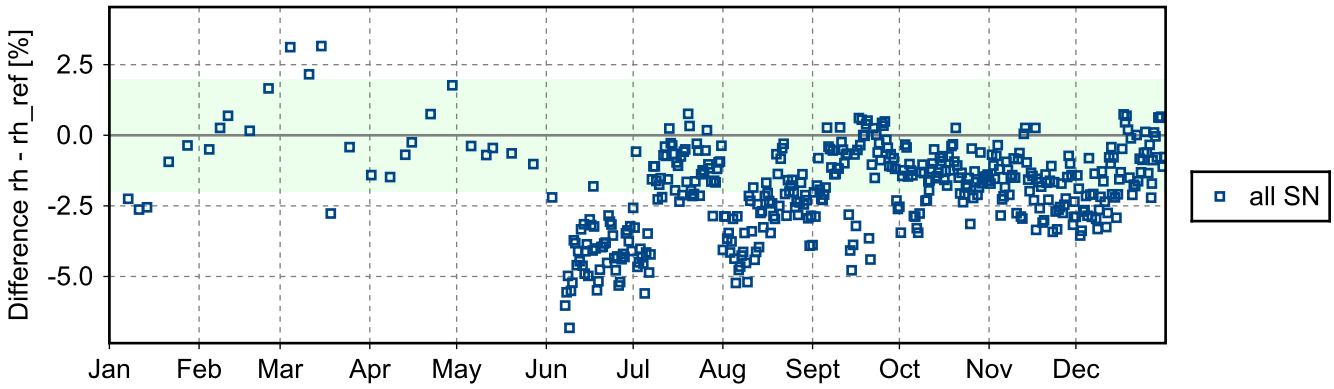
(1) GroundCheck: GC-TU(0)



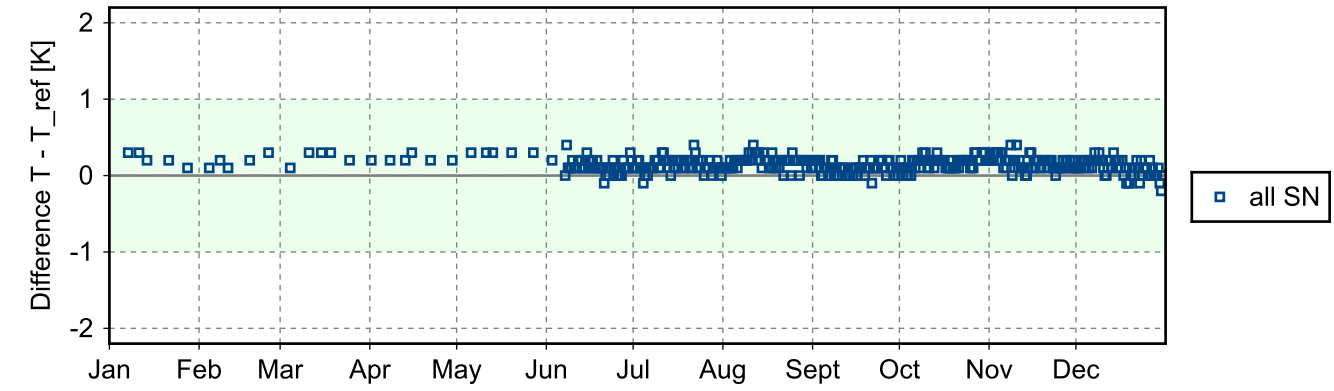


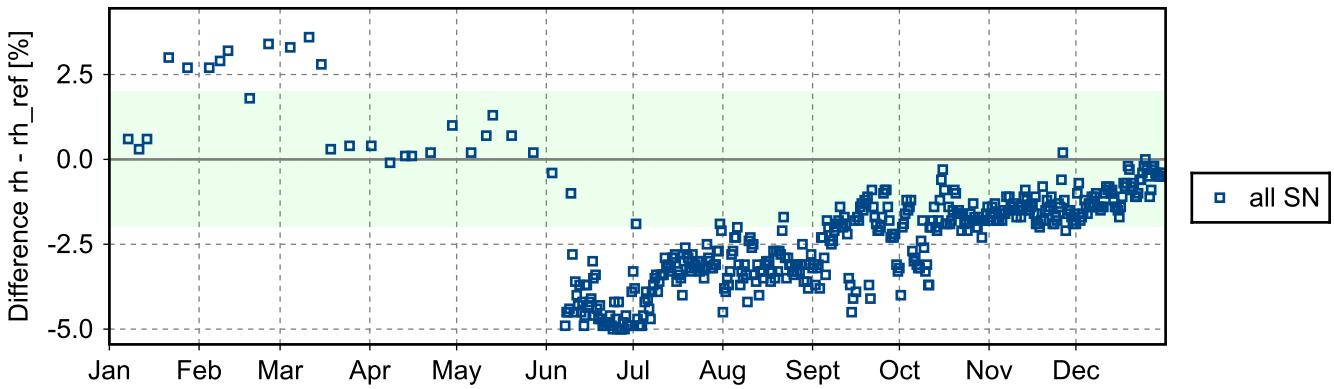
(2) GroundCheck: GC-TU(100)





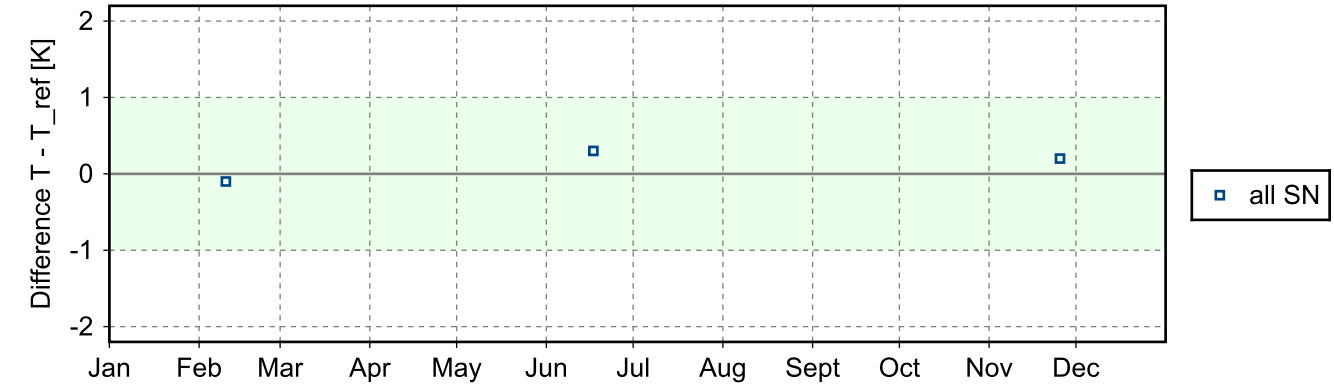
(3) GroundCheck: GC-TU(room)

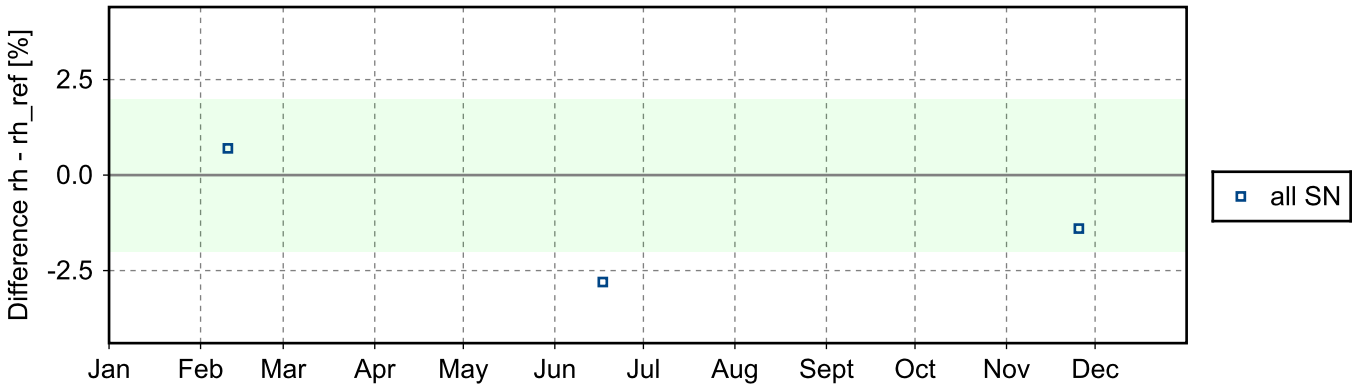




3.5.2 Stream: RS-11G

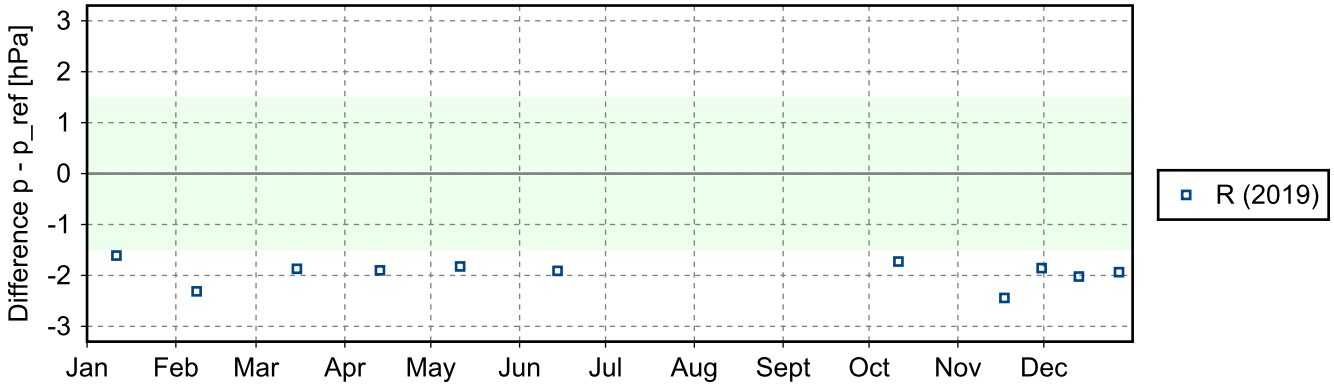
(1) GroundCheck: GC-TU(room)



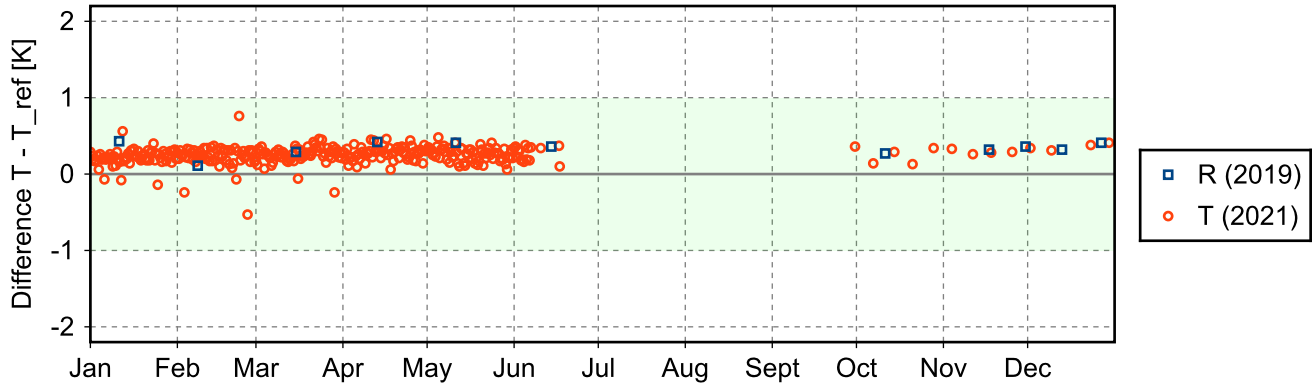


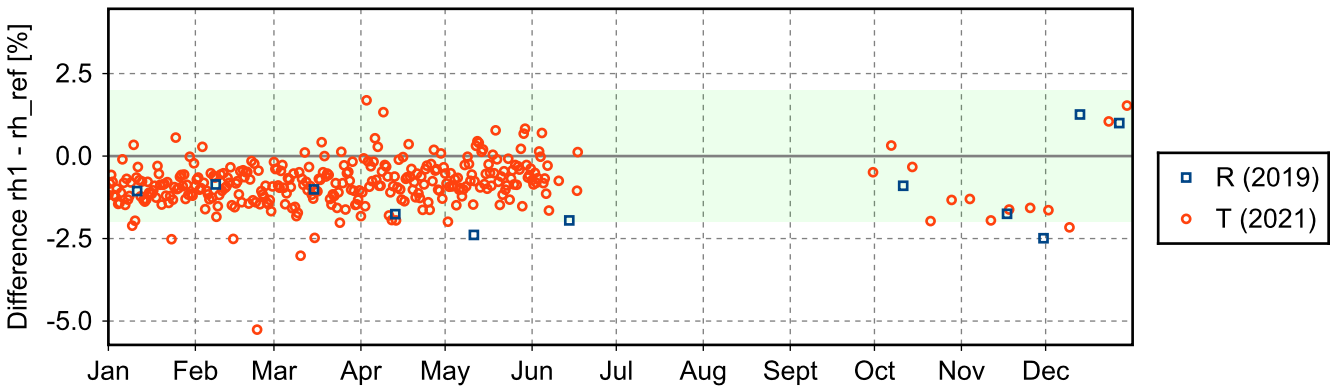
3.5.3 Stream: RS41

(1) GroundCheck: GC-RI41

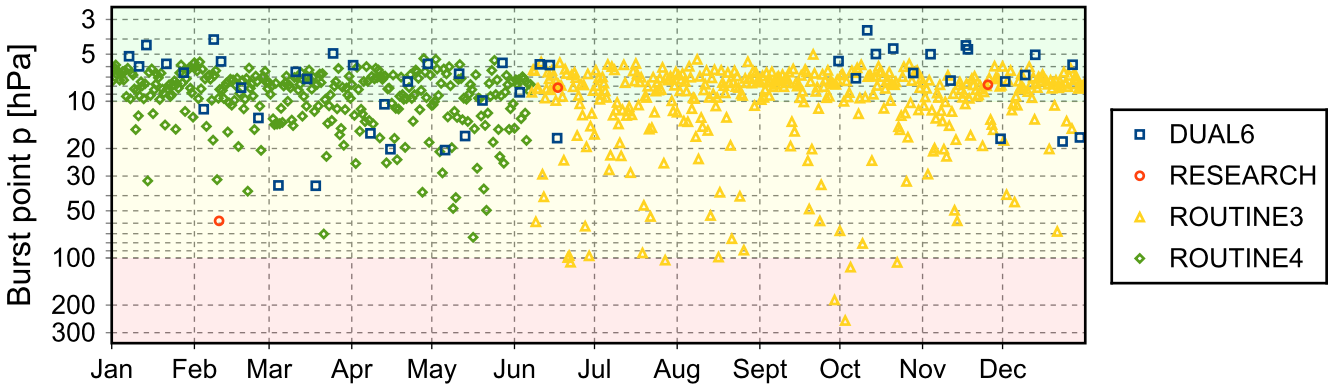


(2) GroundCheck: GC-SHC





3.6 Measurement events



GRUAN Site Report for Tateno (TAT), 2023

Reported time range is Jan 2023 to Dec 2023
Created by the Lead Centre
Version from 2024-03-01

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	Kawaguchi, Toshiyuki
WMO no./name	47646 TATENO
Operators	currently 24, changes +2 / -3
Sounding Site	2
GNSS	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
TAT-GN-02	GNSS Site TSK2	GNSS	1	operational
TAT-RS-01	Tateno Radiosonde Launch Site	Sounding Site	12	250
TAT-RS-02	Automatic Tateno Launch System	Sounding Site	1	527

1.2 General comments from Lead Centre

1.2.1 General

The operational radiosonding was changed from manual to automatic launches.

1.2.2 Request

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 TSK2 (TAT-GN-02)

Object	Value
System name	GNSS Site TSK2
Unique GRUAN ID	TAT-GN-02
System type	GNSS (GN - GNSS)
Geographical position	36.1056 °N, 140.0871 °E, 70.0 m
Operated by	GSI | Geospatial Information Authority
Instrument contact	Kawaguchi, Toshiyuki
Started at	2020-11-01
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 January 2020. The current dataflow includes instrument logs, containing all equipment changes.

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	Kawaguchi, Toshiyuki
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, SKYDEW

3.1 Lead Centre comments

3.1.1 Change management

Regularly twin soundings with RS41 and iMS-100 were performed and submitted to the GRUAN LC since February 2020.

3.1.2 Dataflow

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

Currently, the dataflow includes streams of Vaisala RS41, Meisei iMS-100 and RS-11G. All launches are promptly submitted using the RsLaunchClient.

3.1.3 Data quality

The 100 % RH ground check (iMS-100) shows deviations reaching +3 to -5 %RH. Deviation with smaller amplitude, but similar pattern for RH ground check (iMS-100) at room temperature. Seems to be batch-related.

3.1.4 General

This is the manual launch site.

Routine soundings with Meisei iMS-100 were performed two times per day until March. The automatic launcher system then took over the operational sounding.

There is good performance in terms of burst altitude which is regularly 10 hPa and higher.

3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI

3.2.1 Stream: IMS-100

IMS-100		250	250	
IMS-100-GDP	002		245	

3.2.2 Stream: RS-11G

RS-11G		5	5	
RS-11G-BETA	002		5	
RS-11G-GDP	001		4	

3.2.3 Stream: RS41

RS41		44	44	
RS41-RAW	001		44	
RS41-EDT	001		44	
RS41-GDP	001		44	

3.2.4 Stream: SKYDEW

SKYDEW		2	2	

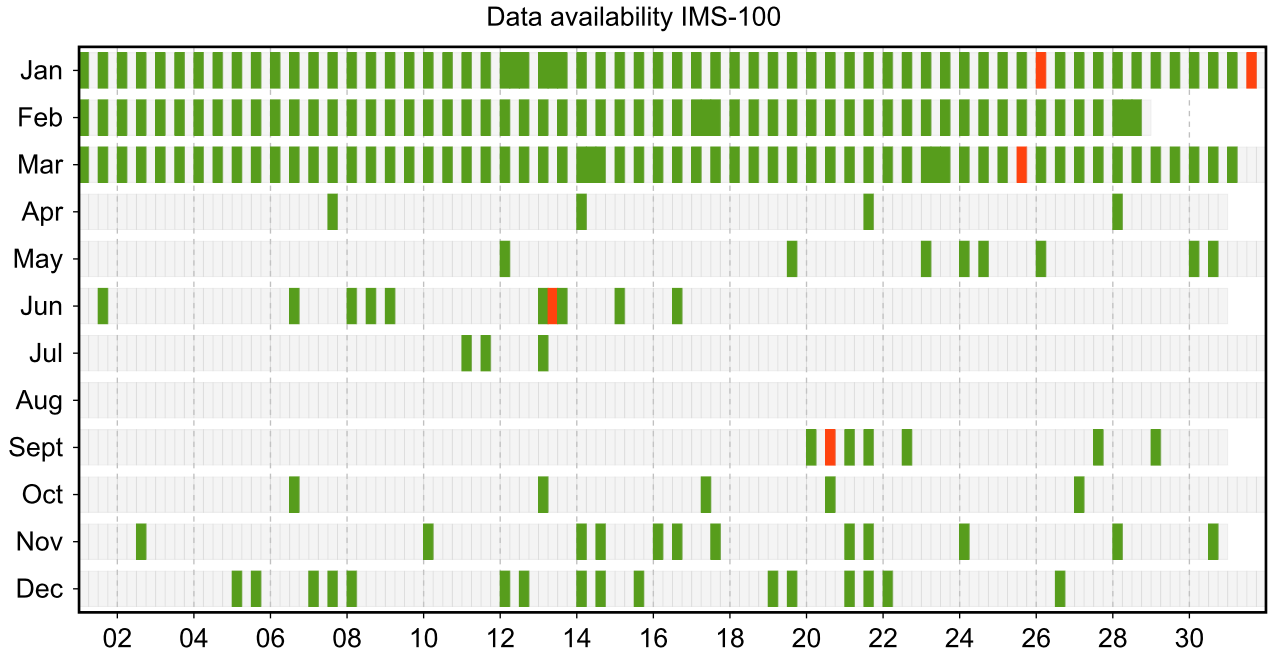
3.3 Availability of data products

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).

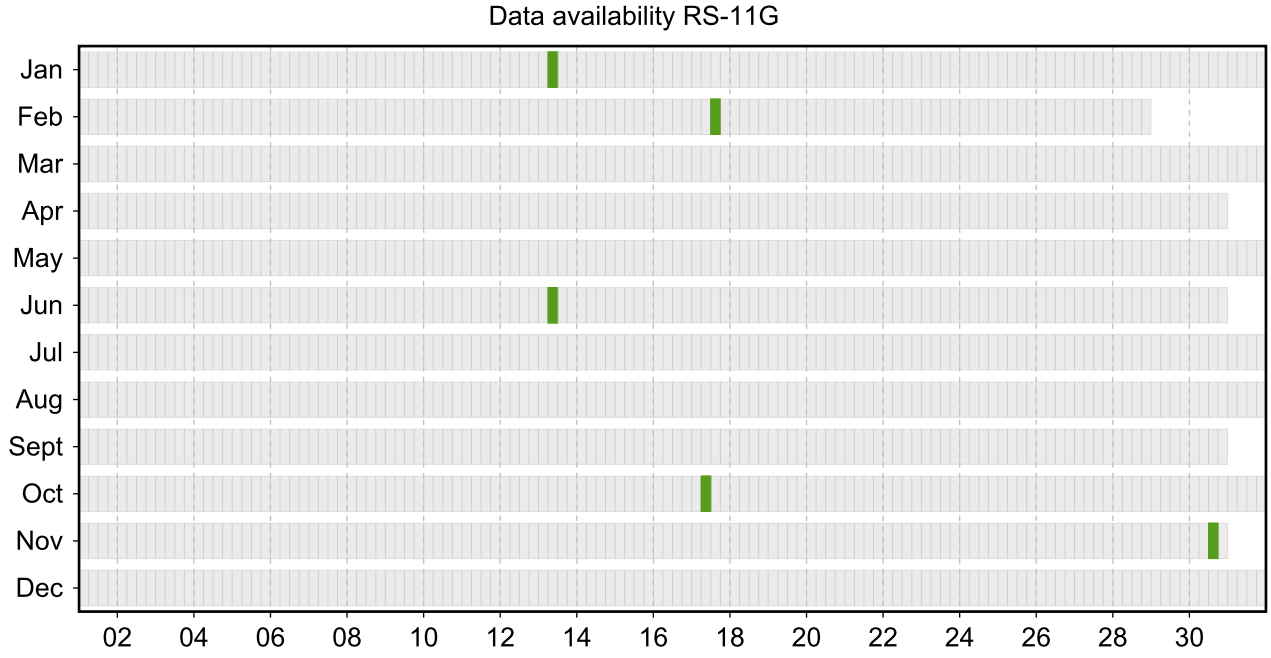
Unprocessed (yellow): The manufacturer-produced file with raw measurement data has been successfully converted into a GRUAN-standardized raw data format (NetCDF). The GRUAN data processing has not been performed or was aborted. Reasons for this may be a still missing GRUAN data processor or a processing-software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

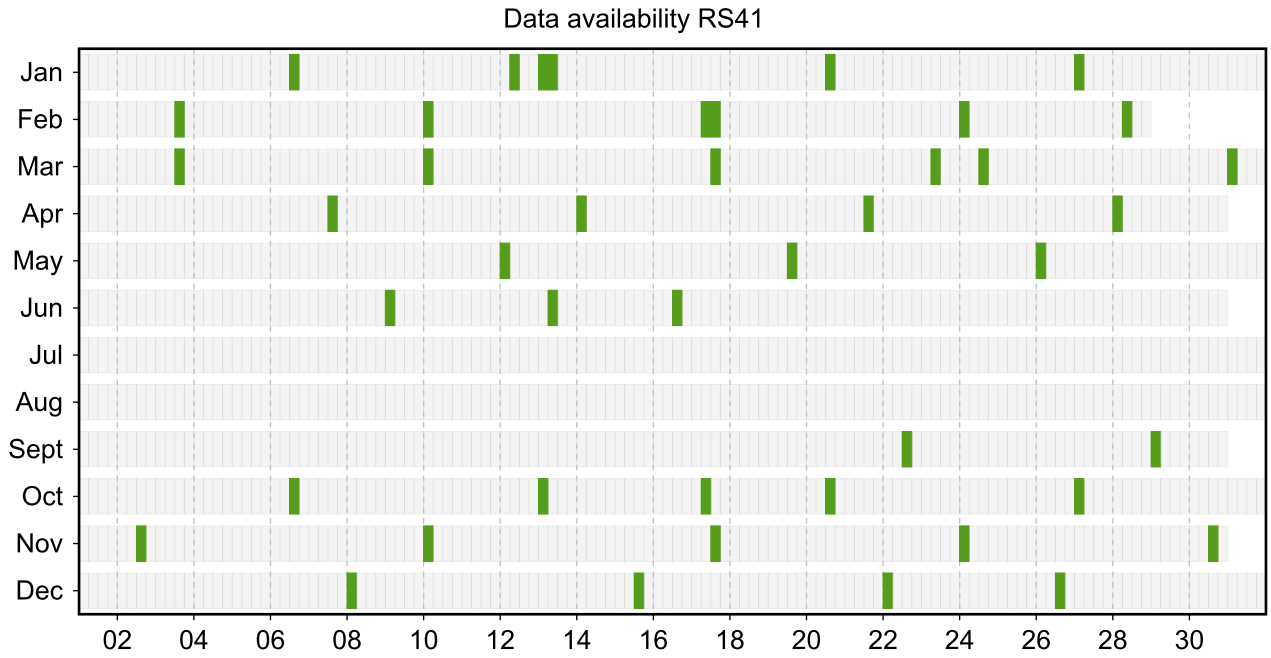
3.3.1 Stream: IMS-100



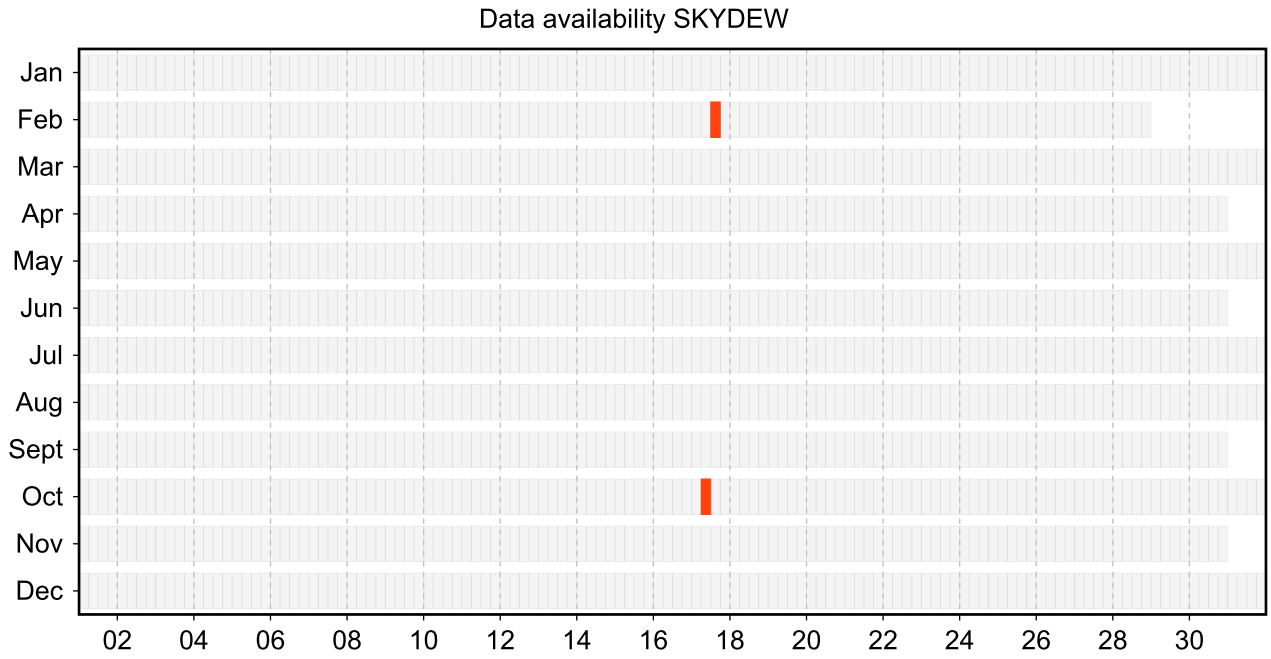
3.3.2 Stream: RS-11G



3.3.3 Stream: RS41



3.3.4 Stream: SKYDEW



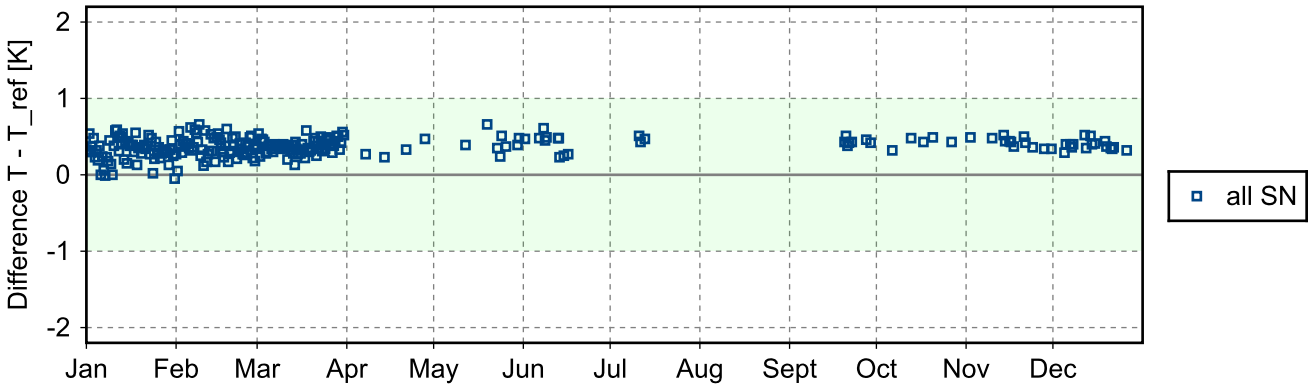
3.4 Instrument combinations of TAT-RS-01

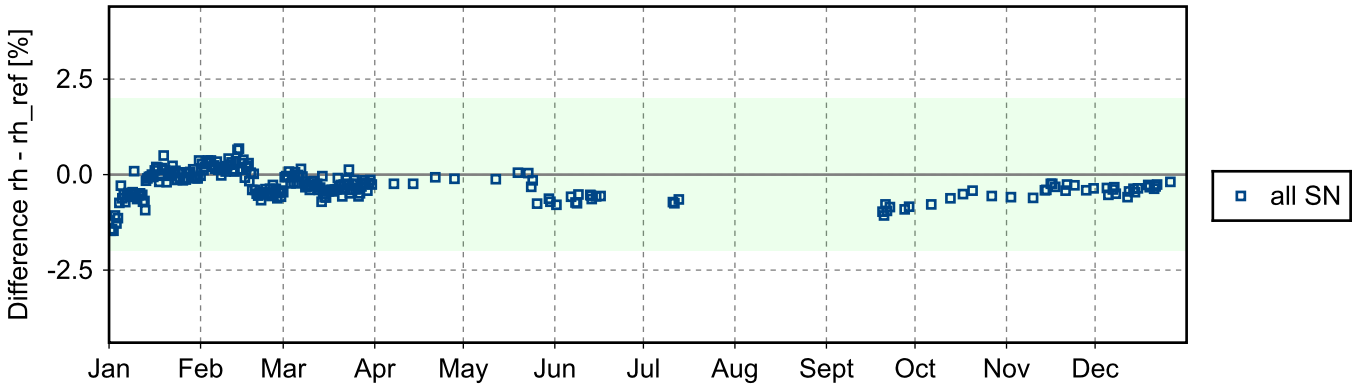
Count	Instrument combination
206	IMS-100
3	IMS-100, RS-11G, RS41
2	IMS-100, RS-11G, RS41, SKYDEW
39	IMS-100, RS41

3.5 Instrument ground check

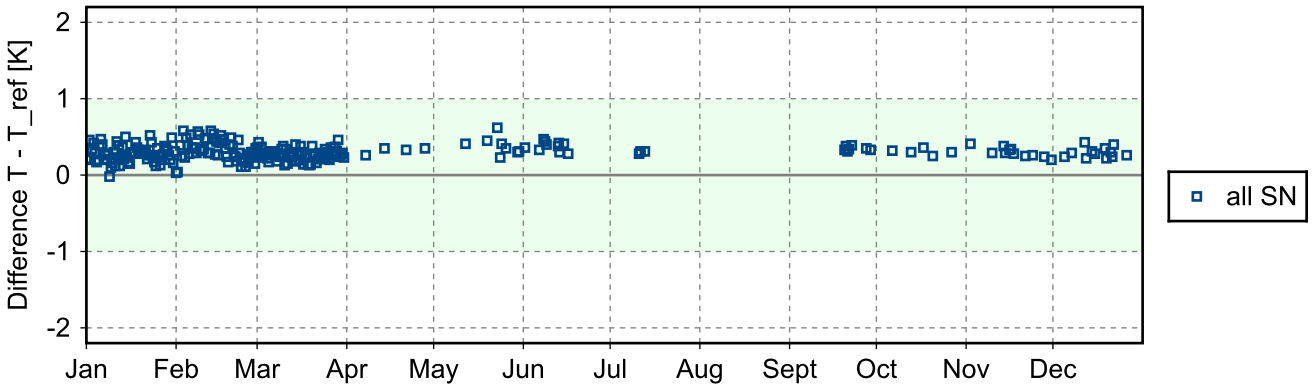
3.5.1 Stream: IMS-100

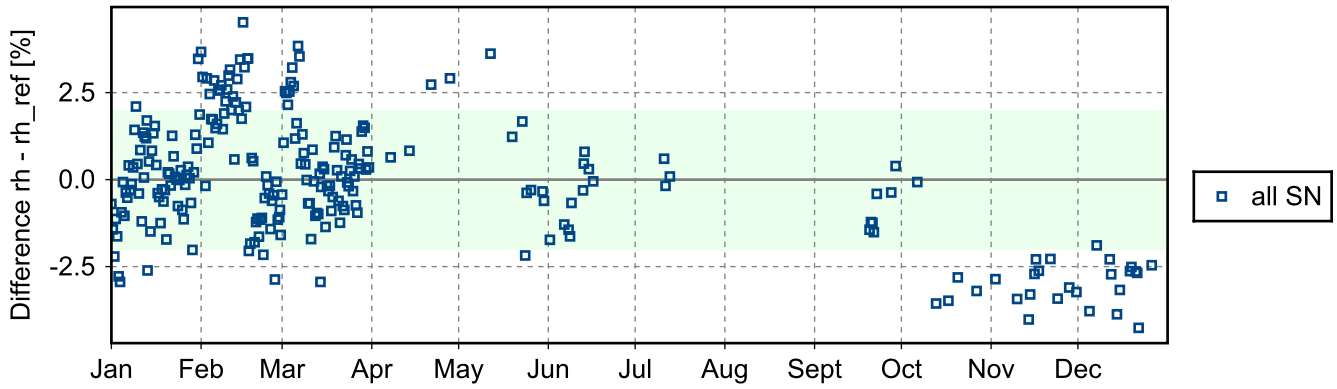
(1) GroundCheck: GC-TU(0)



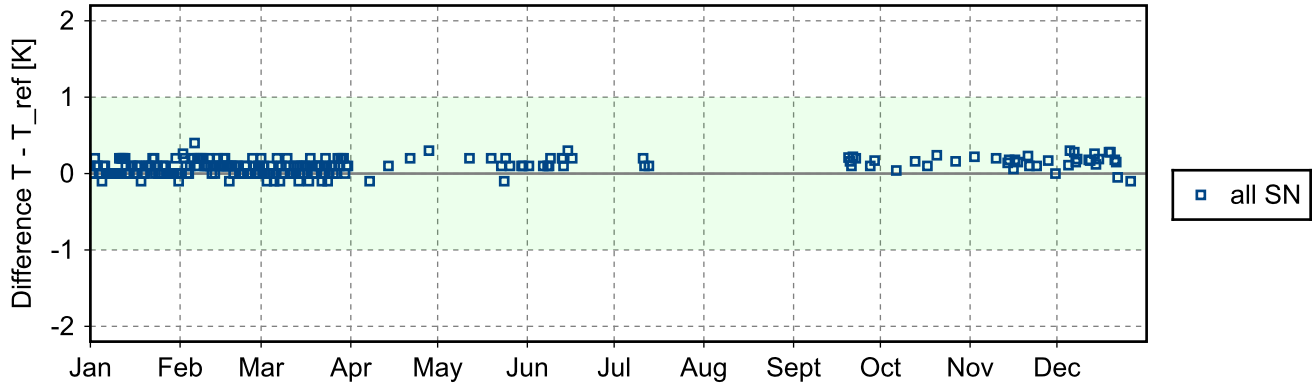


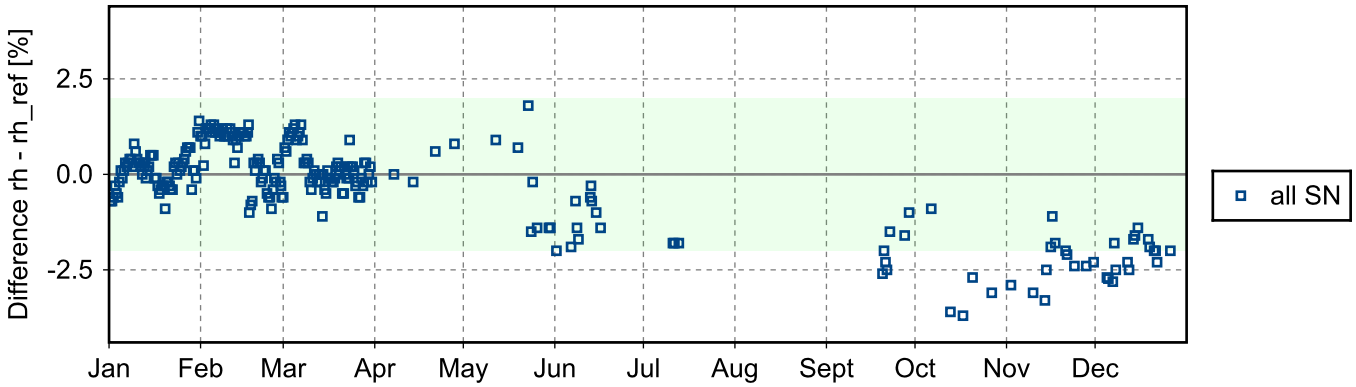
(2) GroundCheck: GC-TU(100)





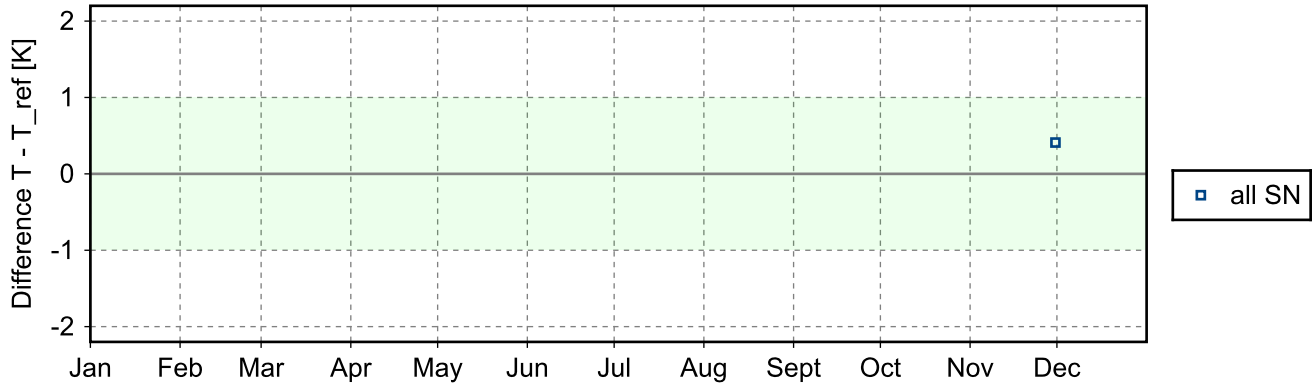
(3) GroundCheck: GC-TU(room)

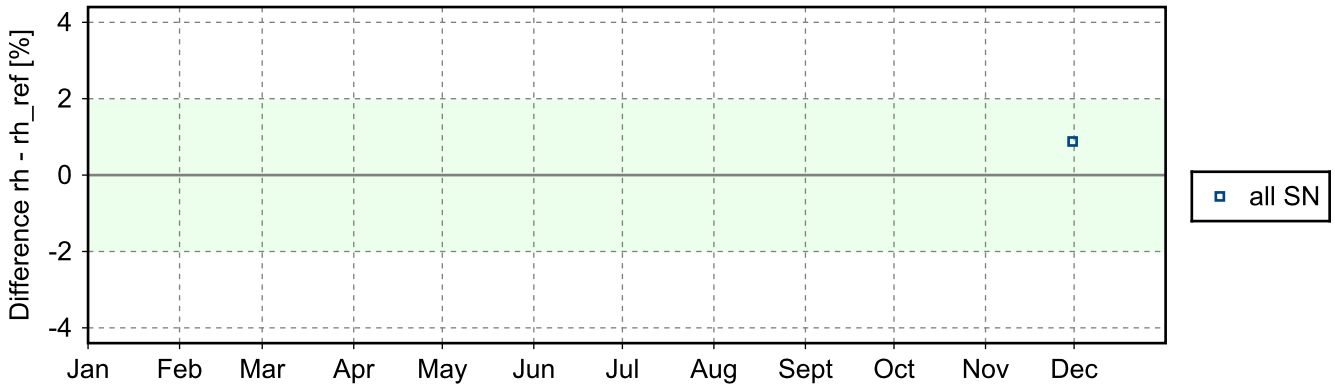




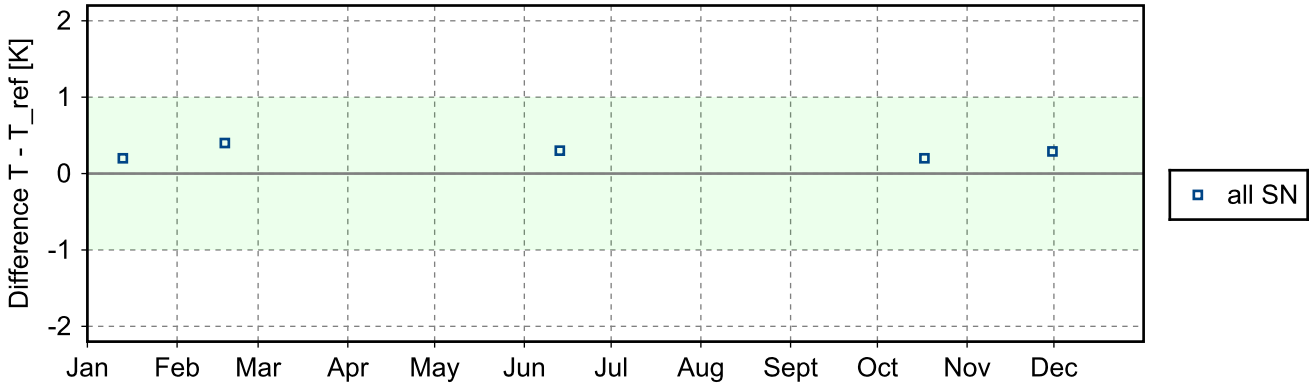
3.5.2 Stream: RS-11G

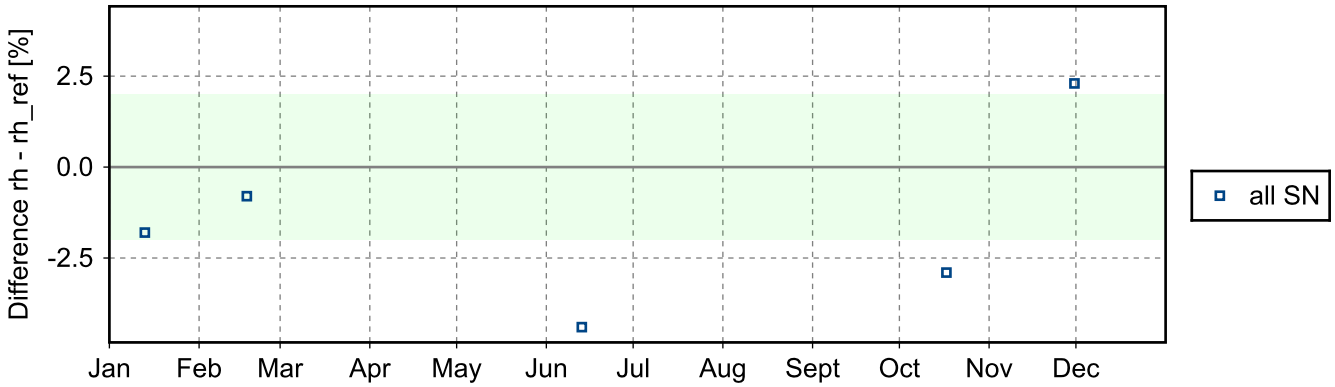
(1) GroundCheck: GC-TU(0)





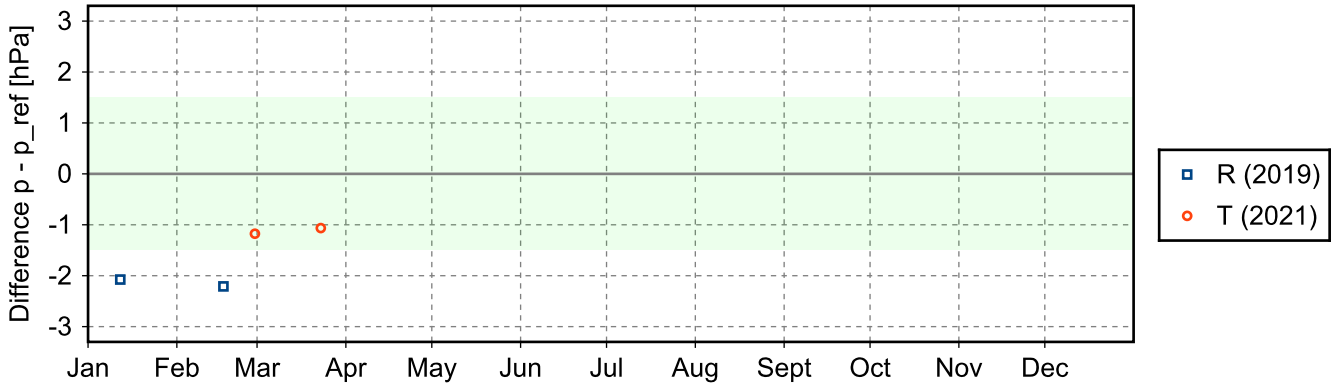
(2) GroundCheck: GC-TU(room)



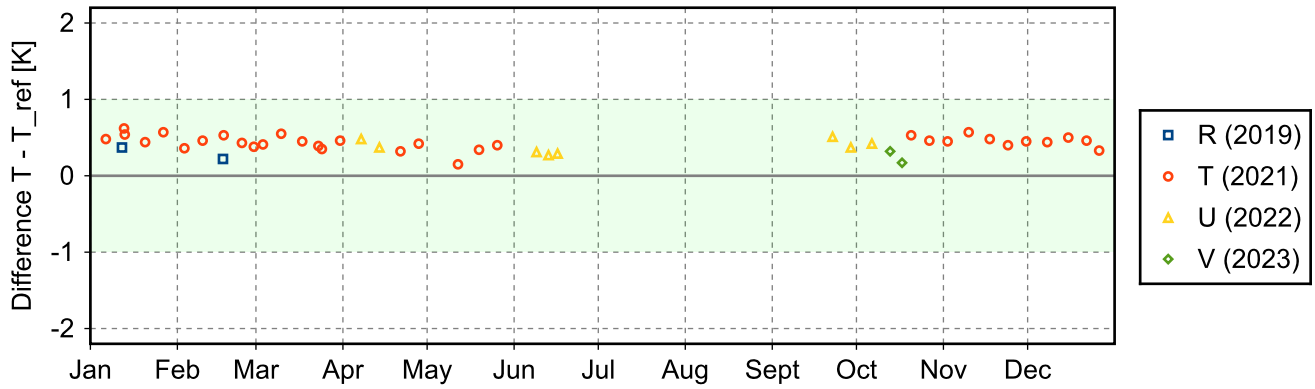


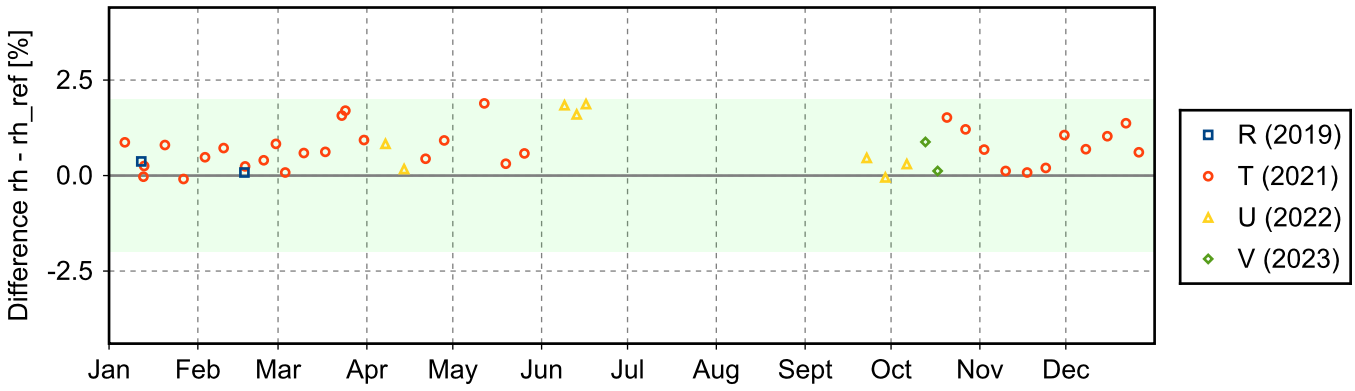
3.5.3 Stream: RS41

(1) GroundCheck: GC-RI41

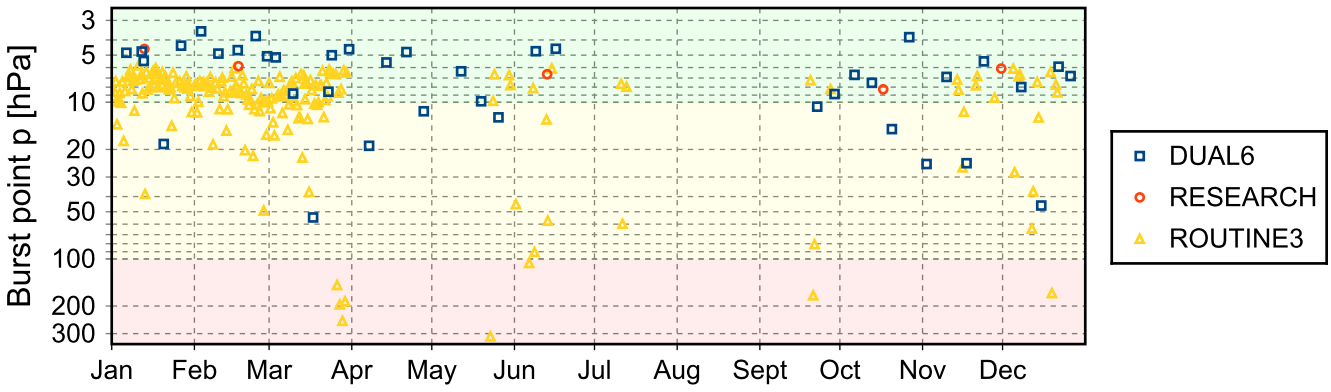


(2) GroundCheck: GC-SHC





3.6 Measurement events



4 System: Automatic Tateno Launch System (TAT-RS-02)

Object	Value
System name	Automatic Tateno Launch System
Unique GRUAN ID	TAT-RS-02
System type	Sounding Site (RS - Radiosonde)
Geographical position	36.0571 °N, 140.1267 °E, 25.6 m
Operated by	JMA | Japan Meteorological Agency
Instrument contact	Kawaguchi, Toshiyuki
Started at	2023-03-31
Defined setups	1 (AUTO1)
Possible streams	IMS-100

4.1 Lead Centre comments

4.1.1 Dataflow

The dataflow includes stream of Meisei iMS-100.

4.1.2 Data quality

Sometimes, relatively large fluctuations of RH differences for ground check at different RH levels (up to 2.5 %RH and more) are visible.

4.1.3 General

This is the autolauncher system.

Routine soundings with Meisei iMS-100 were performed two times per day since April. The automatic launcher system then took over the operational sounding from manual site.

Large variability in burstpoint altitude is visible with values between 6 hPa and 200 hPa.

4.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI

4.2.1 Stream: IMS-100

IMS-100		527	527	
IMS-100-GDP	002		496	

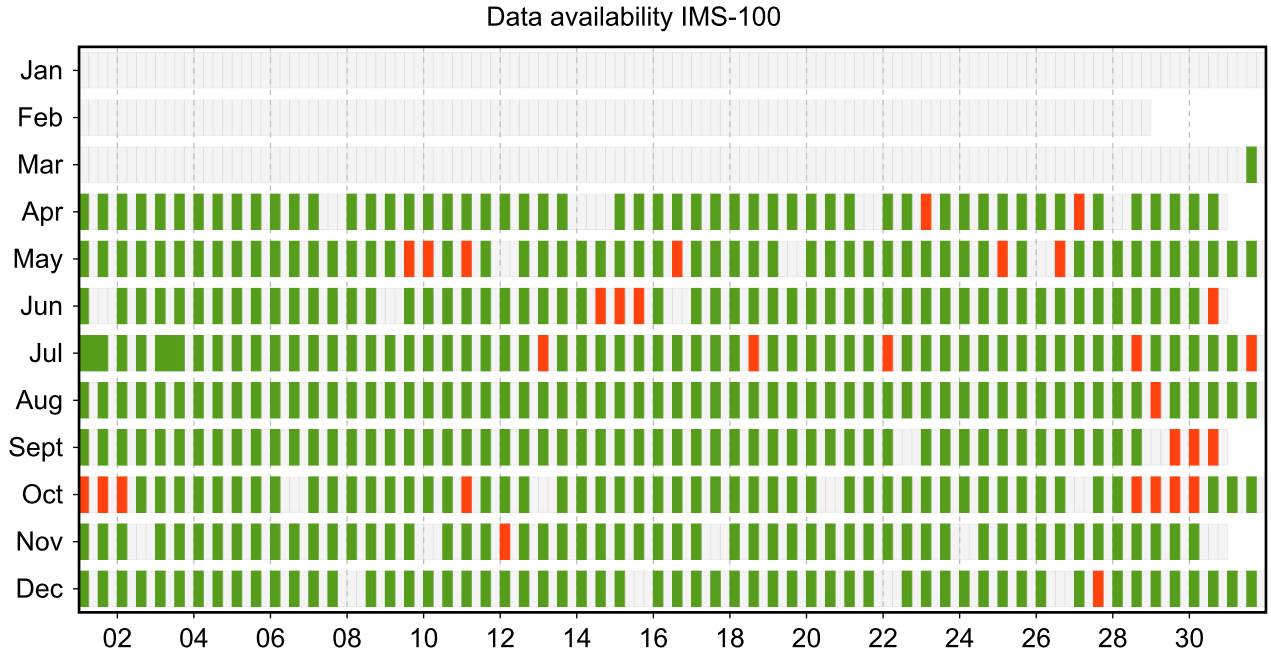
4.3 Availability of data products

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.

4.3.1 Stream: IMS-100



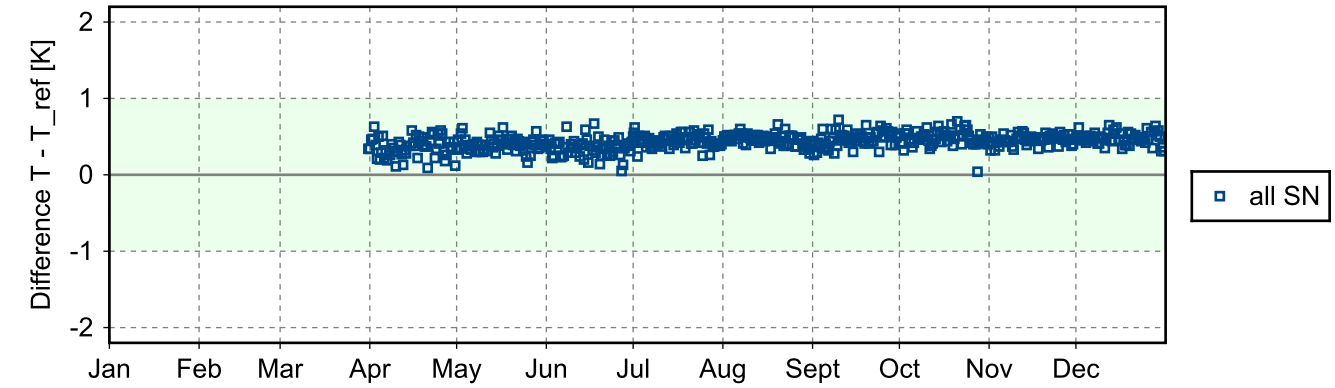
4.4 Instrument combinations of TAT-RS-02

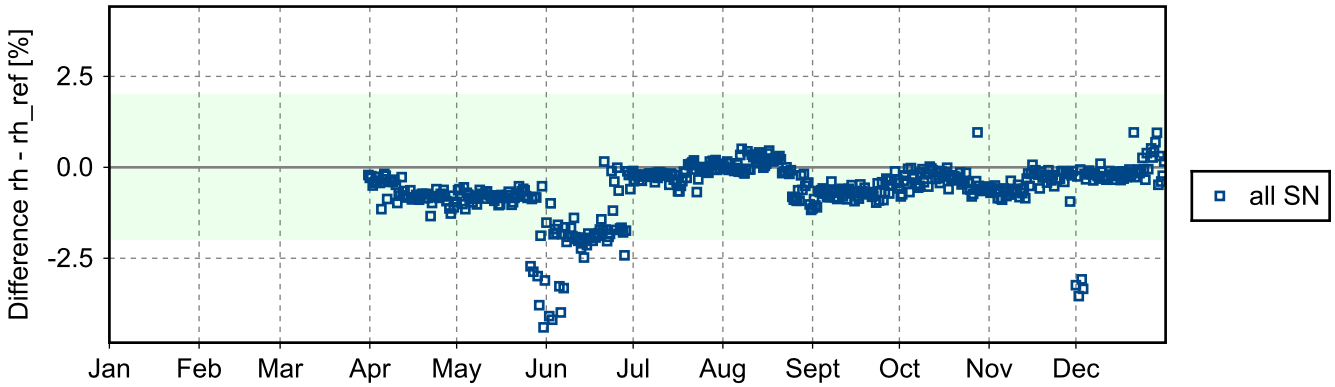
Count	Instrument combination
527	IMS-100

4.5 Instrument ground check

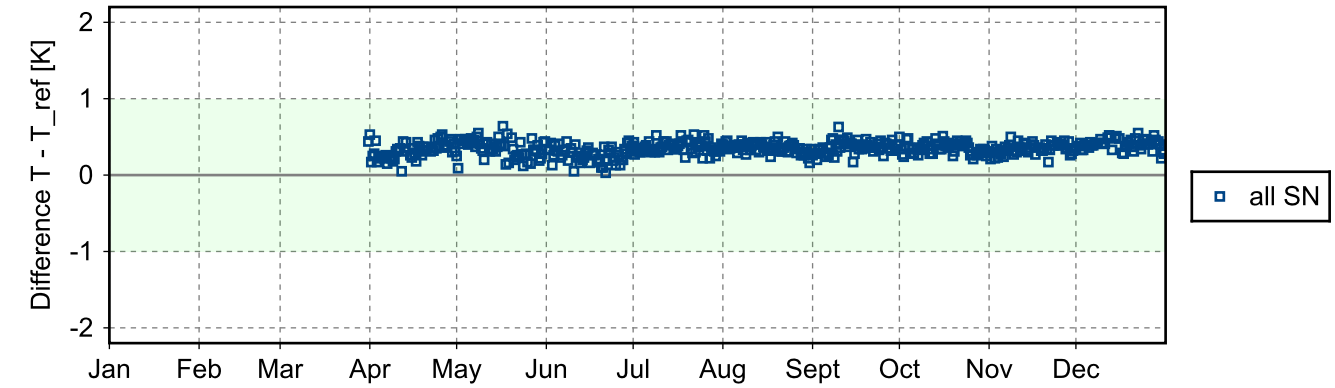
4.5.1 Stream: IMS-100

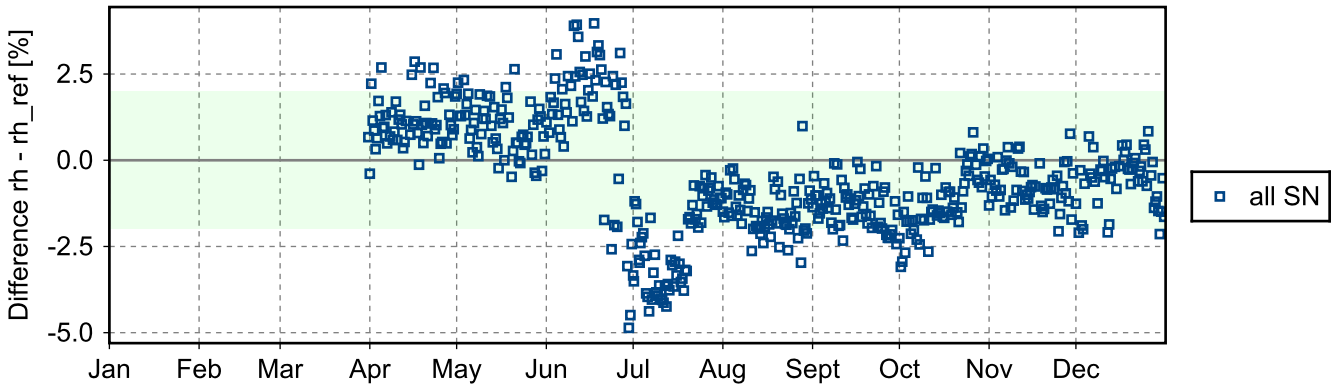
(1) GroundCheck: GC-TU(0)



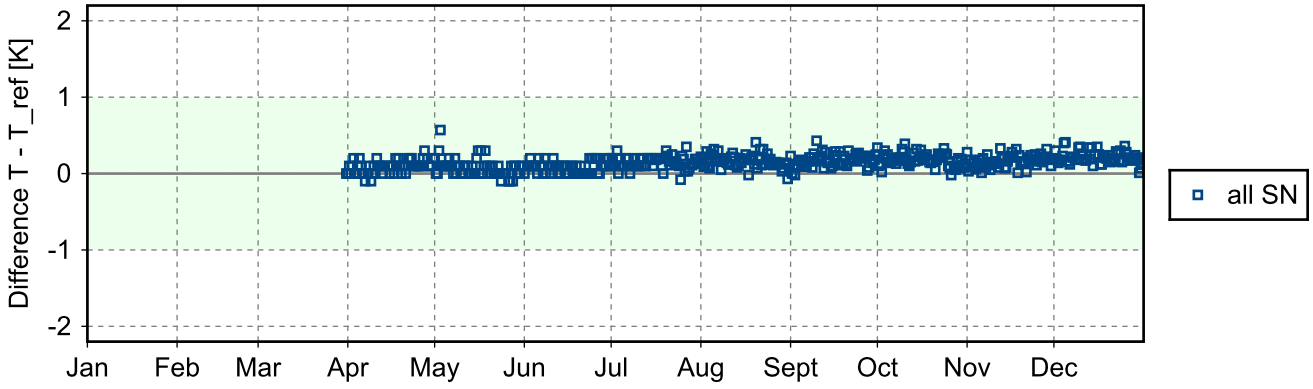


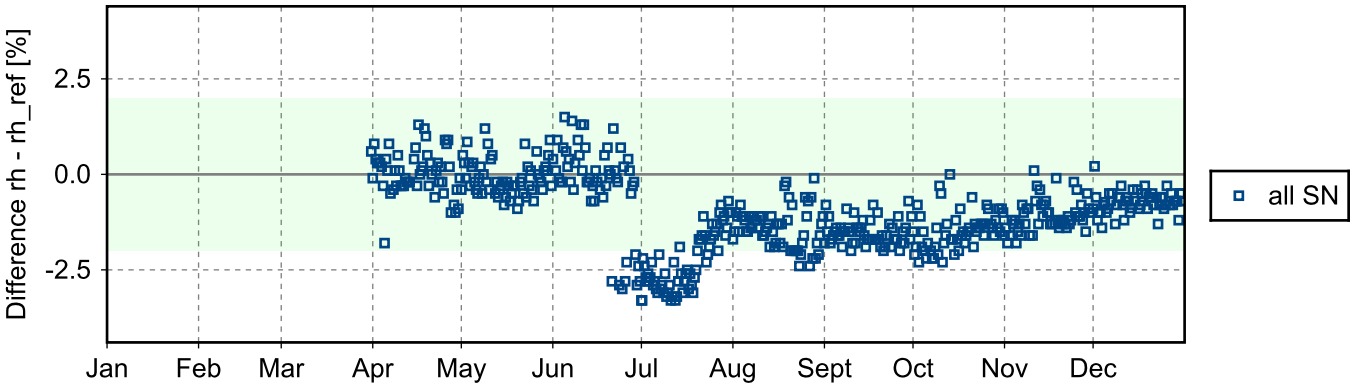
(2) GroundCheck: GC-TU(100)





(3) GroundCheck: GC-TU(room)





4.6 Measurement events