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GLOBAL CLIMATE OBSERVING
SYSTEM (GCOS)

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**15th GRUAN Implementation-
Coordination Meeting (ICM-15)**

Session 5

Bern

11 March - 15 March 2024

GRUAN Site Report for Syowa

(Submitted by Osamu Ijima)

Summary and Purpose of this Document

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

Overview

Syowa is operated by Japan Meteorological Agency (JMA). Syowa contributes to GRUAN with the operational data streams of RS-11G and iMS-100 radiosonde (2 times per day) and GNSS IPW. Syowa additionally conducts surface observation, ECC ozonesonde observation, total column ozone observation with a Dobson ozone spectrophotometer and a Brewer spectrophotometer, ultraviolet observation with a Brewer spectrophotometer, radiation observation and greenhouse-gases observation. Syowa conducts ground check in SHC at 0% and 100%RH similarly to Tateno and Minamitorishima before launching RS-11G and iMS-100 radiosondes.

Change and change management

Syowa changed a Dobson ozone spectrophotometer to Brewer spectrophotometers in operational total column ozone observation in February 2022.

CFH observations were terminated in January 2022.

Balloon Launch point was once changed from the old deck to the new one in January 2022.

It changed in instruments used radiosonde (RS-11GiMS-100) in May 2023. However, SYOWA continues to use RS-11G radiosonde a few times a month with ECC ozonesonde observation.

Resourcing

The price of Helium gas is increasing year by year.

Operations

Due to high Helium prices globally and lower availability of Helium, Syowa had used small types of balloons during evening (12UTC) launch from February 2023. Therefore, it was difficult to regularly attain the burst point at 10 hPa during evening (12UTC) launch.

During winter seasons, balloon burst point tends to decrease due to extremely low temperature. Syowa deals with this problem with kerosene dipping of balloons every year.

Covid-19

NIL.

Site assessment and certification

Preparation for site certification of Syowa is in progress by JMA.

GRUAN-related research

NIL.

WG-GRUAN interface

NIL.

Other archiving centres

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

Participation in campaigns

NIL.

Future plans

NIL.



GRUAN Site Report for Syowa (SYO), 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	Syowa
Unique GRUAN ID	SYO
Geographical position	-69.0100 °S, 39.5800 °E, 25.5 m
Operated by	JMA Japan Meteorological Agency
Main contact	Ijima, Osamu
WMO no./name	89532 SYOWA
Operators	currently 10, changes +5 / -5
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	5	720

1.2 General comments from Lead Centre

No comments from Lead Centre.

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	Ijima, Osamu
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, 21.6 m
Operated by	JMA Japan Meteorological Agency
Instrument contact	Ijima, Osamu
Started at	1959-01-01
Defined setups	5 (ROUTINE, ROUTINE2, RESEARCH, DUAL, ROUTINE3)
Possible streams	CFH, ECC, IMS-100, RS-11G, SKYDEW

3.1 Lead Centre comments

3.1.1 Change management

Occasional twin soundings with RS-11G and IMS-100 were performed and submitted to the GRUAN LC since March 2021.

3.1.2 Dataflow

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

Currently, the dataflow includes streams of the Meisei RS-11G, IMS-100, and CFH water vapour. All launches are promptly recorded 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.

3.1.4 General

Routine soundings are performed two times per day. The operational radiosonde is the Meisei RS-11G.

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

A measurement program for the observation of stratospheric water vapor using CFH is established.

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		3	3	
IMS-100-GDP	002		3	

3.2.3 Stream: RS-11G

RS-11G		720	720	
RS-11G-BETA	002		628	
RS-11G-GDP	001		685	

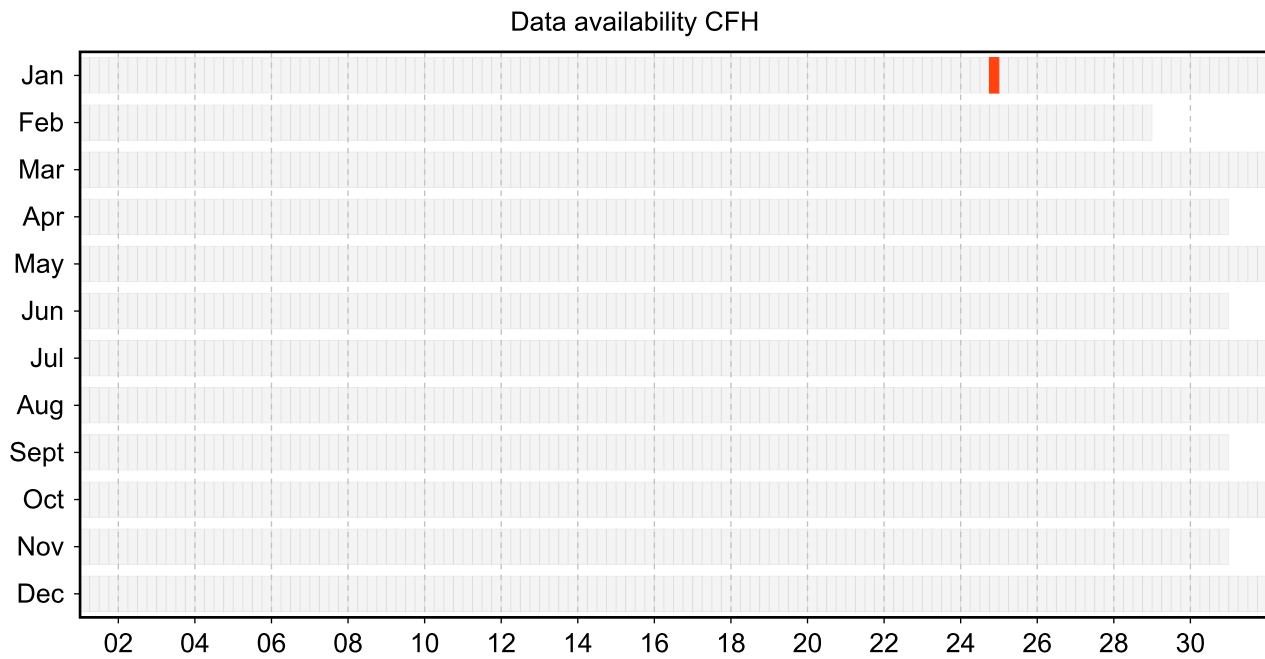
3.3 Availability of data products

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).

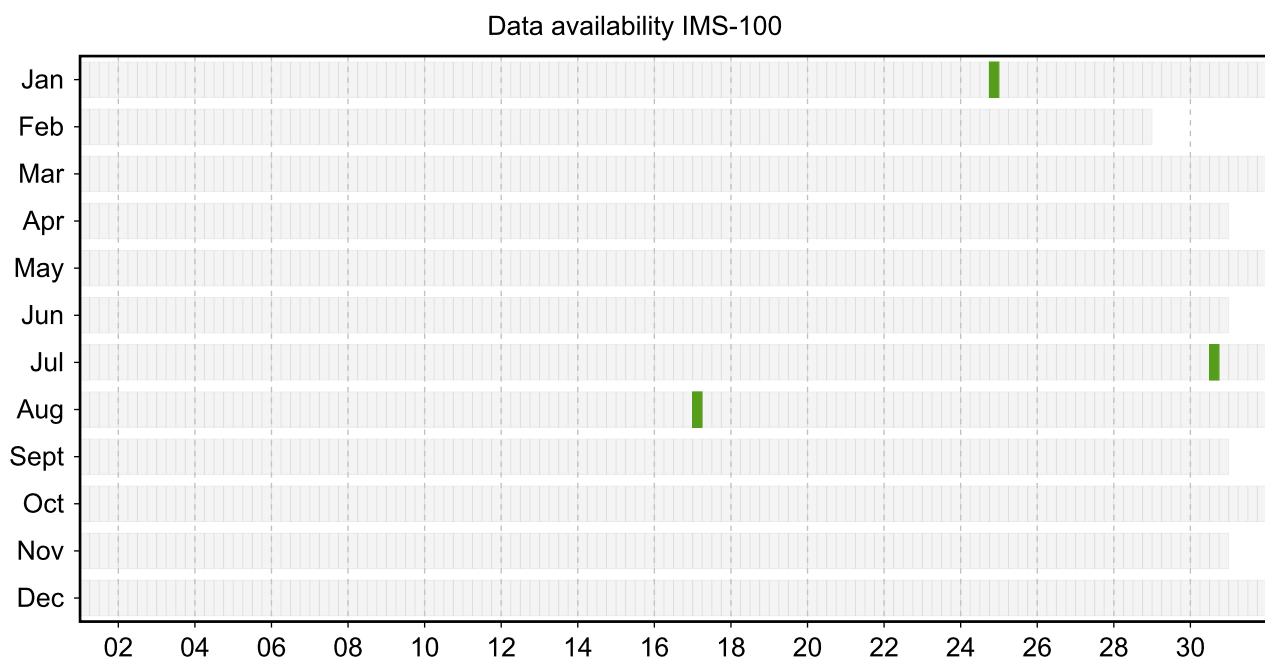
Unprocessed (yellow): The manufacturer-produced file with raw measurement data has been successfully converted into a GRUAN-standardized raw data format (NetCDF). The GRUAN data processing has not been performed or was aborted. Reasons for this may be a still missing GRUAN data processor or a processing-software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

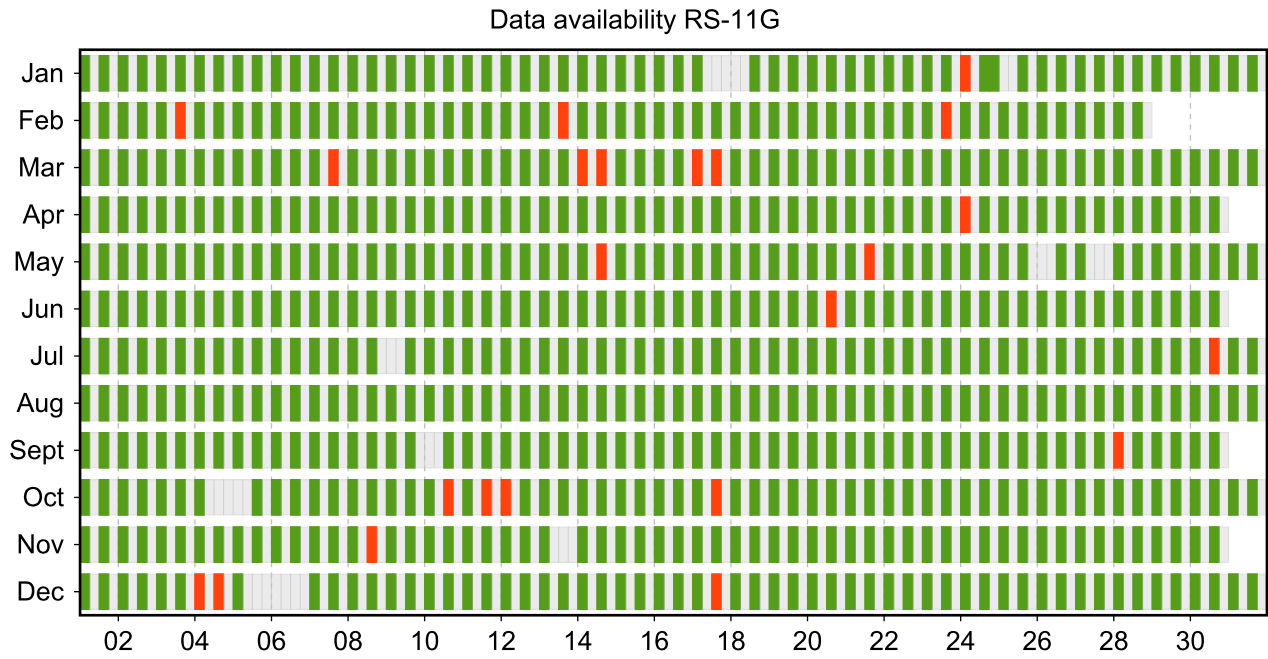
3.3.1 Stream: CFH



3.3.2 Stream: IMS-100



3.3.3 Stream: RS-11G



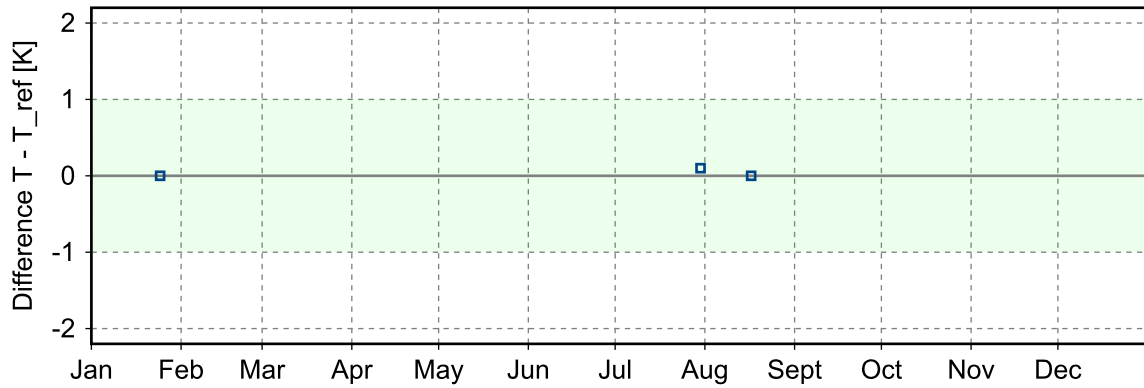
3.4 Instrument combinations of SYO-RS-01

Count	Instrument combination
1	CFH, IMS-100, RS-11G
2	IMS-100, RS-11G
717	RS-11G

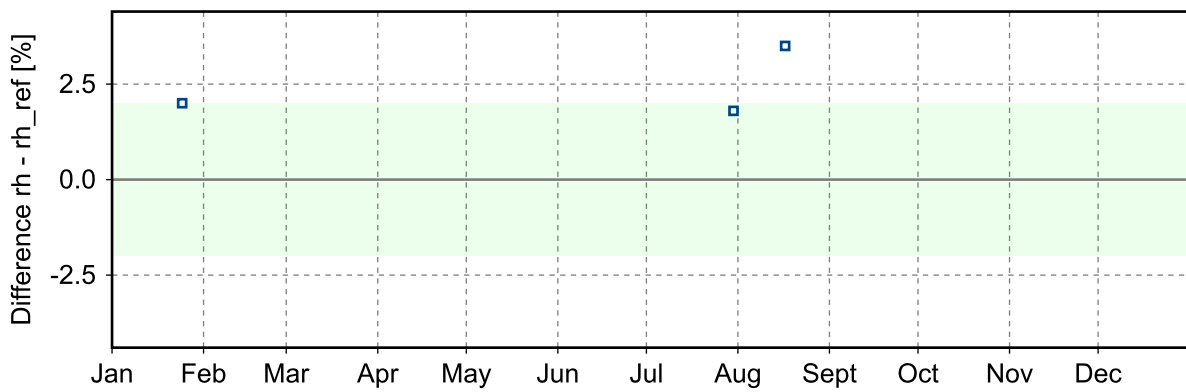
3.5 Instrument ground check

3.5.1 Stream: IMS-100

(1) GroundCheck: GC-TU(0)

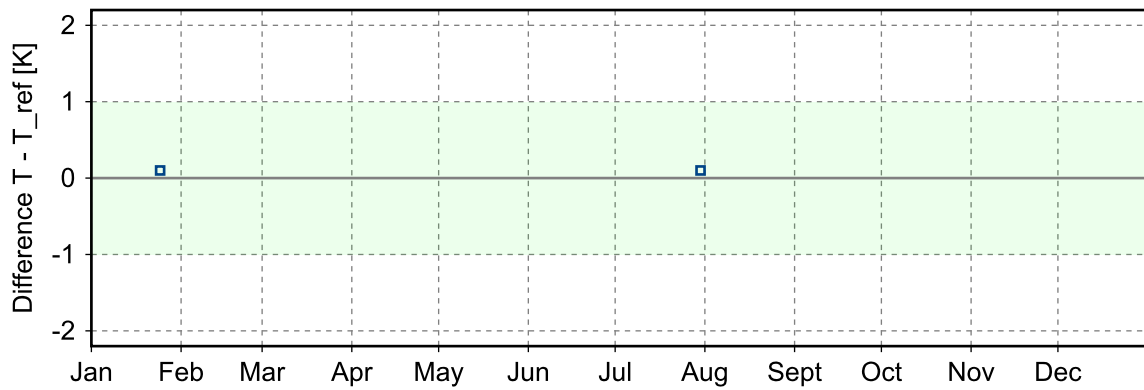


all SN

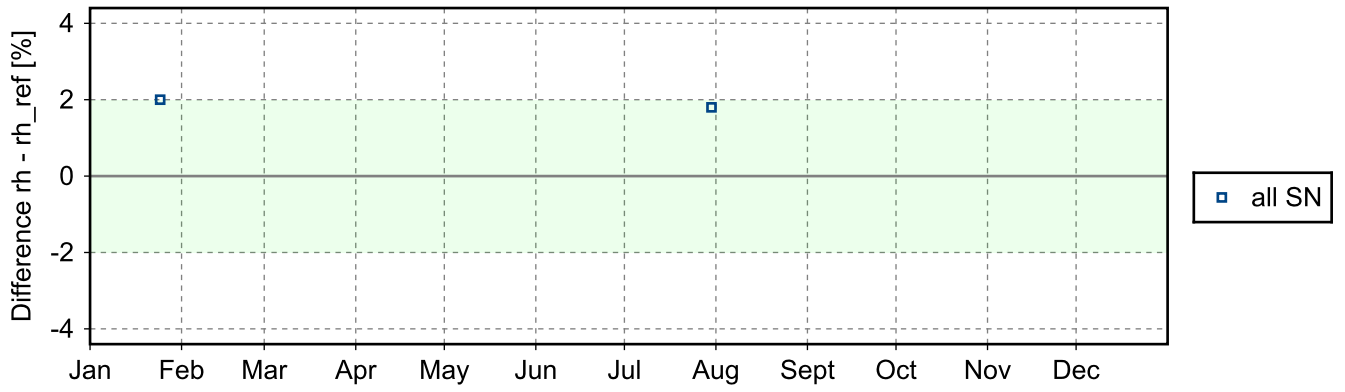


all SN

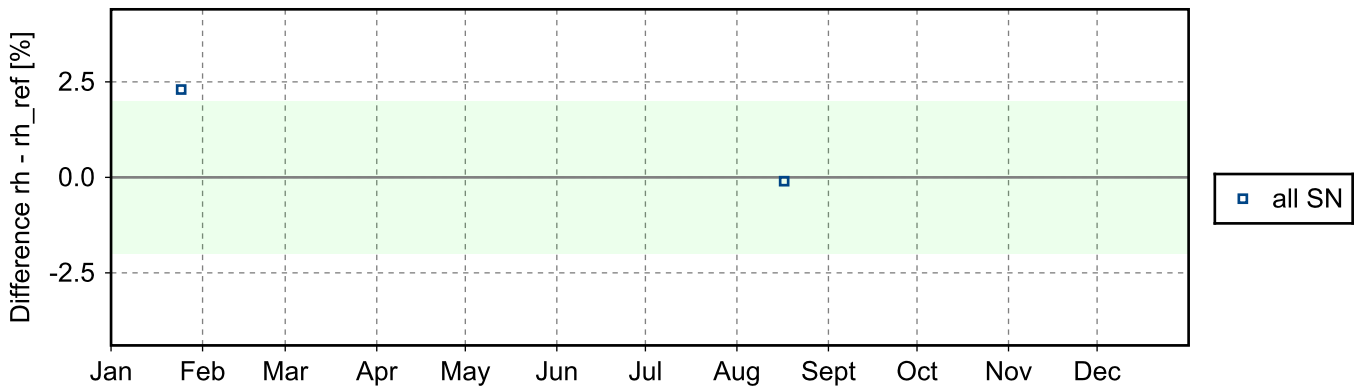
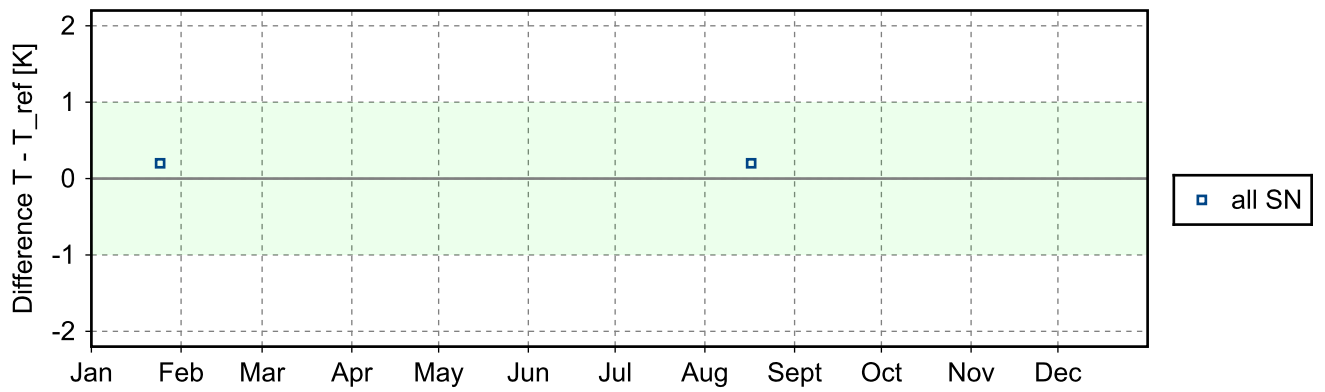
(2) GroundCheck: GC-TU(100)



all SN

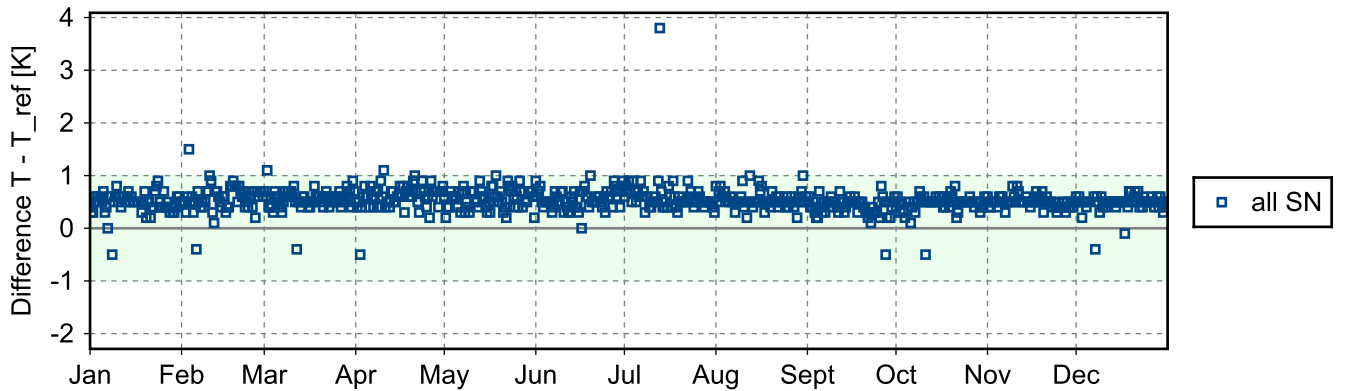


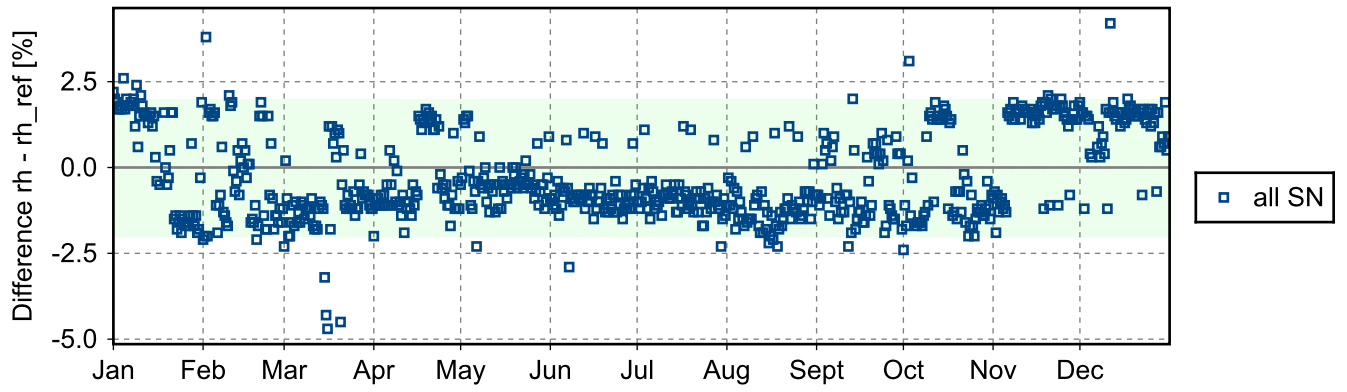
(3) GroundCheck: GC-TU(room)



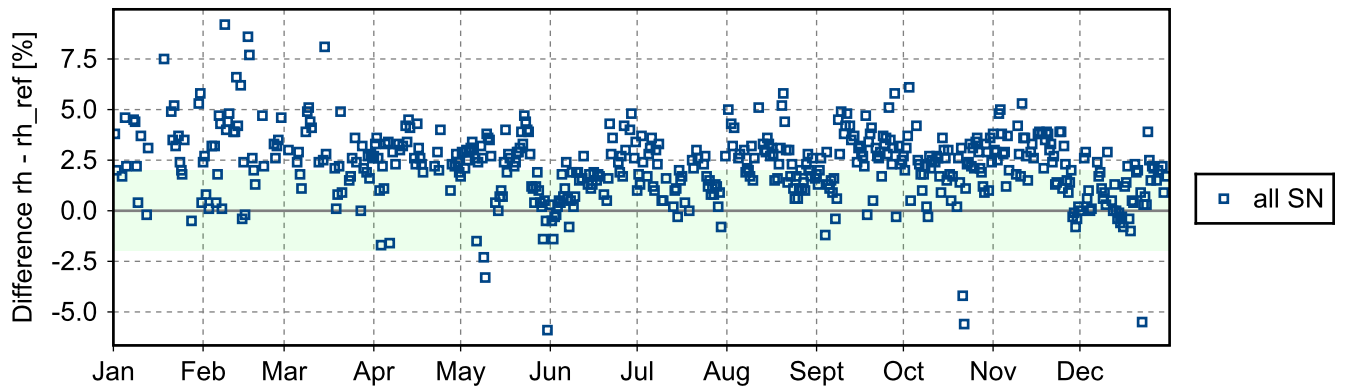
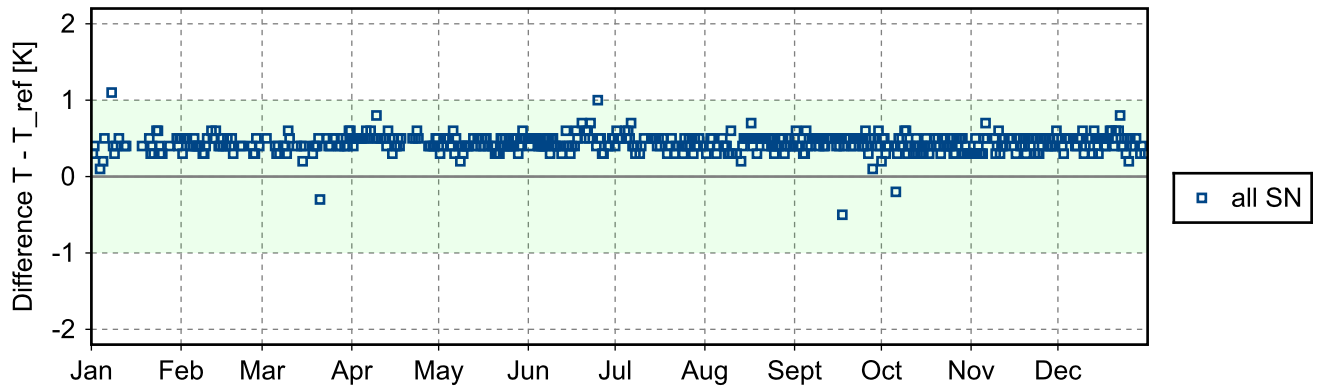
3.5.2 Stream: RS-11G

(1) GroundCheck: GC-TU(0)

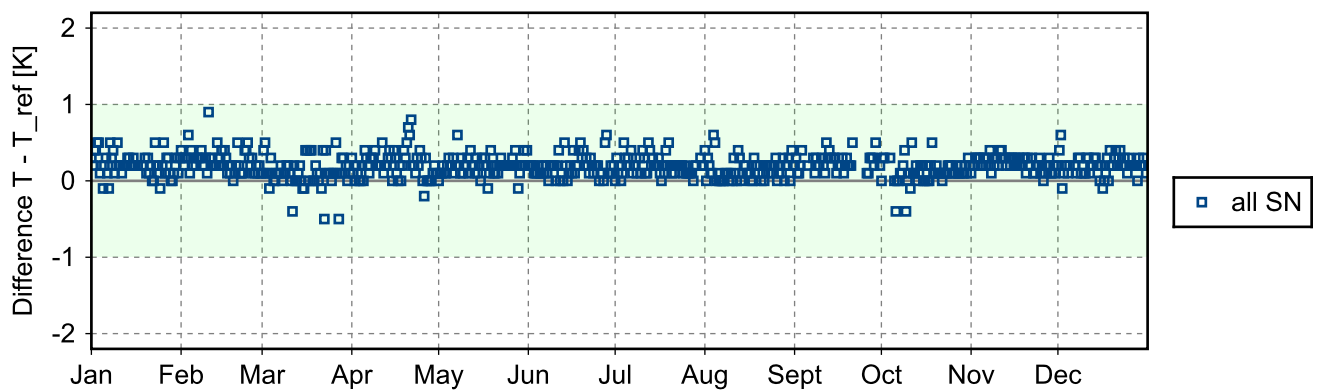


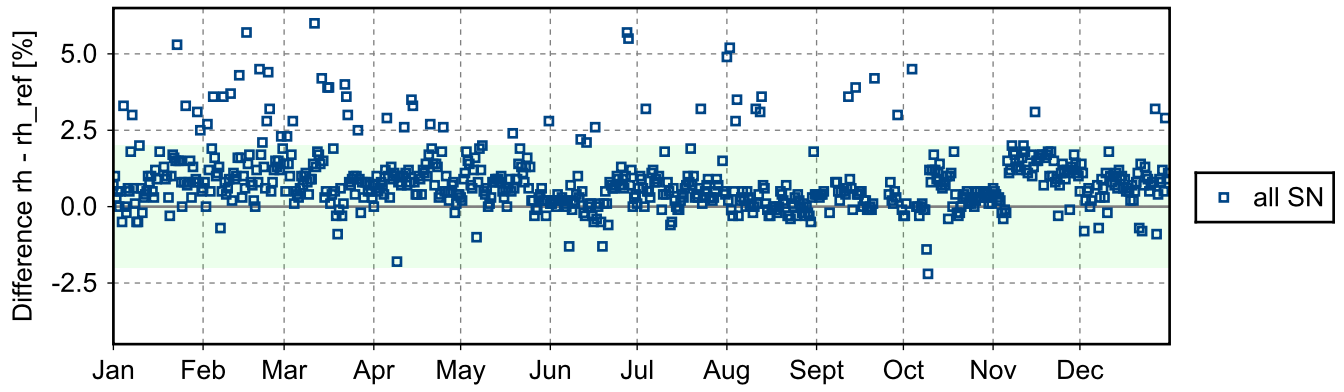


(2) GroundCheck: GC-TU(100)

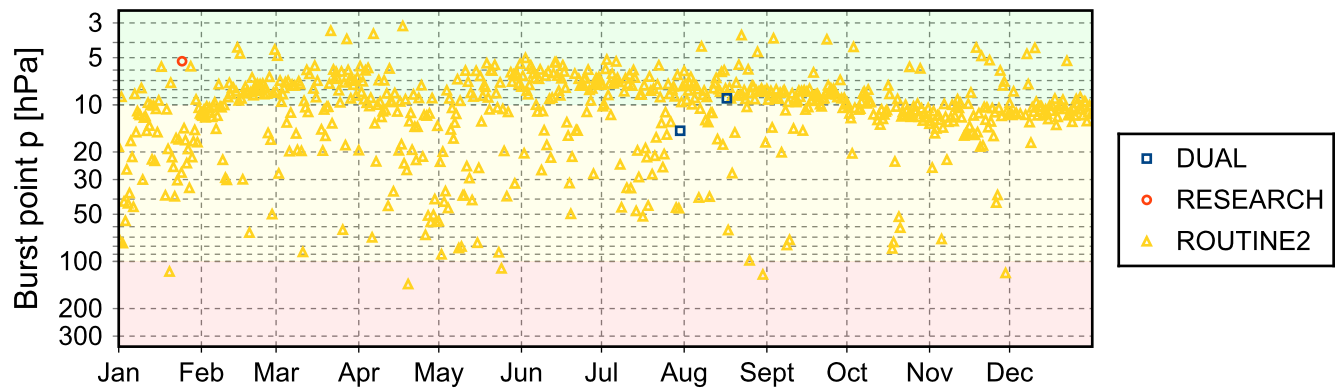


(3) GroundCheck: GC-TU(room)





3.6 Measurement events





GRUAN Site Report for Syowa (SYO), 2023

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Version from 2024-03-01

1 General GRUAN site information

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Operated by	JMA Japan Meteorological Agency
Main contact	Ijima, Osamu
WMO no./name	89532 SYOWA
Operators	currently 10, changes +5 / -5
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	5	711

1.2 General comments from Lead Centre

1.2.1 General

The operational radiosonde was changed from the RS-11G to the iMS-100 in mid-May.

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	Ijima, Osamu
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
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Started at	1959-01-01
Defined setups	5 (ROUTINE, ROUTINE2, RESEARCH, DUAL, ROUTINE3)
Possible streams	CFH, ECC, IMS-100, RS-11G, SKYDEW

3.1 Lead Centre comments

3.1.1 Change management

Weekly soundings with RS-11G were performed which then replace the sounding of the IMS-100. No dual flights were performed.

3.1.2 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.

3.1.3 General

Routine soundings are performed two times per day. The operational radiosonde is the Meisei RS-11G until 14 May and IMS-100 afterwards.

Large variability in burstpoint altitude is visible since February which looks like an apparent bimodal distribution 10 hPa and 50 hPa.

No observation of stratospheric water vapor using CFH were performed.

3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCEI
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3.2.1 Stream: IMS-100

IMS-100		412	412	
IMS-100-GDP	002		404	

3.2.2 Stream: RS-11G

RS-11G		299	299	
RS-11G-BETA	002		250	
RS-11G-GDP	001		288	

3.3 Availability of data products

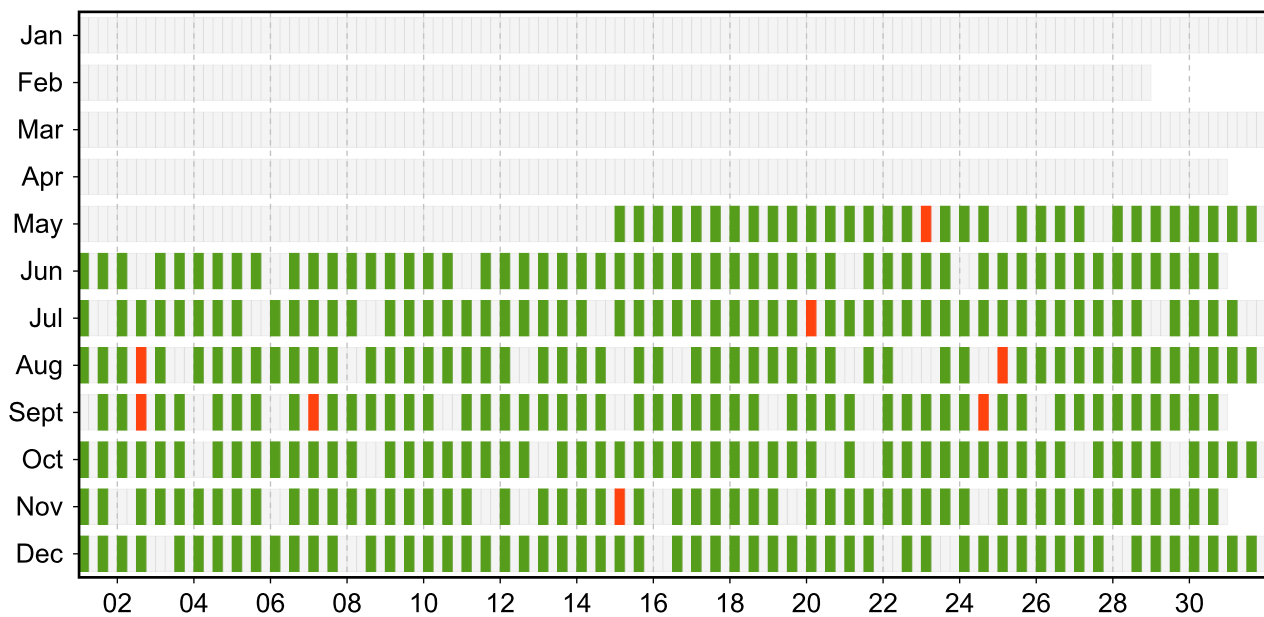
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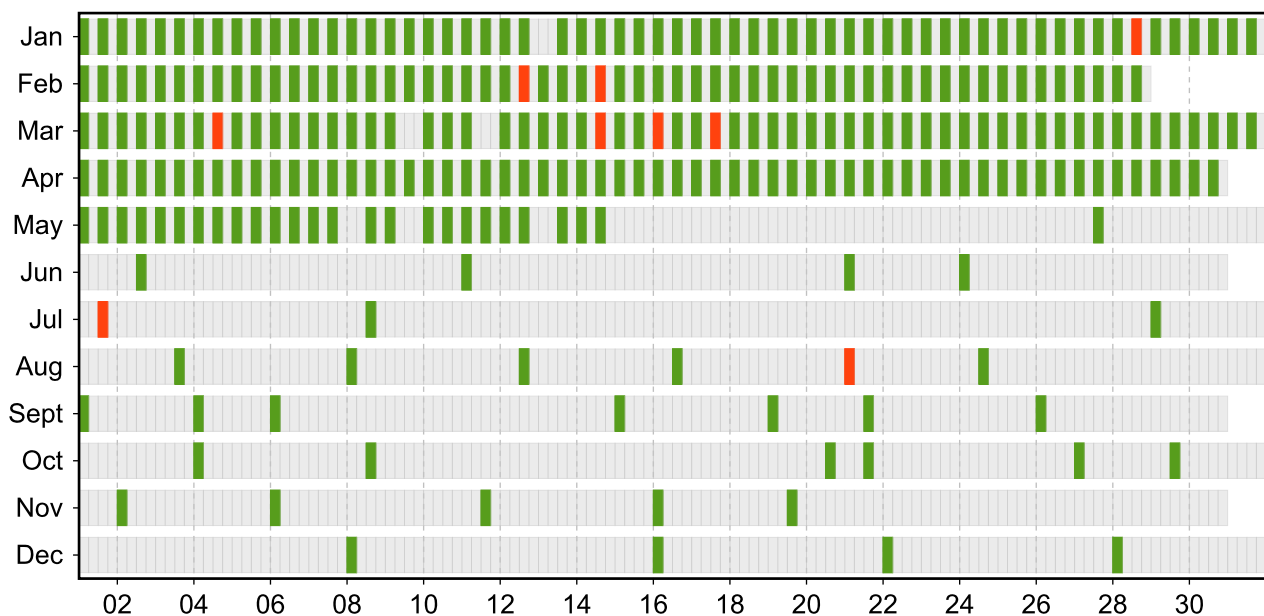
3.3.1 Stream: IMS-100

Data availability IMS-100



3.3.2 Stream: RS-11G

Data availability RS-11G



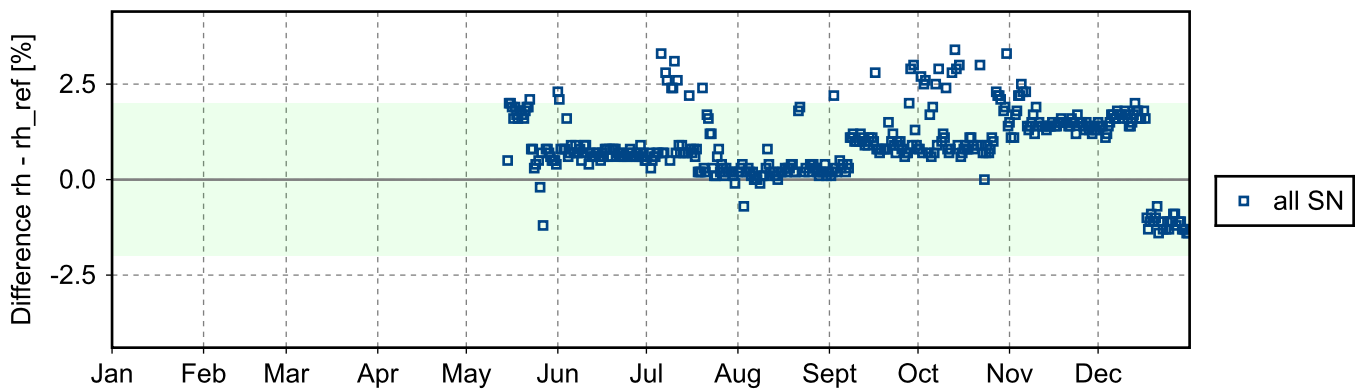
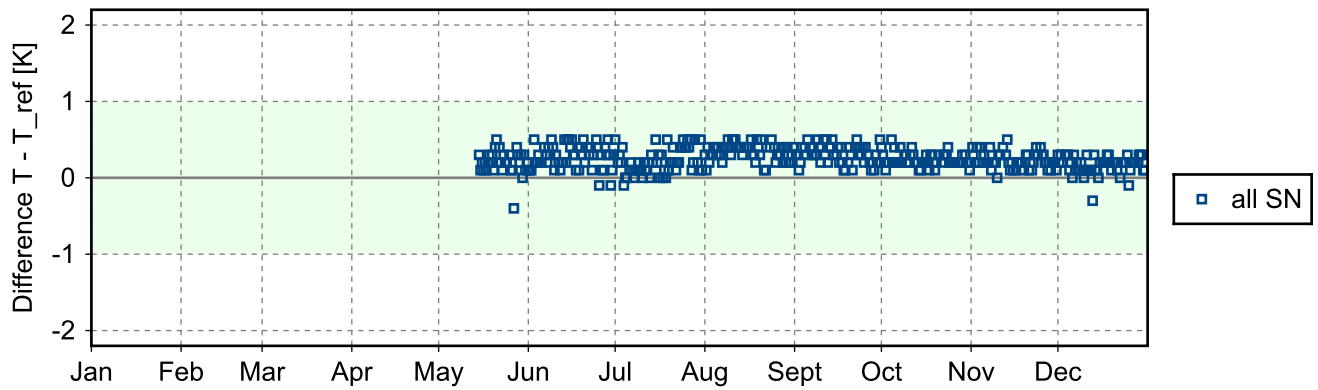
3.4 Instrument combinations of SYO-RS-01

Count	Instrument combination
412	IMS-100
299	RS-11G

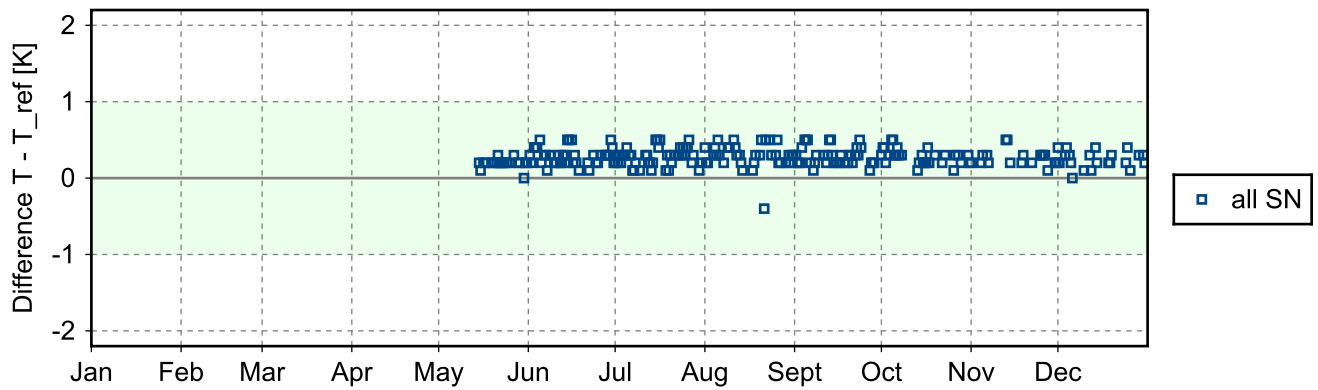
3.5 Instrument ground check

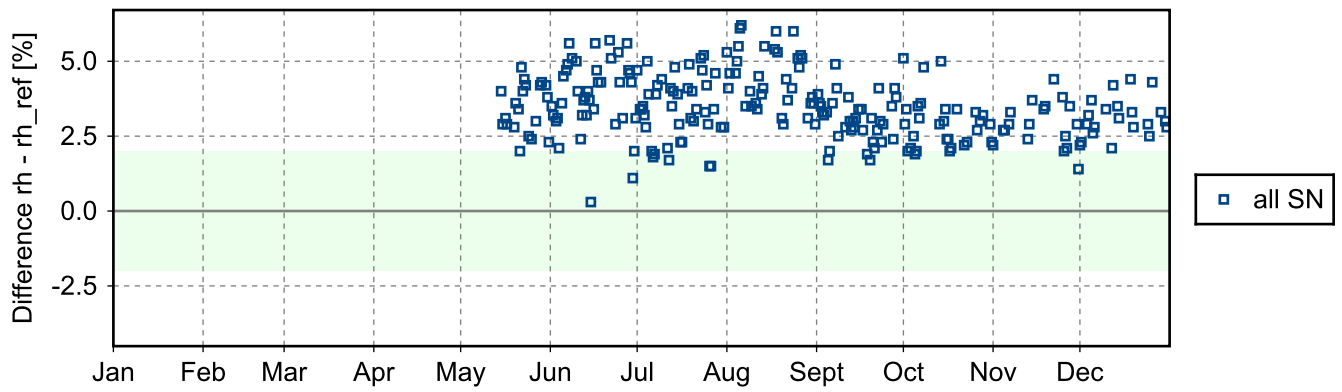
3.5.1 Stream: IMS-100

(1) GroundCheck: GC-TU(0)

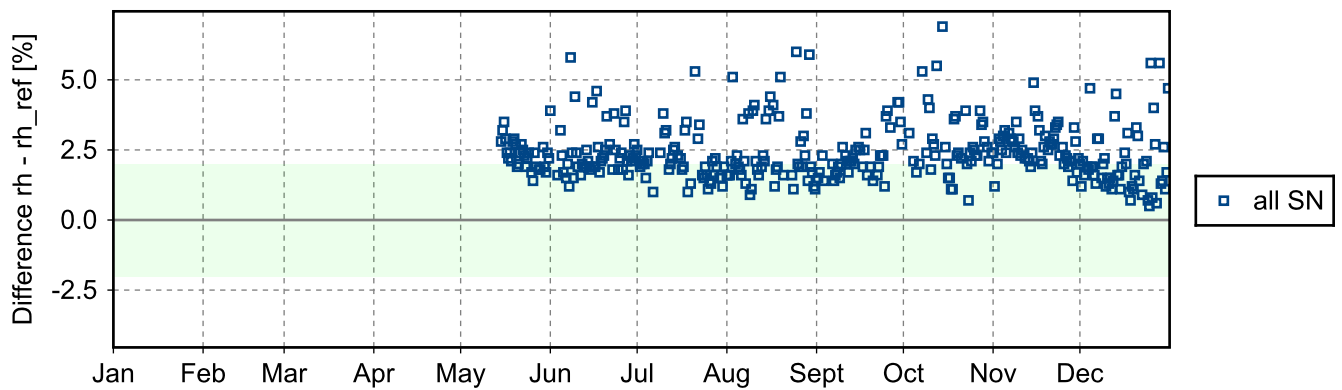
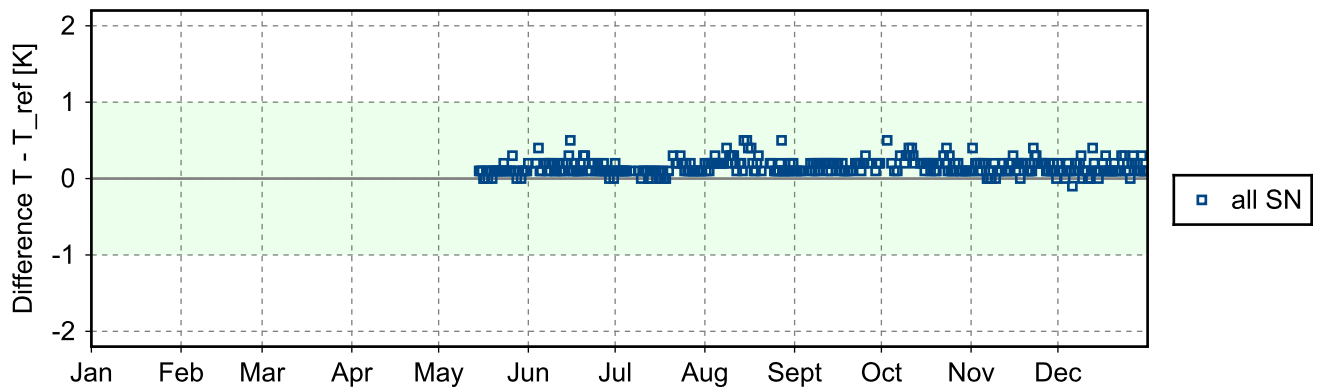


(2) GroundCheck: GC-TU(100)



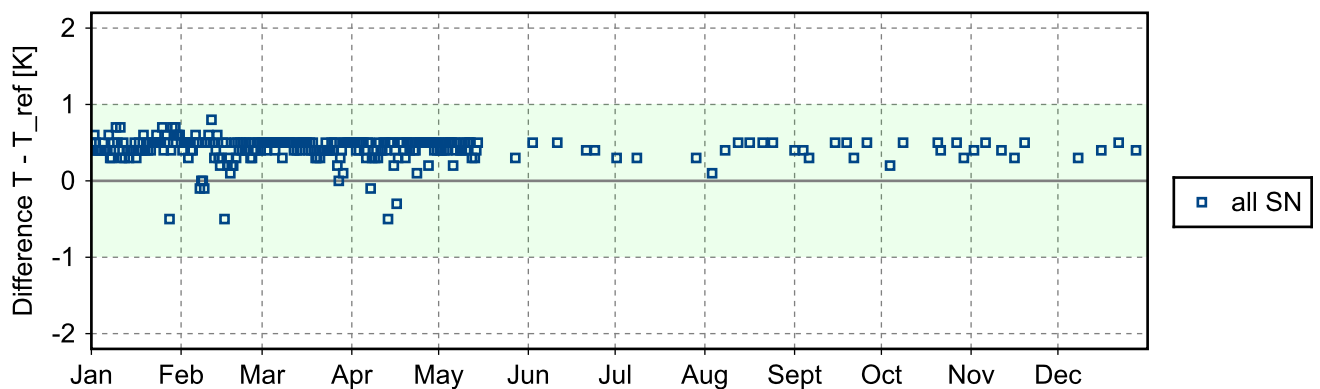


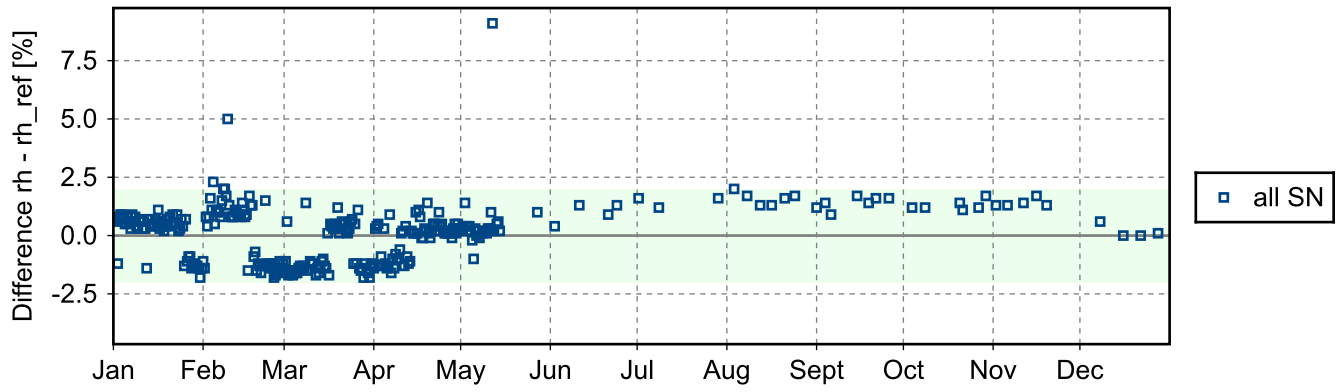
(3) GroundCheck: GC-TU(room)



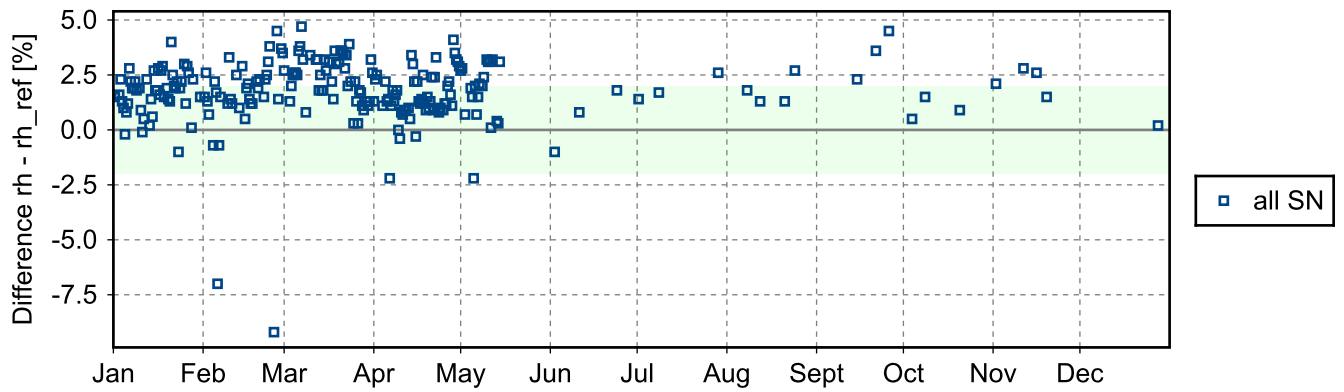
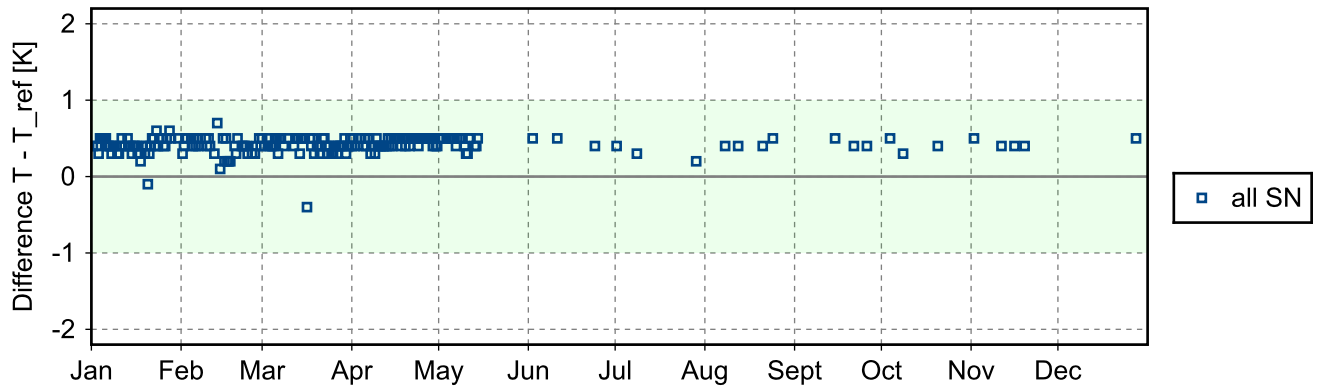
3.5.2 Stream: RS-11G

(1) GroundCheck: GC-TU(0)

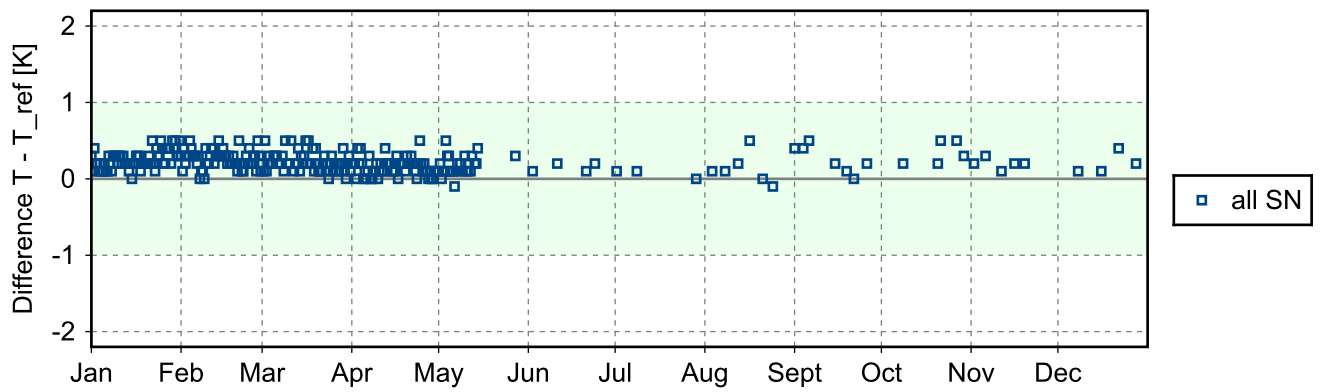


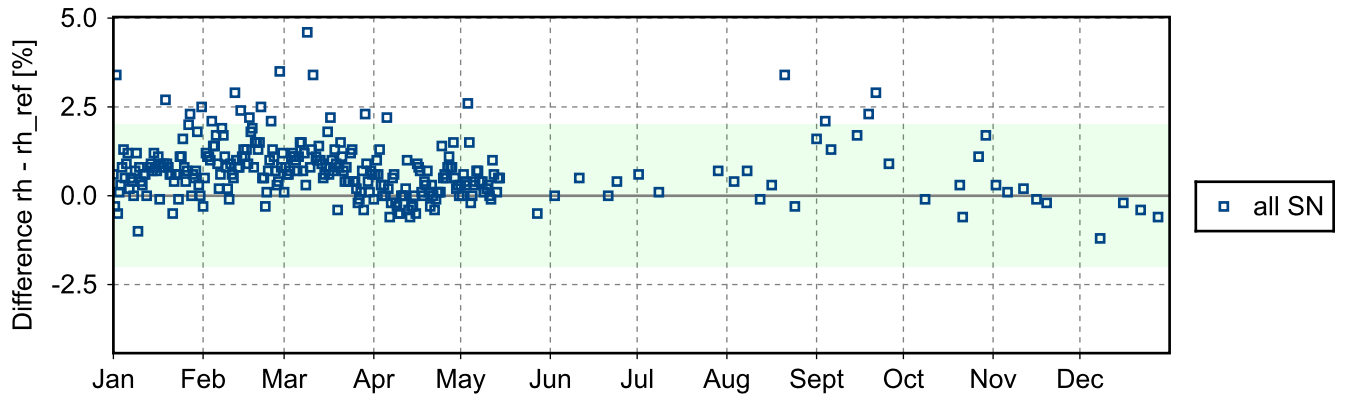


(2) GroundCheck: GC-TU(100)



(3) GroundCheck: GC-TU(room)





3.6 Measurement events

