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GLOBAL CLIMATE OBSERVING
SYSTEM (GCOS)

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**14th GRUAN Implementation-
Coordination Meeting (ICM-14)**

Session 5

La Réunion

28 November - 02 December 2022

GRUAN Site Report for Beltsville

(Submitted by Lead Centre)

Summary and Purpose of this Document

Report from the GRUAN site Beltsville for the period January to December 2021.

Overview

Beltsville is located at Howard University Beltsville Campus. It contributes with weekly RS92-RS41 and a monthly CFH/ozonesonde data. The site was re-certified this year and has made the measurements consistently. The site is has just installed a GNSS as part of the GFZ expansion network and the system is working and will be included in the GRUAN data stream. We have continued Ozone sonde launch capability and has submitted the data to GRUAN. Beltsville was formally invited to the NDACC network and has accepted to join the water vapor network group. In addition, Beltsville has been a primary participant in the multi-agency GRUAN group in the mid-Atlantic region called GMAC.

Change and change management

Beltsville has been launching a dual sonde RS92-RS41 for over two years at HUBC. We have submitted the data to GRUAN LC, NOAA-STAR and have just commenced to do analysis and interpretation of the data. Further, our collaboration with GMAC and Sterling has allowed similar multi-package flights and will be part of the RS41-RS-92 data analysis in GRUAN.

Resourcing

Drs. Demoz, Sakai and Mr. Adrian Flores are the main scientists responsible for the day to day management of the GRUAN activity at Beltsville. We are thankful to Dr. Howard Diamond for the contribution in terms of CFH at the site and NOAA STAR for funding the radiosonde launches. Dr. David Whiteman joined recently and has started the Raman Lidar activity and we hope that will become invigorated in the near future. We have operated through most of the COVID-19 duration but the site is always looking for ways to increase the funding levels and stabilize the GRUAN effort.

Operations

Following are some of the things that we think and worry about (in no particular order)

- The launch site is still in the HUBC north site, and the presence of a hill in the East still gives problems, principally during the winter, when the winds are stronger. Otherwise, most of the times, we have been successful in launching balloons higher or close to 10 hPa.
- The CFH launches are paired with RS41. Some interference has been observed in the CFH data, indicating some interference from the RS41. After discussing with Dr. Holger Vömel, the

RS41 has been repositioned in the block setup, giving better results. Going forward, we will launch the CFH with RS41 only, to minimize interference.

Covid-19

The site has continued GRUAN work through the global Covid-19 pandemic. While it has not affected the operation, it has limited our work in the analysis side by lack of student support (students are not allowed in campus yet).

Site assessment and certification

The Beltsville site is certified.

GRUAN-related research

Coordination work on satellite validation, the GRUAN-Mid-Atlantic-Consortium (GMAC); coordination with NWS - Sterling, VA on testing, documentation, and training, Multi-sonde procedure report for GRUAN are some of the contributions from the site. The site scientists are members in the radiosonde task team; Chair GRUAN site task team, ancillary data task team.

WG-GRUAN interface

As we state in continuation: this sites GRUAN operation is primarily funded through a collaboration with NWS and NOAA-STAR and primarily the advocacy and partial funding from Dr. Howard Diamond and Dr. Mitch Goldberg. It would be very nice to get (1) A thank you letter to both and in particular to Dr. Mitch Goldberg [Phone: 240-684-0509 Email: mitch.goldberg@noaa.gov] would go a long way to help encourage continuing support.

Other archiving centers

Beltsville site will start sharing data with NDACC.

Participation in campaigns

MDE 2018: High ozone episodes ozonesonde launches will continue every summer. Also, NCAS-M is providing ozonesondes for other seasons. The GSFC Ozone lidar will be located at the site

for an ozone lidar comparative study. Interaction with the SHADOZ Ozonesonde intercomparisons coordinated by Ryan Stauffer/Ann Thompson (NASA GSFC) will continue.

Future plans

No change planned.



GRUAN Site Report for Beltsville (BEL), 2021

Reported time range is Jan 2021 to Dec 2021

Created by the Lead Centre

Version from 2022-11-15

1 General GRUAN site information

Object	Value
Station name	Beltsville
Unique GRUAN ID	BEL
Geographical position	39.0500 °N, -76.8800 °W, 53.0 m
Operated by	HOWARD Howard University
Main contact	Demoz, Belay
WMO no./name	-
Operators	currently 26, changes +0 / -0
Sounding Site	1
GNSS	1

1.1 General information about GRUAN measurement systems

System	Name	Type	Setups	Measurements
BEL-GN-01	GNSS Site DCHU	GNSS	0	not operational
BEL-RS-01	Beltsville Radiosonde Launch Site	Sounding Site	8	66

1.2 General comments from Lead Centre

No comments from Lead Centre.

2 System: GNSS Site DCHU (BEL-GN-01)

Object	Value
System name	GNSS Site DCHU
Unique GRUAN ID	BEL-GN-01
System type	GNSS (GN - GNSS)
Geographical position	39.0541 °N, -76.8775 °W, 25.3 m
Operated by	HOWARD Howard University
Instrument contact	Demoz, Belay
Started at	-
Defined setups	-
Possible streams	-

2.1 Lead Centre comments

2.1.1 Dataflow

No GNSS dataflow to LC has been established yet.

3 System: Beltsville Radiosonde Launch Site (BEL-RS-01)

Object	Value
System name	Beltsville Radiosonde Launch Site
Unique GRUAN ID	BEL-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	39.0520 °N, -76.8775 °W, 52.0 m
Operated by	HOWARD Howard University
Instrument contact	Demoz, Belay
Started at	-
Defined setups	8 (RESEARCH, ROUTINE, OZONE, ROUTINE2, OZONE2, ROUTINE3, OZONE3, DUAL1)
Possible streams	CFH, ECC, RS41, RS92

3.1 Lead Centre comments

3.1.1 Change management

Regularly twin soundings were performed with Vaisala RS92-SGP and RS41-SG.

3.1.2 Dataflow

Operational dataflow of radiosonde measurement data to the GRUAN LC since August 2014. The dataflow includes radiosoundings with Vaisala RS92-SGP, RS41-SG, ECC Ozone and CFH. All data are transmitted using the RsLaunchClient.

A regular measurement program for the observation of stratospheric water vapor was performed using CFH.

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		11	11	
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3.2.2 Stream: ECC

ECC		29	29	
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3.2.3 Stream: RS41

RS41		60	60	
RS41-RAW	001		60	
RS41-EDT	001		60	
RS41-GDP	001		60	
RS41-GDP-BETA	002		32	
RS41-GDP-BETA	003		53	

3.2.4 Stream: RS92

RS92		8	8	
RS92-INT	001		8	
RS92-RAW	002		8	
RS92-EDT	001		4	
RS92-GDP	002		4	

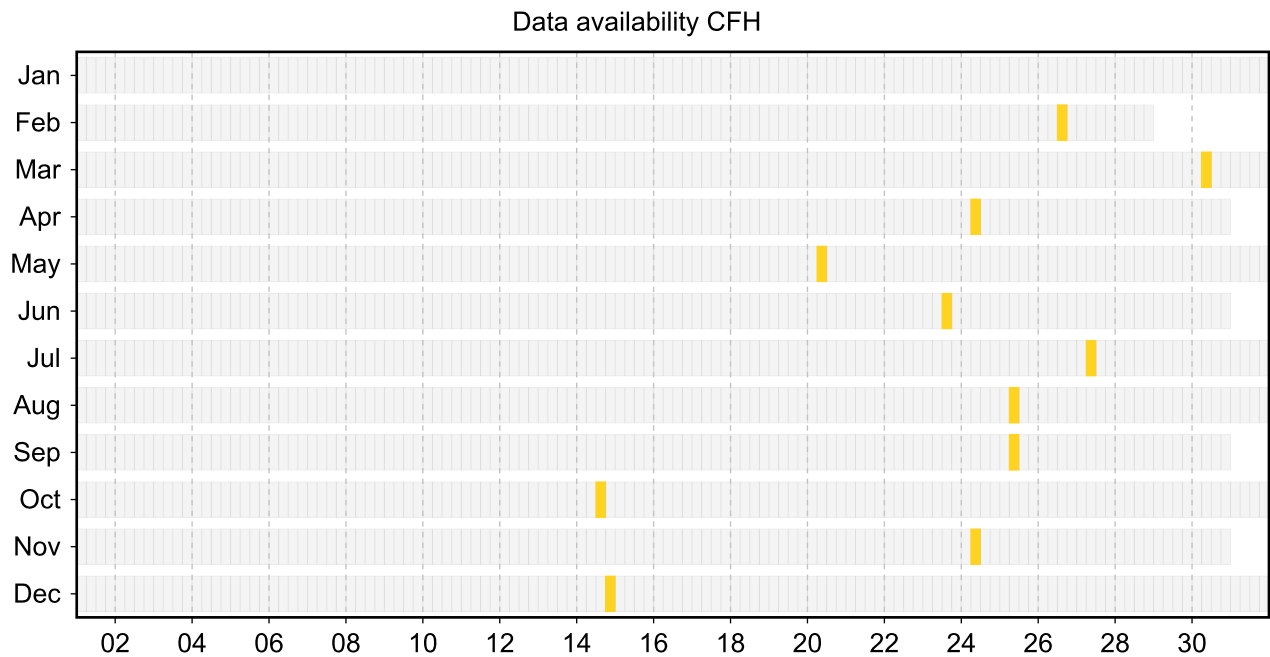
3.3 Availability of data products

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).

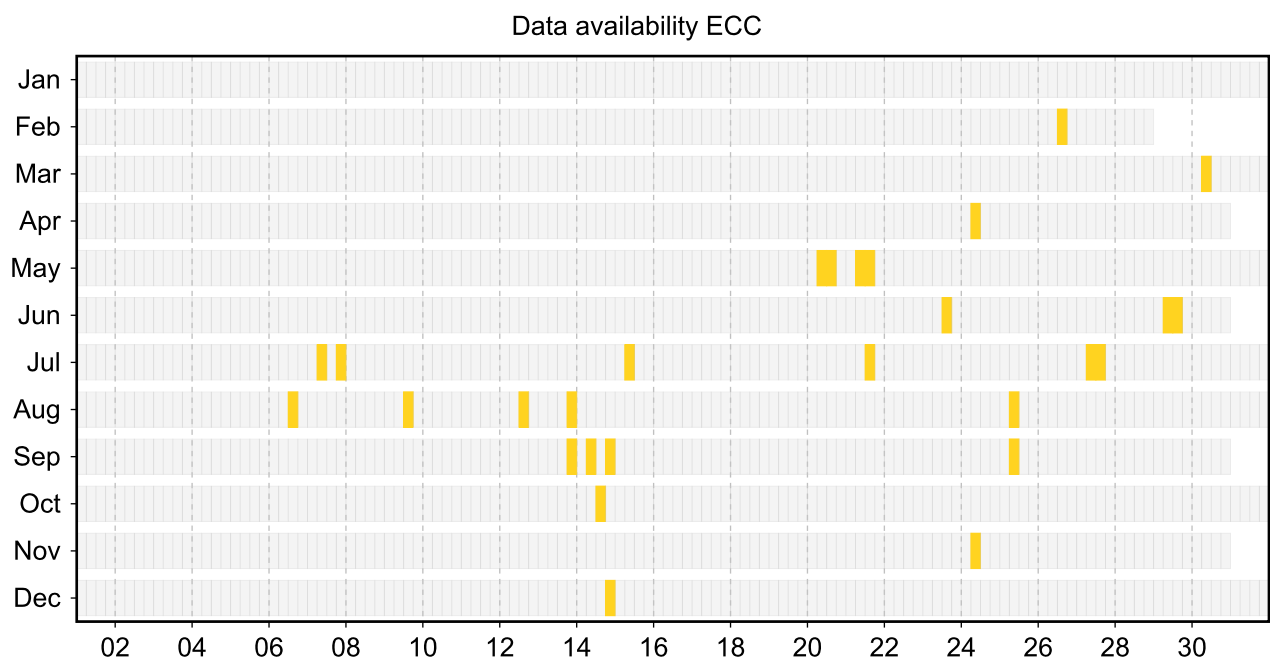
Unprocessed (yellow): The manufacturer-produced file with raw measurement data has been successfully converted into a GRUAN-standardized raw data format (NetCDF). The GRUAN data processing has not been performed or was aborted. Reasons for this may be a still missing GRUAN data processor or a processing-software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

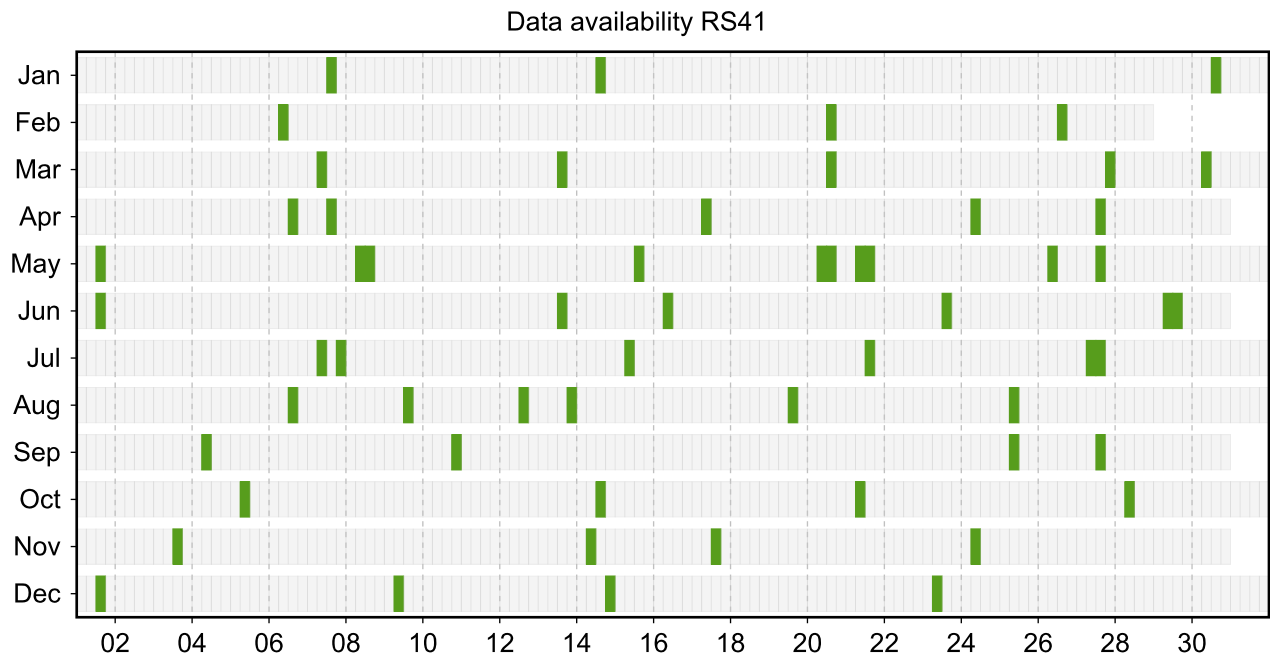
3.3.1 Stream: CFH



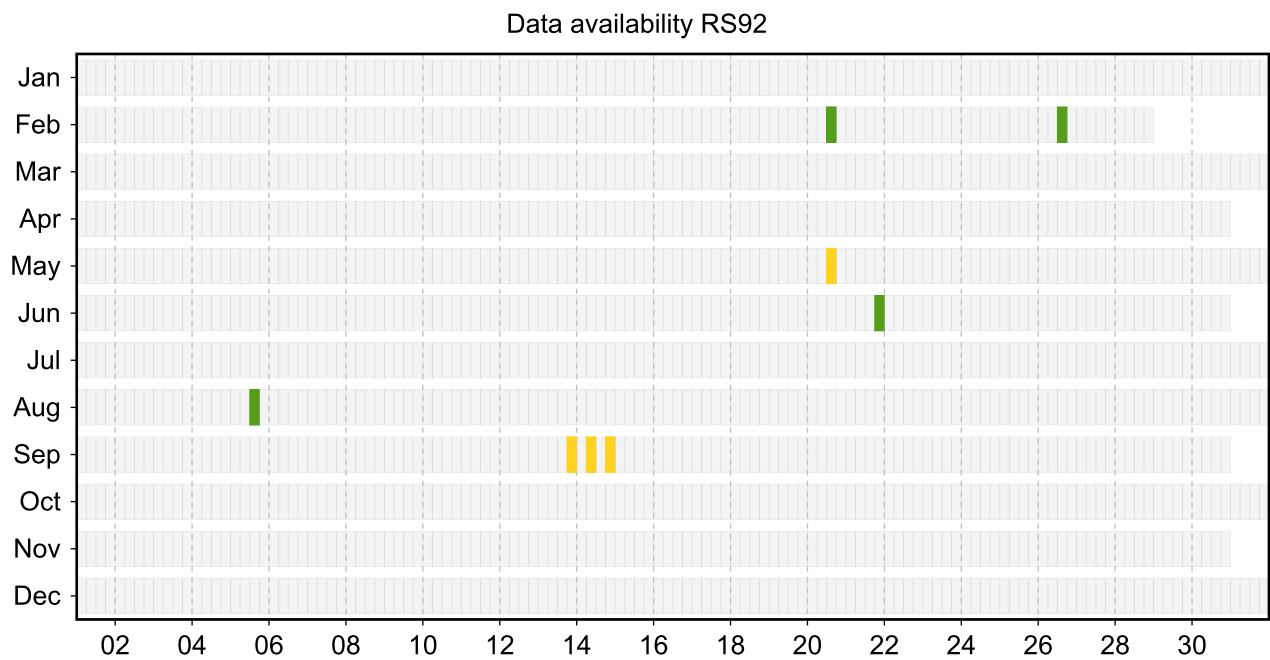
3.3.2 Stream: ECC



3.3.3 Stream: RS41



3.3.4 Stream: RS92



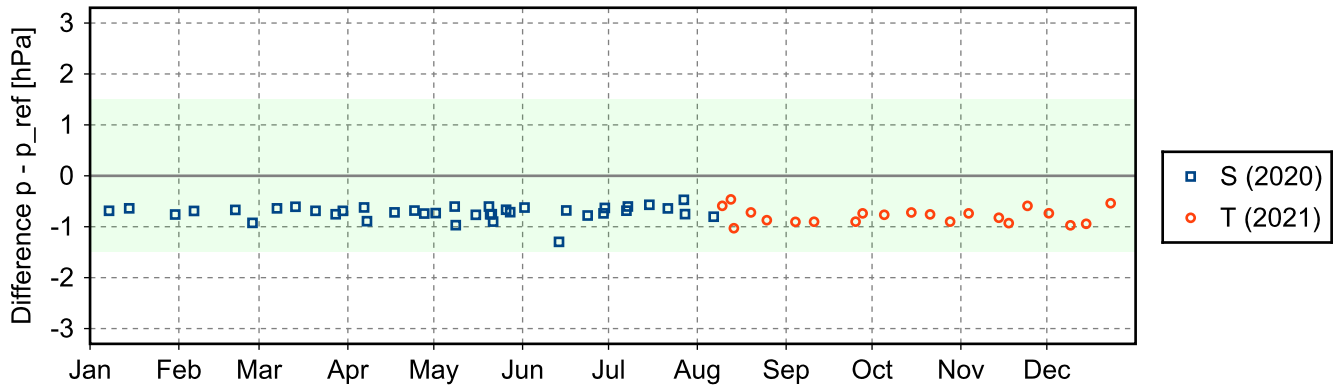
3.4 Instrument combinations of BEL-RS-01

Count	Instrument combination
10	CFH, ECC, RS41
1	CFH, ECC, RS41, RS92
14	ECC, RS41
4	ECC, RS92
34	RS41
1	RS41, RS92
2	RS92

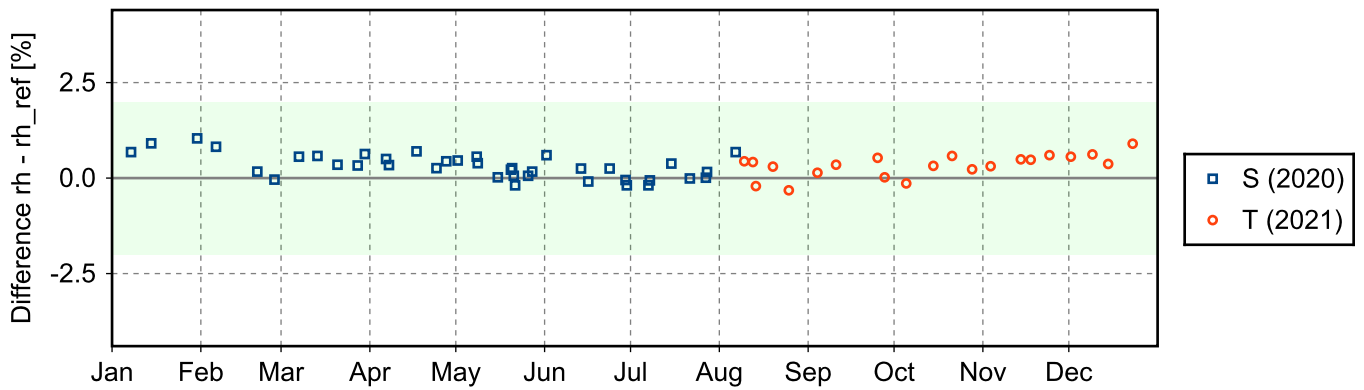
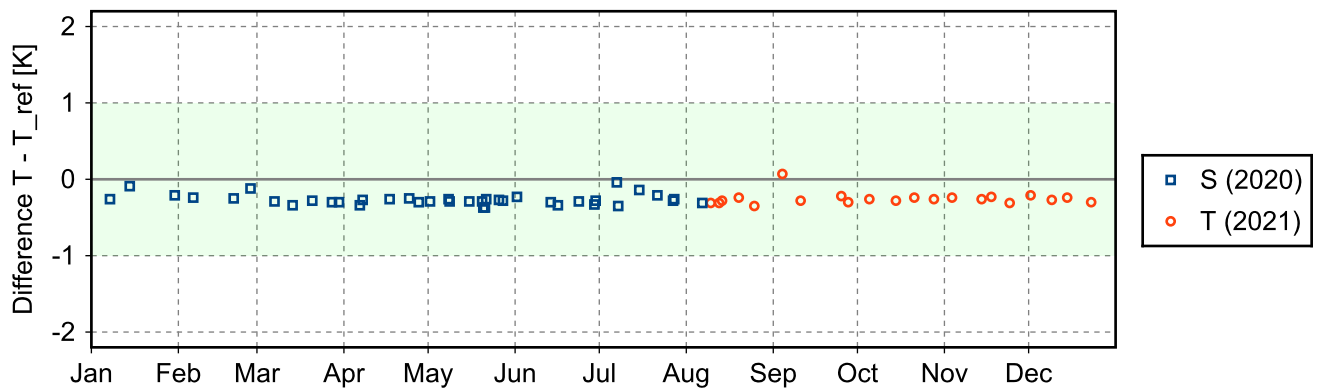
3.5 Instrument ground check

3.5.1 Stream: RS41

(1) GroundCheck: GC-RI41

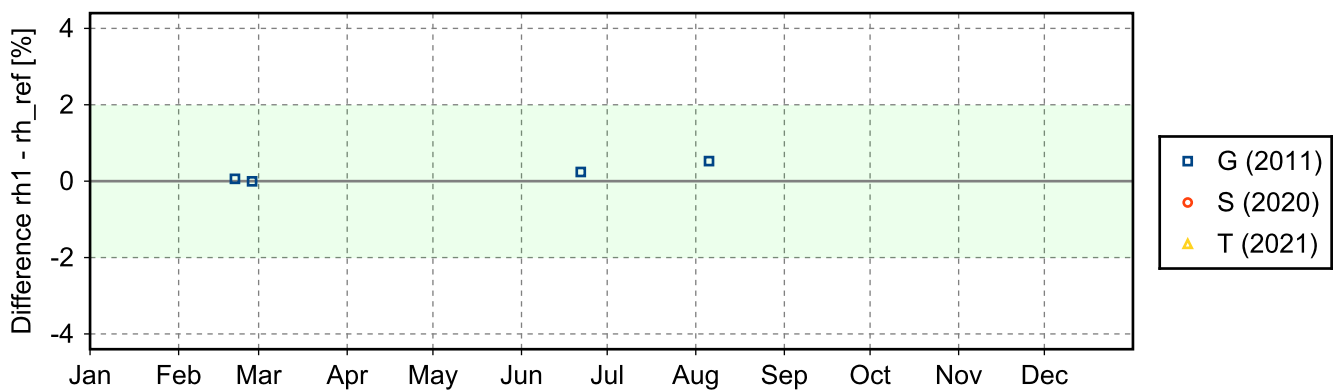
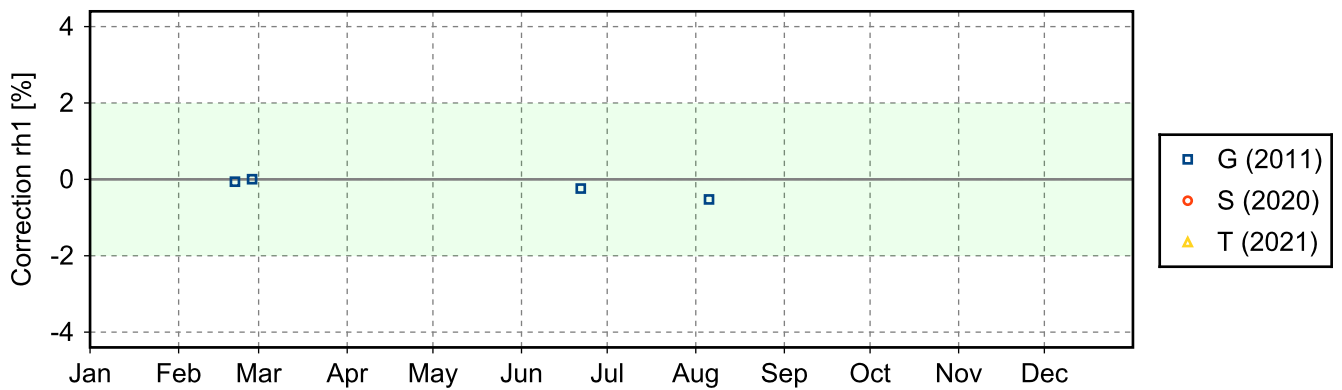
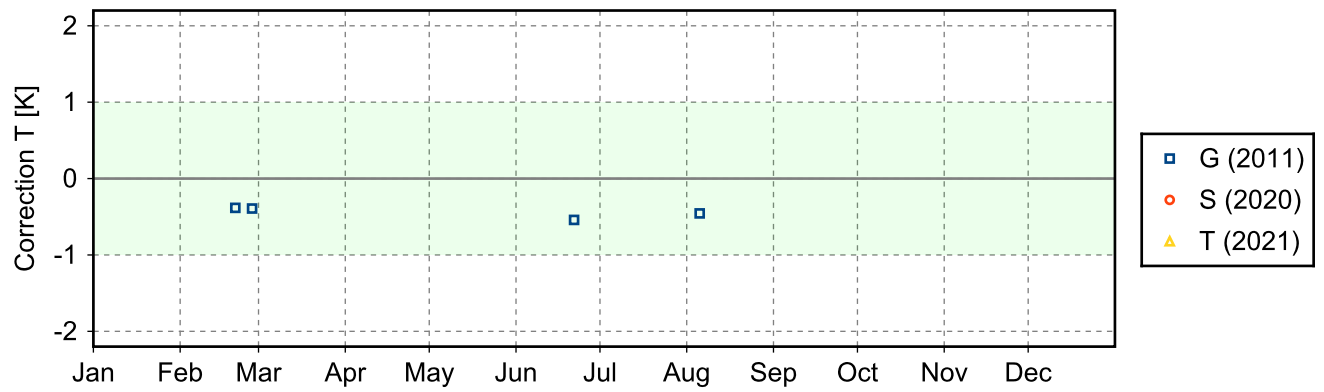
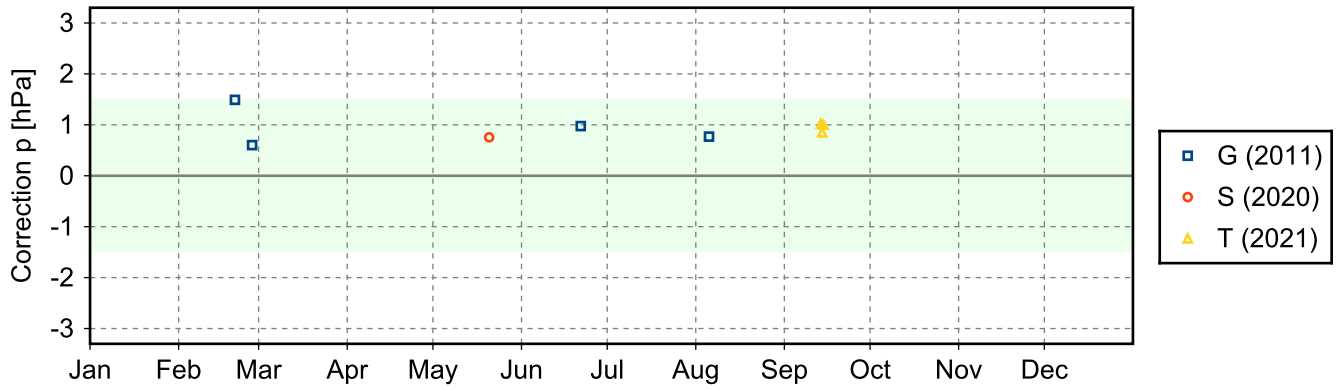


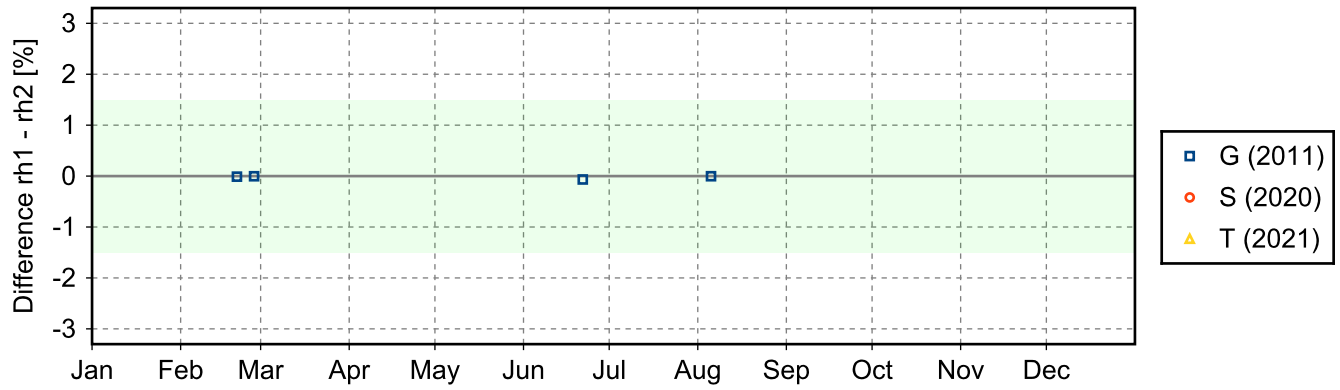
(2) GroundCheck: GC-SHC



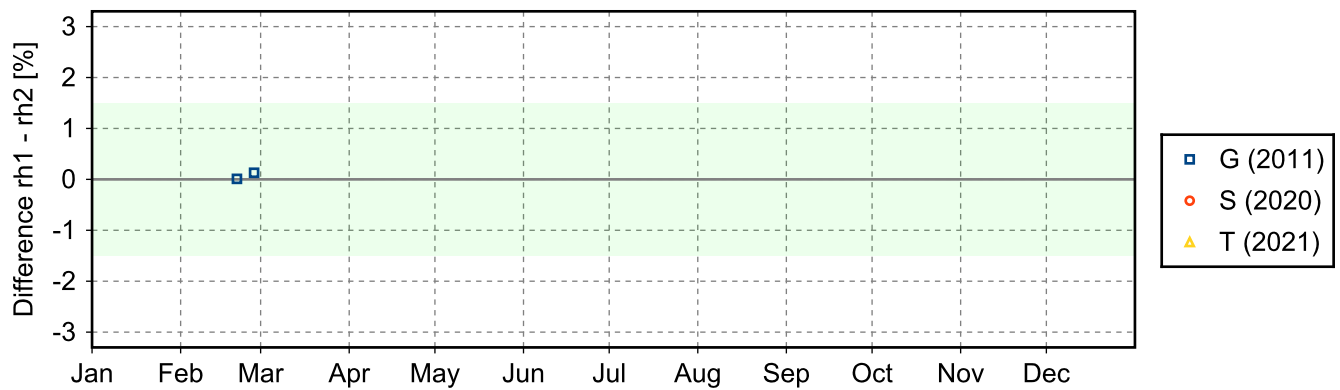
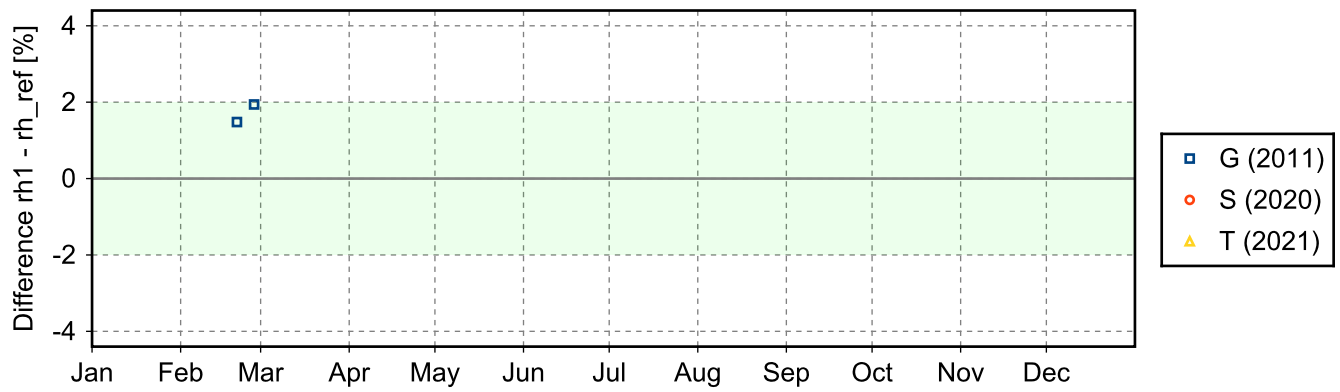
3.5.2 Stream: RS92

(1) GroundCheck: GC-GC25





(2) GroundCheck: GC-SHC



3.6 Measurement events

