



WMO/IOC/UNEP/ICSU
GLOBAL CLIMATE OBSERVING
SYSTEM (GCOS)

Doc. 7.03
(12.III.2019)

**11th GRUAN Implementation-
Coordination Meeting (ICM-11)**

Session 7

Singapore

20 - 24 May 2019

GRUAN Site Report for Beltsville

(Submitted by Belay Demoz and Ricardo Sakai)

Summary and Purpose of this Document

Report from the GRUAN site Beltsville for the period January to December 2018.

GRUAN Site Report for Beltsville (BEL)



Reporting for the period January to December 2018

Date: 12-March-2019

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Overview

Beltsville is located at Howard University Beltsville Campus (HUBC, figure 1). It contributes with weekly RS92-RS41 and a monthly CFH data. The site was certified this year and has made the measurements consistently. The site is currently working on ways to submit the ozone profiles. In addition, Beltsville has been a primary participant in the multi-agency GRUAN group in the mid-Atlantic region called GMAC. In addition, the site contributes with all dual RS92-RS41 launches and ozone launches.



Figure 1: Google Earth image of HUBC. Yellow lines are the HUBC property boundaries. Red circle is the balloon launch location. Blue line shows the hill adjacent to the balloon launch location.

Change and change management

Beltsville has been launching a dual sonde RS92-RS41 since December 2016. Further, our collaboration with GMAC and NWS-Sterling has allowed continuation of similar multi-package flights as reported at ICM meetings. No changes in operating procedures to date but we plan on introducing a TH-Ref sometime in late 2019 as an additional ground calibration procedure.

Resourcing

Dr. Sakai, with the help of a technician (Mr. Adrian Flores) has been managing the day to day GRUAN activity at Beltsville. In addition, Dr. Whiteman has joined the Howard University Beltsville Campus personnel and has been serving as a GRUAN team member. Dr. Whiteman is a long time GRUAN working group member and NDAC scientist. Further, Dr. Charles Ichoku has recently joined the Howard University Beltsville team as an aerosol-satellite scientist and distinguished professor in the NCAS-M research center. While the scientist level of Howard staff is gaining we, the cost of running the CFH and personnel is always a challenge and one-proposal decline away. We acknowledge the support from Dr. Howard Diamond for operating the CFH at this site - it is our lifeline for this part of the GRUAN work.

Operations

We have improved our operational challenges reported last year. We have improved the burst altitude for launches, improved RS41 data loss that were occurring early on in 2016, and continue to coordinate with satellite overpass - which makes operational launches to be at night. This late night launches, preferred for consistency but hard on manpower. Recovery of the CFH packages is a challenge - we are located in increasingly dense and water/coastal region. We have not had issues with the application of the R23 cryogen for frostpoint hygrometer soundings but anticipate we will soon see challenges. One challenge we have was replacing our burnout GNSS receiver. Dr. Whiteman is working on a collaboration and will be installing and restoring the GNSS receiver and restarting the data stream soon - hope in 2019

Site assessment and certification

Site is certified



Figure 2: Figure 2: (left) RS41-SG, RS92-SGPD/Ozonesonde, CFH/Imet launch with (left to right) Siwei Li, Kafayat Olaynka and Adrian Flores, Ms Olaynka is a PhD candidate, Dr. Li is a research scientist at HUBC. (right) Ephraim Alpha, Adrian Flores, Solomon Demoz, and Jonathan Solomon launching the RS92-SGPD and RS41-SG radiosondes. Mr. Alpha, Demoz, and Solomon are students in training.

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. Site scientists also worked on a regional air pollution investigation - OWLETS 2 and the site was used as one of the super-site measurement locations. OWLETS 2 was funded by the state of MD, NASA and NOAA.

The site scientists are members in the radiosonde task team; Chair GRUAN site task team, ancillary data task team.

WG-GRUAN interface

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.

Items for ICM-11 plenary discussions

The fate of the Cryogen and future status of the reference sounding definition. Cost is becoming prohibitive and alternatives should be encouraged.

Other archiving centers

N/A

Participation in campaigns

- MDE 2018: High ozone episodes ozonesonde launches.
- OWLETS 2: Synchronized ozonesonde launches with University of Maryland, Baltimore County, and Hart Miller Island sites.
- SHADOZ-OWLETS: Ozonesonde intercomparisons coordinated by Ryan Stauffer/Ann Thompson (NASA GSFC)

Future plans

Immediate plans are to continue the operation and no major changes are planned.



GRUAN Site Report for Beltsville (BEL), 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	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	61

1.2 General comments from Lead Centre

No comments available 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 GRUAN LC as 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 dual comparison flights were performed between Vaisala RS92-SGP and RS41-SG.

3.1.2 Dataflow

Sonde dataflow to the GRUAN LC is operational since August 2014. This dataflow includes data from the Vaisala RS92-SGP and RS41-SG, ECC Ozone, CFH and Internet iMet-1. All launches are transmitted using the RsLaunchClient.

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		7	7	
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3.2.2 Stream: ECC

ECC		24	24	
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3.2.3 Stream: RS41

RS41		45	45	
RS41-GCA	001		45	
RS41-RAW	001		45	
RS41-EDT	001		45	
RS41-GDP-ALPHA	002		25	

3.2.4 Stream: RS92

RS92		61	61	
RS92-GCA	001		43	
RS92-INT	001		60	
RS92-RAW	002		61	
RS92-EDT	001		61	
RS92-GDP	002		56	54

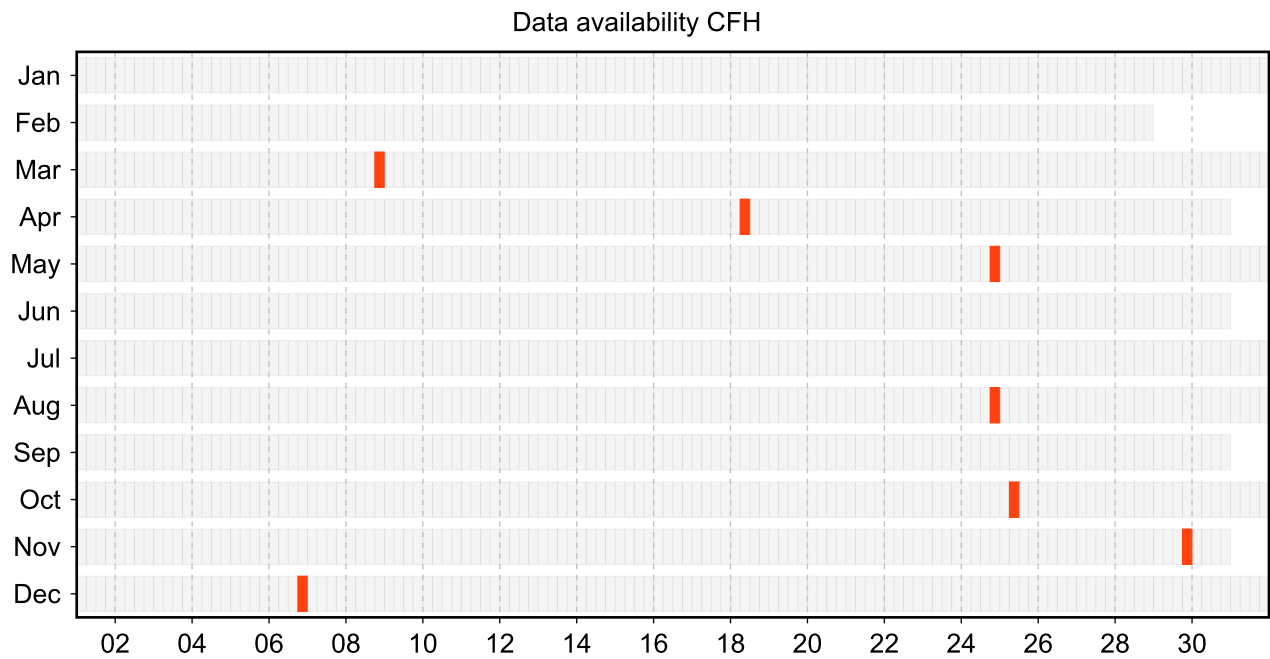
3.3 Data availability of data products

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).

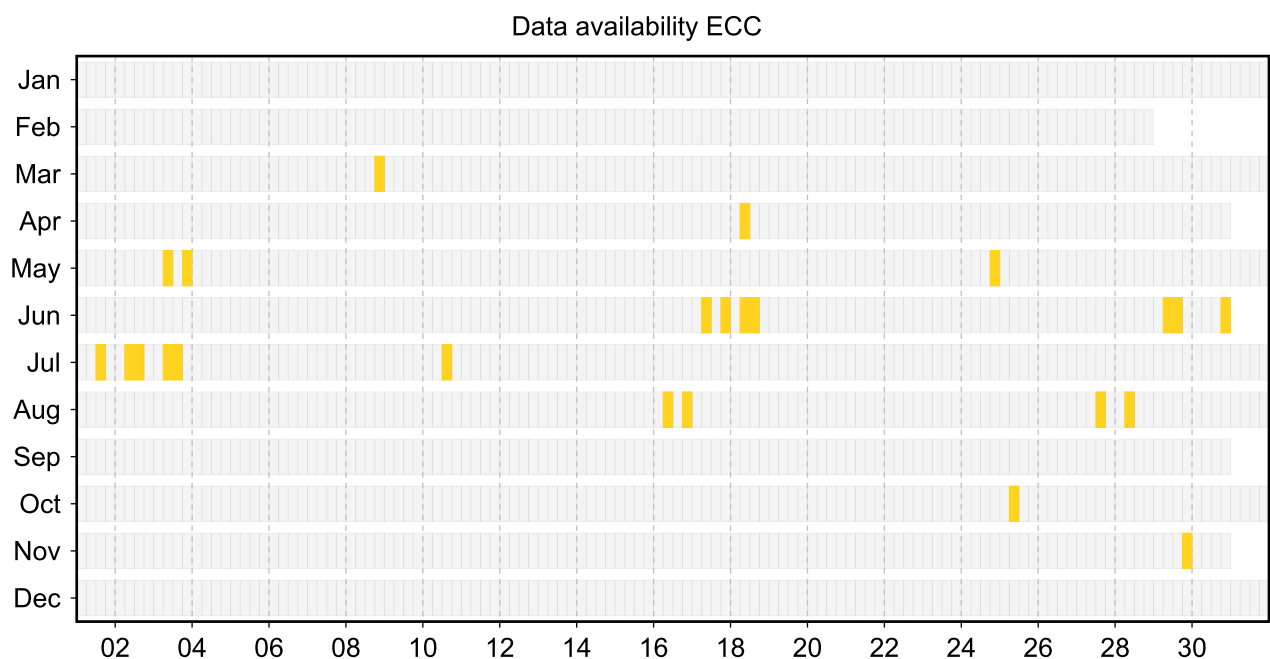
Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing (e.g. GRUAN data processing) has not yet been done, or has not been completed. Reason may be a processing routine which does not yet exist, or software errors.

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

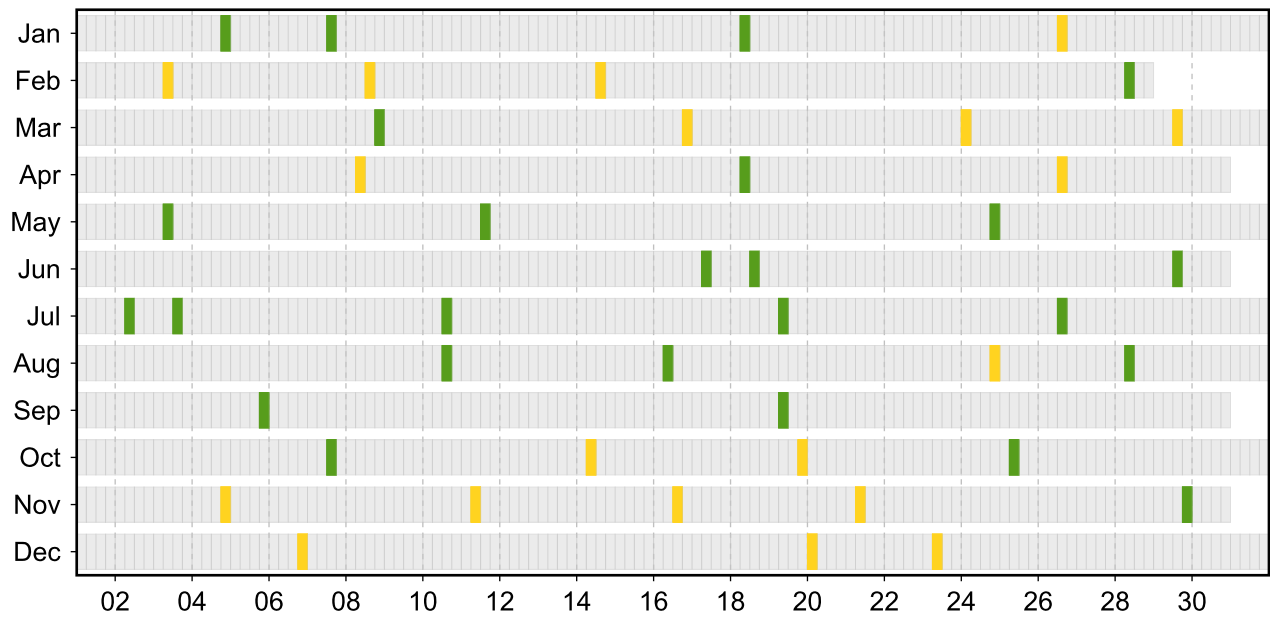


3.3.2 Stream: ECC



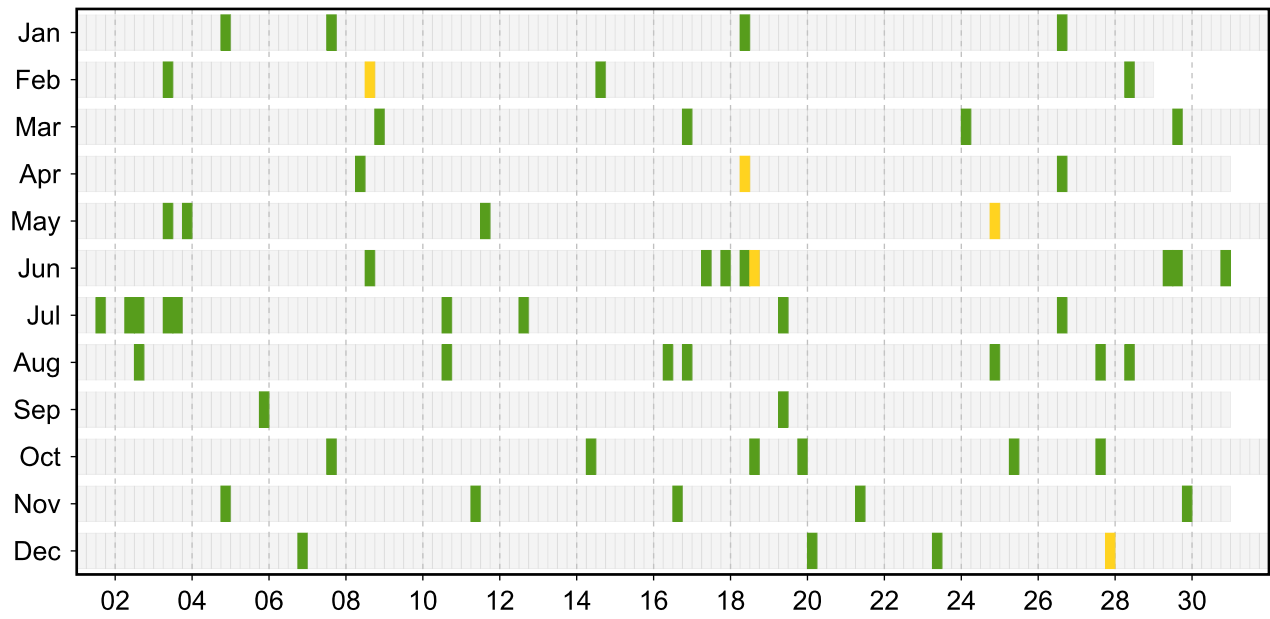
3.3.3 Stream: RS41

Data availability RS41



3.3.4 Stream: RS92

Data availability RS92



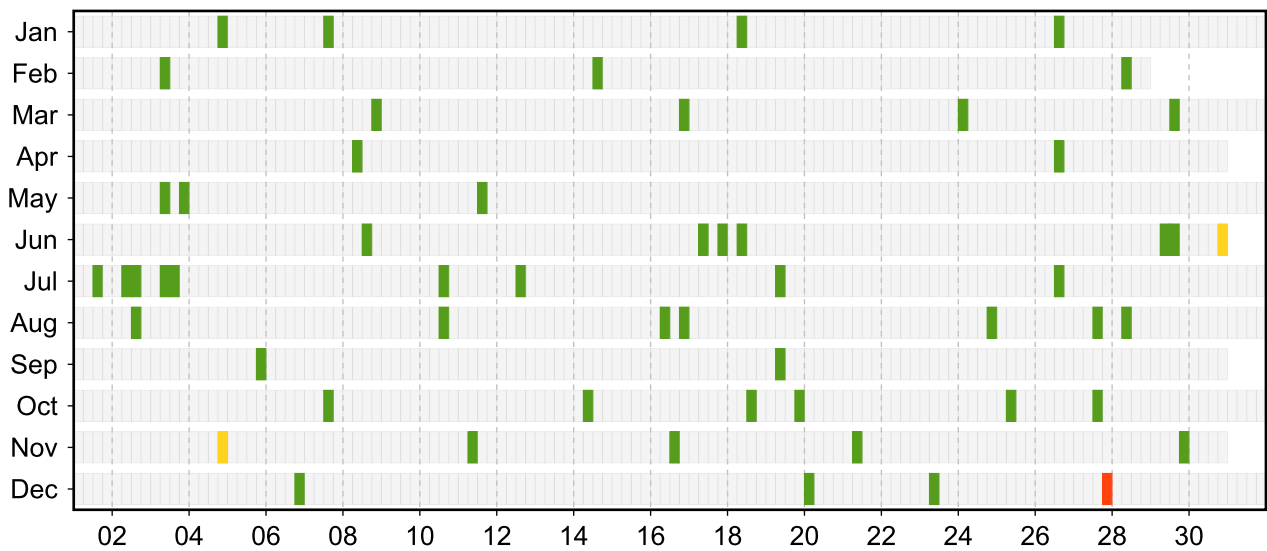
3.4 Data quality of current GRUAN data products

Month	Total	GRUAN Data Quality			Issues				
		Approved	Checked	Rejected	Meta-data	Process.	Press	Temp	RH

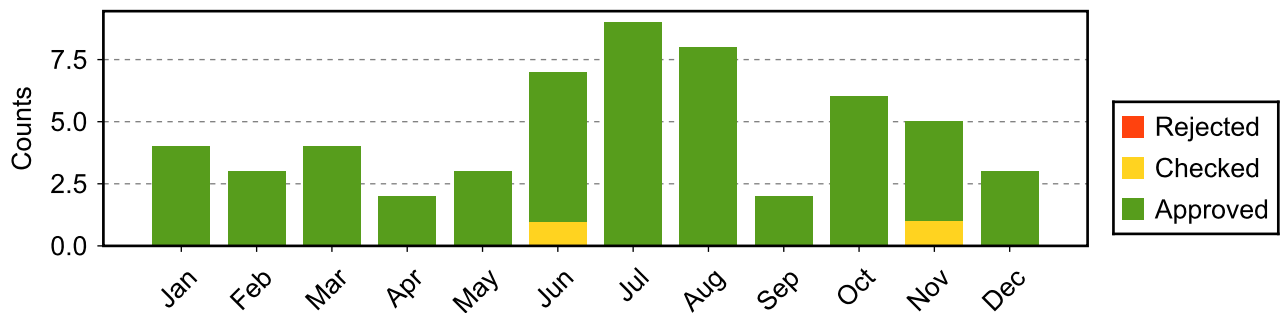
3.4.1 Stream: RS92 (Product: RS92-GDP-002)

Jan	4	4							
Feb	3	3							1
Mar	4	4							
Apr	2	2							
May	3	3							1
Jun	7	6	1						3
Jul	9	9							1
Aug	8	8							4
Sep	2	2							
Oct	6	6							2
Nov	5	4	1				1		
Dec	3	3							
Sum	56	54	2				1		12

Data quality of stream RS92



Data quality statistic of stream RS92



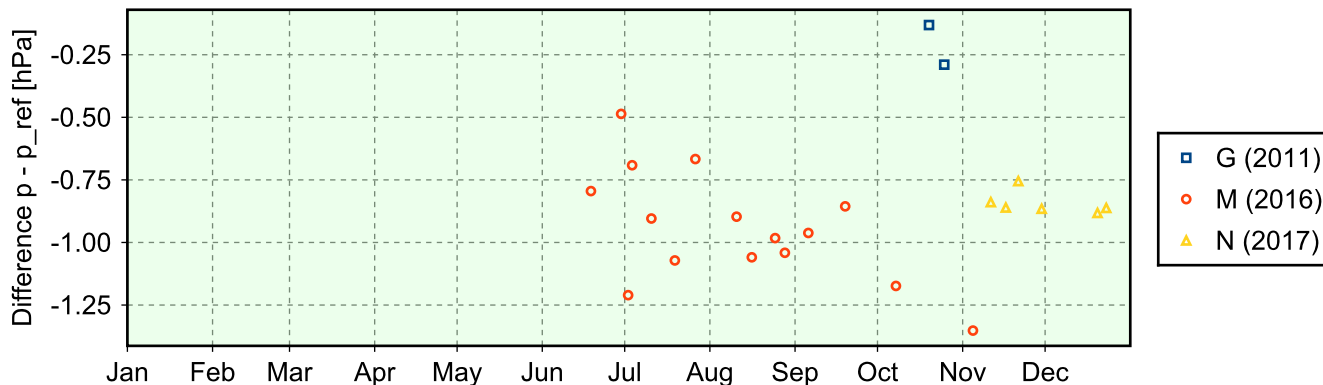
3.5 Instrument combinations of BEL-RS-01

Count	Instrument combination
5	CFH, ECC, RS41, RS92
2	CFH, RS41, RS92
9	ECC, RS41, RS92
10	ECC, RS92
29	RS41, RS92
6	RS92

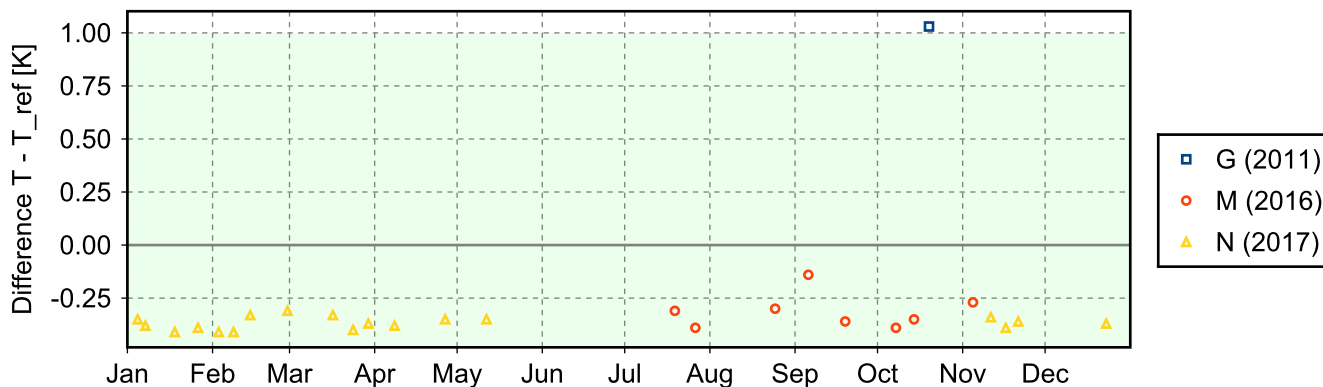
3.6 Instrument ground check

3.6.1 Stream: RS41

(1) GroundCheck: GC-RI41

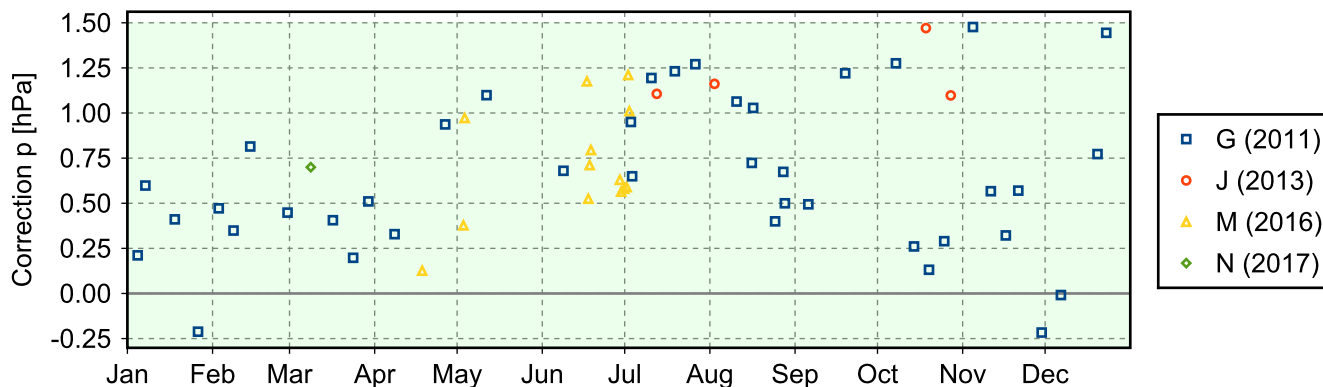


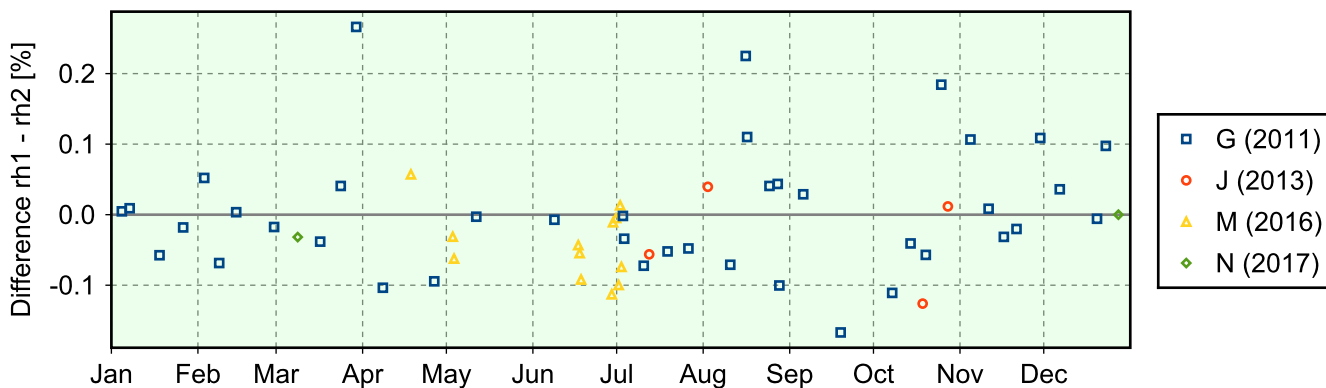
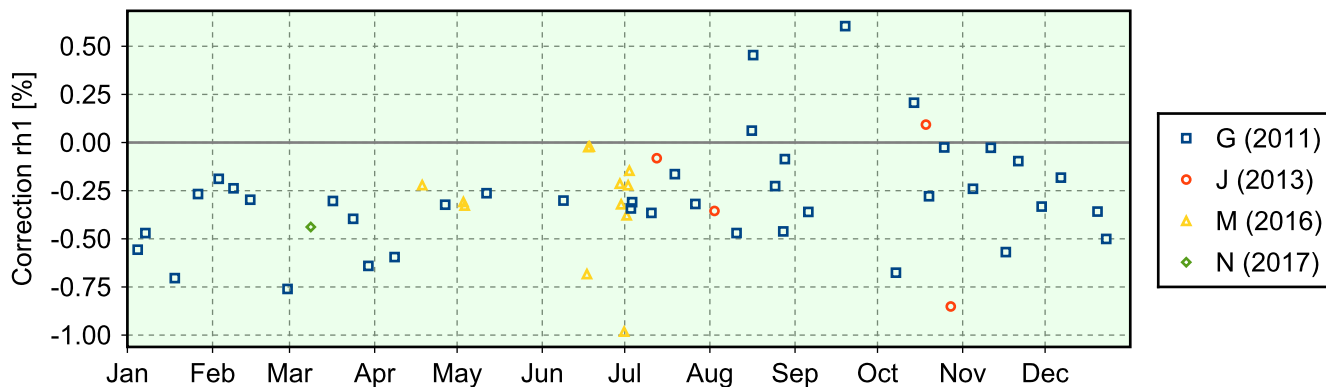
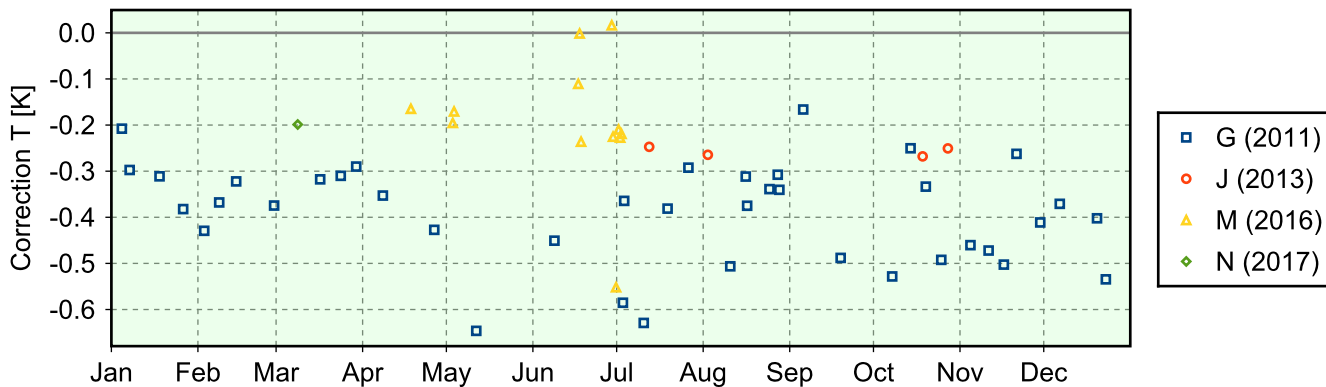
(2) GroundCheck: GC-SHC



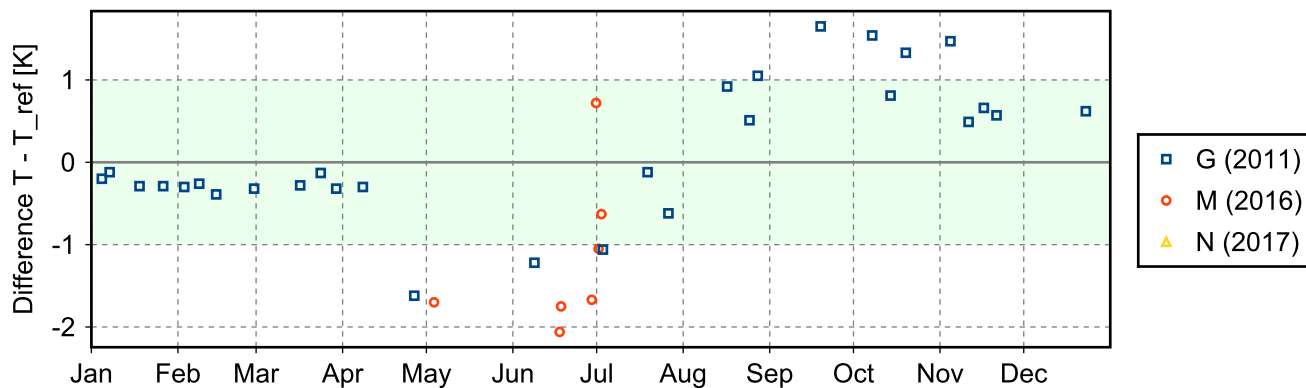
3.6.2 Stream: RS92

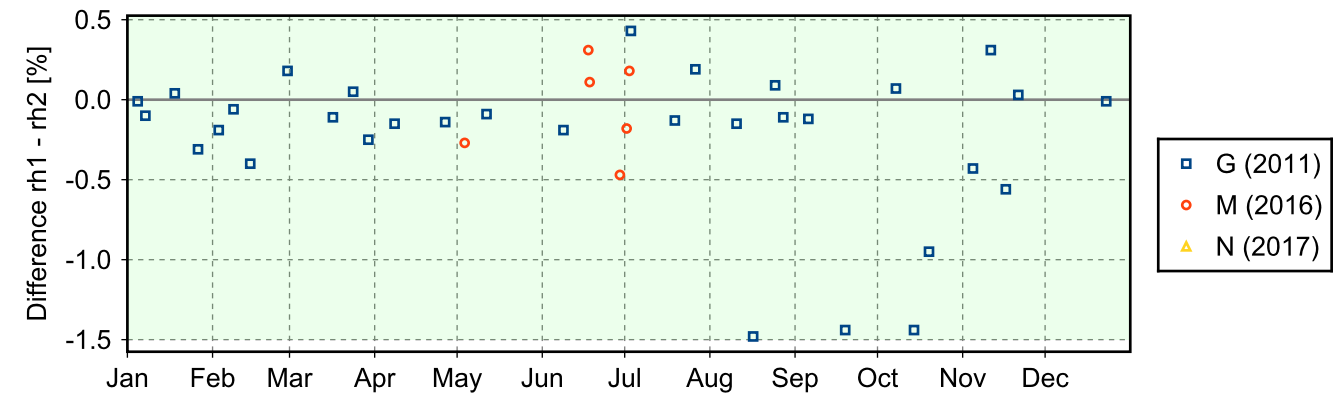
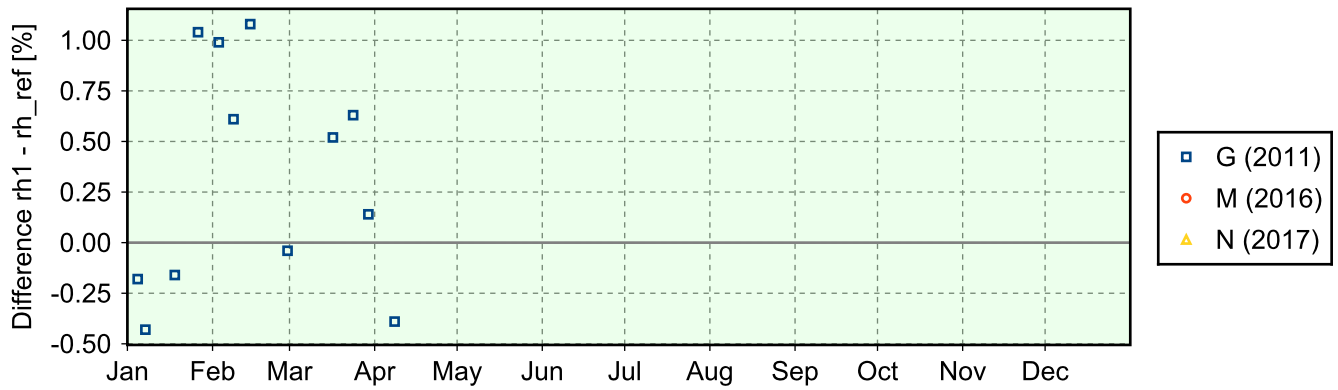
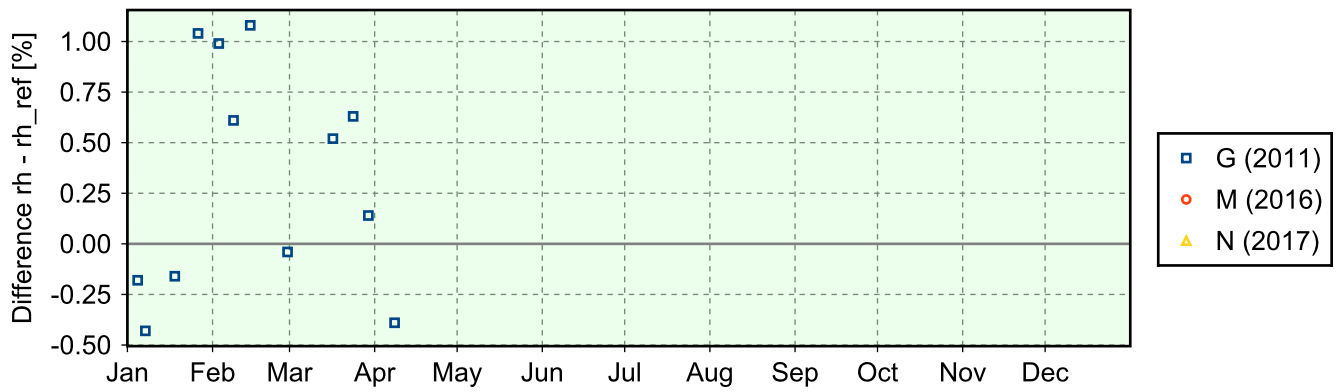
(1) GroundCheck: GC-GC25





(2) GroundCheck: GC-SHC





3.7 Measurement events

