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GLOBAL CLIMATE OBSERVING
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Coordination Meeting (ICM-10)**

Session 7

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23 - 27 April 2018

GRUAN Site Report for Beltsville

(Submitted by Ricardo Kendi Sakai and Belay Demoz)

Summary and Purpose of this Document

Report from the GRUAN site Beltsville for the period January to December 2017.

GRUAN Site Report for Beltsville (BEL)



Reporting for the period January to December 2017

Date: 5-April-2018

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Overview

The Howard University Beltsville Campus GRUAN site is located approximately 12 miles NE of downtown Washington, DC, in the State of Maryland on 110 acres in Suburban Maryland (39.05N, 76.88W, 53m). The campus is in a forested rural setting and contains minimal development (HUBC, figure -1). It contributes with weekly RS92-RS41 and a monthly cryogenic frost-point hygrometer (CFH) data. Ozonesondes are also launched semi-routinely. 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 at HUBC since December 2016. The plan is to operate in that mode for the foreseeable future. During 2017, 66 radiosondes had been launched, with 49 of these as dual launches. We plan to do dual launches (RS92 SGP and RS41) till our RS 92SGP supply lasts, including a package donated from ARM.

No changes in management.

Resourcing

The cost of running the radiosonde launches (CFH and ozonesonde included) and personnel is always a challenge and one-proposal decline away. So far, we are grateful for Dr. Howard Diamond and Mitch Goldberg as well as NOAA Center for Atmospheric Studies and Meteorology (NCAS-M) at

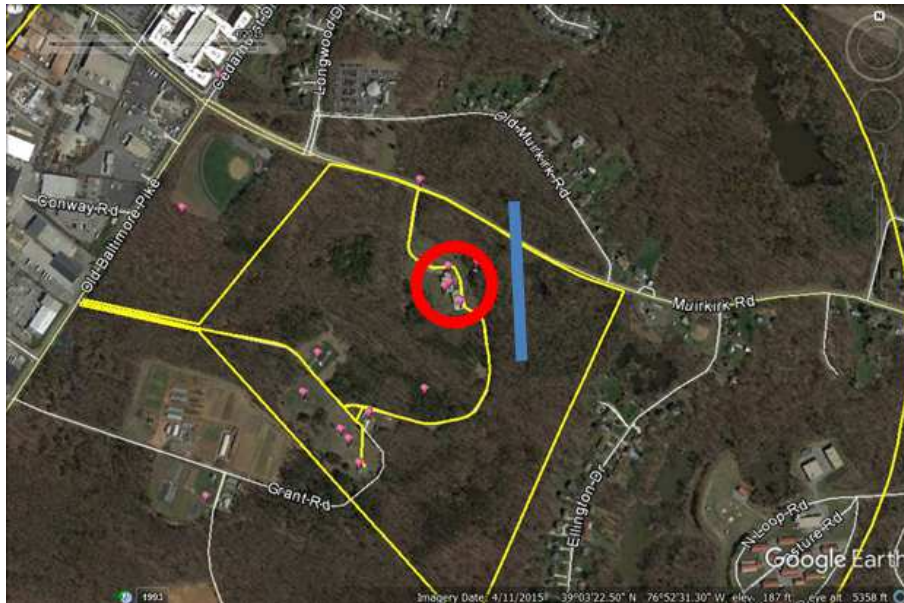


Figure 1: Google Earth image of HUBC. Yellow lines are the HUBC property boundaries. Red circle is the balloon launch location. Blue line shows the hill adjacent to the balloon launch location.

Howard University Department of Atmospheric Science (HUPAS) as well as University of Maryland Baltimore-County (UMBC).

Operations

Dr. Sakai has been managing the day to day GRUAN activity at Beltsville. Dr. Demoz has been fundamental in connecting HUBC to other GMAC members, and providing resources to HUBC balloon operations. Mr. Adrian Flores had been launching most of the soundings. He performs launches, and prepares ozonesondes and CFH. We are currently launching the dual sonde launches every week (RS92 SGPD and RS41), and the CFH/Ozonesonde monthly (figure 2). On July, 2017, the saturation humidity chamber for the RS41 has been implemented. Ozonesondes launch frequency is variable. For winter, fall, and spring, ozonesondes are launched with CFH launches. However, during summer more ozonesondes are launched when there is a forecast of a high ozone episode. Those ozone data are being submitted to lead centre. Winter launches are always a challenge to collect data till 10hPa. Strong winds and poor telemetry pose the big problems to reach the 10hPa mark, principally when the balloon trajectory is northeast bounded, probably due to the hill (figure 1). Submission to the lead centre has been halted due to problems with Howard University network firewall. The problem has been solved, and new setups were provided on March 2018 to submit the dual launch data using the RsLaunchClient Software. CFH launches will be submitted in the near future.



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 RS 92SGPD and RS 41 SG radiosondes. Mr. Alpha, Demoz, and Solomon are students in training.

Site assessment and certification

This site has been certified for RS92 radiosondes.

GRUAN-related research

We will continue to do balloon launches coordinated with S-NPP and COSMIC satellite overpasses, for validation purposes. Synchronized launches with NOAA NWS Sterling Field Support Center to determine spatial variation and continue co-location science work. Dr. Dave Whiteman has joined the Beltsville campus and Howard University as an Adjunct Professor and has brought all his lidar instrumentation to the campus. Discussions are under way to locate the GSFC *Network for the Detection of Atmospheric Composition Change (NDACC)* ozone lidar from GSFC and a Pandora Ozone sensor (Contact: Dr. John Sullivan).

WG-GRUAN interface

This site's 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: +1-240-684-0509 Email: mitch.goldberg@noaa.gov] would go a long way to help encourage continuing support. (2) We would be most grateful to get a support letter to NASA for we are discussing a long term continued support of the Beltsville NDACC activities. We could draft the

letter and the point of contact if LC is willing to help in this regard.

Items for ICM-10 plenary discussions

Please detail any issues that you specifically would like to be discussed during a plenary session at ICM-10. A vision document on where GRUAN is headed is timely and needed to continue funding.

Other archiving centers

STAR, NWS-Sterling

Participation in campaigns

We plan to participate in the NASA OWLETS 2 field experiment with ozonesonde launches at HUBC. This project will study the reasons of high ozone concentrations over the Chesapeake Bay, close to Baltimore, MD USA.

<https://www-air.larc.nasa.gov/missions/owlets/docs/OwletsSlides.pdf>

Future plans

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



GRUAN Site Report for Beltsville (BEL), 2017

Reported time range is Jan 2017 to Dec 2017

Created by the Lead Centre

Version from 2018-04-11

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	62

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 Dataflow

Sonde dataflow to the GRUAN LC is operational since August 2014. This dataflow includes data from the Vaisala RS92-SGP. 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: ECC

ECC		23	23	
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3.2.2 Stream: RS41

RS41		47	47	
RS41-RAW	001		47	
RS41-EDT	001		47	

3.2.3 Stream: RS92

RS92		61	61	
RS92-INT	001		61	
RS92-RAW	002		61	
RS92-EDT	001		61	
RS92-GDP	002		57	50

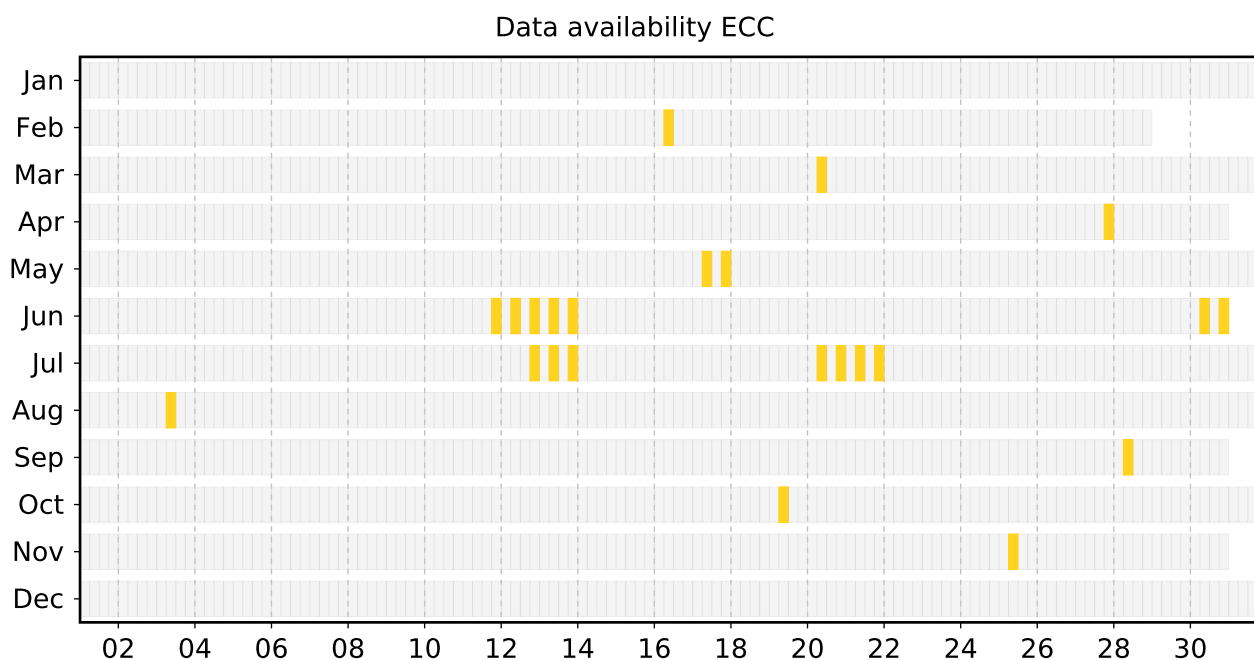
3.3 Data availability of data products

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).

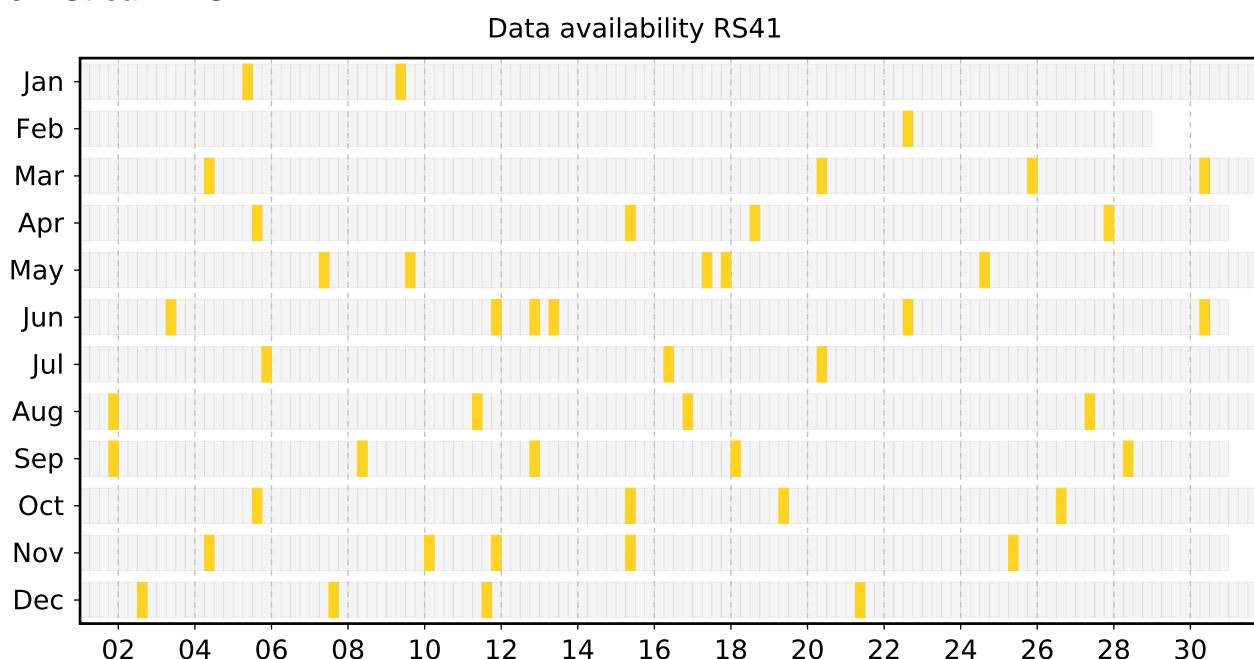
Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing (e.g. GRUAN data processing) has not yet been done, or has not been completed. Reason may be a processing routine which does not yet exist, or software errors.

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.

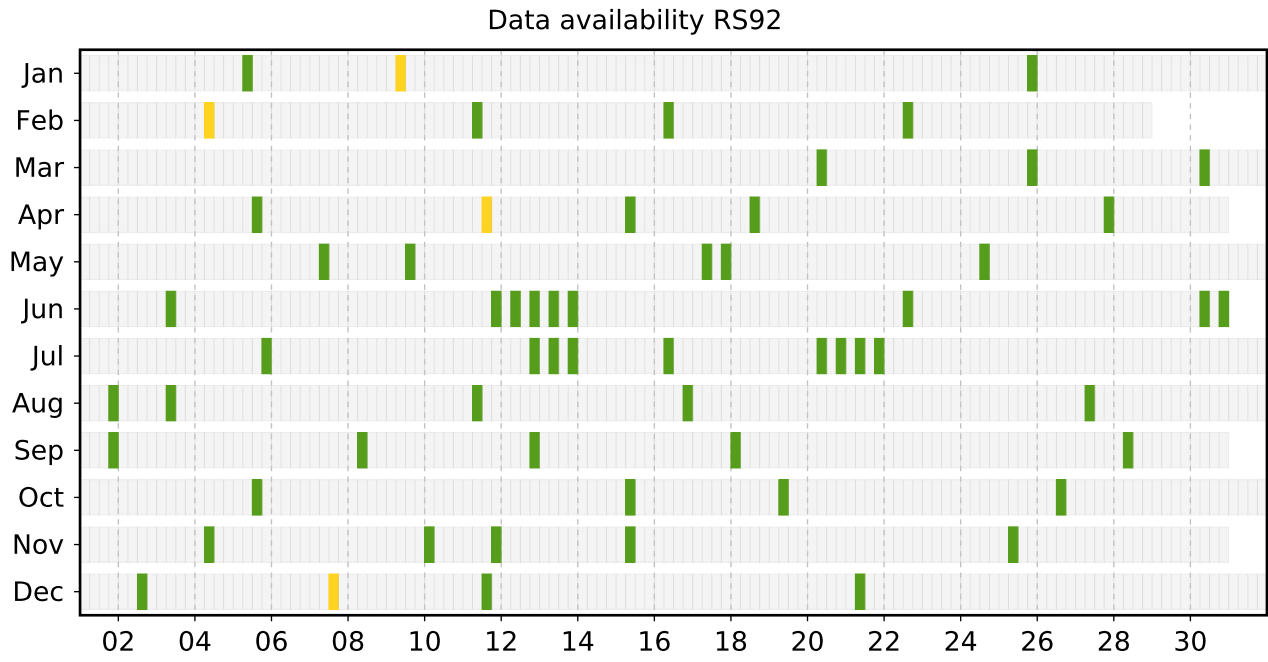
3.3.1 Stream: ECC



3.3.2 Stream: RS41



3.3.3 Stream: RS92



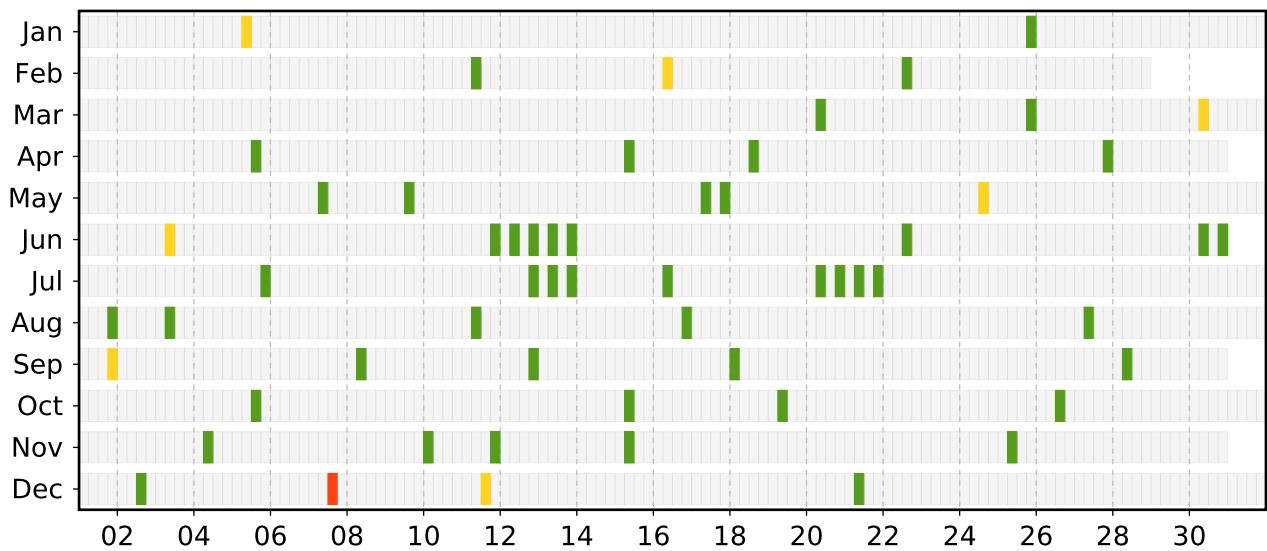
3.4 Data quality of current GRUAN data products

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

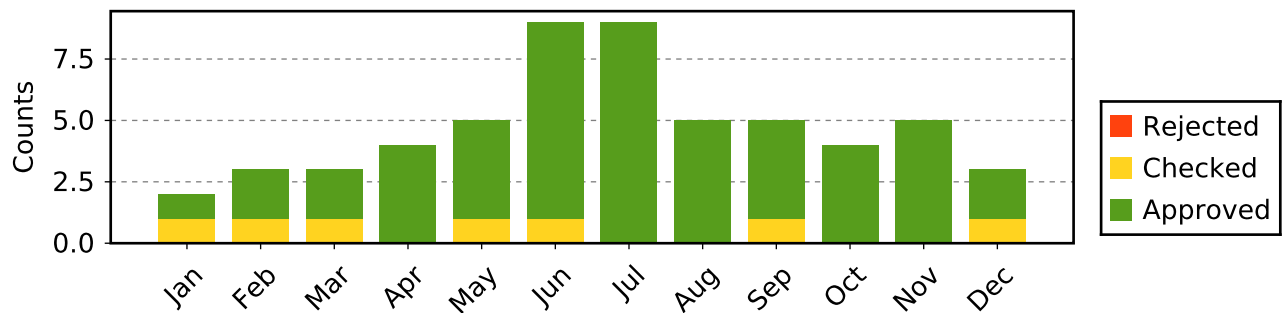
3.4.1 Stream: RS92 (Product: RS92-GDP-002)

Jan	2	1	1					1		
Feb	3	2	1					1		
Mar	3	2	1					1		1
Apr	4	4								2
May	5	4	1					1		
Jun	9	8	1					1		4
Jul	9	9								6
Aug	5	5								
Sep	5	4	1							1
Oct	4	4								1
Nov	5	5								
Dec	3	2	1					1		
Sum	57	50	7					6		15

Data quality of stream RS92



Data quality statistic of stream RS92



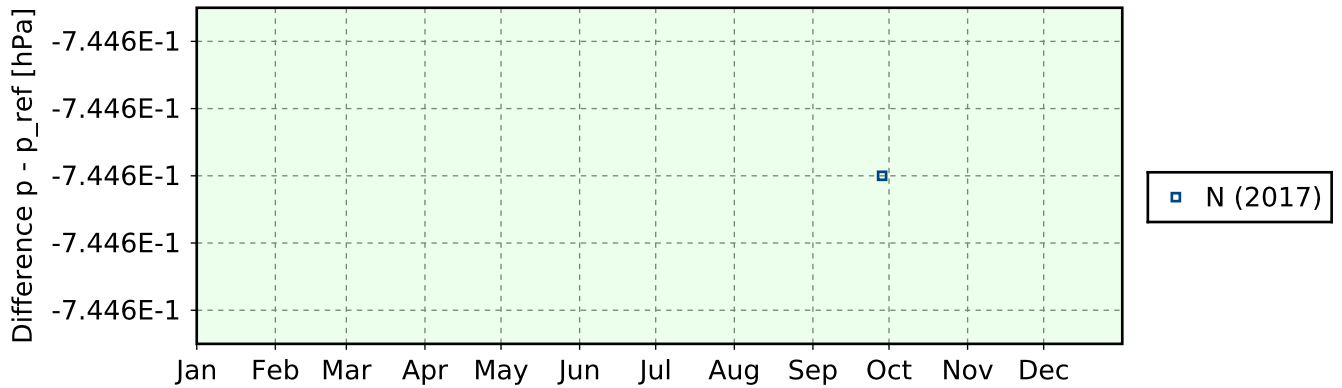
3.5 Instrument combinations of BEL-RS-01

Count	Instrument combination
12	ECC, RS41, RS92
11	ECC, RS92
1	RS41
34	RS41, RS92
4	RS92

3.6 Instrument ground check

3.6.1 Stream: RS41

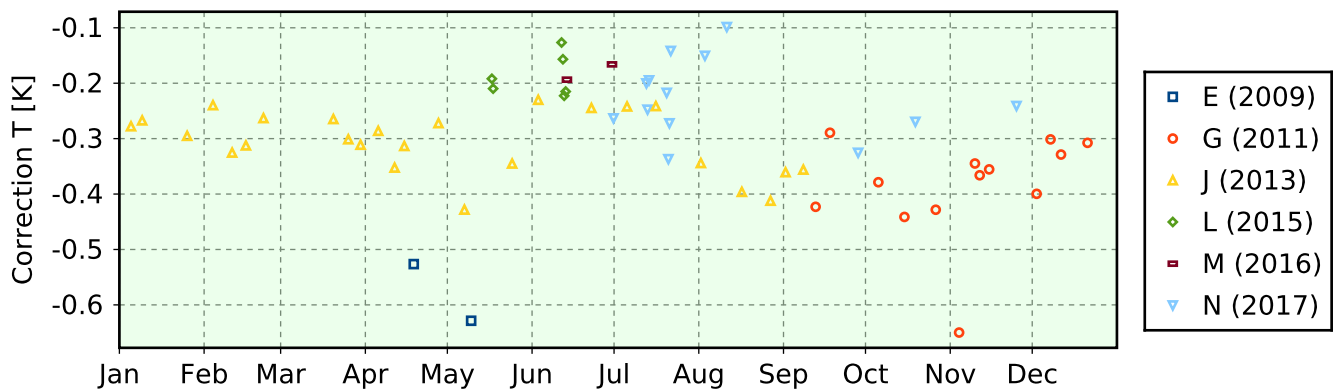
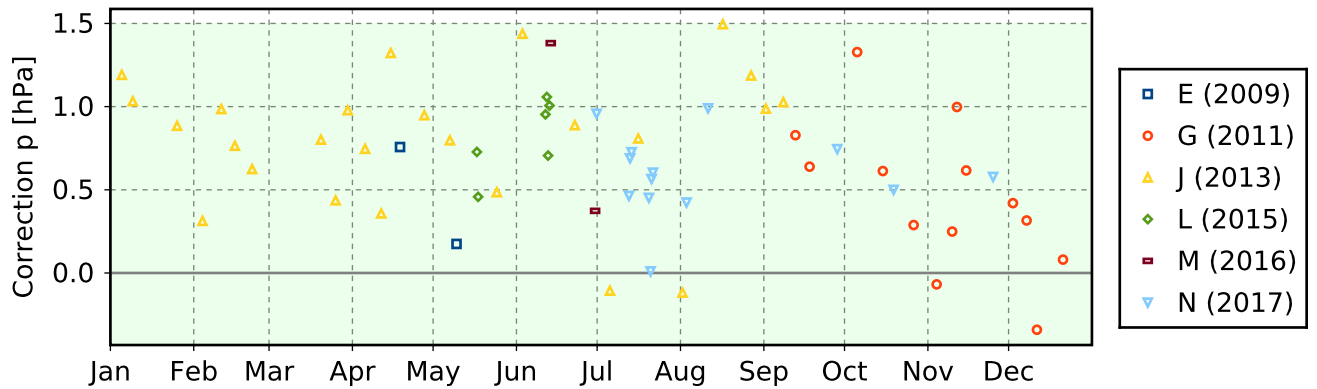
(1) GroundCheck: GC-RI41

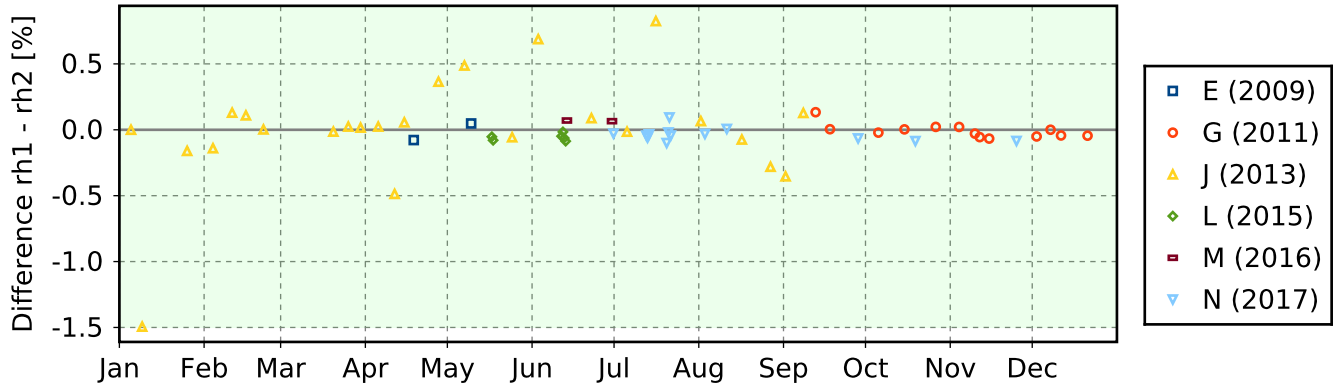
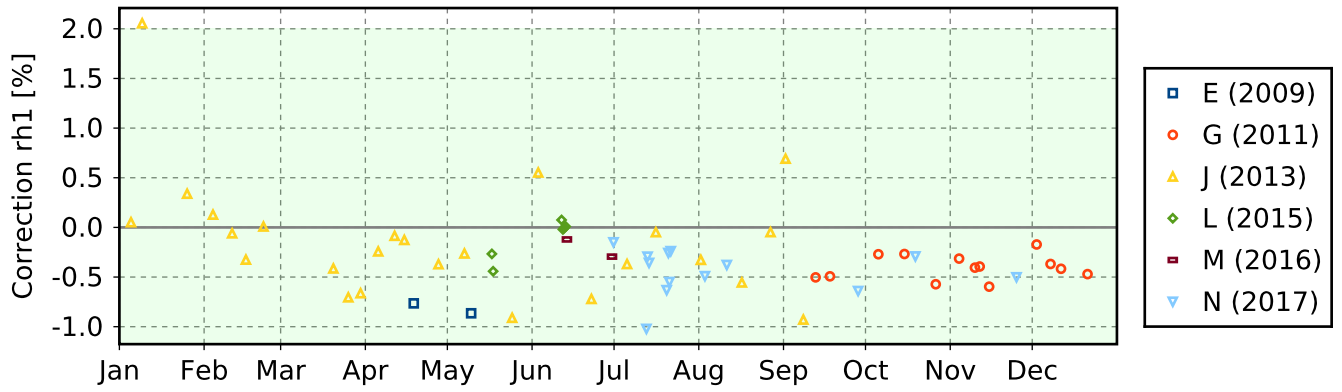


(2) GroundCheck: GC-SHC

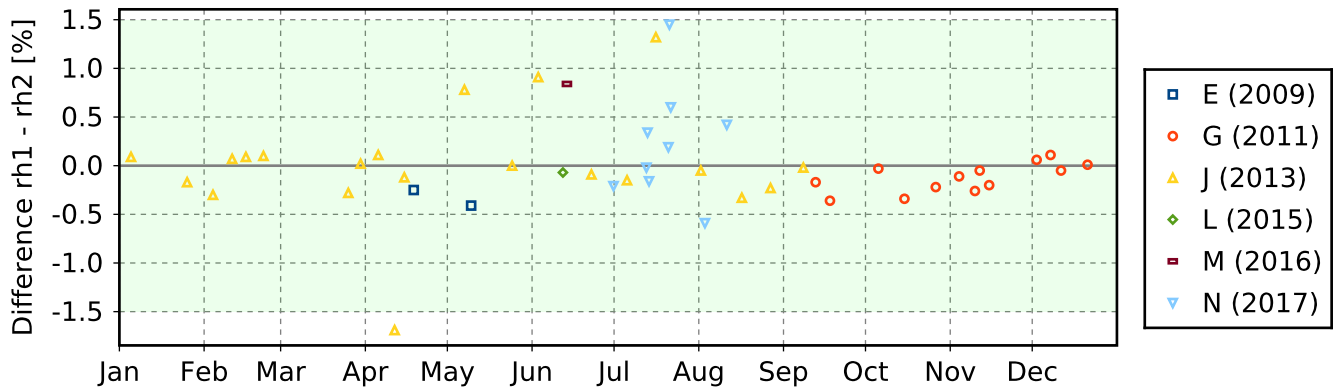
3.6.2 Stream: RS92

(1) GroundCheck: GC-GC25





(2) GroundCheck: GC-SHC



3.7 Measurement events

