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GLOBAL CLIMATE OBSERVING
SYSTEM (GCOS)

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Session 7

GRUAN Site Report for Sodankyla

(Submitted by Rigel Kivi)

Summary and Purpose of this Document

Report from the GRUAN site Sodankyla for the period March 2016 to April 2017.

Overview

Sounding measurement programs are contributing to GRUAN data streams. At Sodankyl we have installed receiving systems for both manual and automated soundings. Altogether 38 manual soundings and 776 automated soundings have been submitted during the reporting period, using the GRUAN operating procedures. The manual sounding dataflow includes Vaisala RS92-SGP, ECC ozone sonde, CFH water vapor, Intermet IMET-1, Vaisala RS80, RS41. The data have been transmitted using the RsLaunchClient software. In addition the GNSS dataflow has been set up.

Change and change management

RS92 and RS41 comparison flights have been made at Sodankyl. RS41 showed improvements for humidity and temperature measurements compared to the RS92, especially in the upper troposphere. The comparison flights have included CFH as a reference instrument. Change from RS92 to RS41 was made on March 30, 2017. Since then we have launched RS41 sondes on regular basis. The ozonesondes are flown using RS92. RS41 will be used within the CFH soundings.

Resourcing

Currently our budget funding does not cover all the research activities, therefore external funding is needed to continue with these activities.

Operations

A challenge is to increase the number of Ta600 or Ta800 balloons also during the summer period. However, currently the main issue is the rising cost which is expected as a consequence of this change if approved by the institute.

Site assessment and certification

Our site has been certified.

GRUAN-related research

GRUAN research is related to the work within the Radiosonde task team.

WG-GRUAN interface

Letter of support would be useful from the Working Group on GRUAN. Probably also other ways might be possible to increase GRUAN visibility within the institute. ICM-9 is hosted by the FMI, thus it is expected that FMI staff has a good possibility to learn more about the GRUAN activities.

Items for ICM-9 plenary discussions

Change management issues, for example in case of RS92/RS41. Also external funding possibilities would be of interest to discuss with the GRUAN partners. Finally, the Arctic research activities have been included as one of the topics at the ICM-9.

Future plans

Over the coming year we expect to improve instrumentation at the site and participate in the GRU-AN task team activities. We also hope to contribute to the instrument development regarding additional sensors to be flown in the GRUAN payload.

GRUAN Station Report for Sodankyla (SOD), 2016/17

Reported time range is Mar 2016 to Apr 2017
Created by the Lead Centre
Version from 2017-06-06

1 General GRUAN station information

Info	Value
Station name	Sodankyla
Unique GRUAN ID	SOD
Geographical position	67.3700 °N, 26.6300 °E, 179.0 m
Operated by	FMI | Ilmatieteen laitos
Main contact	Kivi, Rigel
WMO no./name	02836 SODANKYLÄ
Operators	current 8, change +0 / -0
Sounding Site	2
GNSS	1

1.1 General information about GRUAN measurement systems

System	Type	Setups	Measurements	As scheduled
SOD-GN-01	GNSS	1	operational	complete
SOD-RS-01	Sounding Site	3	40	53.33 %
SOD-RS-02	Sounding Site	1	776	91.08 %

1.2 General comments from Lead Centre

1.2.1 General

Two sounding sites have been defined, one for manual launches, one for the auto-launcher, even though both sites are in close proximity.

2 System: GNSS Site SODF (SOD-GN-01)

Info	Value
System name	GNSS Site SODF
Unique GRUAN ID	SOD-GN-01
System type	GNSS (GN - GNSS)
Geographical position	67.4209 °N, 26.3890 °E, 299.7 m
Operated by	FMI | Ilmatieteen laitos
Instrument contact	Kivi, Rigel
Started at	-
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 February 2015. The current dataflow includes manufacturer raw data, converted raw data (RINEX) and instrument logs, containing all equipment changes.

3 System: Radiosonde Launch Site (SOD-RS-01)

Info	Value
System name	Radiosonde Launch Site
Unique GRUAN ID	SOD-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	67.3700 °N, 26.6300 °E, 179.0 m
Operated by	FMI | Ilmatieteen laitos
Instrument contact	Kivi, Rigel
Started at	-
Defined setups	3 (OZONE, RESEARCH, ROUTINE2)
Possible streams	CFH, COBALD, RS41, RS80, RS92

3.1 Lead Centre comments

3.1.1 Dataflow

Dataflow to GRUAN LC is operational since October 2010, with some gaps until April 2012. Dataflow includes: Vaisala RS41-SG, Vaisala RS92-SGP, ECC ozone sonde, CFH water vapour, Intermet IMET-1, and Vaisala RS80. The launches are transmitted using RsLaunchClient.

3.1.2 General

This is the manual launch site, used for ECC ozone sondes, CFH sondes and other manually released research sondes.

3.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCDC

3.2.1 Stream: CFH

CFH		1	1	

3.2.2 Stream: ECC

ECC		40	40	

3.2.3 Stream: IMET-1

IMET-1		1	1	

3.2.4 Stream: RS41

RS41		1	1	
RS41-RAW	001		1	
RS41-EDT	001		1	1

3.2.5 Stream: RS92

RS92		40	40	
RS92-RAW	001		40	
RS92-RAW	002		40	
RS92-EDT	001		40	40
RS92-GDP	002		30	18

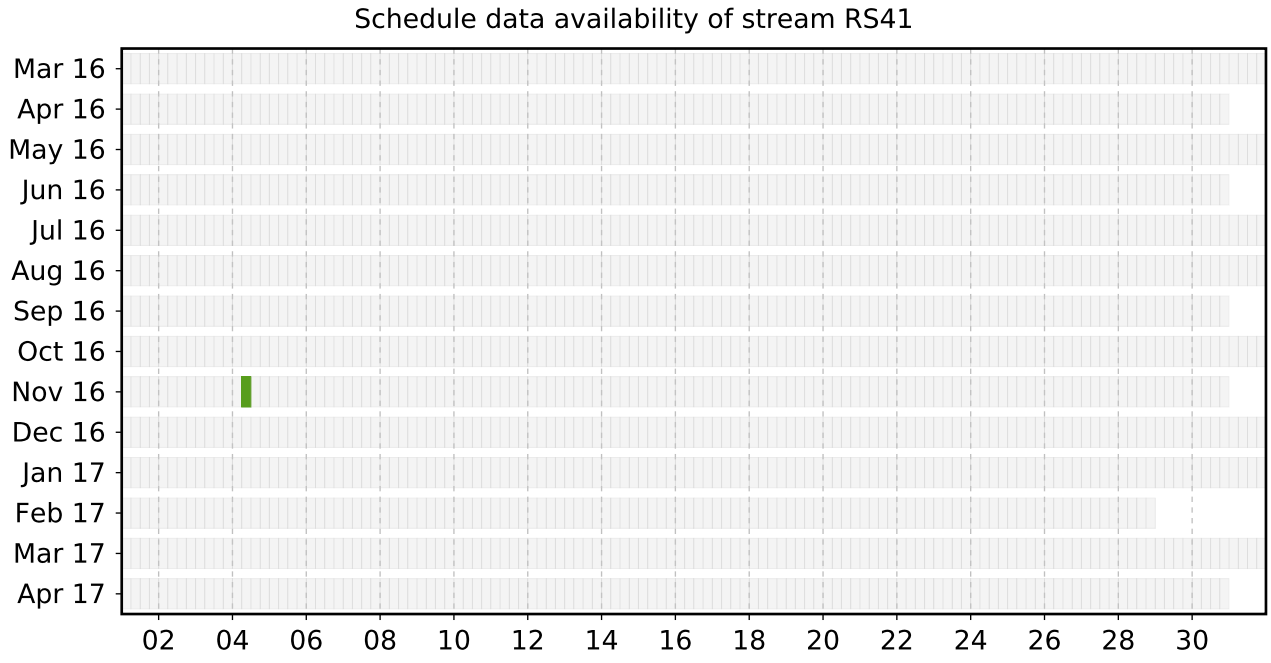
3.3 Data availability of data products

Available (green): All steps of processing have been successfully completed. The data file is available at NCEI (NCDC).

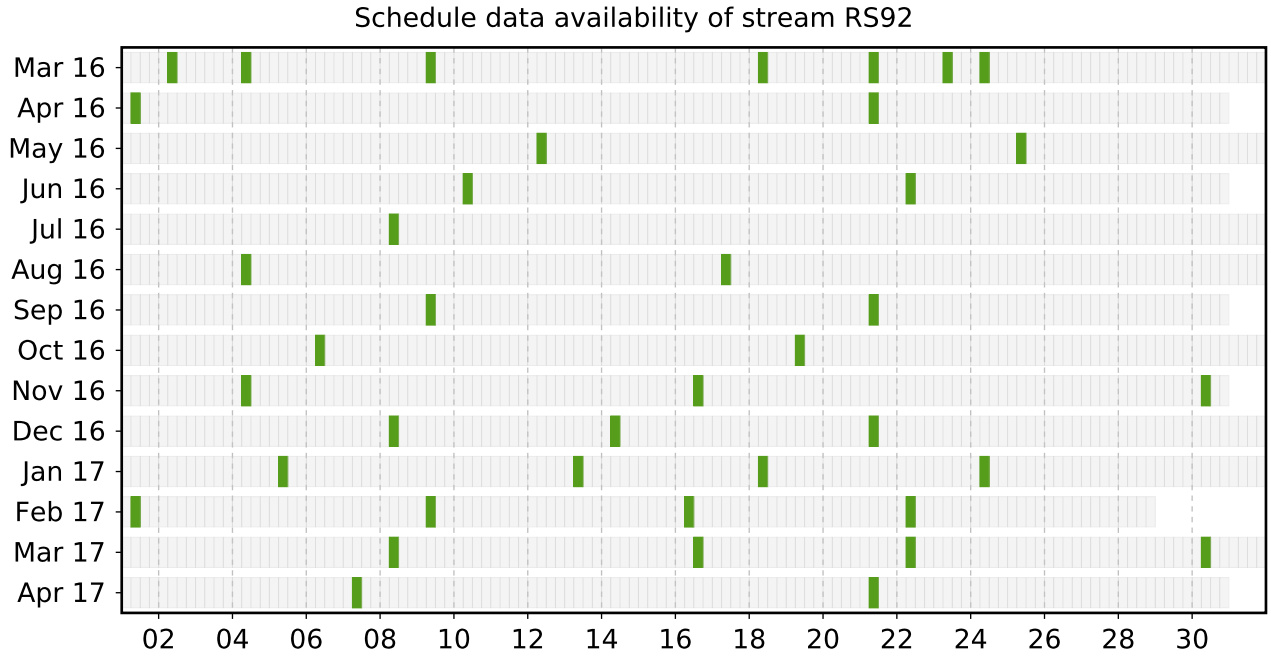
Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing itself (e.g. extracting manufacturer data product or GRUAN data processing) is not done yet, or could not be completed. Reason may be missing raw data, or software bugs.

Failed (red): Raw data file could not be converted to a GRUAN standardized raw data file format (NetCDF). Reason may be a corrupt original raw data file, or software bugs.

3.3.1 Stream: RS41 (Product: RS41-EDT-001)



3.3.2 Stream: RS92 (Product: RS92-EDT-001)

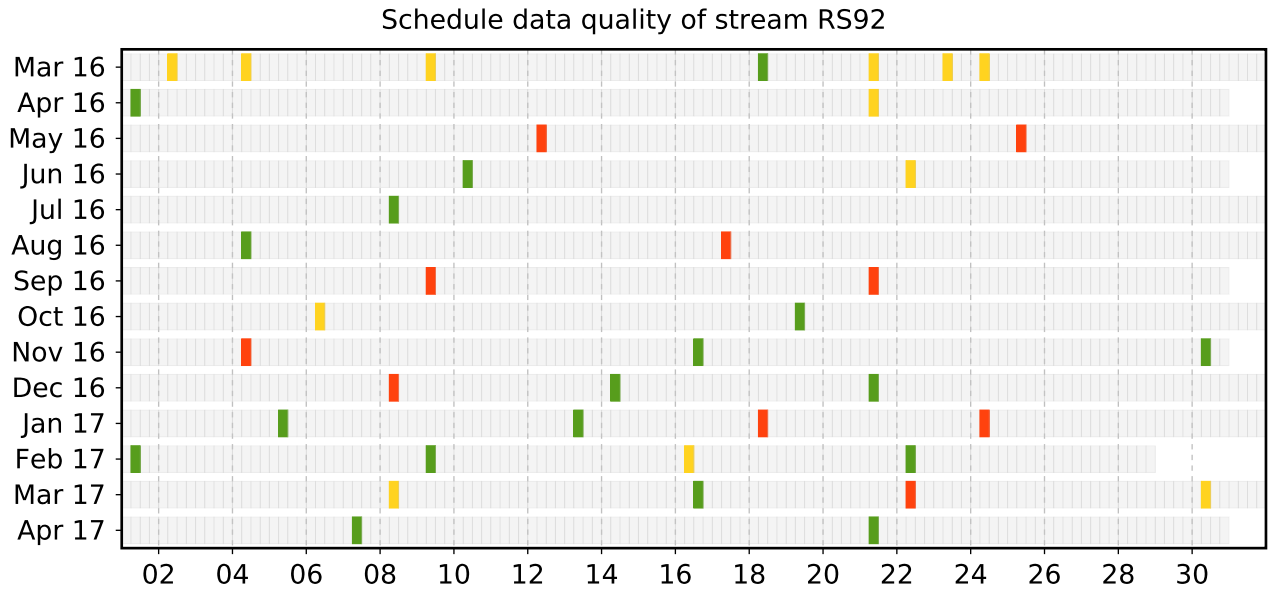


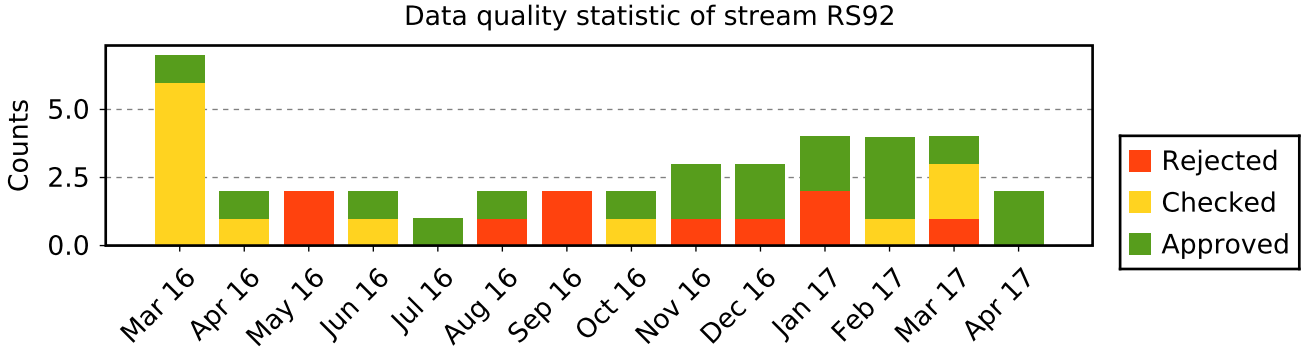
3.4 Data quality of current GRUAN data products

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

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

Mar 16	7	1	6					6	2
Apr 16	2	1	1					1	
May 16	2			2					1
Jun 16	2	1	1					1	
Jul 16	1	1							
Aug 16	2	1		1			1		
Sep 16	2			2			2		
Oct 16	2	1	1					1	
Nov 16	3	2		1					
Dec 16	3	2		1			1		1
Jan 17	4	2		2			1		1
Feb 17	4	3	1					1	3
Mar 17	4	1	2	1			1	2	1
Apr 17	2	2							
	40	**18**	**12**	**10**			**6**	**12**	**9**





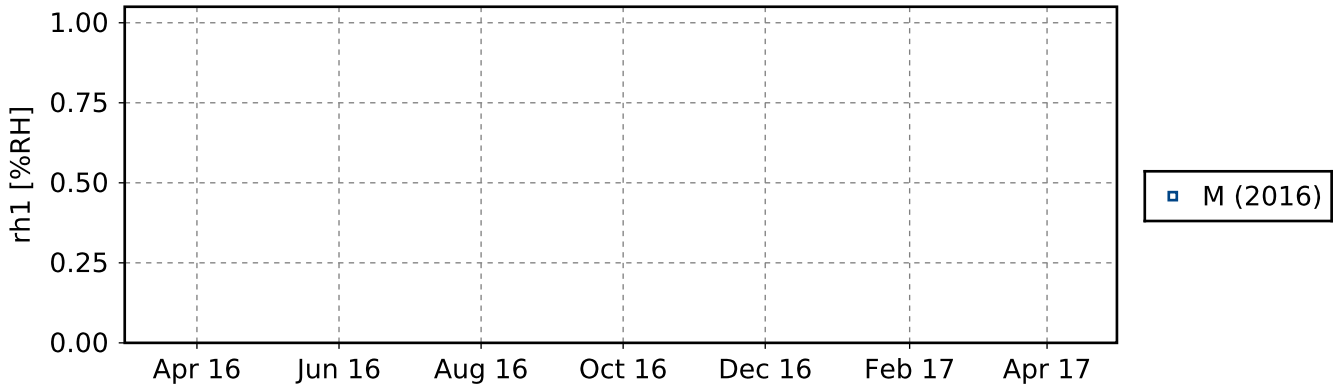
3.5 Instrument combinations of SOD-RS-01

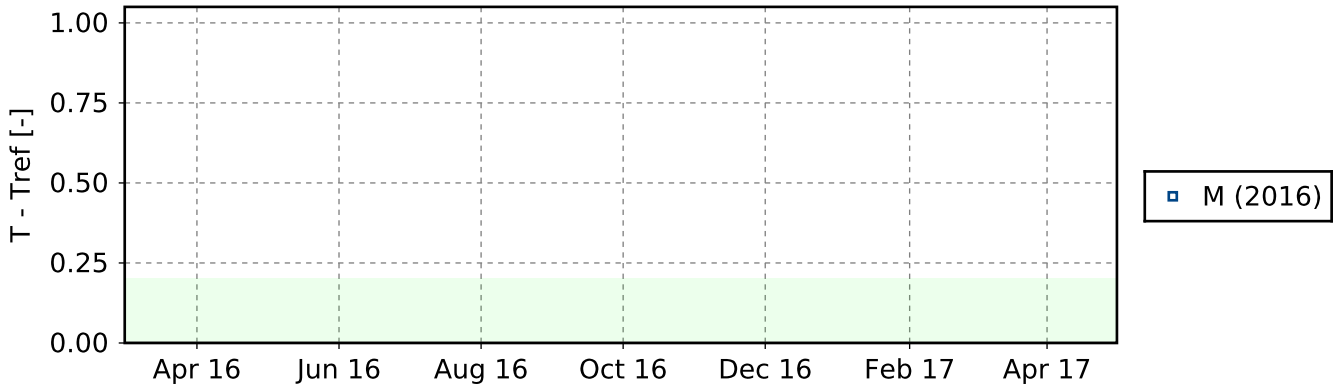
Count	Instrument combination
1	CFH, ECC, IMET-1, RS41, RS92
39	ECC, RS92

3.6 Instrument ground check

3.6.1 Stream: RS41

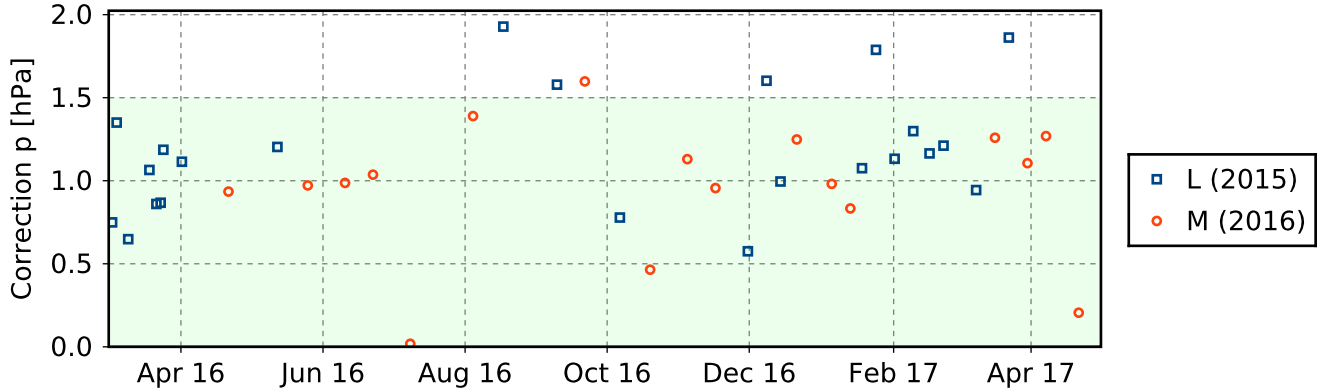
3.6.1.1 GroundCheck: SHC

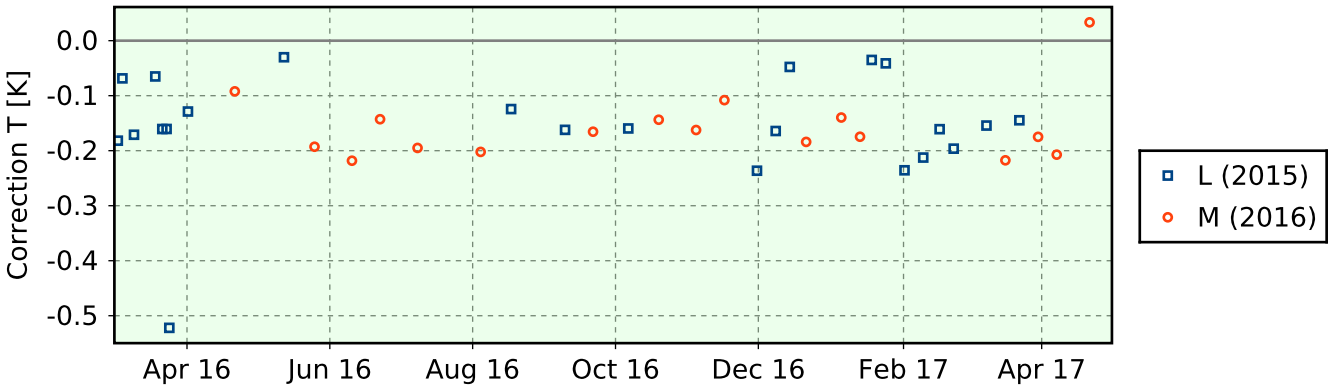


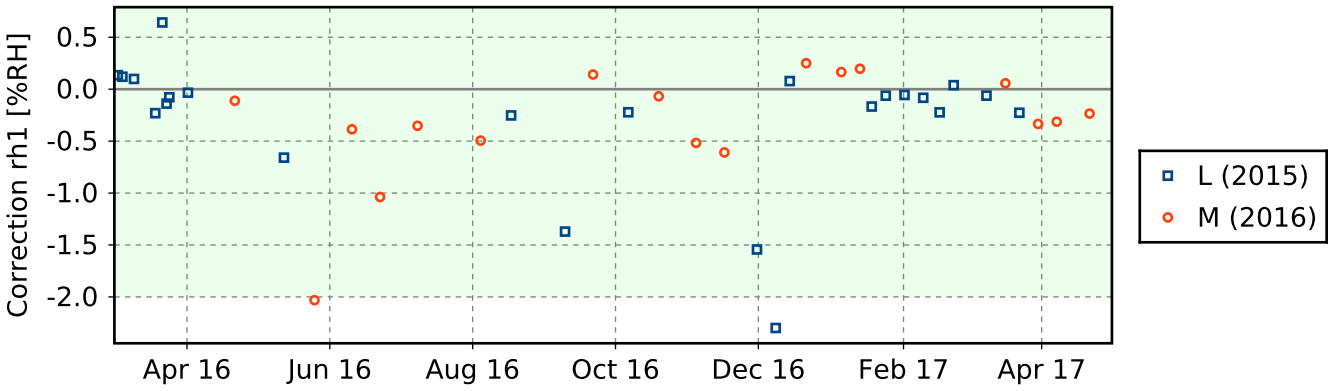


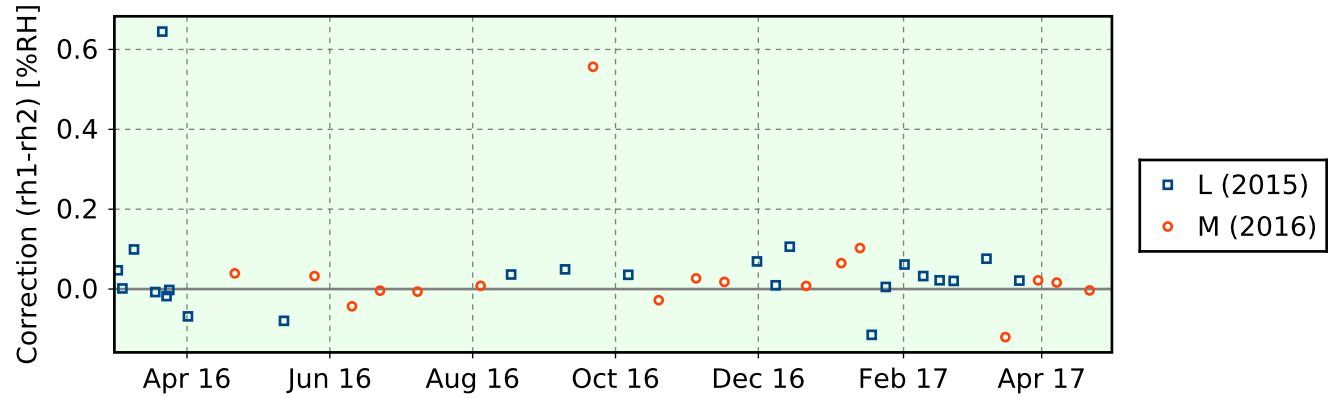
3.6.2 Stream: RS92

3.6.2.1 GroundCheck: GC25

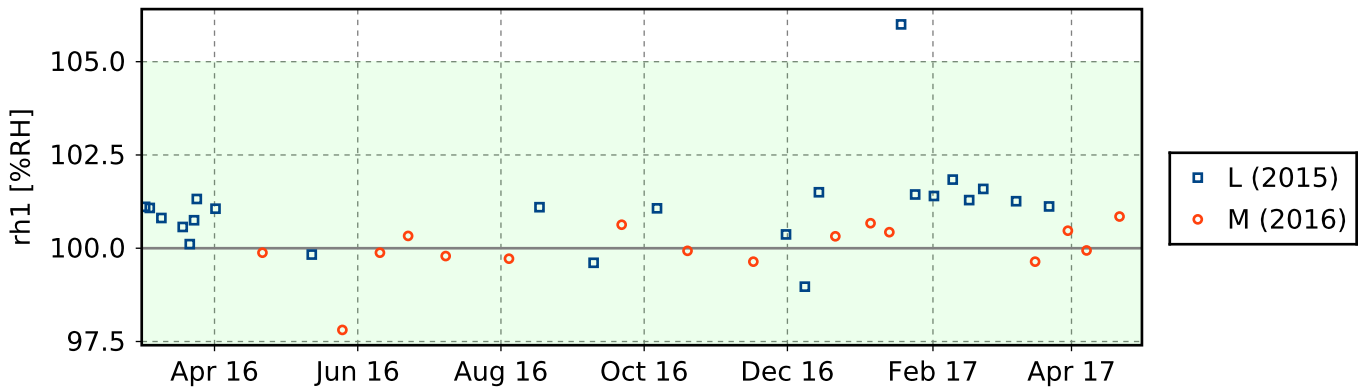


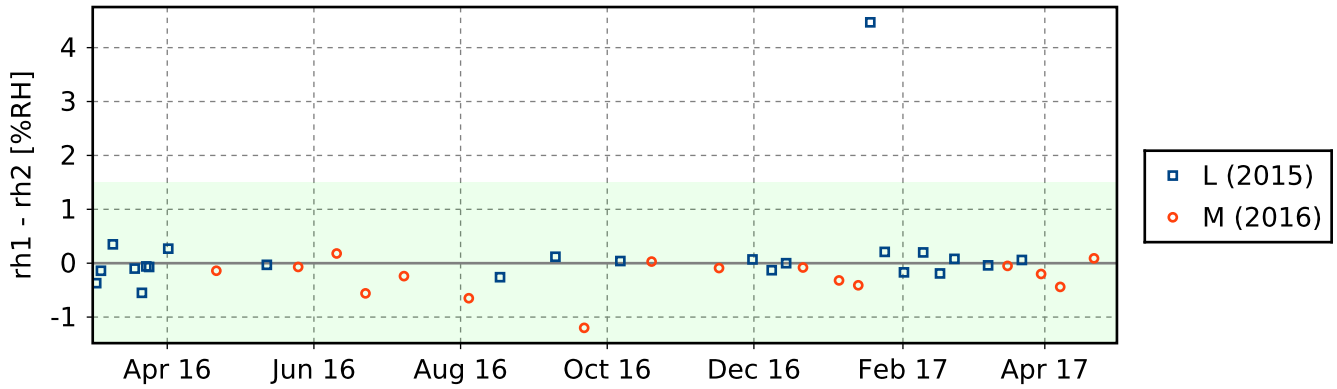


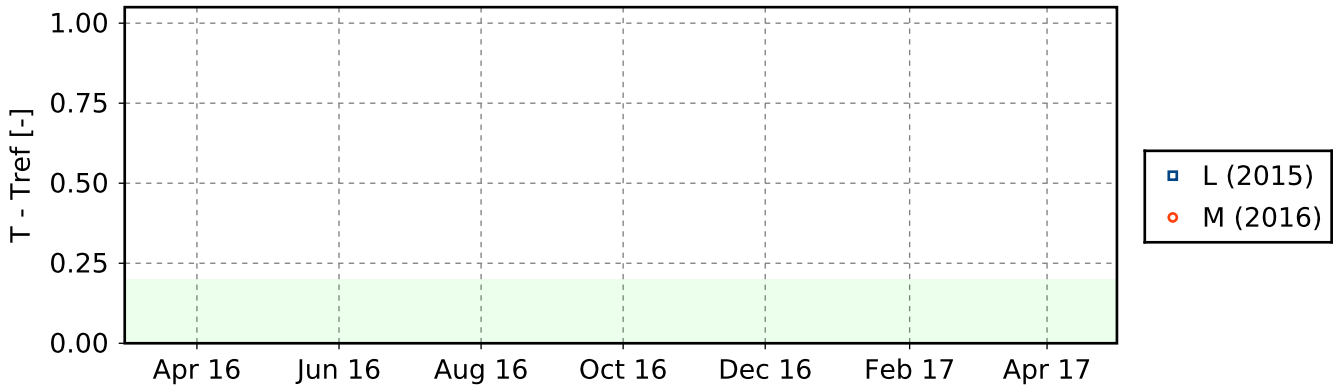




3.6.2.2 GroundCheck: SHC

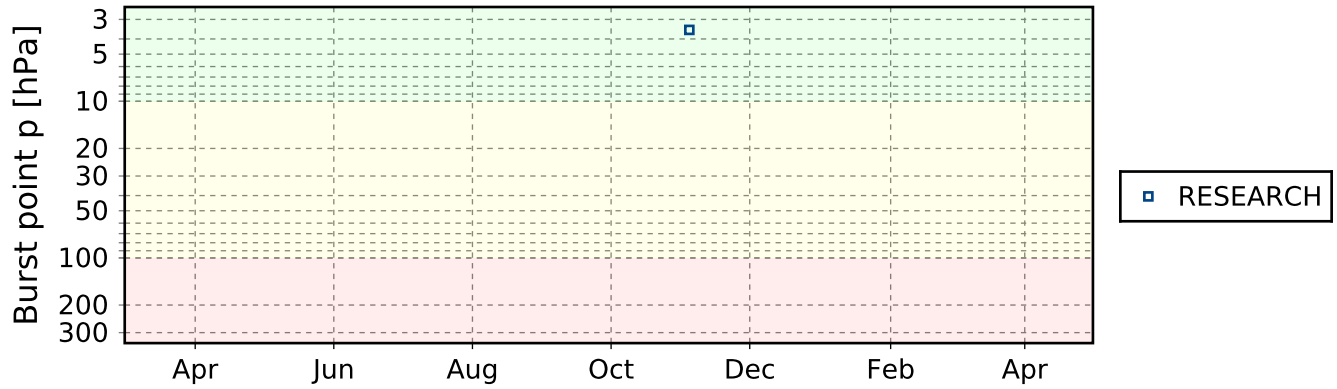




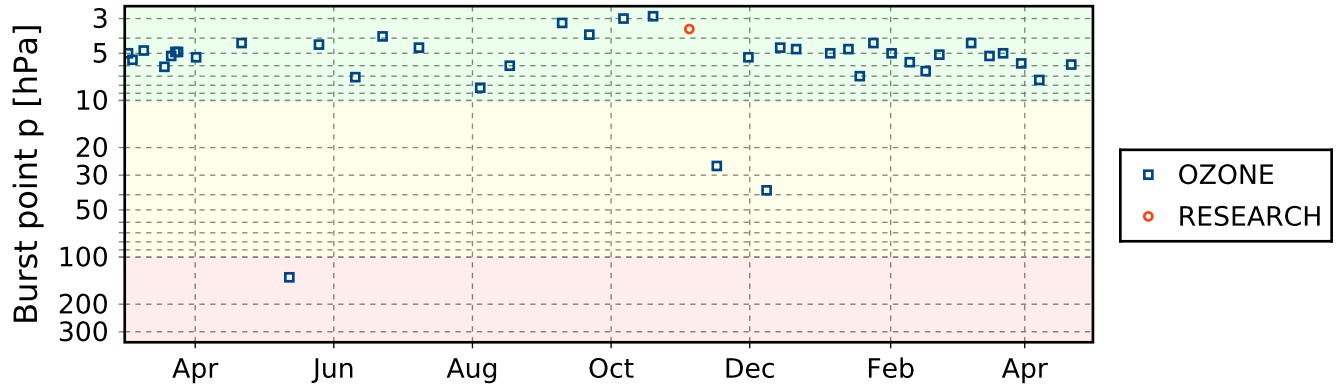


3.7 Measurement events

3.7.1 Stream: RS41



3.7.2 Stream: RS92



4 System: Automatic Radiosonde Launch System (AUTOSONDE)

Info	Value
System name	Automatic Radiosonde Launch System (AUTOSONDE)
Unique GRUAN ID	SOD-RS-02
System type	Sounding Site (RS - Radiosonde)
Geographical position	67.3700 °N, 26.6300 °E, 179.0 m
Operated by	FMI | Ilmatieteen laitos
Instrument contact	Kivi, Rigel
Started at	2008-01-01
Defined setups	1 (ROUTINE)
Possible streams	RS92

4.1 Lead Centre comments

4.1.1 Dataflow

Dataflow to GRUAN LC is operational since January 2011. Currently a weekly delivery to GRUAN LC is implemented.

4.1.2 General

This is the auto-launcher data stream.

4.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCDC

4.2.1 Stream: RS92

RS92		776	776	
RS92-RAW	001		774	
RS92-RAW	002		774	
RS92-EDT	001		773	773
RS92-GDP	002		683	385

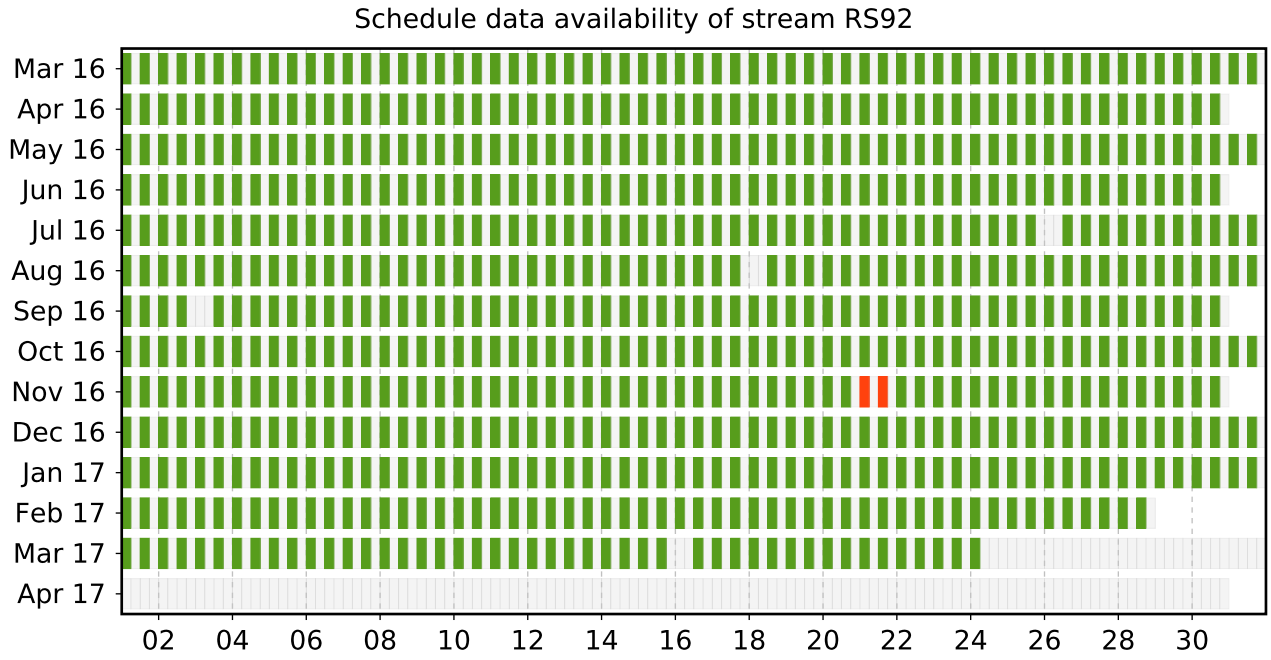
4.3 Data availability of data products

Available (green): All steps of processing have been successfully completed. The data file is available at NCEI (NCDC).

Unprocessed (yellow): The raw data file has been successfully converted to a GRUAN standardized raw data file format (NetCDF). The processing itself (e.g. extracting manufacturer data product or GRUAN data processing) is not done yet, or could not be completed. Reason may be missing raw data, or software bugs.

Failed (red): Raw data file could not be converted to a GRUAN standardized raw data file format (NetCDF). Reason may be a corrupt original raw data file, or software bugs.

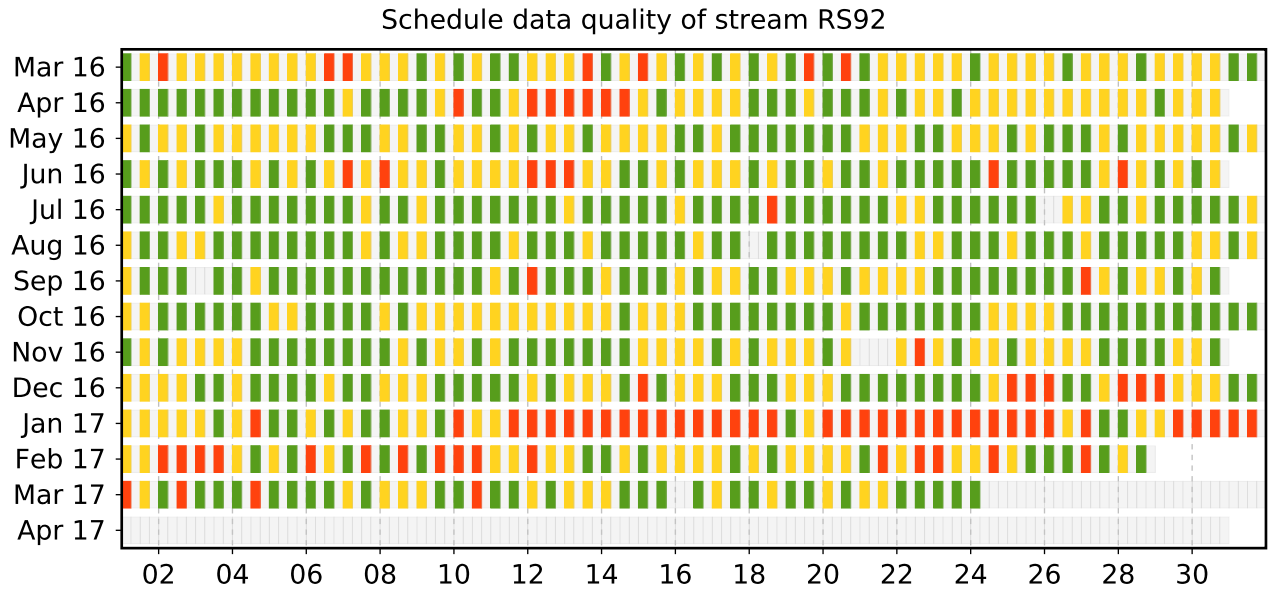
4.3.1 Stream: RS92 (Product: RS92-EDT-001)

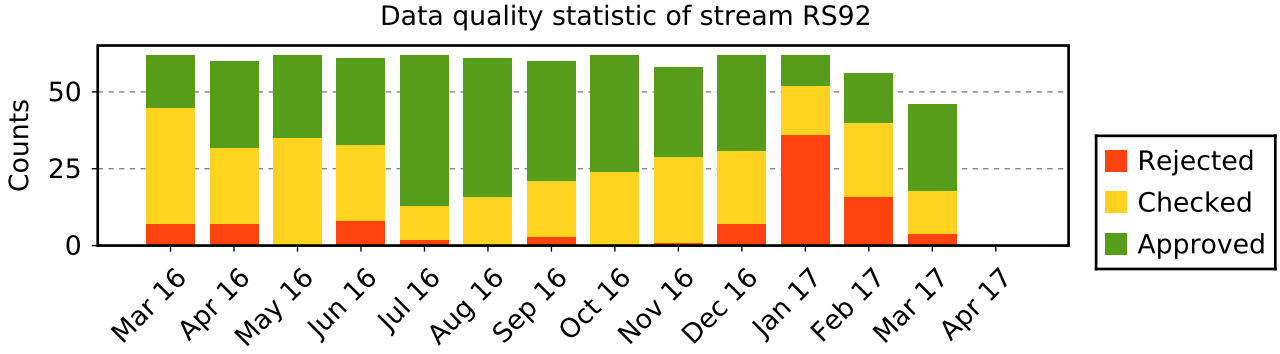


4.4 Data quality of current GRUAN data products

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

Month	Count	GRUAN Data Quality			Issues				
		Approved	Checked	Rejected	Meta-data	Process.	Press	Temp	RH
Mar 16	62	17	38	7			9	19	27
Apr 16	60	28	25	7			7	10	17
May 16	62	27	35					12	25
Jun 16	61	28	25	8			9	9	17
Jul 16	62	49	11	2			1		10
Aug 16	61	45	16				1		15
Sep 16	60	39	18	3			1		18
Oct 16	62	38	24				2		22
Nov 16	58	29	28	1			2		28
Dec 16	62	31	24	7			7		24
Jan 17	62	10	16	36			39		15
Feb 17	56	16	24	16			25		21
Mar 17	46	28	14	4			6	1	12
Apr 17									
	774	**385**	**298**	**91**			**109**	**51**	**251**





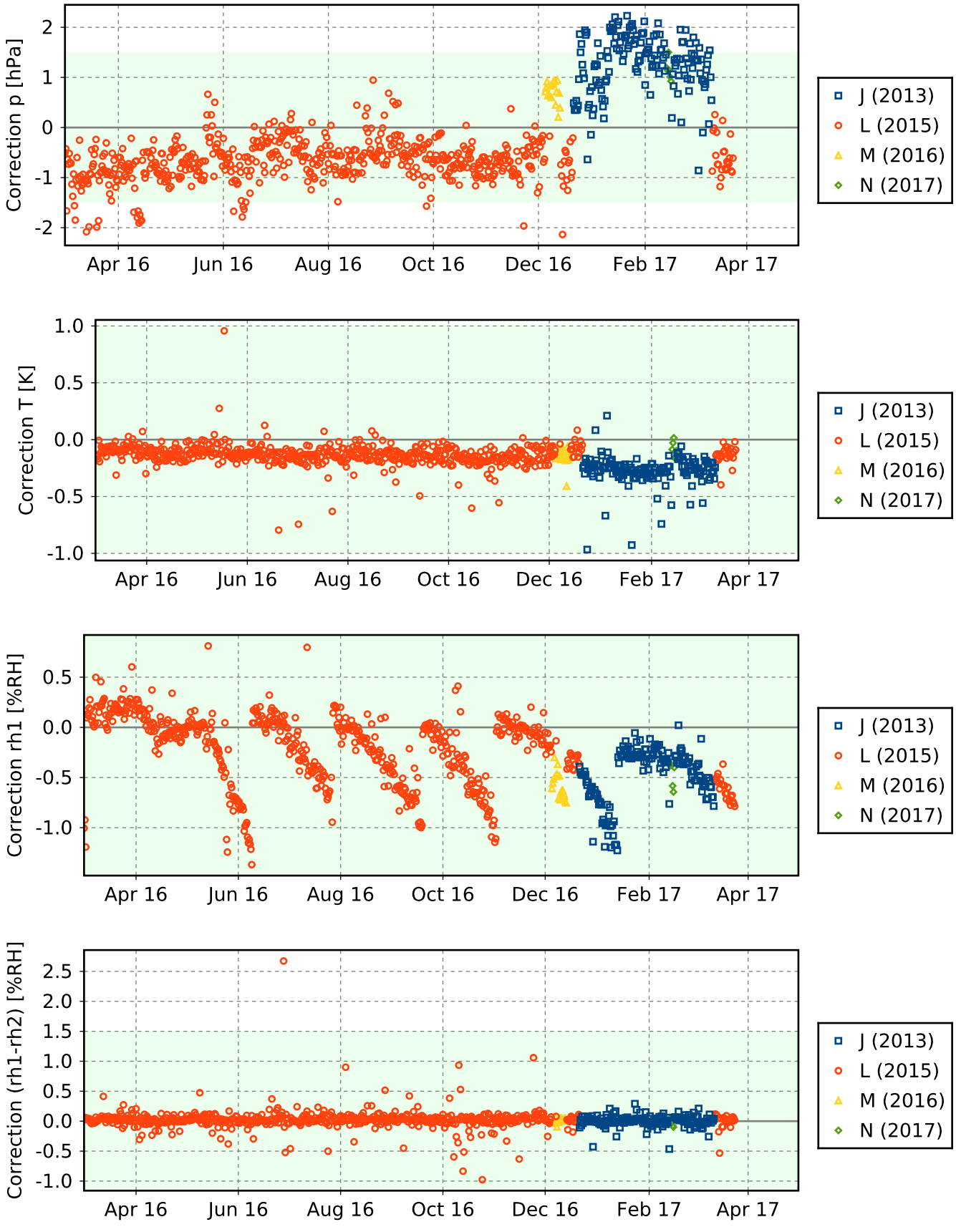
4.5 Instrument combinations of SOD-RS-02

Count	Instrument combination
776	RS92

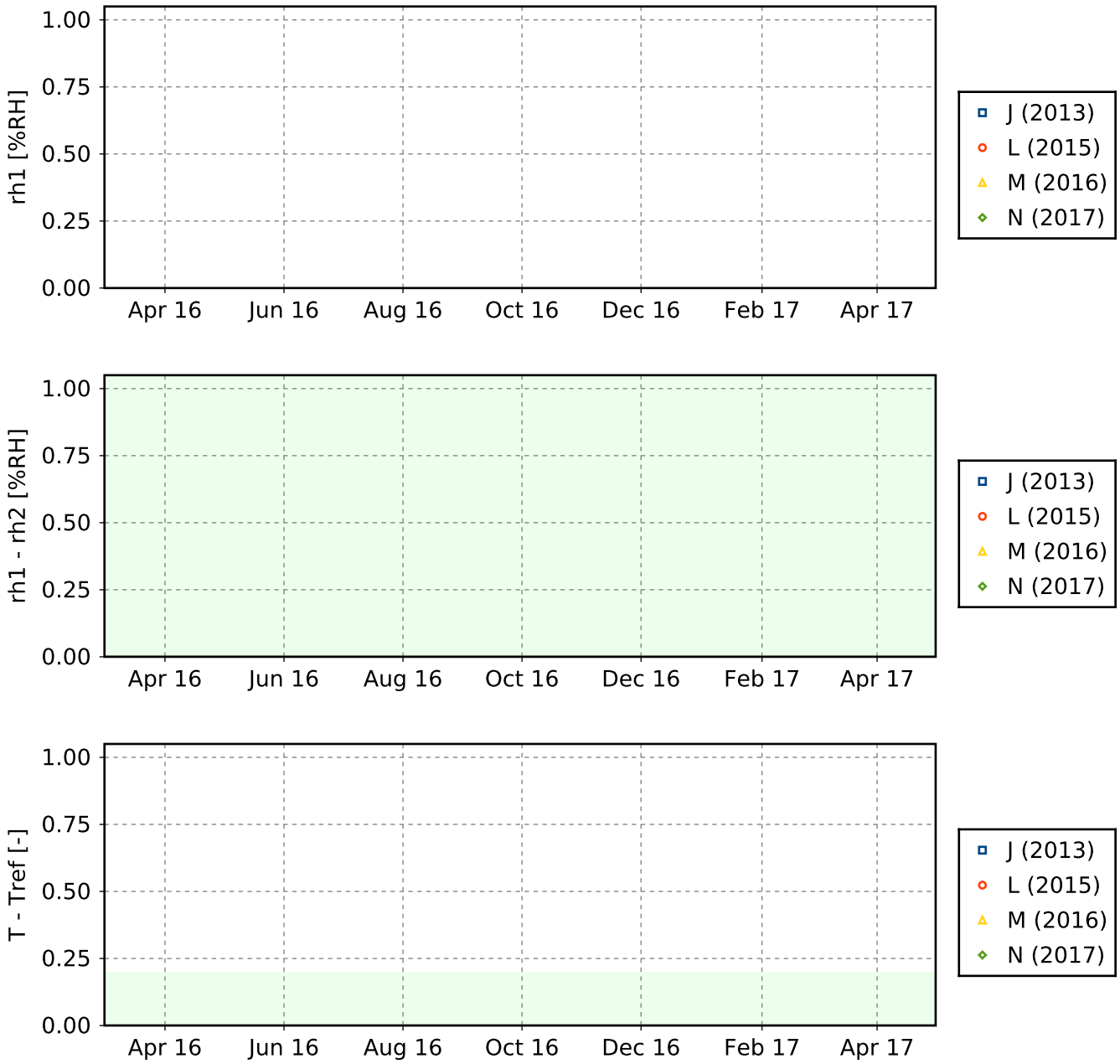
4.6 Instrument ground check

4.6.1 Stream: RS92

4.6.1.1 GroundCheck: GC25



4.6.1.2 GroundCheck: SHC



4.7 Measurement events

4.7.1 Stream: RS92