



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

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**7th GRUAN Implementation-  
Coordination Meeting (ICM-7)**

Session 8

Matera, Italy

23 February – 27 February 2015

## GRUAN Station Report for Sodankylä

*(Submitted by Rigel Kivi)*

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### **Summary and Purpose of Document**

Report from the GRUAN station Sodankylä for the period Mar 2014 to Jan 2015.

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## GRUAN Station Report for Sodankylä

Reporting for the period Mar 2014 to Jan 2015

Date: 31-Jan-2015

Primary author: Rigel Kivi (email:rigel.kivi@fmi.fi)

### **Overview**

Sounding measurement programs are currently contributing to GRUAN data streams. At Sodankylä we have receiving systems for both manual and automated radiosoundings. Altogether 61 manual soundings and 722 autosonde launcher soundings have been submitted using the GRUAN operating procedures. The manual sounding dataflow includes Vaisala RS92-SGP, ECC ozone sonde, CFH water vapor, Internet IMET-1, and Vaisala RS80. The data have been transmitted using the RsLaunchClient software. Preparations have been made to start the GNSS dataflow.

### **Change and change management**

No major changes have taken place during the reporting period. RS92 and RS41 comparison flights were made at Sodankylä and at some other locations. RS41 showed improvements for humidity and temperature measurements compared to the RS92. In addition we were able to test the new interface for the RS41/ozonesonde flights. Also tests with the CFH reference were made.

### **Resourcing**

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

### **Site assessment and certification**

Our site is not certified yet, we have submitted the application in late 2014. The review process is ongoing.

### **GRUAN related research**

GRUAN research in our case is related to the GATNDOR and the Radiosonde task team.

### **WG-GRUAN interface**

Letter of support would be useful.

### **Items for ICM-7 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, we are interested to include the GNSS dataflow.

### **Future plans**

Over the coming year we expect to continue the site certification process, improve some of the instrumentation at the site and participate in the GRUAN task team activities.





# GRUAN Station Report for Sodankyla (SOD), 2014

Reported time range is Nov 2013 to Oct 2014

Created by the Lead Centre

Version from 2015-02-11

## 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 7, 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	0	0	not scheduled
SOD-RS-01	Sounding Site	3	61	93.85 %
SOD-RS-02	Sounding Site	1	722	98.90 %

### 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.

It is strongly recommended that a fixed data delivery schedule for the autosonde launcher soundings is implemented.

It is strongly recommended that the site uses a manufacturer independent ground check for the RS92 radiosonde.

## 2 System: GNSS Site SODA (SOD-GN-01)

<b>Info</b>	<b>Value</b>
System name	GNSS Site SODA
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	-
Possible streams	-

### 2.1 Lead Centre comments

#### 2.1.1 Dataflow

No GNSS dataflow to GRUAN LC as yet.

### 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, 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 RS92-SGP, ECC ozone sonde, CFH water vapour, Internet IMET-1, and Vaisala RS80. The launches are promptly transmitted using RsLaunchClient.

##### 3.1.2 General

This is the manual launch site, and is 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
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##### 3.2.1 Stream: CFH

CFH		6	6	
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##### 3.2.2 Stream: ECC

ECC		61	61	
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##### 3.2.3 Stream: IMET1

IMET1		3	3	
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##### 3.2.4 Stream: RS92

RS92		61	61	
RS92-RAW	001		61	
RS92-GDP	001		10	
RS92-GDP	002		51	31

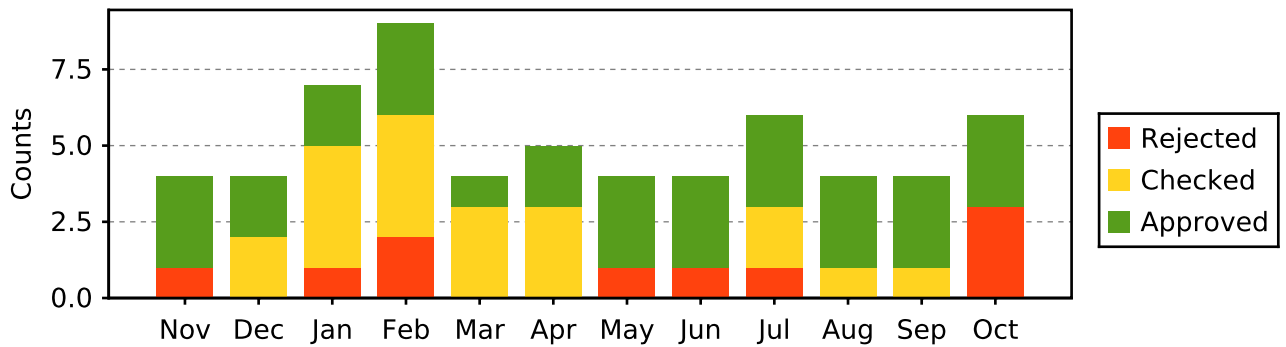
#### 3.3 Data quality of current GRUAN data products

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

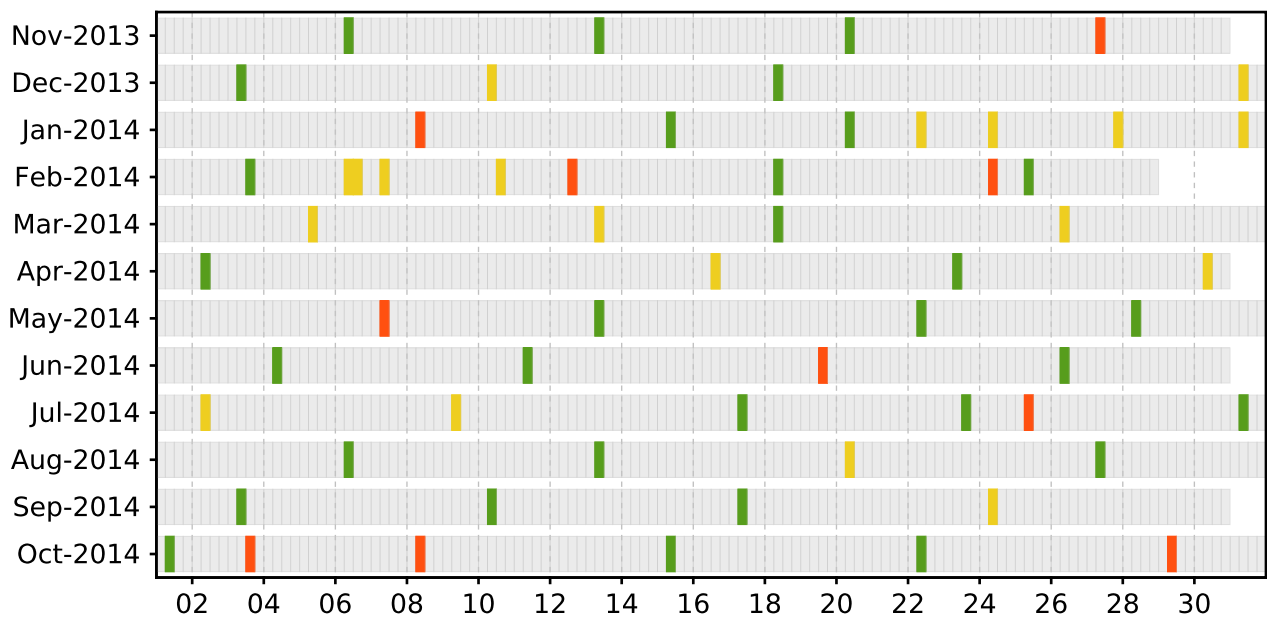
3.3.1 Stream: RS92 (Product: RS92-GDP-002)

Nov 13	4	3		1						
Dec 13	4	2	2							2
Jan 14	7	2	4	1			3			4
Feb 14	9	3	4	2			2			3
Mar 14	4	1	3					3		3
Apr 14	5	2	3					2		1
May 14	4	3		1			1			
Jun 14	4	3		1						
Jul 14	6	3	2	1				1		1
Aug 14	4	3	1					1		
Sep 14	4	3	1							1
Oct 14	6	3		3			3			2
<b>Total</b>	<b>61</b>	<b>31</b>	<b>20</b>	<b>10</b>			<b>9</b>	<b>7</b>		<b>17</b>

Data quality statistic of stream RS92



Schedule data quality of stream RS92



3.4 Instrument combinations of SOD-RS-01

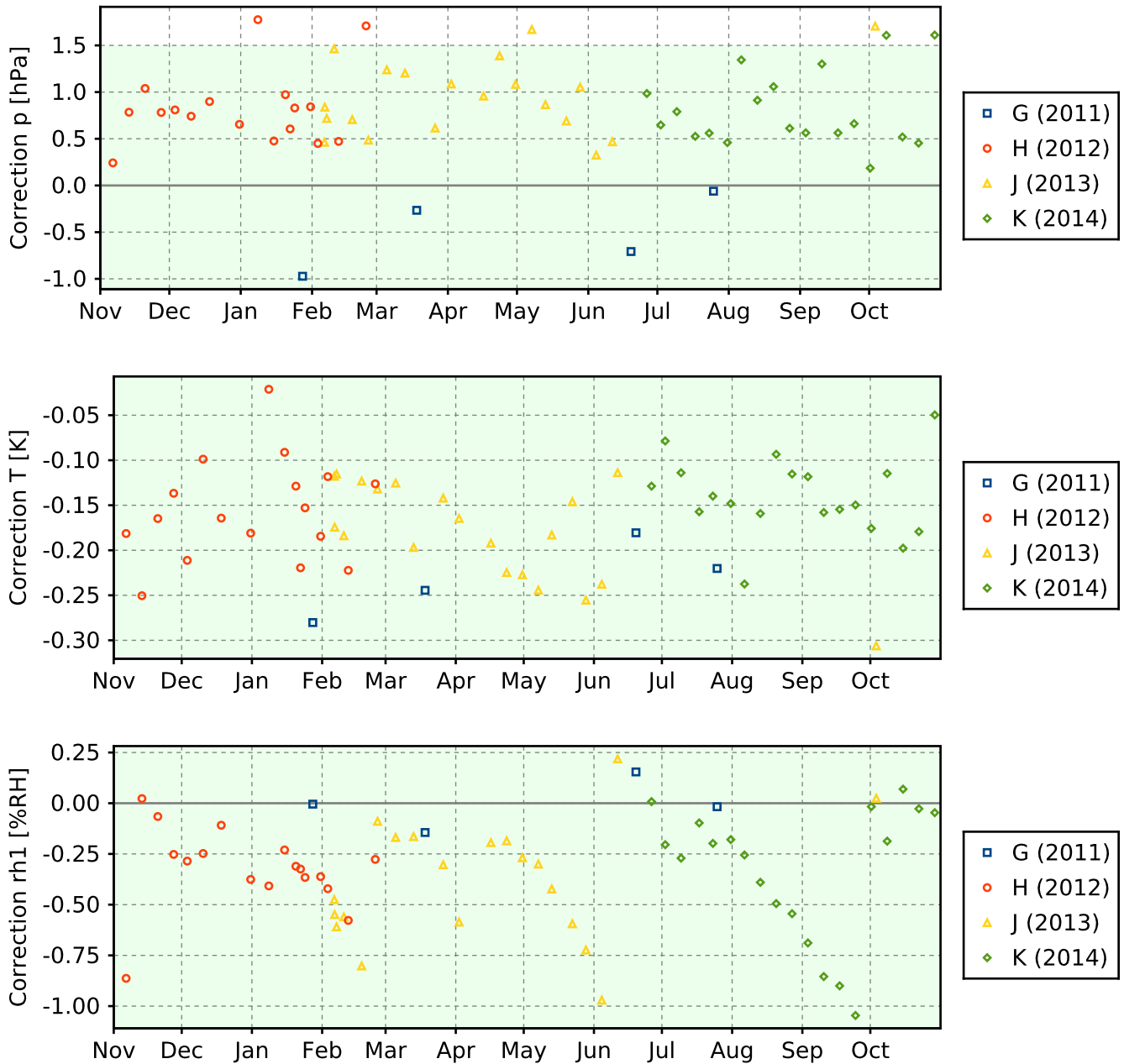


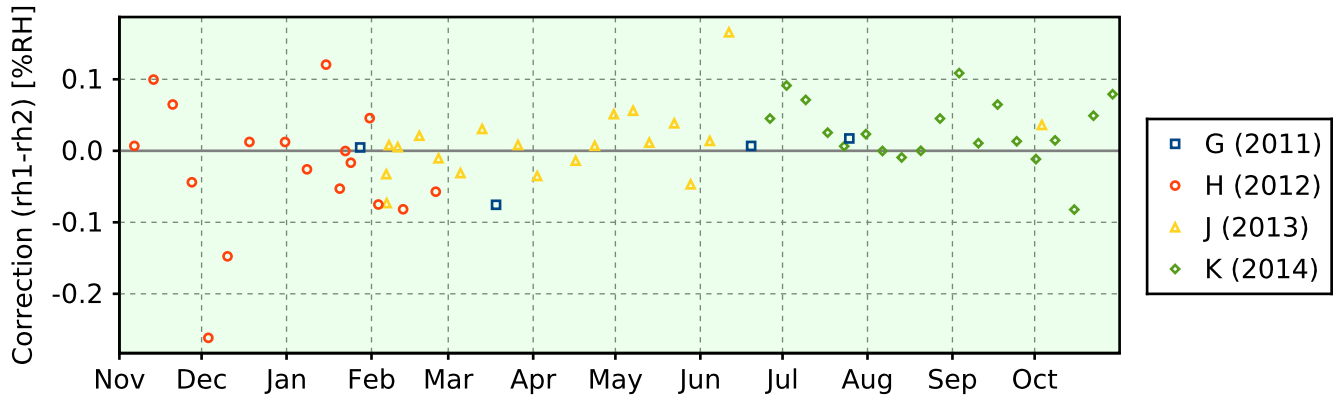
Count	Instrument combination
3	CFH, ECC, IMET1, RS92
3	CFH, ECC, RS92
55	ECC, RS92

### 3.5 Instrument ground check

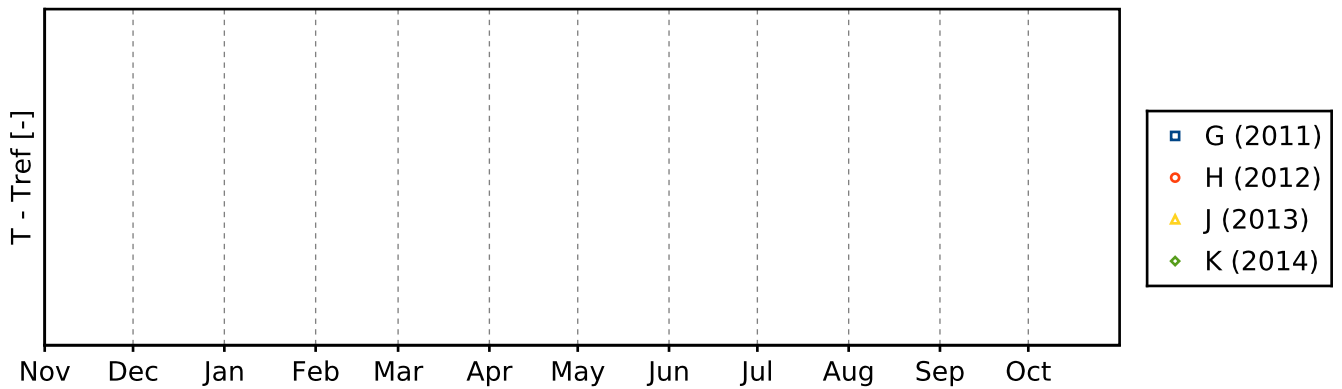
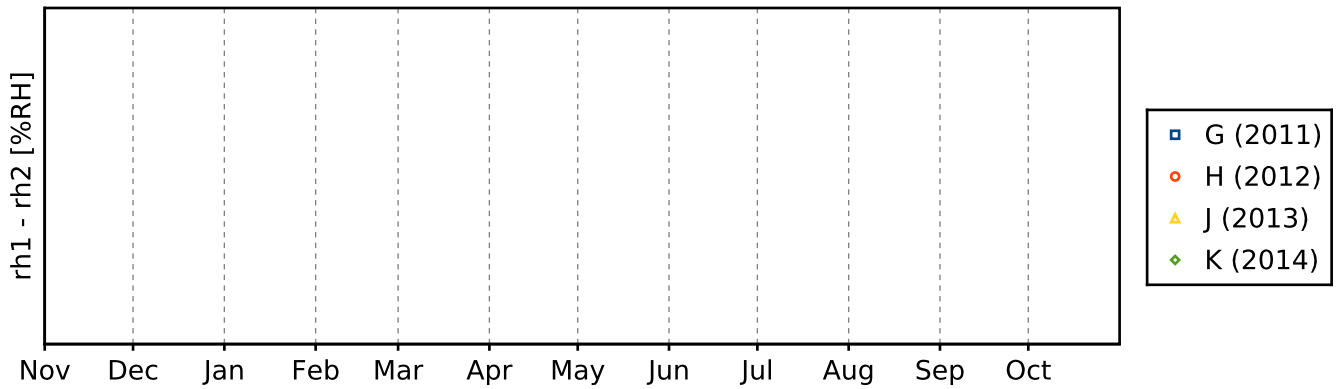
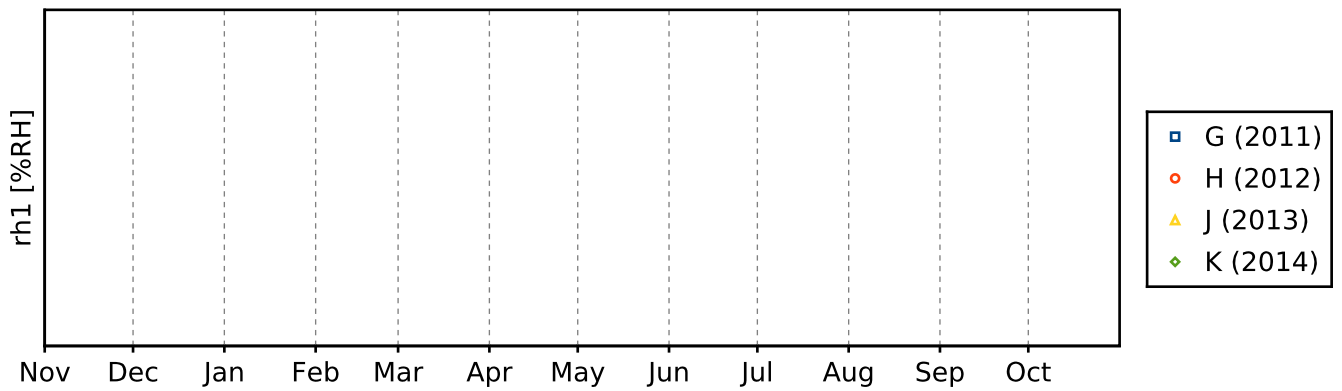
#### 3.5.1 Stream: RS92

##### 3.5.1.1 GroundCheck: GC25



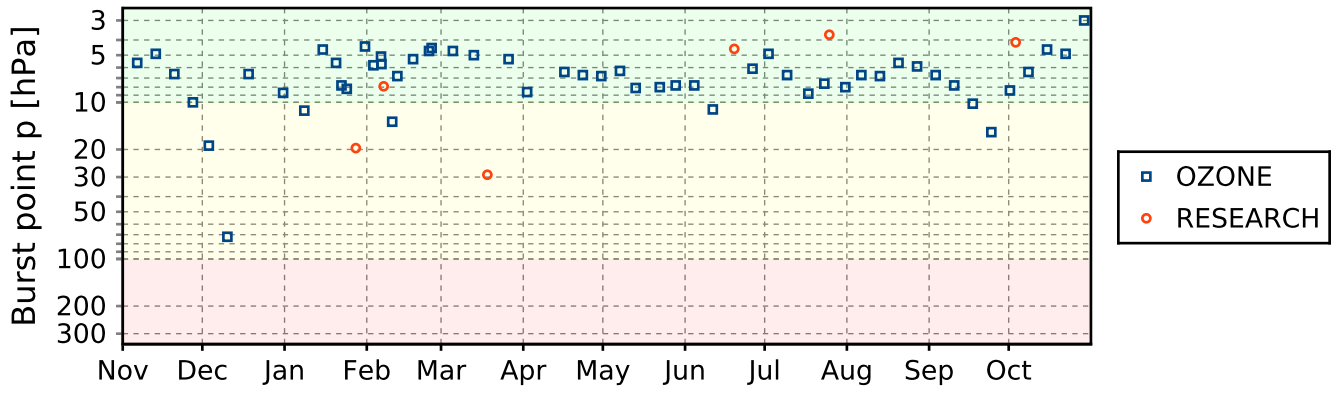


3.5.1.2 GroundCheck: SHC



3.6 Measurement events

3.6.1 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 only sporadic delivery to GRUAN LC is possible. An improvement of the delivery schedule needs to be worked out in cooperation with the GRUAN LC (e.g. monthly delivery).

#### 4.1.2 Data quality

Only few data processing issues (corrupt files or unknown issues).

One third of all measurements pass GRUAN Quality Control routines with a 'checked' label, largely due to uncertainty inconsistencies in pressure and humidity.

GC25 ground check corrections are within expected limits.

The use of a manufacturers independent ground check (e.g. SHC) is highly recommended.

#### 4.1.3 General

This is the auto-launcher data stream.

### 4.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCDC
RS92		722	722	
RS92-RAW	001		722	
RS92-GDP	002		704	379

#### 4.2.1 Stream: RS92

RS92		722	722	
RS92-RAW	001		722	
RS92-GDP	002		704	379

### 4.3 Data quality of current GRUAN data products

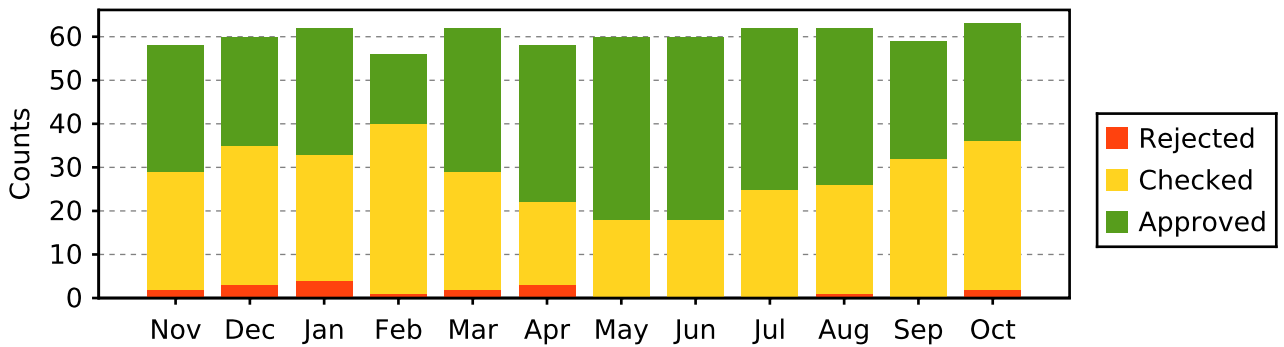
Month	Count	GRUAN Data Quality			Issues				
		Approved	Checked	Rejected	Meta-data	Process.	Press	Temp	RH

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

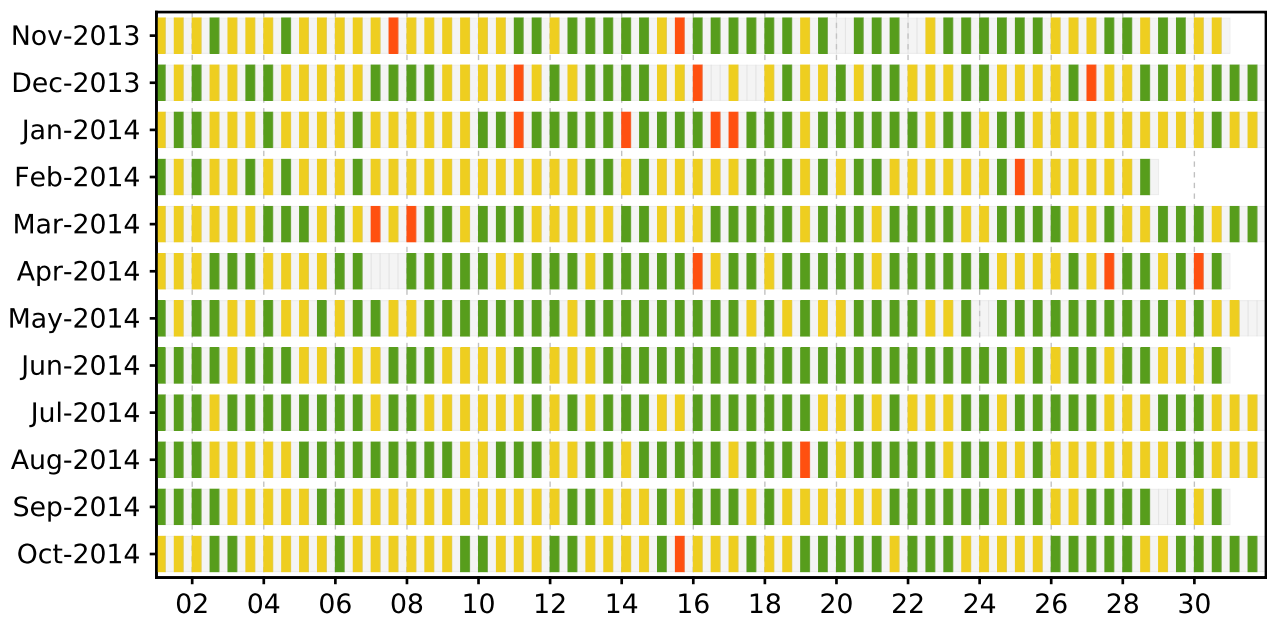
4.3.1 Stream: RS92 (Product: RS92-GDP-002)

Nov 13	58	29	27	2			3		26
Dec 13	60	25	32	3					32
Jan 14	62	29	29	4					29
Feb 14	56	16	39	1					39
Mar 14	62	33	27	2			1		26
Apr 14	58	36	19	3			2		19
May 14	60	42	18						18
Jun 14	60	42	18				2		17
Jul 14	62	37	25						25
Aug 14	62	36	25	1					25
Sep 14	59	27	32						32
Oct 14	63	27	34	2			3		34
	<b>722</b>	<b>379</b>	<b>325</b>	<b>18</b>			<b>11</b>		<b>322</b>

Data quality statistic of stream RS92



Schedule data quality of stream RS92



4.4 Instrument combinations of SOD-RS-02

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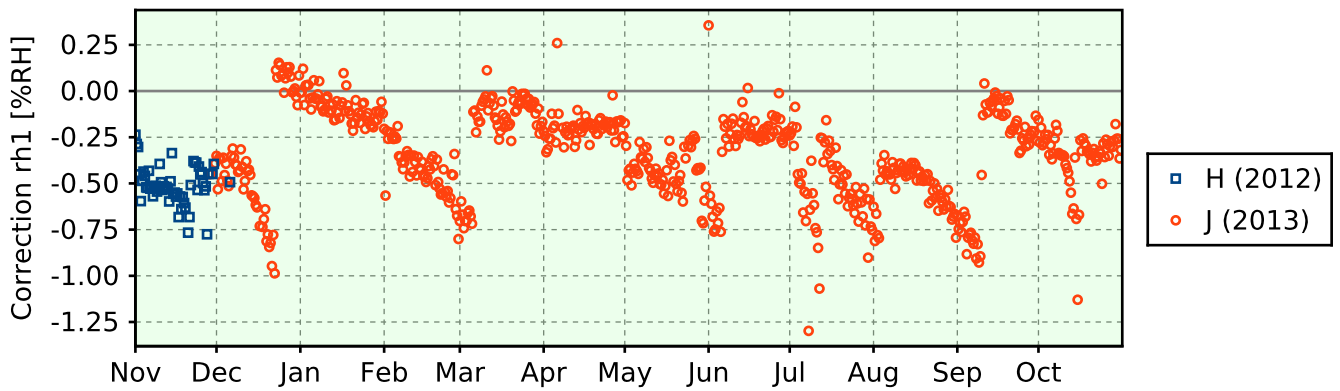
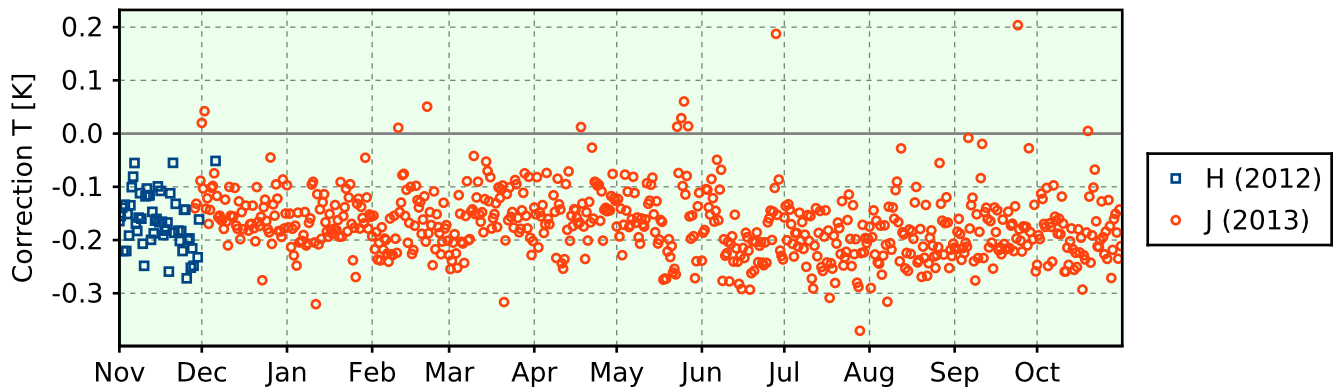
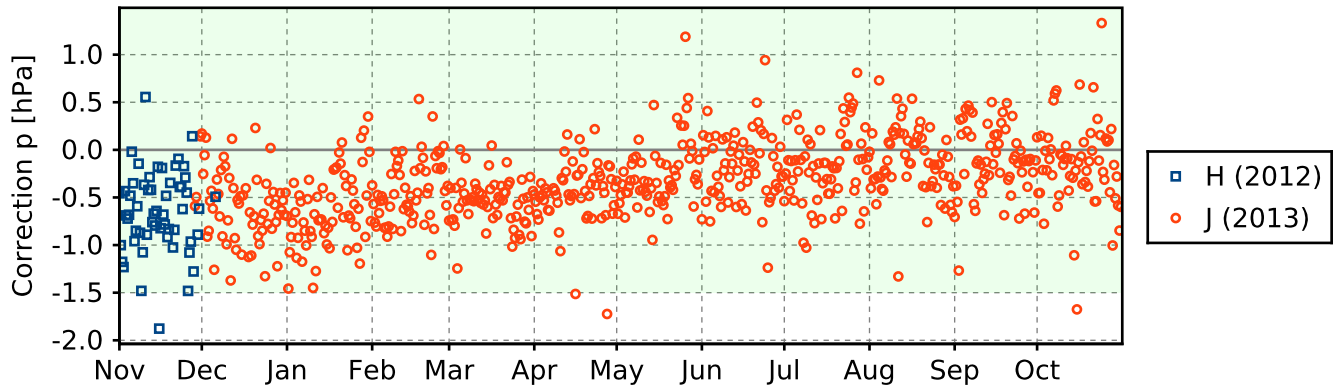
Count	Instrument combination
722	RS92

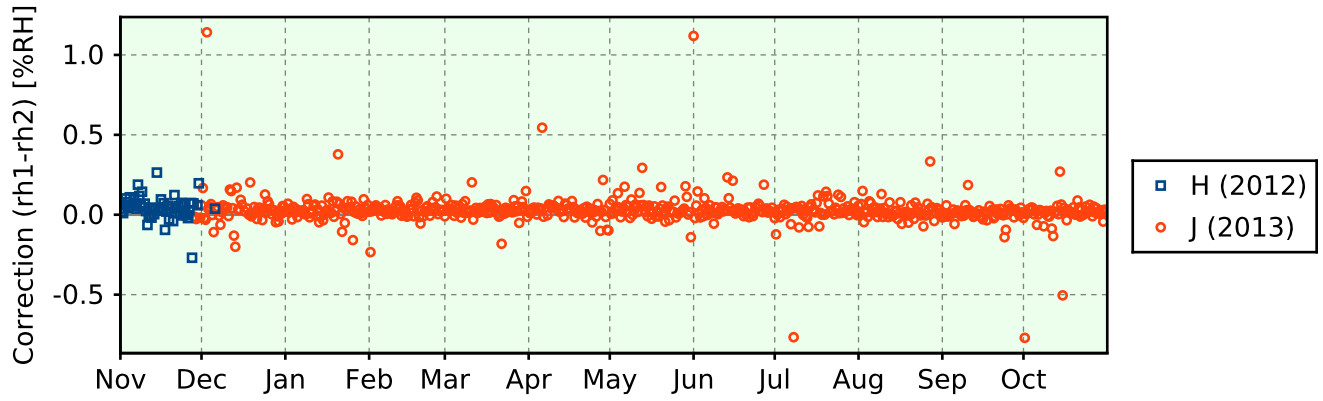
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## 4.5 Instrument ground check

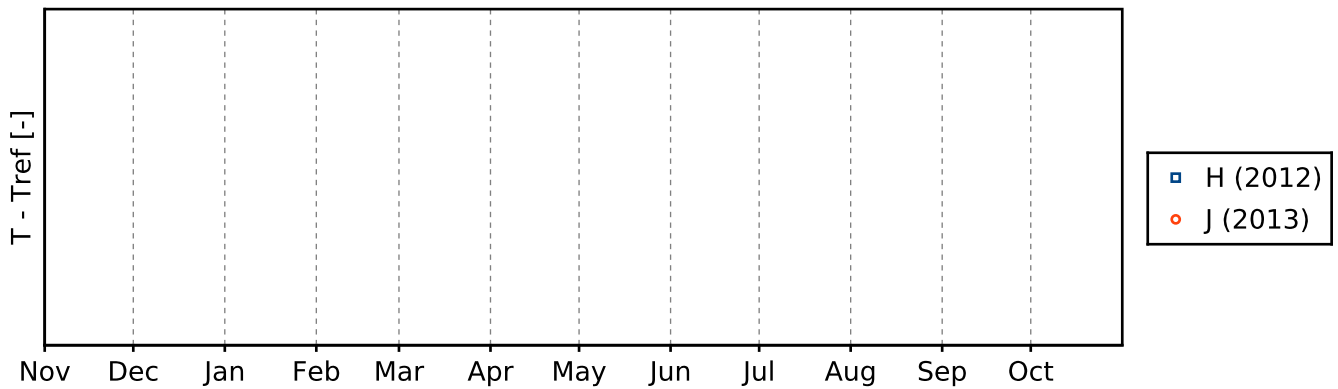
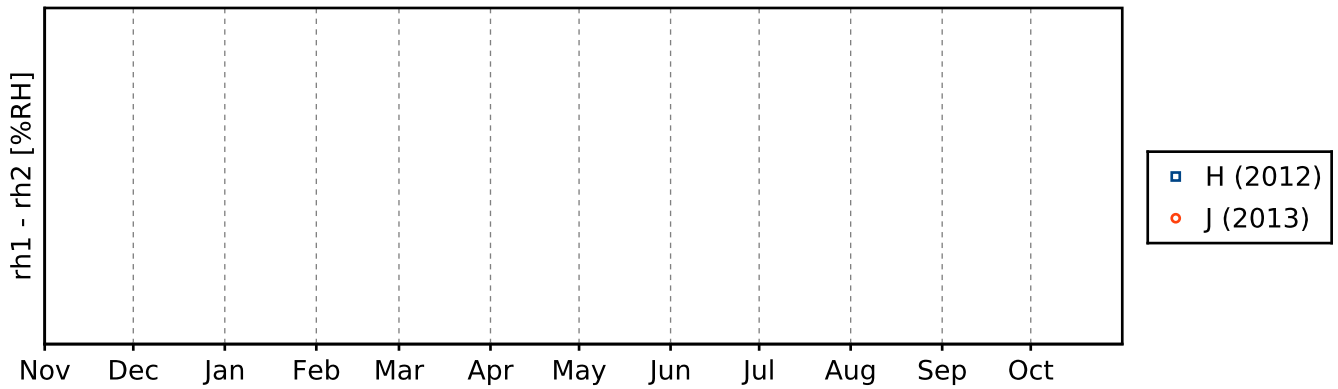
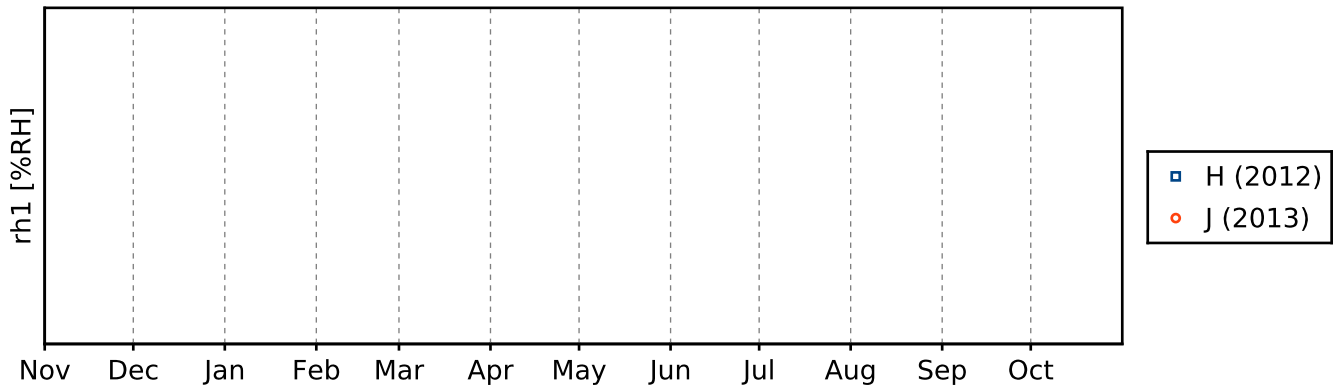
### 4.5.1 Stream: RS92

#### 4.5.1.1 GroundCheck: GC25





4.5.1.2 GroundCheck: SHC



4.6 Measurement events

4.6.1 Stream: RS92

