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GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)

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6th GRUAN Implementation-Coordination Meeting (ICM-6)
Greenbelt, USA
10 March – 14 March 2014

Session 6

GRUAN Station Report for Sodankylä

(Submitted by Rigel Kivi)

Summary and Purpose of Document

Report from the GRUAN station Sodankylä for the period Feb 2013 to Feb 2014.

GRUAN Station Report for Sodankylä

Reporting for the period Feb 2013 to Feb 2014
Date: 04-Mar-2014
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 soundings. 52 manual soundings and 690 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, Intermet IMET-1, and Vaisala RS80. The data have been transmitted using RsLaunchClient. We plan to include GNSS dataflow in the future.

Change and change management
No major changes have taken place during the reporting period. DigiCORA sounding software was upgraded on May 8, 2013. New software version 3.66 now replaces version 3.64 software for all setups (manual and automated sonde system). 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. 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 expect that the site will be ready to go through the process within a year or two.

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

WG-GRUAN interface
Letters of support will be useful, maybe this can be combined with the certification process.

Items for ICM-6 plenary discussions
Change management issues, for example in case of RS92/RS41. Also external funding possibilities would be useful to discuss with GRUAN partners. Finally, we are interested to include GNSS dataflow.

Future plans
Over the coming year we expect to submit the site certification application, improve some of the instrumentation at the site and participate in the GRUAN task team activities.

GRUAN Station Report for Sodankyla (SOD), 2013

Reported time range is Nov 2012 to Oct 2013
Created by the Lead Centre
Version from 2014-02-20

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	2	52	98.11 %
SOD-RS-02	Sounding Site	1	690	94.52 %

1.2 General comments from Lead Centre

1.2.1 General

Good communications between station and GRUAN LC.

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 being implemented.

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

1.2.2 GTS

This site regularly sends PTU measurements in the GTS (BUFR format, low resolution, 2 times per day).

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

Info	Value
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 General

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	2 (OZONE, RESEARCH)
Possible streams	CFH, RS80, RS92

3.1 Lead Centre comments

3.1.1 Dataflow

Dataflow to GRUAN LC running since October 2010, with some gaps until April 2012. Dataflow includes: Vaisala RS92-SGP, ECC ozone sonde, CFH water vapour, Intermet 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 ozone sondes, CFH sondes and other manually released research sondes.

3.2 GRUAN data products

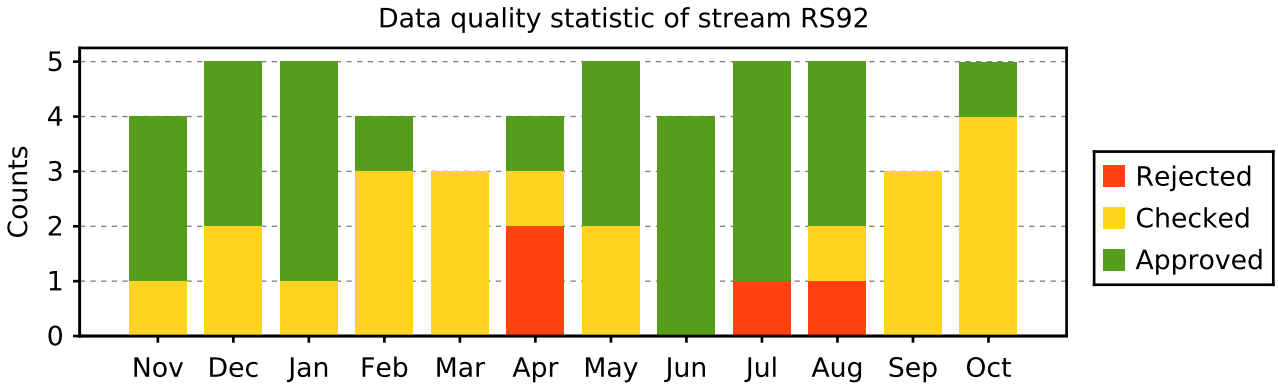
Product	Version	Soundings received	Available at LC	Distributed by NCDC
3.2.1 Stream: CFH				
CFH		7	7	
3.2.2 Stream: ECC				
ECC		52	52	
3.2.2 Stream: IMET1				
IMET1		3	3	
3.2.3 Stream: RS80				
RS80		3	3	
3.2.4 Stream: RS92				
RS92		52	52	
RS92-RAW	001		52	
RS92-GDP	001		50	
RS92-GDP	002		48	27

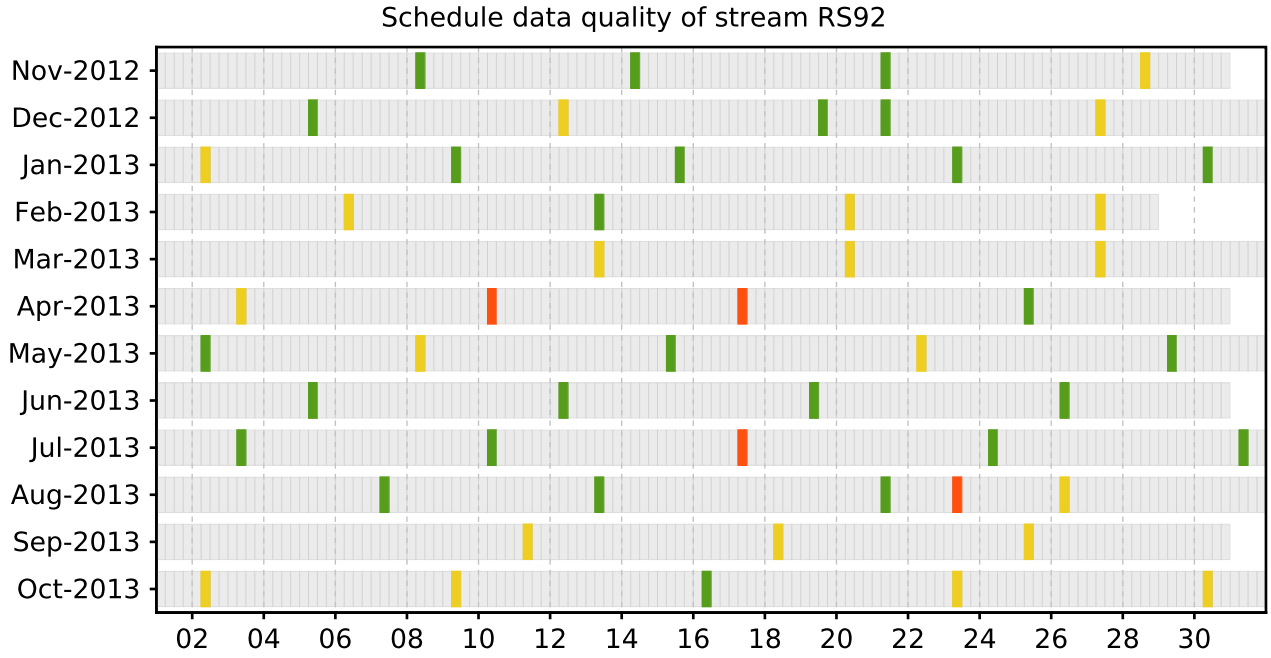
3.3 Data quality of current GRUAN data products

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 12	4	3	1						2
Dec 12	5	3	2						2
Jan 13	5	4	1						1
Feb 13	4	1	3						3
Mar 13	3		3					2	2
Apr 13	4	1	1	2				1	
May 13	5	3	2				1	1	
Jun 13	4	4							
Jul 13	5	4		1					
Aug 13	5	3	1	1			1		1
Sep 13	3		3					3	
Oct 13	5	1	4						4
	52	**27**	**21**	**4**			**2**	**7**	**15**





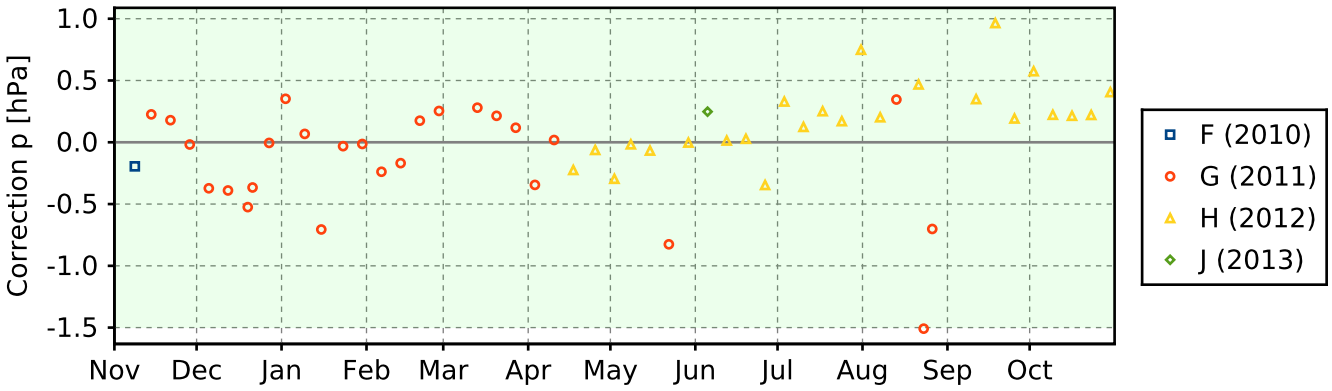
3.4 Instrument combinations of SOD-RS-01

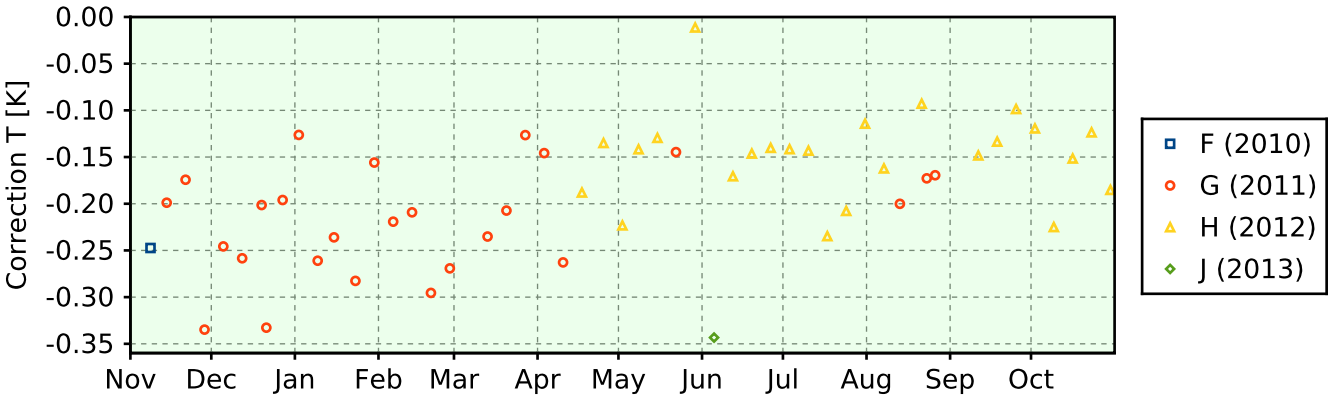
Count	Instrument combination
3	CFH, ECC, IMET1, RS92
3	CFH, ECC, RS80, RS92
1	CFH, ECC, RS92
45	ECC, RS92

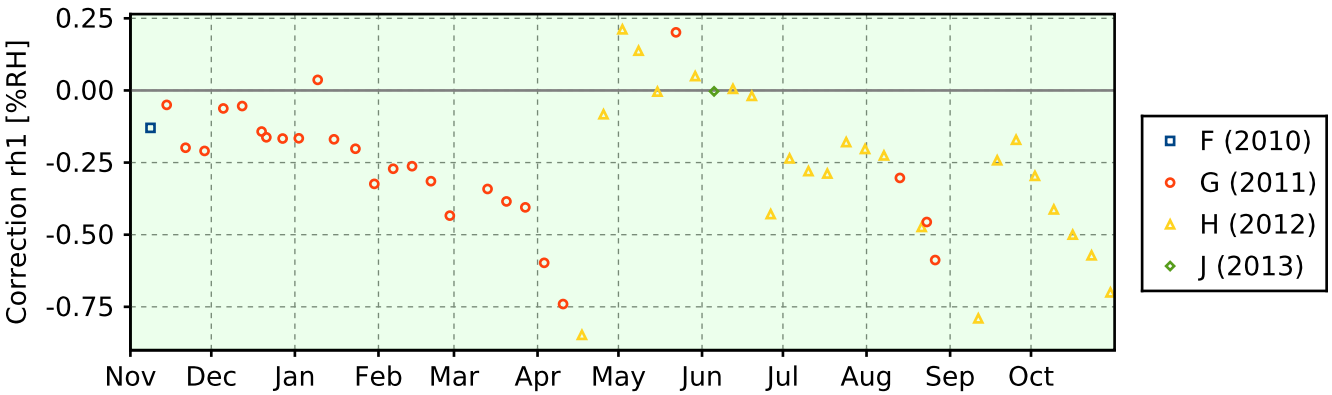
3.5 Instrument ground check

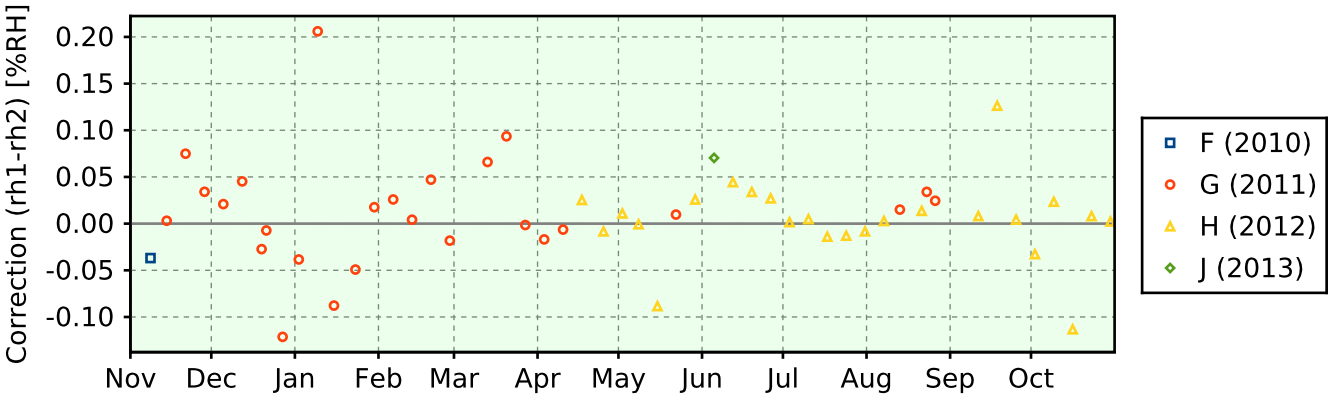
3.5.1 Stream: RS92

3.5.1.1 GroundCheck: GC25

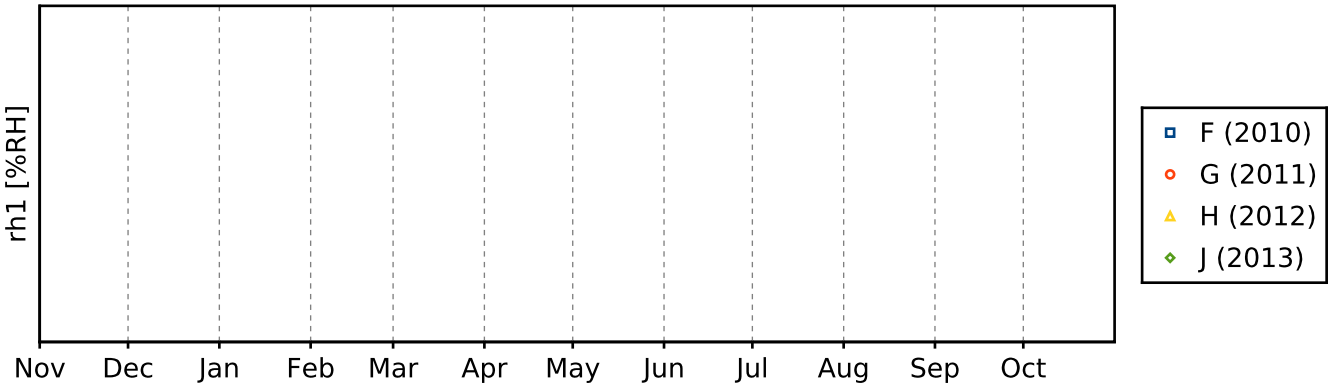


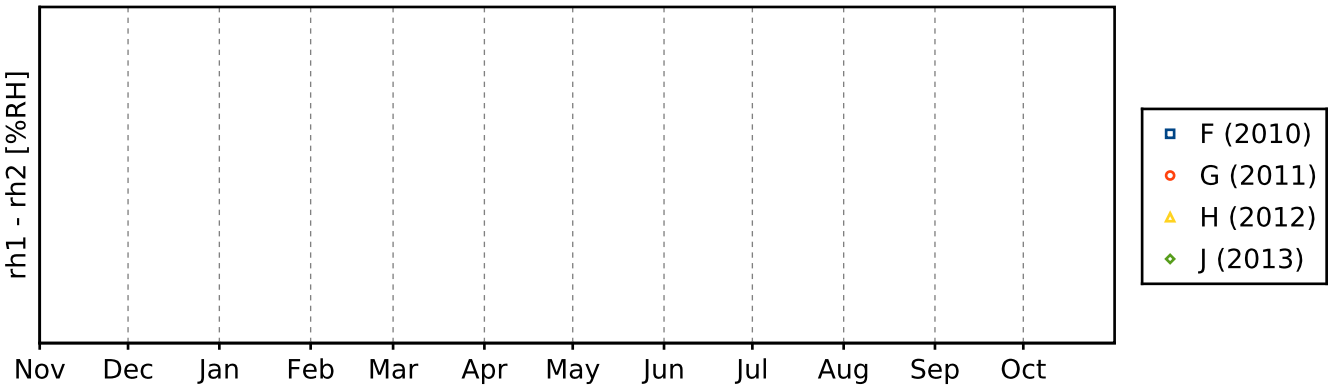


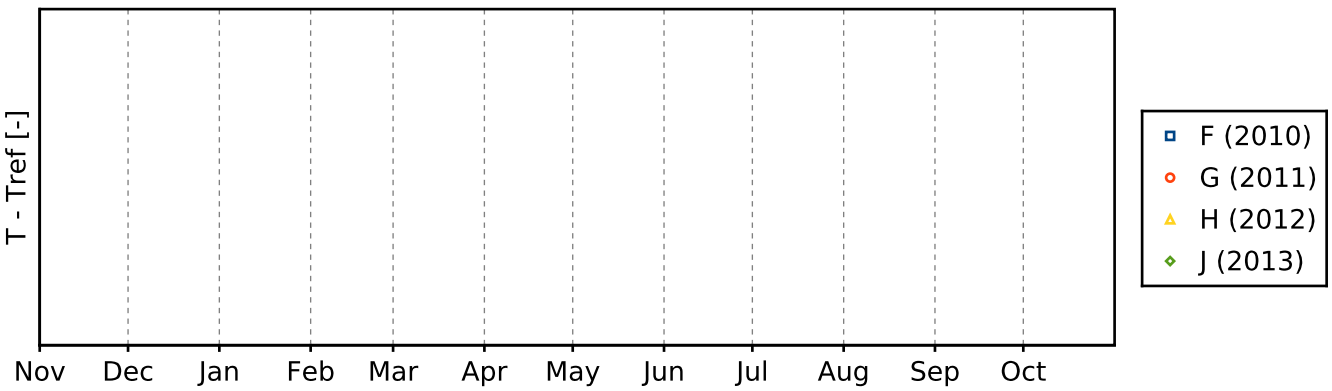




3.5.1.2 GroundCheck: SHC







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 running 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 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

4.2.1 Stream: RS92

RS92		690	690	
RS92-RAW	001		690	
RS92-GDP	001		687	
RS92-GDP	002		676	394

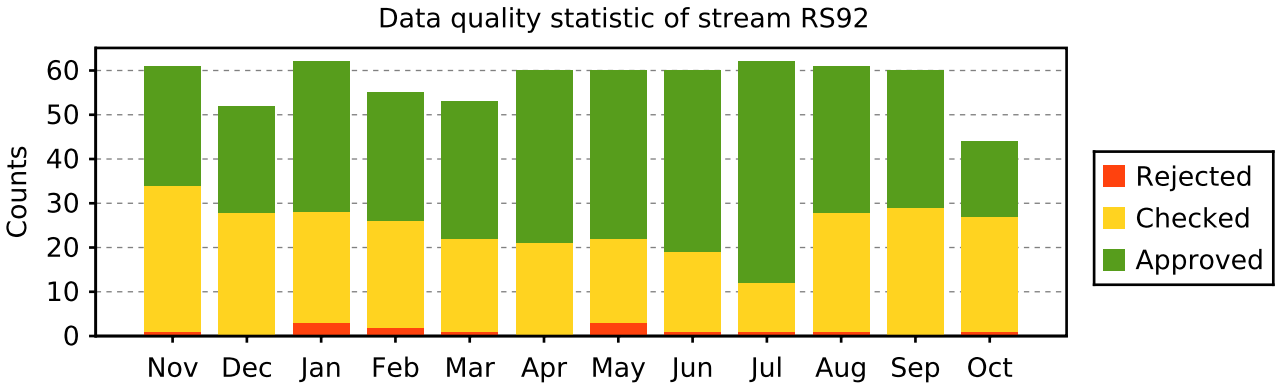
4.3 Data quality of current GRUAN data products

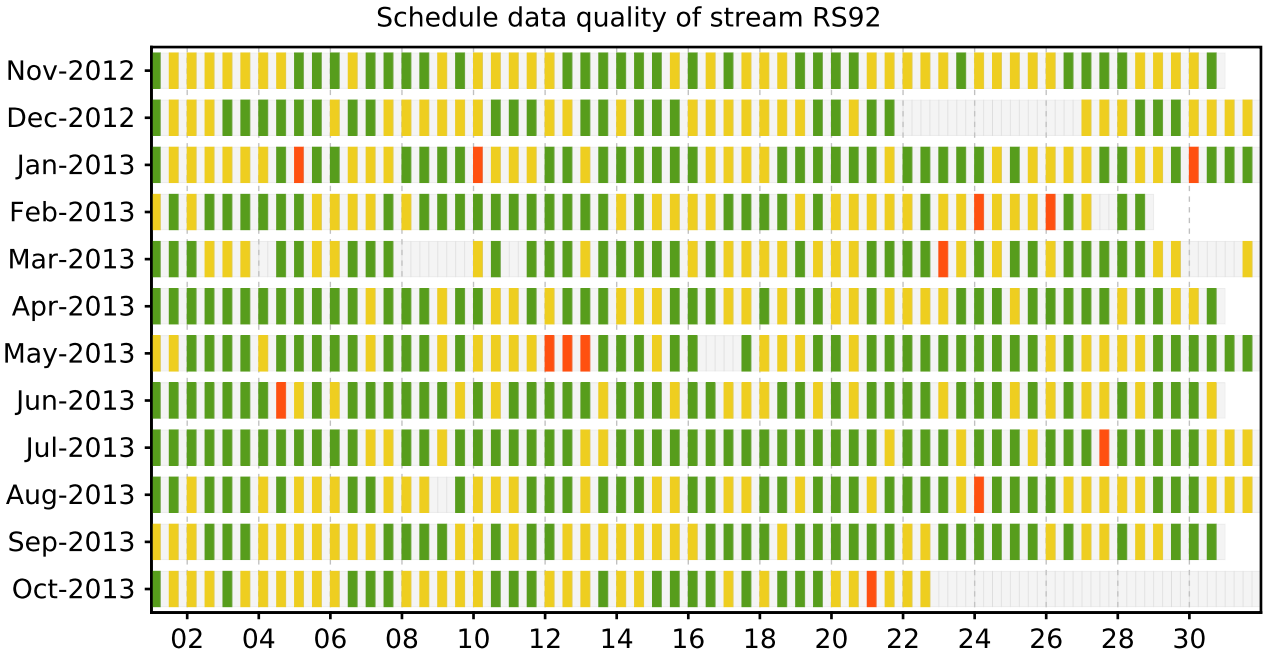
Month	Count	GRUAN Data Quality			Issues				
		Approved	Checked	Rejected	Meta-data	Process.	Press	Temp	RH

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 12	61	27	33	1			1		33
Dec 12	52	24	28						28
Jan 13	62	34	25	3			2		26
Feb 13	55	29	24	2					24
Mar 13	53	31	21	1			1		21
Apr 13	60	39	21						21
May 13	60	38	19	3					22
Jun 13	60	41	18	1			2		16
Jul 13	62	50	11	1			3		9
Aug 13	61	33	27	1					27
Sep 13	60	31	29						29
Oct 13	44	17	26	1			1		26
	690	**394**	**282**	**14**			**10**		**282**





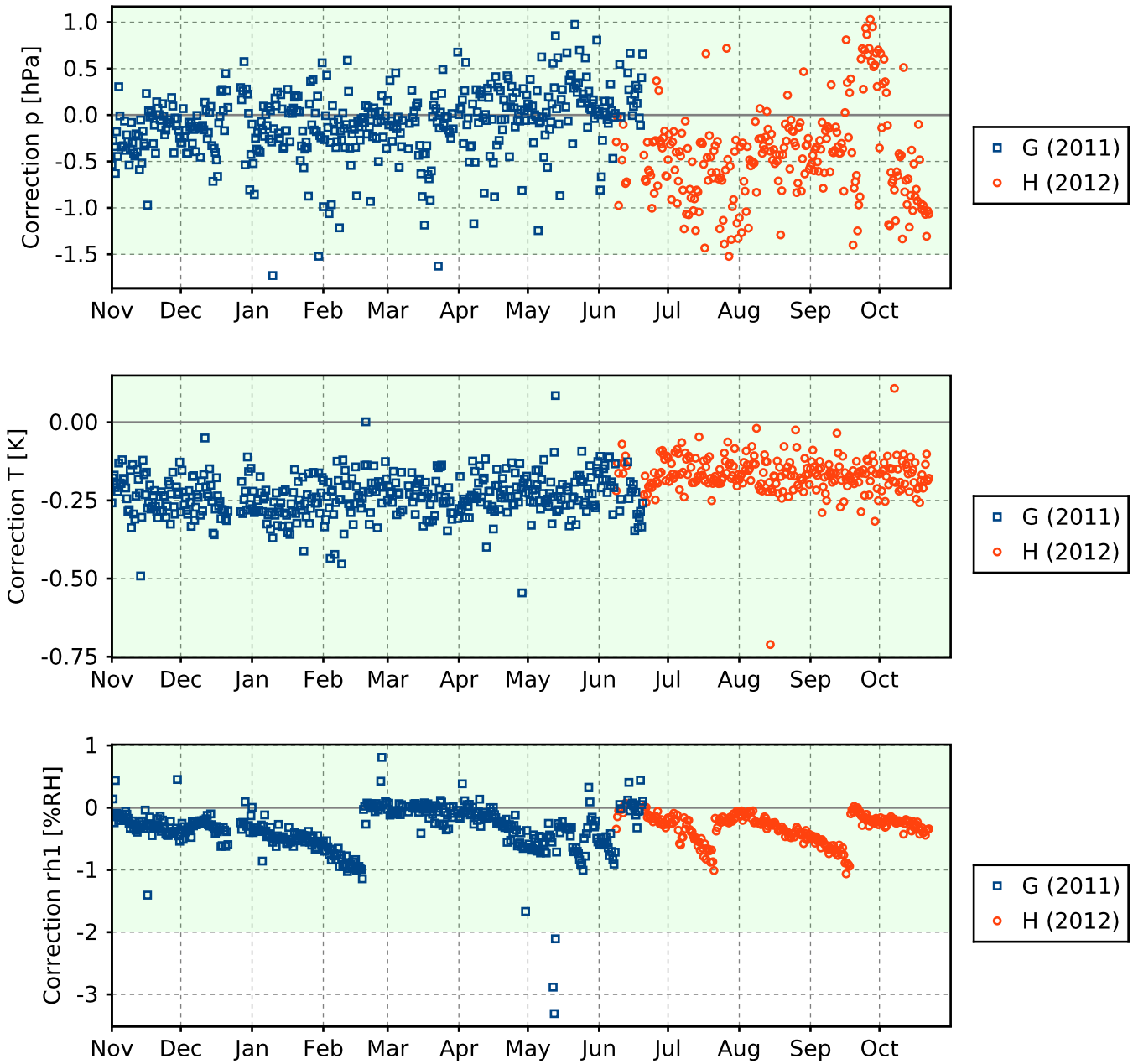
4.4 Instrument combinations of SOD-RS-02

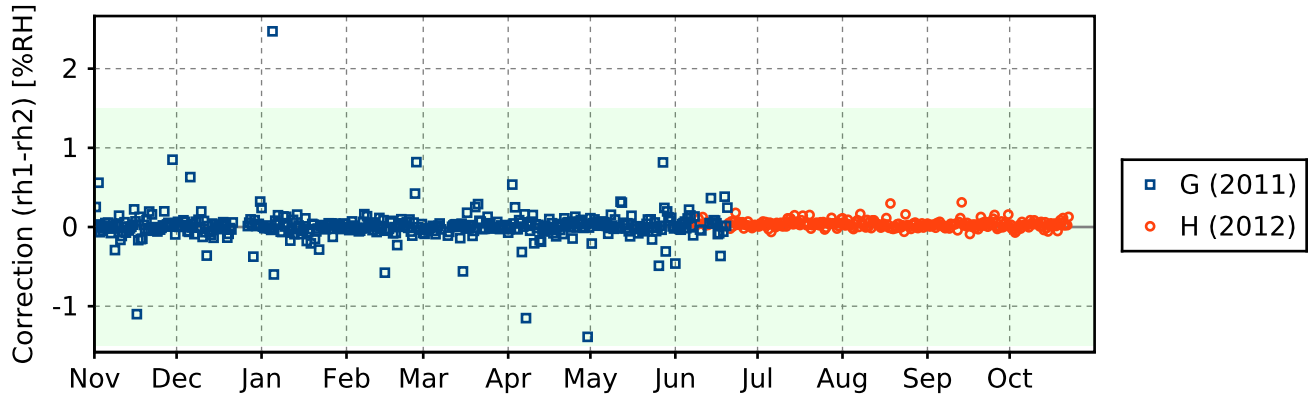
Count	Instrument combination
690	RS92

4.5 Instrument ground check

4.5.1 Stream: RS92

4.5.1.1 GroundCheck: GC25





4.5.1.2 GroundCheck: SHC