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GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)

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10 March – 14 March 2014

Session 6

GRUAN Station Report for Lindenberg

(Submitted by Holger Vömel)

Summary and Purpose of Document

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

GRUAN Station Report for Lindenberg

Reporting for the period Feb 2013 to Feb 2014
Date: 21 February 2014
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Overview
Lindenberg currently provides Vaisala RS92, CFH, ECC ozone, Graw and GNSS/IPW to the GRUAN data base. CFH, ECC ozone and GNSS/IPW are currently being developed as GRUAN data products.

Change and change management
Lindenberg changed the bubble flow meter for the ECC ozone sonde preparation from a style that require sucking air into the flow meter to the more common style, where air is pushed into the flow meter. Both flow meters were checked volumetrically and both were used in parallel routine operations for 34 soundings. The mean difference between both instruments is smaller than 0.14 s at 3 σ. No impact to the long term ozone sonde series is to be expected.

Resourcing
The GRUAN station Lindenberg is almost exclusively supported by DWD base funding. DWD is under continued pressure to reduce staff and staffing cuts may be expected in the future.

Site assessment and certification
The site is certified.

GRUAN related research
Lindenberg studies the radiation correction of several radiosondes, and currently works with Modem to characterize their sonde. Lindenberg is involved in the development of the CFH GRUAN data product and the ECC ozone data product.

WG-GRUAN interface
Lindenberg is well integrated into the GRUAN structure and has good communications with the Working Group. Support by the Working Group is seen as important to maintain the high level of science done at the site, in particular support visible to DWD management.

Items for ICM-6 plenary discussions
Cooperation between sites

Future plans
Publication of the characteristics of other radiosondes.
Lindenberg is preparing to study the impact of the Vaisala RS41 radiosonde.

GRUAN Station Report for Lindenberg (LIN), 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	Lindenberg
Unique GRUAN ID	LIN
Geographical position	52.2100 °N, 14.1200 °E, 98.0 m
Operated by	MOL | Meteorologisches Observatorium Lindenberg, part of: DWD | Deutscher Wetterdienst
Main contact	Vömel, Holger
WMO no./name	10393 LINDENBERG
Operators	current 15, change +0 / -0
Sounding Site	1
GNSS	2

1.1 General information about GRUAN measurement systems

System	Type	Setups	Measurements	As scheduled
LIN-GN-01	GNSS	1	0	0.00 %
LIN-GN-02	GNSS	0	0	not scheduled
LIN-RS-01	Sounding Site	3	1473	104.54 %

1.2 General comments from Lead Centre

1.2.1 General

The site is requested to establish a cryogenic frostpoint hygrometer GRUAN data product.

1.2.2 GTS

This site regularly sends PTU measurements in the GTS (BUFR format, 2s resolution, 4 times per day).

2 System: GNSS Site LDB0 (LIN-GN-01)

Info	Value
System name	GNSS Site LDB0
Unique GRUAN ID	LIN-GN-01
System type	GNSS (GN - GNSS)
Geographical position	52.2096 °N, 14.1185 °E, 160.2 m
Operated by	GFZ | Deutsches GeoForschungsZentrum GFZ, part of: HELMHOLTZ | Helmholtz-Gemeinschaft
Instrument contact	Bisek, Krispin
Started at	2007-05-25
Defined setups	1 (HOURLY)
Possible streams	-

2.1 Lead Centre comments

2.1.1 General

Dataflow of GNSS data to GRUAN LC and the GRUAN GNSS processing centre at GFZ has started in September 2013. This GNSS station is one of two test sites to implement the GNSS dataflow in GRUAN. The current dataflow includes manufacturer raw data, converted raw data (RINEX) and instrument logs, containing all equipment changes.

3 System: GNSS Site LDB2 (LIN-GN-02)

Info	Value
System name	GNSS Site LDB2
Unique GRUAN ID	LIN-GN-02
System type	GNSS (GN - GNSS)
Geographical position	52.2091 °N, 14.1209 °E, 159.5 m
Operated by	-
Instrument contact	Bisek, Krispin
Started at	-
Defined setups	-
Possible streams	-

3.1 Lead Centre comments

3.1.1 General

No GNSS dataflow to GRUAN LC as yet.

4 System: Lindenberg Launch Site (LIN-RS-01)

Info	Value
System name	Lindenberg Launch Site
Unique GRUAN ID	LIN-RS-01
System type	Sounding Site (RS - Radiosonde)
Geographical position	52.2100 °N, 14.1200 °E, 112.0 m
Operated by	MOL | Meteorologisches Observatorium Lindenberg, part of: DWD | Deutscher Wetterdienst
Instrument contact	Vömel, Holger
Started at	-
Defined setups	3 (RESEARCH, ROUTINE, OZONE)
Possible streams	CFH, ECC, RS80, RS92

4.1 Lead Centre comments

4.1.1 Dataflow

Sonde dataflow to the GRUAN LC running since January 2008. This dataflow includes streams of the Vaisala RS92-SGP, ECC Ozone sonde, CFH water vapour, and Intermet IMET-1. All launches are promptly recorded using the RsLaunchClient. The site is used as test bed for the RsLaunchClient.

4.1.2 Data quality

GC25 ground check corrections are largely within expected limits.

A manufacturer independent additional ground check using the Standard Humidity Chamber (SHC) is used for all radiosonde launches.

Very few metadata issues have been identified and are being corrected.

4.1.3 General

Routine soundings are launched four times per day. Ozone soundings are launched weekly. Research soundings using CFH, ECC, iMet-1, and Vaisala RS92 are launched twice per month. Graw radiosondes have been used as redundant sonde on weekly dual soundings. Various sonde combinations have been flown through the reporting period.

4.2 GRUAN data products

Product	Version	Soundings received	Available at LC	Distributed by NCDC
4.2.1 Stream: CFH				
CFH		31	31	
4.2.2 Stream: DFM06				
DFM06		5	5	
4.2.3 Stream: DFM09				
DFM09		49	49	
4.2.4 Stream: ECC				

Product	Version	Soundings received	Available at LC	Distributed by NCDC
ECC		81	81	

4.2.4 Stream: IMET1

IMET1		32	32	

4.2.5 Stream: RS92

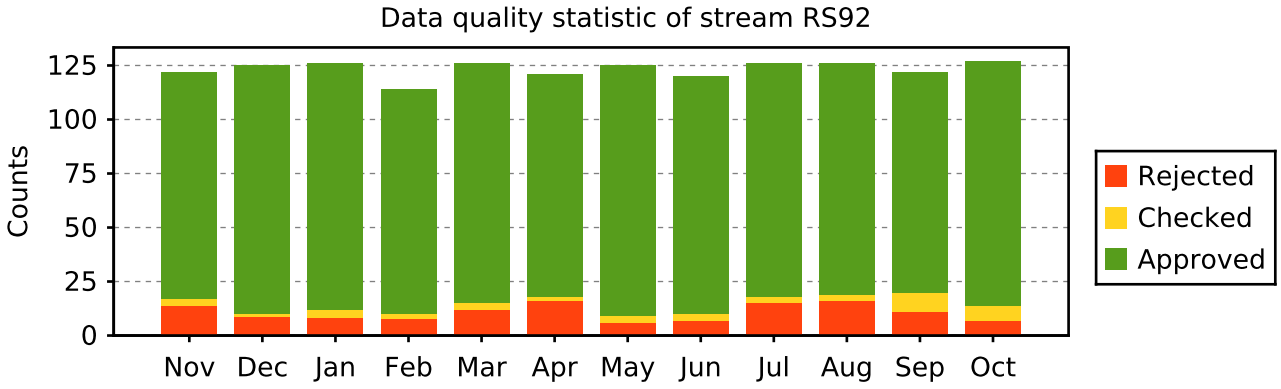
RS92		1485	1485	
RS92-RAW	001		1480	
RS92-GDP	001		1292	
RS92-GDP	002		1351	1308

4.3 Data quality of current GRUAN data products

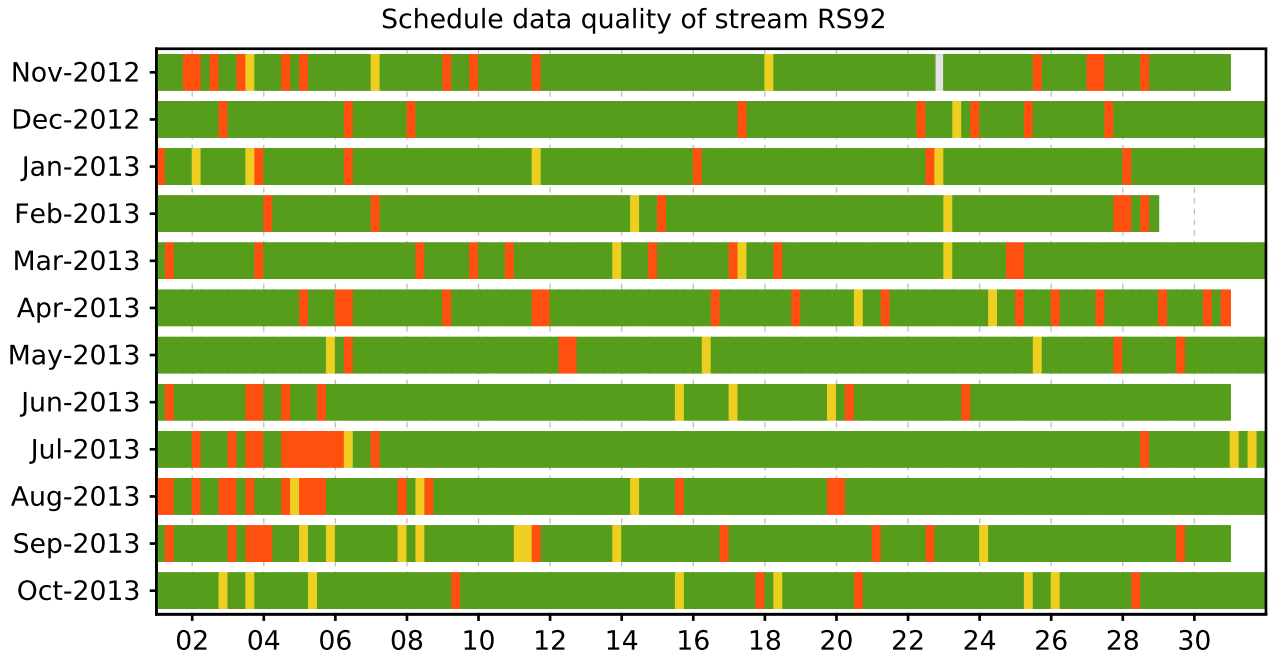
Month	Count	GRUAN Data Quality			Issues				
		Approved	Checked	Rejected	Meta-data	Process.	Press	Temp	RH

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

Nov 12	122	105	3	14	7		7	3	42
Dec 12	125	115	1	9	4		3	4	37
Jan 13	126	114	4	8	2		6	1	26
Feb 13	114	104	2	8	4		3	6	4
Mar 13	126	111	3	12	7		4	10	11
Apr 13	121	103	2	16	7		3	13	21
May 13	125	116	3	6	6		2	12	4
Jun 13	120	110	3	7	1		8	4	10
Jul 13	126	108	3	15	2		15	9	10
Aug 13	126	107	3	16	1		13	4	10
Sep 13	122	102	9	11	3		16	6	7
Oct 13	127	113	7	7	2	1	7	11	13
	1480	**1308**	**43**	**129**	**46**	**1**	**87**	**83**	**195**



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



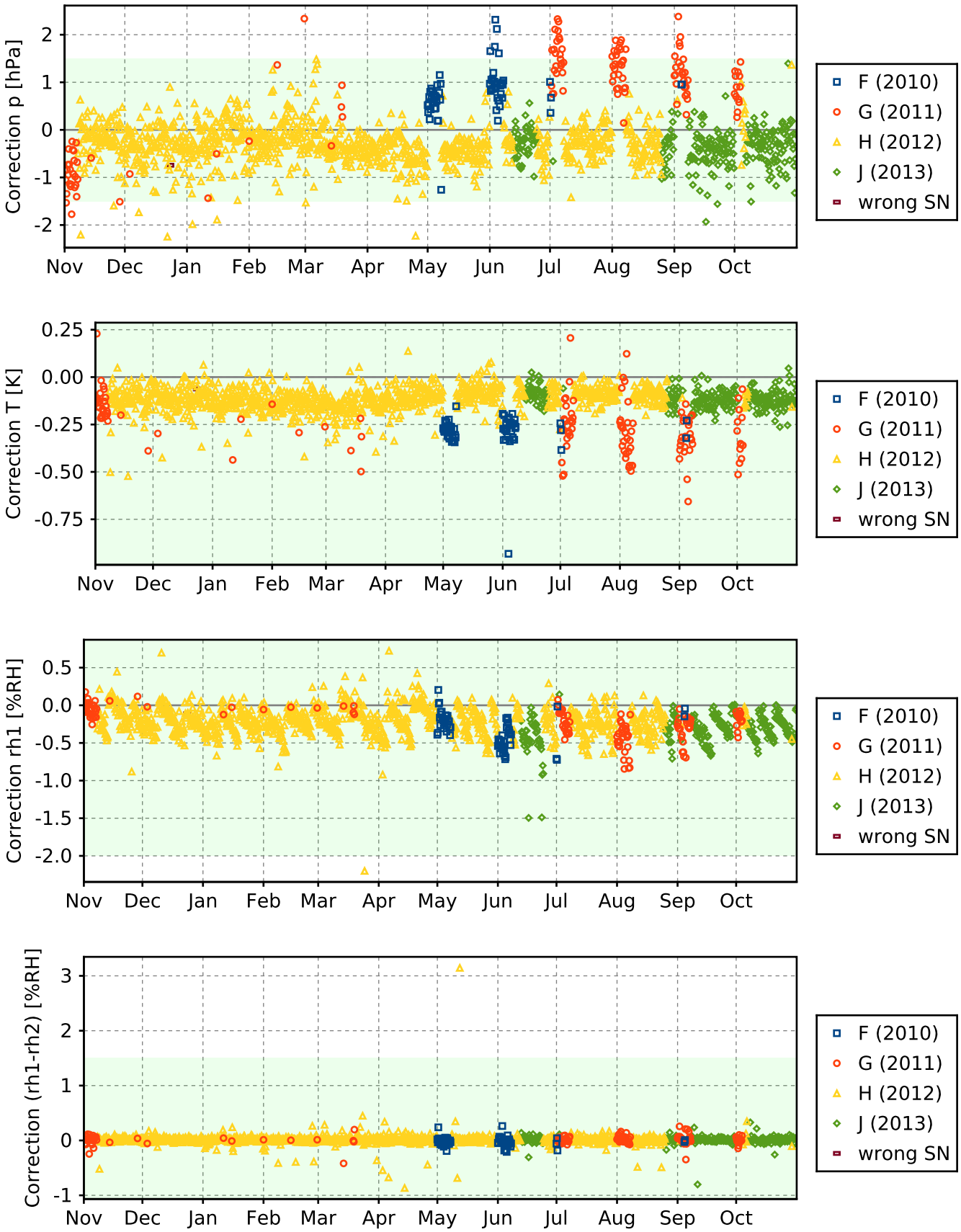
4.4 Instrument combinations of LIN-RS-01

Count	Instrument combination
9	CFH, DFM09, ECC, IMET1, RS92
1	2x CFH, DFM09, ECC, IMET1, RS92
1	CFH, DFM09, ECC, 2x IMET1, 2x RS92
6	CFH, DFM09, ECC, IMET1, 2x RS92
1	CFH, DFM09, 2x ECC, IMET1, RS92
1	CFH, DFM09, 2x ECC, IMET1, 2x RS92
3	2x CFH, DFM09, ECC, 2x IMET1, RS92
3	CFH, ECC, IMET1, RS92
1	2x CFH, ECC, 2x IMET1, RS92
1	DFM06, DFM09, 2x RS92
4	DFM06, DFM09, RS92
1	DFM09, ECC, 2x RS92
1	DFM09, IMET1, RS92
20	DFM09, RS92
1	ECC, 2x RS92
51	ECC, RS92
1367	RS92
1	2x RS92

4.5 Instrument ground check

4.5.1 Stream: RS92

4.5.1.1 GroundCheck: GC25



4.5.1.2 GroundCheck: SHC