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Wetter und Klima aus einer Hand

GRUAN data flow

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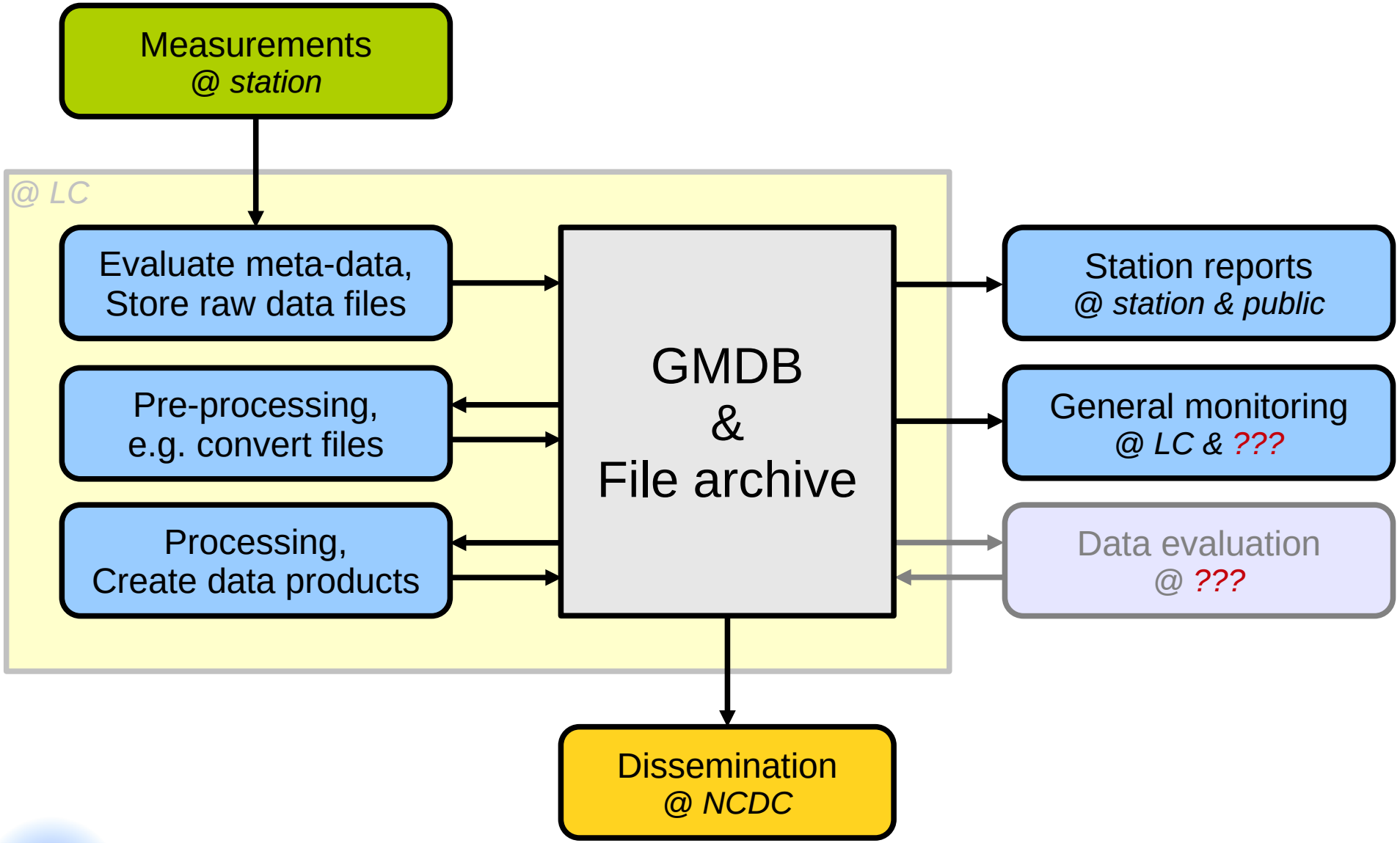
6th GRUAN Implementation and Coordination Meeting (ICM-6)
Greenbelt, MD, USA
12 March 2014

Outline

- Part I: GRUAN data flow
- Part II: Monitoring at LC
- Part III: GRUAN station report
- Conclusion

Part I: GRUAN data flow



Internal work flow – an example

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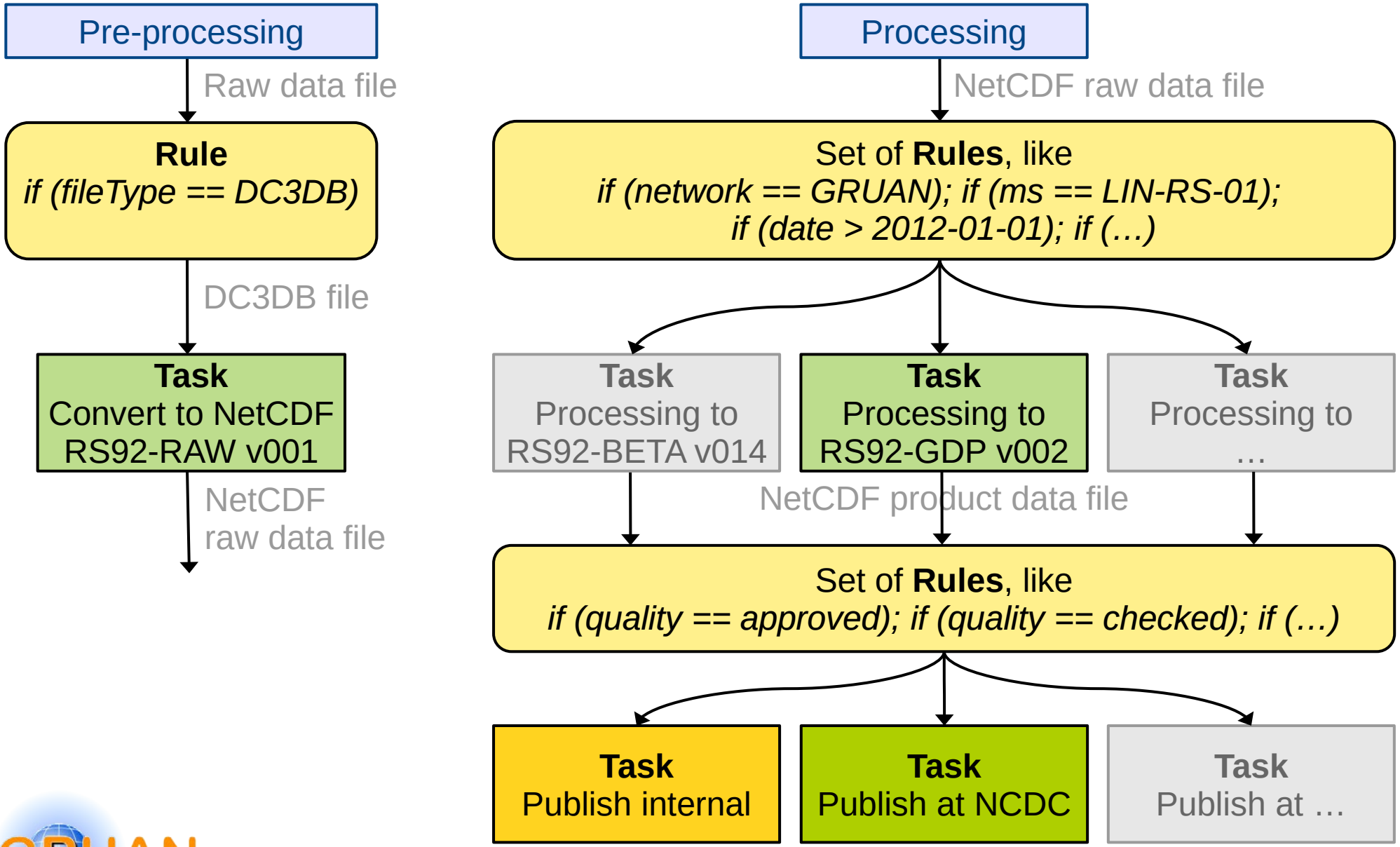
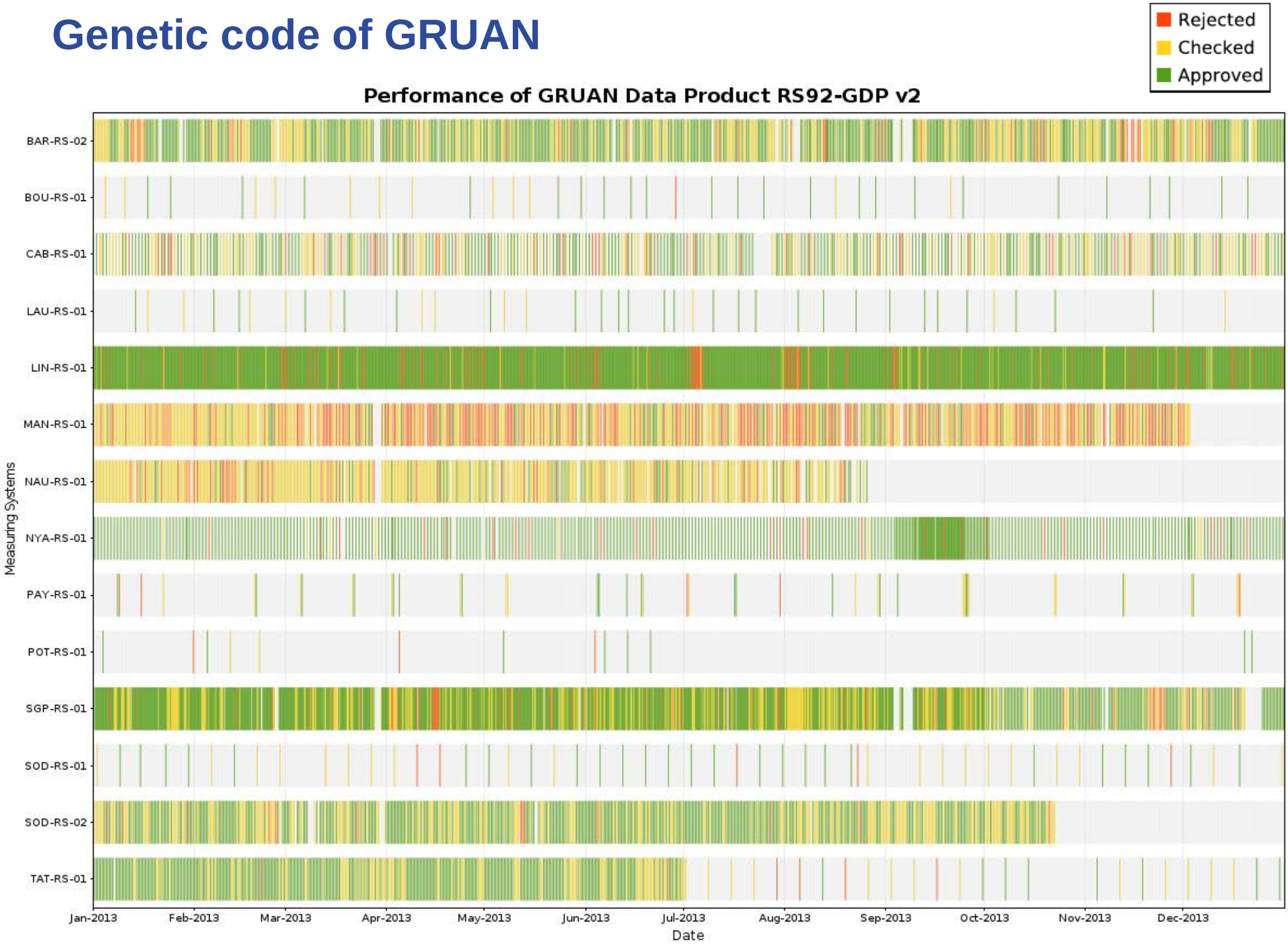


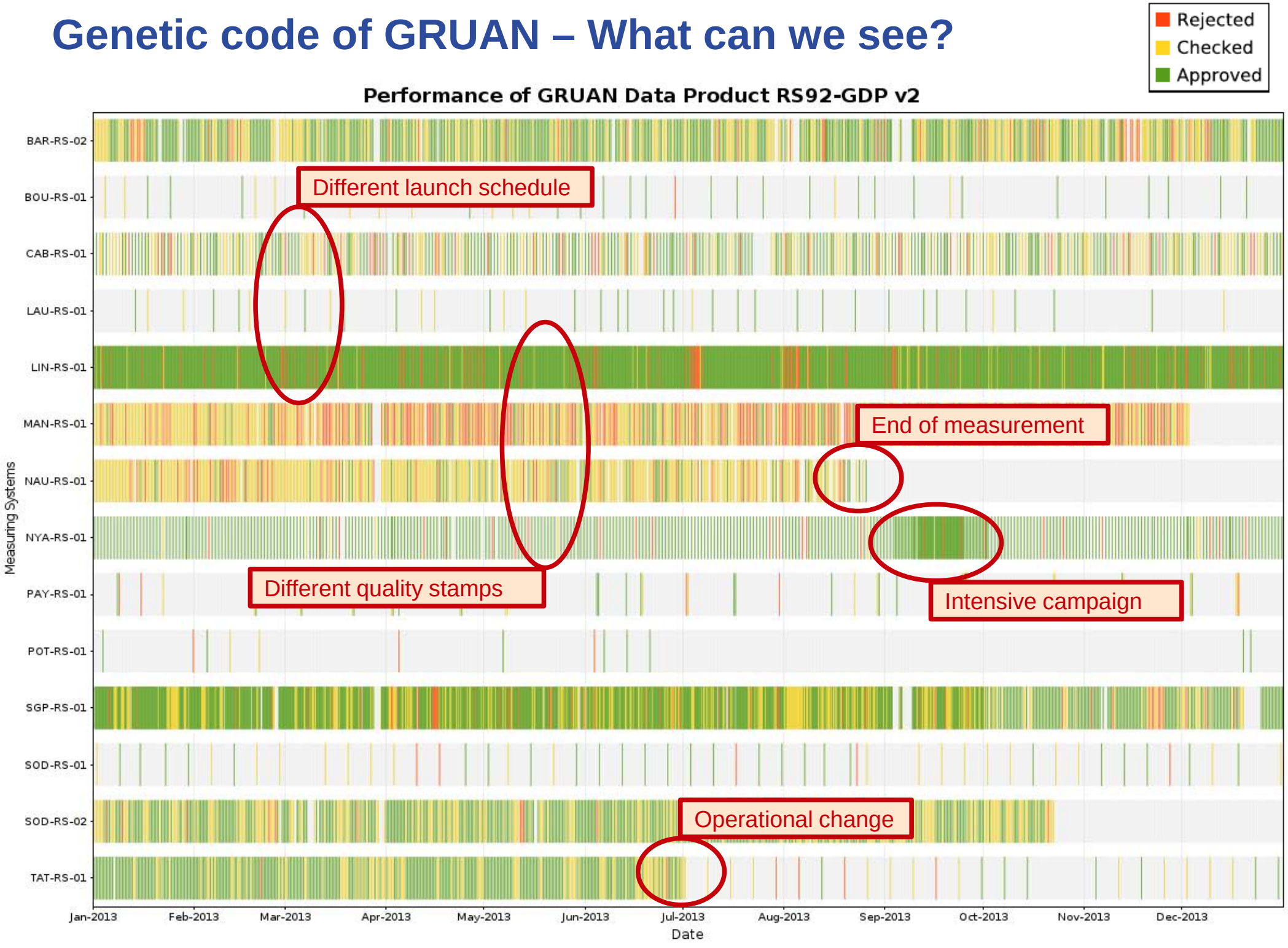
Part II: Monitoring

- General monitoring
  - Automatic check of incoming measurements (all)
  - Manual random inspection (limited)
- Monitoring aims
  - Consistency of GRUAN meta-data base (GMDB)
  - Completeness of measurements
  - Unexpected things
- Monitoring example

Genetic code of GRUAN



Genetic code of GRUAN – What can we see?



Part III: GRUAN station report

- Annual report with two parts for each GRUAN station → as ICM documents 6.xx
- Manual written report → from site representative
- Automatic generated report → from Lead Centre (GMDB)

Manual written station report

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- Overview
- Change and change management
- Resourcing
- Site assessment and certification
- GRUAN related research
- WG-GRUAN interface
- Items for ICM plenary discussions
- Future plans

Automatic generated data report

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GRUAN

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

- Station
- Measurement systems
- Setups & data streams
- Data products
- Instrument combinations
- Ground checks

Station – general info

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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 General station info

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 %

2 List of systems

1.2 General comments from Lead Centre

1.2.1 General

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

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3 Comments from LC

Measurement system – general info

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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

1 General info

3 Setups & streams

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.

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2 Comments from LC

Setups & data streams

➔ Setups

- Group of *similar* default measurement constellations
- Example setups
  - 'ROUTINE' for all default operational soundings (one radiosonde)
  - 'OZONE' for all default ozone soundings (one radiosonde and one ozone sonde)

➔ Data streams

- Group of *similar* instrument models
- Data products always for **all** instrument models of a stream
- Example streams
  - 'RS92' for all Vaisala RS92 instrument models, like RS92-K, RS92-SGP, RS92-FN, …
  - 'ECC' for all ECC ozone sondes, like SCP-6a, DMT-Z, …

Data products – summary

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				
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

1 Not processed yet

2 Processed fully

Data products – quantity & quality

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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**

Quality stamp 1

2 Processing issues

Data products – quantity & quality

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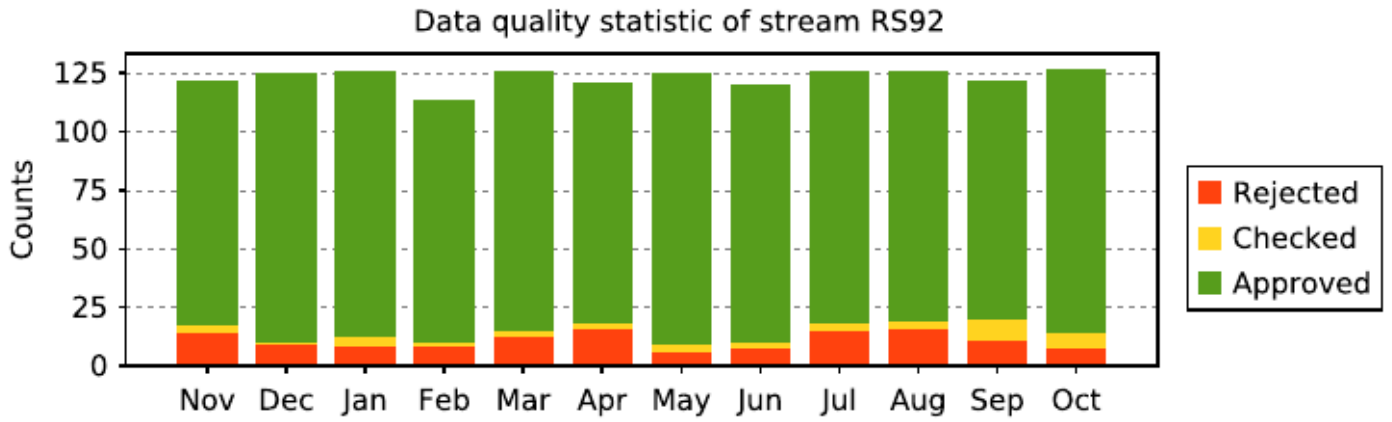
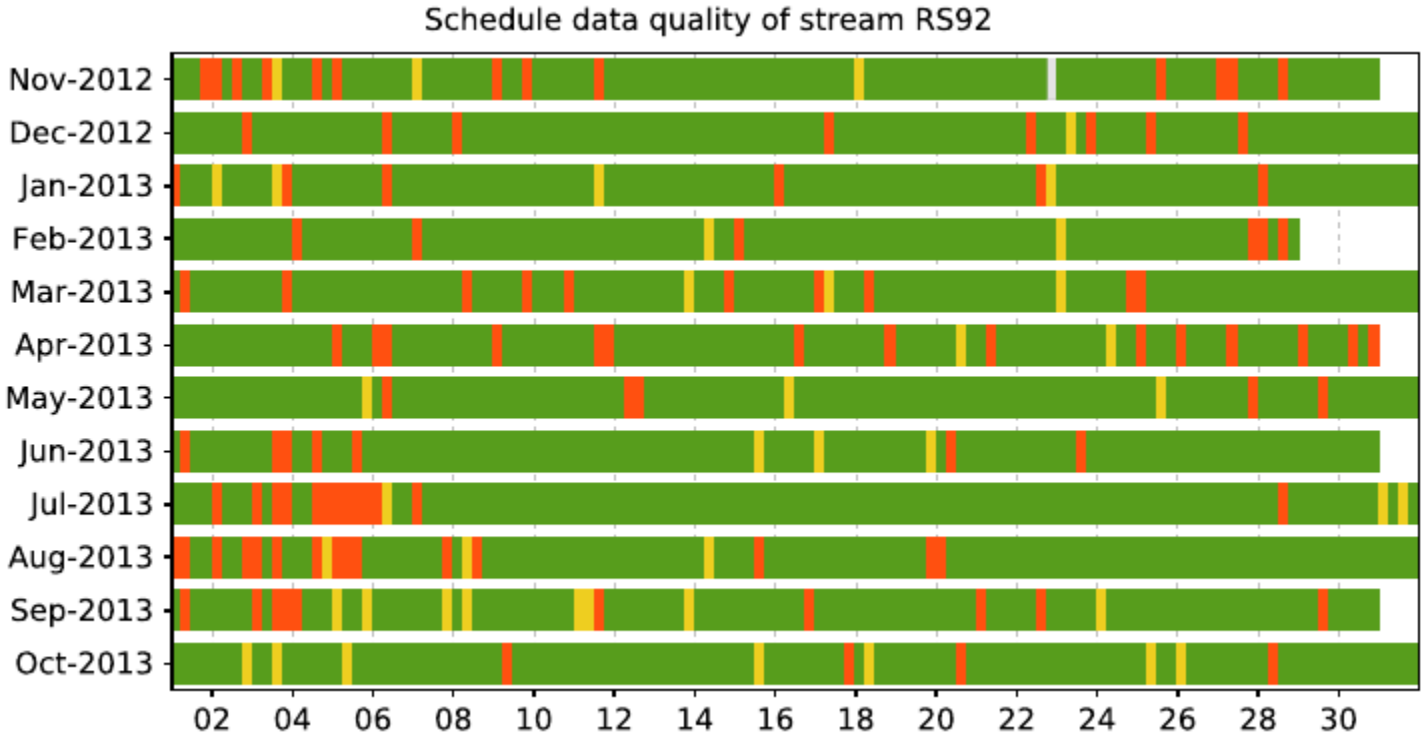




Instrument combinations

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

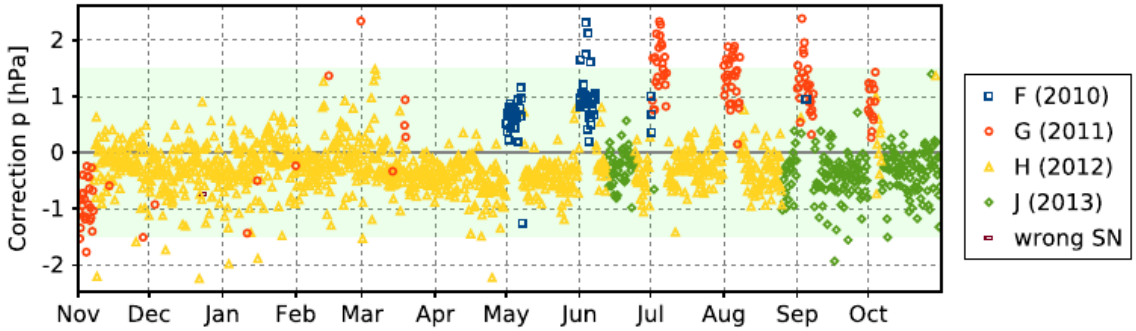
4 Setup RESEARCH
biweekly

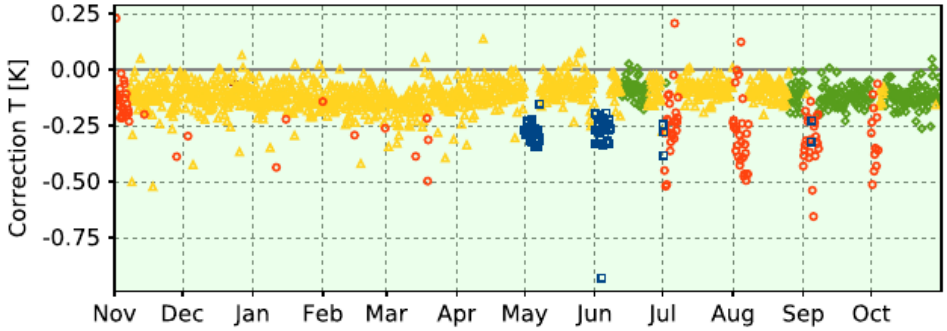
biweekly
Setup COMPARE 3

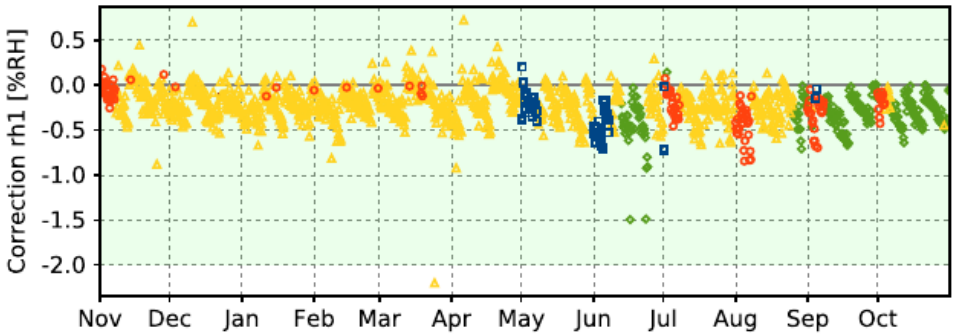
2 Setup OZONE
weekly

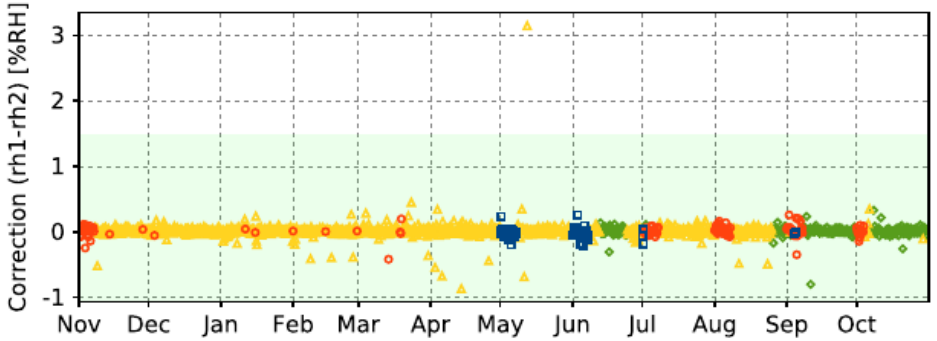
Setup ROUTINE 1
four times daily

Ground check – manufacturer (GC25)



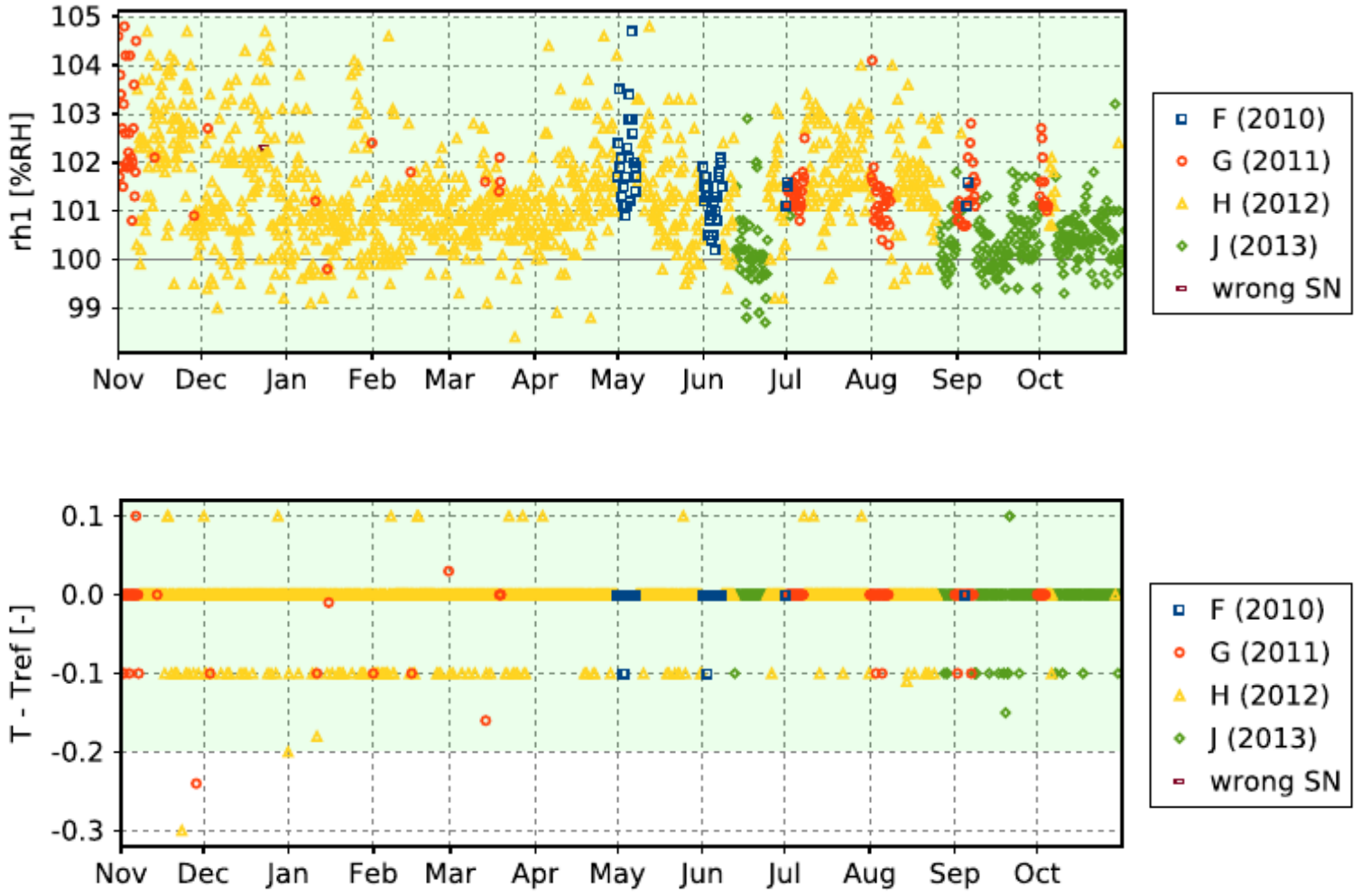






- Batch-dependent differences
- Green range → OK

Ground check – independent (SHC)



Conclusion

- All information about GRUAN data flow → GMDB
- Monitoring of data flow at Lead Centre
- Public annual GRUAN station reports

Thank you for your attention.