

Progress of Data Flow and Technical Manuals



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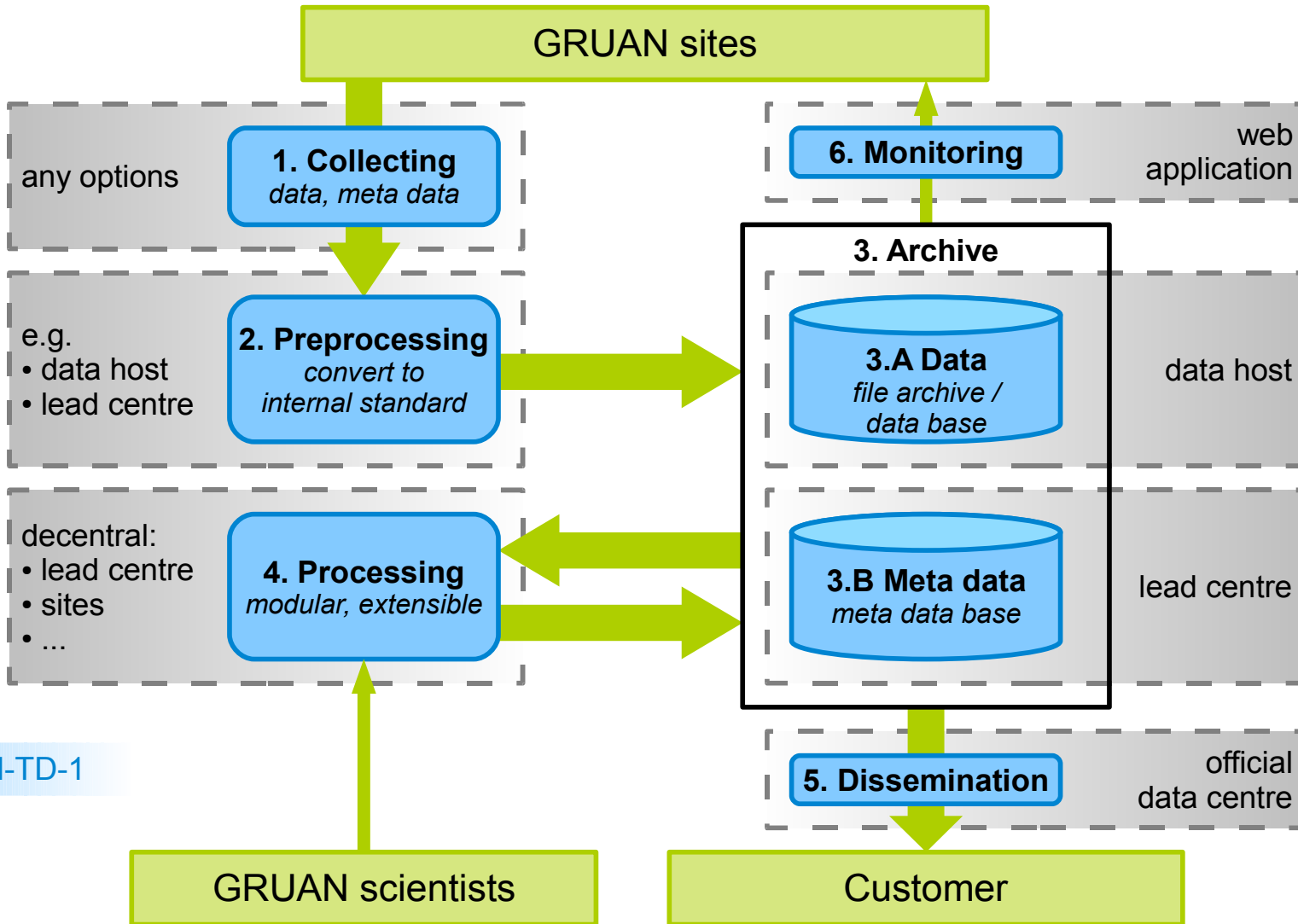
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Queenstown, New Zealand
28th February 2011



- Strategy of GRUAN data handling
- Data collection using RsLaunchClient
- Pre-processing and archiving
- Processing and dissemination
- Technical documentation
- Conclusion



Strategy of GRUAN data handling

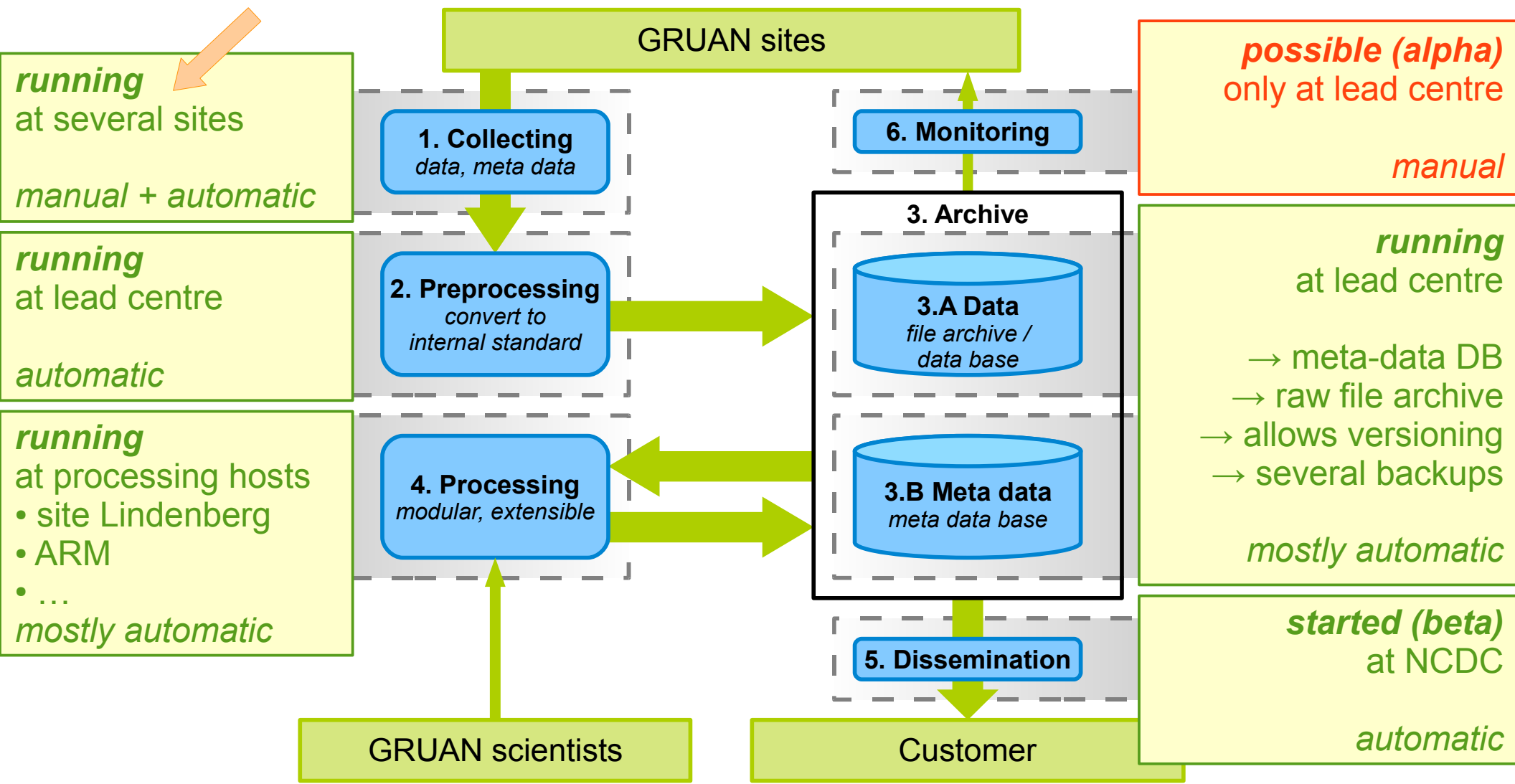


see GRUAN-TD-1



Strategy of GRUAN data handling

current status (only radiosonds)





- **Lindenberg** → **running** (RS92, ozone, RS92FN, research)
 - Use of RsLaunchClient
- **Sodankylä** → **running** (RS92+ozone)
 - Use of RsLaunchClient
- **Cabauw** → **running** (RS92)
 - Use of automatic scripts to create GMD files and to upload all
- **Tateno** → **ready to go** (RS92, comparison)
 - Long test phase is finished (*connection issue is solved*)
 - Use of RsLaunchClient
- **Boulder** → **ready to go** (ozone, FPH, FPH+ozone / incl. RS92)
 - Use of RsLaunchClient





→ Measurements at sites

- Start point of GRUAN data flow
- What kind of meta-data and data should be collected?
- How do the stations submit the measurement data to GRUAN?

→ Definition of data management in GRUAN

- Series of GRUAN Technical documentation (**GRUAN-TD-x**)
 - ◆ including general and specific manuals/guides
- specific definition of
 - ◆ file formats
 - ◆ required/recommended/optional meta-data

→ Developing a handy tool for stations that helps to collect

- all relevant things of a measurement event (e.g. a radiosonde launch)



→ Purpose

- Managing, collecting and uploading of all relevant things regarding any measurement events

→ Features

- Java program
 - ◆ Independent of the operating system
- Managing and overview of measurement events
 - ◆ At the moment specialised in radiosonde launches → but extendible
- User-friendly assistant to describe such an event
- Upload both meta-data and raw data to the lead centre
- Versioning of events (allows correction of everything)
- General meta-data always up-to-date
- User guide as a technical documentation (GRUAN-TD-3)



RLC – Main window



O/C	MS Site	Setup	Schedule Date	Balloon No.	Internal Code	Op
	LIN-RS-01	RESEARCH	2010-08-05 00:00	1	LG2010_67_F	PI
	LIN-RS-01	RESEARCH	2010-07-29 12:00	1	LG2010_65_F	PI
	LIN-RS-01	RESEARCH	2010-07-20 00:00	1	LG2010_63_F	PI
	LIN-RS-01	RESEARCH	2010-07-12 12:00	1	LG2010_60_F	WA
	LIN-RS-01	RESEARCH	2010-07-07 00:00	1	LG2010_56_F	WA
	LIN-RS-01	RESEARCH	2010-06-28 12:00	1	LG2010_54_F	PI
	LIN-RS-01	RESEARCH	2010-06-23 00:00	1	LG2010_53_F	KR
	LIN-RS-01	RESEARCH	2010-06-17 12:00	1	LG2010_51_F	WA
	LIN-RS-01	RESEARCH	2010-06-09 00:00	1	LG2010_48_F	PI
	LIN-RS-01	RESEARCH	2010-06-03 12:00	1	LG2010_45_F	KR
	LIN-RS-01	RESEARCH	2010-05-28 00:00	1	LG2010_43_F	WA
	LIN-RS-01	RESEARCH	2010-05-17 12:00	1	LG2010_39_F	WA
	LIN-RS-01	RESEARCH	2010-05-11 00:00	1	LG2010_37_F	PI
	LIN-RS-01	RESEARCH	2010-05-03 12:00	1	LG2010_35_F	KR
	LIN-RS-01	RESEARCH	2010-04-28 00:00	1	LG2010_34_F	KR
	LIN-RS-01	RESEARCH	2010-04-20 12:00	1	LG2010_29_F	PI

Navigation

General functions

Overview about

local measurement events

Managing Specific functions



RLC-Assistant page 1 – Observation



RLC-Assistant page 2 – Instruments



Steps

1. Observation
- 2. Instruments**
3. Instrument checks
4. Launch conditions
5. Attach files
6. Upload

Instruments

Instruments and Sounding Components

Add a part [X] [^] [v]

- 0 - DC3-RESEARCH-1/DP5 (A42102)
- 1 - GC25-RESEARCH-1/CheckTool (lin-gc25-2)
- 2 - TA1200/Balloon
- 3 - TP-160-05/Parachute
- 4 - UW1/Unwinder
- 5 - SOLO/Rig
- 6 - R592-SGPD/Sonde (?)**

Description

Type: Sonde

Instrument: R592-SGPD [Change]

Serial Number: []

Operator: [] [X]

Processing: Add processing [X]

Comments: []

Name ^	Value	Unit
Frequency		[MHz]
Weight	290	[g]

< Prev Next > Finish Close

- Managing equipment
- for use in the event
 - simple or complex structure
 - use pre-defined set-ups

- Specific properties for each instrument
- defined per meta-data
 - expandable
 - differ → required, recommended, optional

- Detailed description of each instrument
- type
 - identification (sn)
 - links
 - ...

helpful visible indications



RLC-Assistant page 5 – Attach files



Steps

1. Observation
2. Instruments
3. Instrument checks
4. Launch conditions
- 5. Attach files**
6. Upload

Attach files

Instruments and Sounding Components

- 0 - DC3-RESEARCH-1/DPS (A42102) --> 1 of 1
- 1 - GC25-RESEARCH-1/CheckTool (lin-gc25-2)
- 2 - TA1200/Balloon
- 3 - TP-160-05/Parachute
- 4 - UW1/Unwinder
- 5 - SOLO/Rig
- 6 - RS92-SGPD/Sonde (test4567)

Attached Files of DC3-MW31

File list:

Lindenberg_20100817_230034.dc3db (data)

File Info

- 1 - DC3DB - Vaisala DC3
- 0 - FLEDT - Vaisala DigiCoraIII (optional)
- 0 - FRAWPTU - Vaisala DigiCoraIII (optional)
- 0 - LAS - Vaisala DigiCoraIII (optional)
- 0 - Log - Vaisala DigiCoraIII (optional)
- 0 - RS92SONDEID - Vaisala DigiCoraIII (optional)

This instrument has corrupt or missing data files.

< Prev Next > Finish Close

Attaching files

- separated by instrument
- one or more files

Mapping files

- to pre-defined file types
- check if required



RLC-Assistant page 6 – Upload



Steps

1. Observation
2. Instruments
3. Instrument checks
4. Launch conditions
5. Attach files
- 6. Upload**

Upload

All preliminaries are completed...

Gruan Meta-data File (GMD file)

```
<?xml version="1.0" encoding="UTF-8"?>
<gmdFile xmlns="http://www.gruan.org/GruanMetaData"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.gruan.org/GruanMetaData GruanMeta-Data.xsd">
  <version>0.6</version>
  <timestamp>2011-02-16T08:50:23.594Z</timestamp>
  <purpose>RsLaunch</purpose>
  <rsLaunch internalId="test 1234" launchId="1"
    measuringSystem="LIN-RS-01" operator="DUMMY" setup="RESEARCH"
    standardDate="2011-02-16T06:00:00.000Z" station="Lindenberg" version="1">
    <comment>this is a test</comment>
    <instrument code="DC3-MW31" permanentCode="DC3-RESEARCH-1"
      sn="A42102" type="DPS">
      <dataFile crc="2679438947"
        filename="Lindenberg_20100817_230034.dc3db"
      />
    />
  />
</gmdFile>
```

Status of Upload

```
+ Start [STARTED: 08:50:50 | 32.53 %]
+ RsLaunchUpload | LIN-RS-01_0_RESEARCH_001_20110216T060000_1 [STARTED: 08:50:50 | 32.53 %]
-- OneFileUpload | Lindenberg_20100817_230034.dc3db [STARTED: 08:50:51 | 32.53 %]
```

You can upload all files now.

Gruan Meta-data File: GMD

- include all collected meta-data and reference to all related files
- well-defined XML
 - see GRUAN-TD-1
 - easy validation (XSD)
 - external generation → **automatic process**

Upload

- all referenced files + GMD
- direct to the lead centre
- use of GRUAN-internal collecting interface (FTP)
- message of progress (success / failure)





- Monitoring of incoming GMD files
 - Use a GMD file as a starting point for pre-processing of any measurement
- Start of pre-processing of each GMD file
 - Validation and detailed analyse
 - Extract all meta-data and store all in the GRUAN meta data base (GMDB)
 - Download all referenced files → validate (*size, hash-code, ...*)
 - Archive all files (*including backups*) → infos about archived files in GMDB
 - Create continuative **processing tasks** → modular and decentralised handling

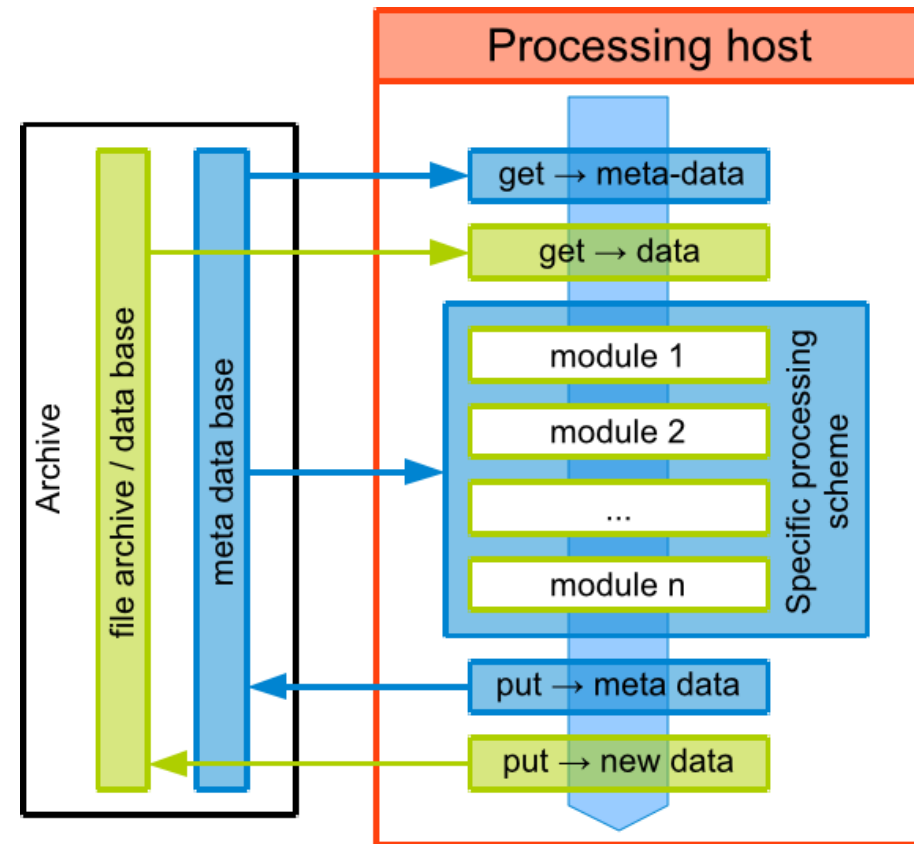


→ Processing task can include, e.g.

- convert DC3DB to NetCDF
- validate a file and extract meta-data
- transfer a specific file type to a destination (*processing host, dissemination centre*)
- run a specific processing

→ Processing at several hosts

- **one processing host for one instrument of all stations**
- ARM → QA/QC of RS92 data (*pre-proc.*)
- site Lindenberg → **create first RS92 product**
- **site Boulder → FPH**
- **site Payerne → SRS + SnowWhite...**
- **... → remote sensing instruments**





→ Dissemination centre of GRUAN is the NCDC

- official start is 1 March 2011
- at first pure FTP server
- prospective (together with LC)
 - ◆ web-site with documentation
 - ◆ searchable data products
 - ◆ traceable meta-data back to the measurement



<ftp.ncdc.noaa.gov/pub/data/gruan/>

→ Current content

- RS92 product (beta) → ready for evaluation / validation / ...
- **Please assist:** test it and give us a response about
 - ◆ handling of server
 - ◆ file format of product
 - ◆ missing/inscrutable meta-data
 - ◆ data quality





- Series of technical GRUAN-internal documents
 - GRUAN-TD-1 (v0.4) Manual for the Data Management in GRUAN
 - GRUAN-TD-3 (v0.4) User Guide of GRUAN RsLaunchClient

- Further relevant documents **GRUAN-TD-x**
 - Documentation of GRUAN products
 - Definitions of file formats
 - Definitions of specific meta-data (instruments, checks, set-ups, ...)
 - Additional user guides





- **All parts** of our data handling strategy are **basically running**
- Data-flow is running for radiosounding at several stations
 - **Next step is broaden to all GRUAN stations**
- User-friendly program for collecting (RsLaunchClient)
- First GRUAN data product is available for evaluation
- Start of a series '**Technical documentation**'

Thank you for your
attention.

