ACTRIS
CCRES

Labelling Operational Services

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Outline

1. **ACTRIS-CCRES labelling process**

2. **Status of National Facilities for step 1b**

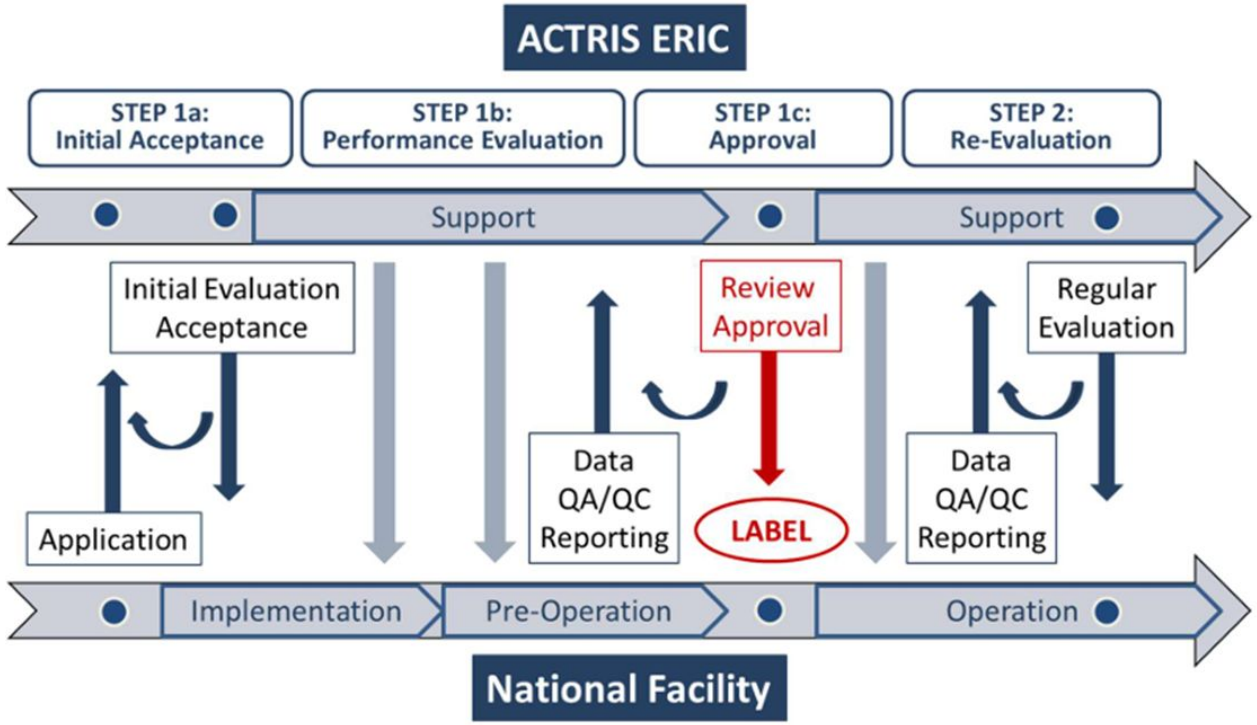
3. **Lessons learned**
   a. Why months are excluded ?
   b. 36-month data requirement
   c. Importance of instrument maintenance/calibration
   d. MWR: 1-2 channel failures
   e. Potential use of backup instruments (when available)

4. **Conclusions & Perspectives**

1. ACTRIS labelling process

A stepwise labelling process to monitor the progress of the National Facilities and validate the compliance to CCRES requirements over a period of 24 months.

→ long journey…



1. Step 1b: What needs to be validated?

Once a station has been granted the labelling initial acceptance, CCRES submits an **annual evaluation assessing the number of months of compliant operation** to the Head Office at the beginning of **each calendar year**, attesting that during the previous year, the National Facility has followed CCRES and CLU recommendations for their nominal instruments, regarding :

- Implementation of the **SOPs**
- The implementation of the **upgrade plan** (if needed)
- **Calibration** procedures
- **Maintenance** and regular check-ups of the instruments
- The **availability** and **quality** of data

1. Step 1b: ACTRIS Head Office rules

ACTRIS Head Office statement about general principles for all Central Facilities

75% Data coverage rule

- **Excludes periods when external factors** (e.g., instrument maintenance, unsuitable weather conditions, …) prevent valid data
- Coverage is assessed per variable, not per instrument
  - All required instruments must be operational simultaneously for a variable to be validated

Final evaluation

- **Granted:** once **24 months of compliance is reached in a 36 months period**, a NF receives a certificate of step 1b completion and is thus approved for step 1c.
- **Full label** is expected to happen **within 5 years from the initial acceptance (step 1a)**

1. CCRES: upgrade plan + SOPs compliance

Conformity matrix *(ex: Lindenberg)*

→ 8-9 items to review
+ upgrade plan (if any)

Germany				Latest update by CCRES :	24/3/2026	NF info	Validated	Blocking
Date of initial acceptance:	23/05/2023			Latest update by NF:			Not validated	Not considered
Facility PI :	Volker Lehmann							

		Instruments information		NF Upgrade plan		CCRES & CLU SOPs compliance				
Code	Instruments	Model	PID	Planned upgrade for the instrument	Implementation status	1. Maintenance	2. Calibration	3. Check-up		
A	Doppler Cloud Radar	Metek GmbH MIRA 35	https://hdl.handle.net/21.12132/3.d6cc3d73f9dd4d4b	Renewal of Metek MIRA	OK	Radome change (RPG)		DCR 50% vertical pointing		
B	Microwave Radiometer	RPG HATPRO G5	https://hdl.handle.net/21.12132/3.442ec2ea9a24440e	None	N/A	Radome change (RPG)	LN2 calibration (RPG)	MWR 50% vertical pointing	MWR receiver T°C stability	MWR ambient target T°C stability
C	Automatic lidar & ceilometer	Lufft/Ott HydroMet CHM15k	https://hdl.handle.net/21.12132/3.cdf99c536bd04146	None	N/A				Optical quality	Laser quality
D	Doppler Lidar	Halo Photonics/Lumibird Streamline XR	https://hdl.handle.net/21.12132/3.423d89c1b5114af7	None	N/A					
E	Disdrometer	OTT HydroMet Parsivel2	https://hdl.handle.net/21.12132/3.1b0966f63b2d41f2	None	N/A					
F	Weather Station	DWD standard weather station	https://hdl.handle.net/21.12132/3.ffb25f43330f4793	None	N/A					
G	Raingauge	Lambrecht rain[e]H3	https://hdl.handle.net/21.12132/3.3292ee29e461405a	None	N/A					

1. CCRES: data availability & quality

1. Data availability ≥ 75% for each selected product (ACTRIS HO)

2. Data quality ≥ 75 % for each selected product (CCRES)

→ compliance period: 24 months within 36 months

→ 14 items to review

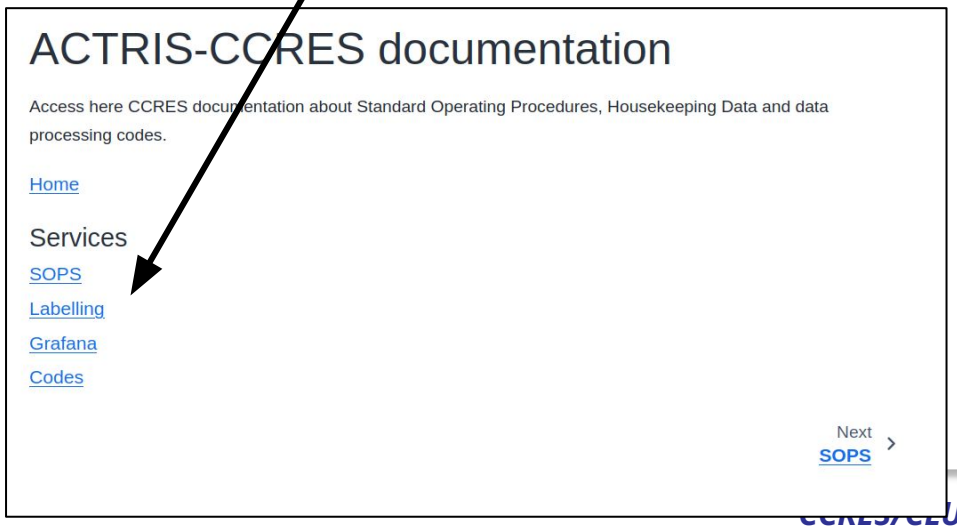
#	Availability & Quality of products considered for step 1b assessment
1	Lidar
2	MWR L1c (BT)
3	MWR single (LWP)
4	Disdrometer
5	Radar
6	Categorize
7	Classification

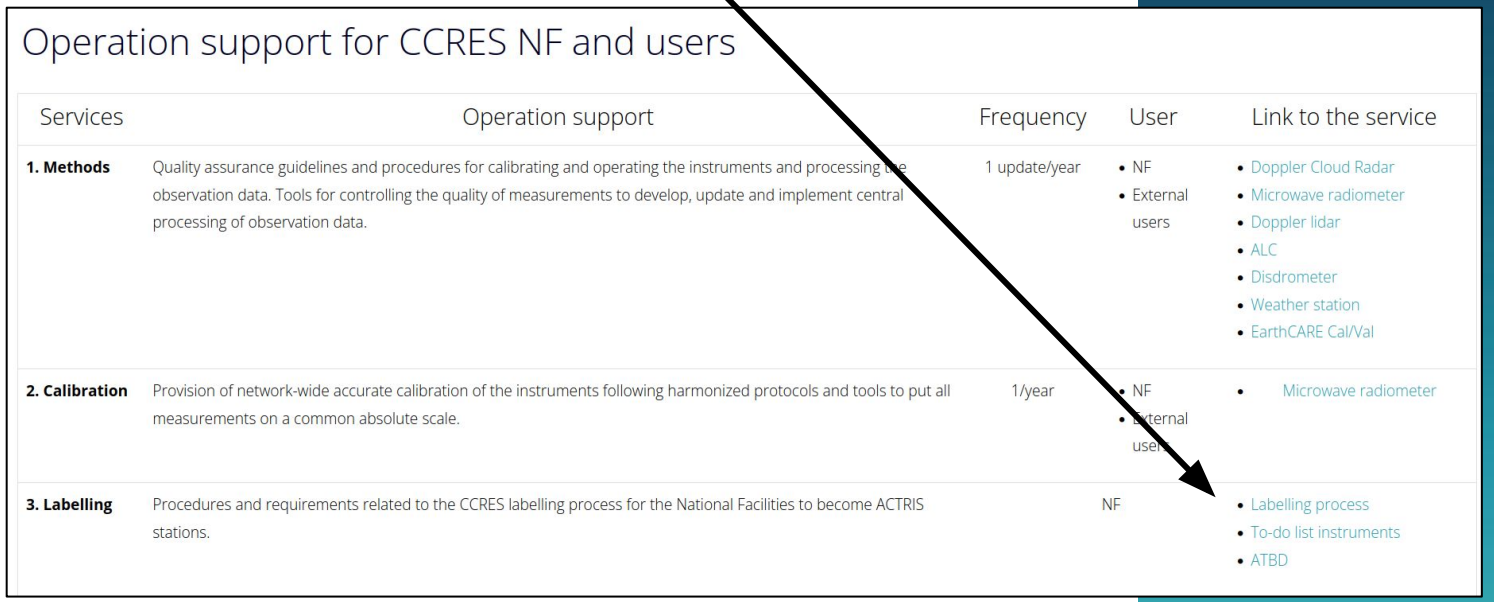
1. CCRES step 1b documentation

Available on:

https://www.actris.eu/topical-centre/ccres/operation-support-ccres-nf-and-users

https://ccres.ipsl.fr/docs/





2. CCRES step 1b status

#	NF	Initial acceptance date (step 1a)	Period with all CCRES instruments	Step 1b TC evaluation	Step 1b validated by GA
1	Jülich	12/04/2023	> 2 years	Yes	June 2026
2	Lindenberg	23/05/2023	> 2 years	Yes	June 2026
3	Palaiseau	12/04/2023	> 2 years	Yes	June 2026
4	Hyytiälä	01/09/2023	> 2 years	Delayed	Spring 2027 ?
5	Bucharest	12/04/2023	> 2 years	Delayed	Autumn 2026 ?
6	Galati	06/10/2023	> 2 years	Delayed	Autumn 2026 ?
7	Granada	16/04/2024	> 2 years	Before next GA ?	Automn 2026 ?
8	Lampedusa	14/09/2024	> 2 years	Before next GA ?	Automn 2026 ?
9	Munich	11/10/2024	> 2 years	/	/
10	Potenza	11/10/2024	Since March 2025	/	/
11	Mindelo	13/12/2024	> 2 years	/	/
12	Payerne	14/03/2025	> 2 years	/	/
13	Cabauw	13/06/2025	> 2 years	/	/
14	Limassol	13/06/2025	> 2 years	/	/
15	Cluj-Napoca	09/05/2025	Since March 2025	/	/
16	Maïdo	12/09/2025	> 2 years	/	/
17	Pallas	12/01/2026	Since November 2025	/	/
18	Melpitz	Not yet		/	/
19	Rzecin	Not yet		/	/
20	Warsaw	Not yet		/	/
21	L'Aquila	Not yet		/	/

- 3 NFs validated step 1b
- 3 NFs are delayed
- +2 additional NFs for the next GA ?

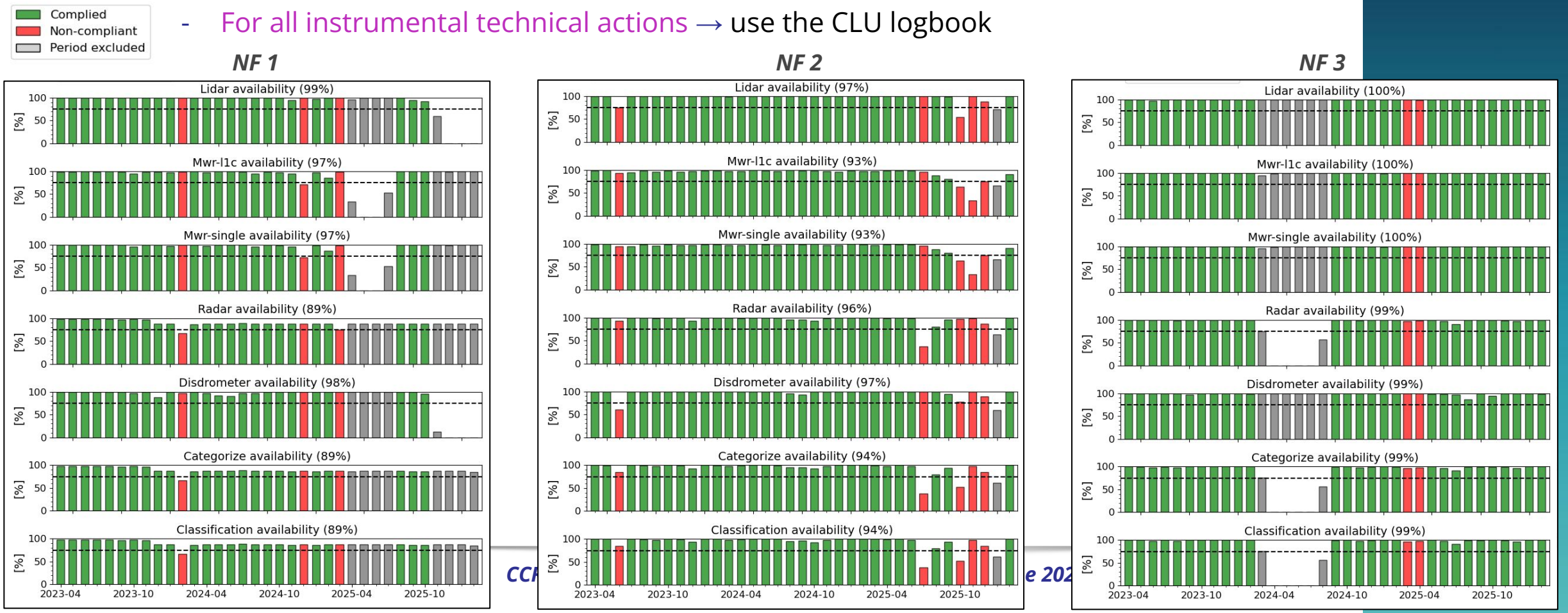
3. Lessons learned:
a) Why months are excluded ?

- **Reasons for excluding months from step 1b analyses**
  - Purchase of an instrument
  - Maintenance/refurbishment (transmitter [DCR, ALC], magnetron [DCR], …)
  - Renewal
  - Extreme weather conditions
  - Power outage
  - AC issue (high T°C during summer)
  - CCRES campaigns (disdrometer verification: @Palaiseau & @LMU)

→ **Soon:** more detailed statistics available thanks to the CLU logbook (see Simo's presentation)

3. Lessons learned:
b) 36-month data requirement

- **Key focus:** instrumental/product synergy
- **Time sensitivity:** 1 month can be lost quickly due to maintenance or technical issues
- **Important to monitor:**
  - Instruments → Grafana (Marc-Antoine's presentation) + Cloudnet data portal
  - For all instrumental technical actions → use the CLU logbook



3. Lessons learned:
c) Importance of instrument maintenance/calibration

- **MWR maintenance & calibration**

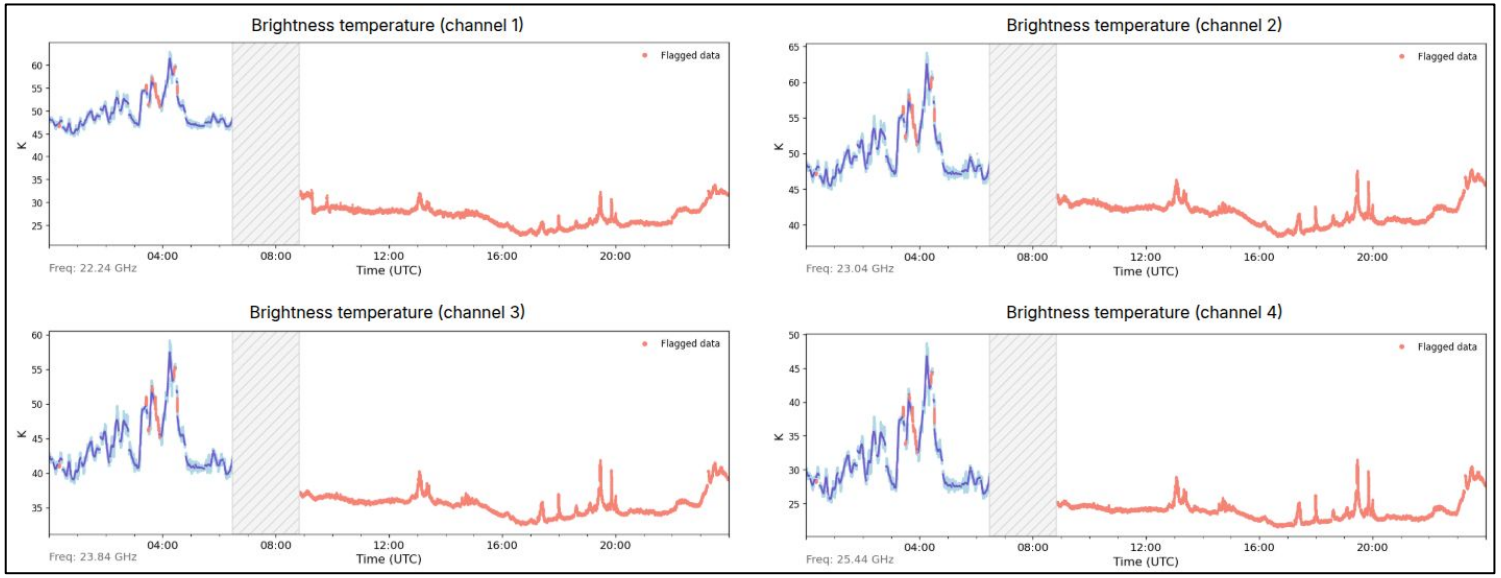
- **CCRES requirement:** minimum accepted is once per year → otherwise may affect data quality

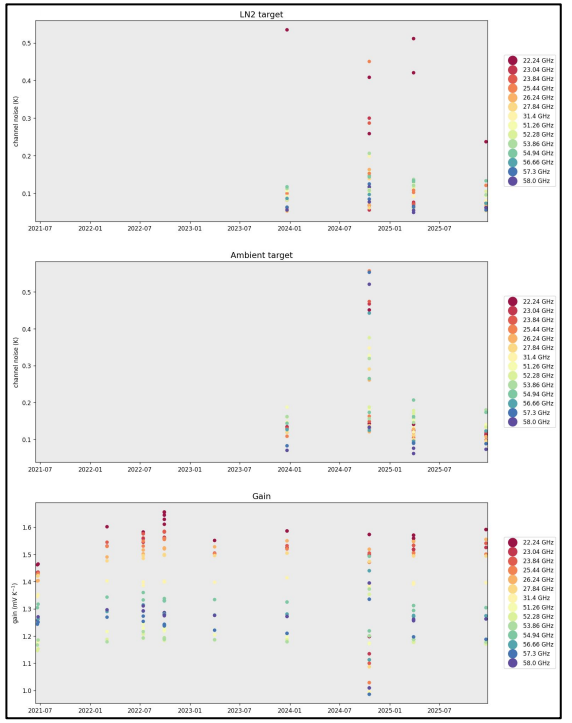
  → Reminder: CCRES ToDo list available: here

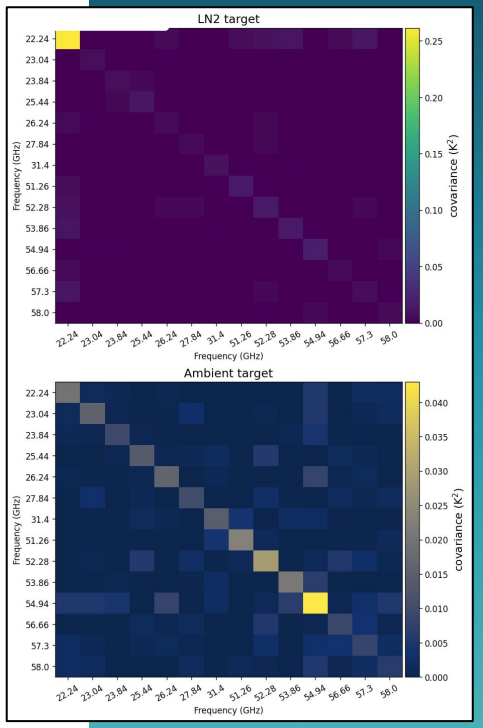
	2023	2024	2025
Radome change	23/11/2023		27/03/2025 18/12/2025
LN2 calibration	18/12/2023		27/03/2025 18/12/2025
Log files sent/received to/at actris-ccres-mwr@uni-koeln.de ?	ok		ok

3. Lessons learned
d) MWR: 1-2 channel failures

- **Issue:** TB drop in 1-2 channels after LN2 calibration (invisible in others) → calibration could be correct, but channel is faulty / affected by interference (also happens unrelated to calibrations)
- Need to be reported to RPG
- **Observation:** LN2 calibration logs sometimes show higher noise for the affected channel
- **Impact:** Blocks MWR-single product (LWP) generation





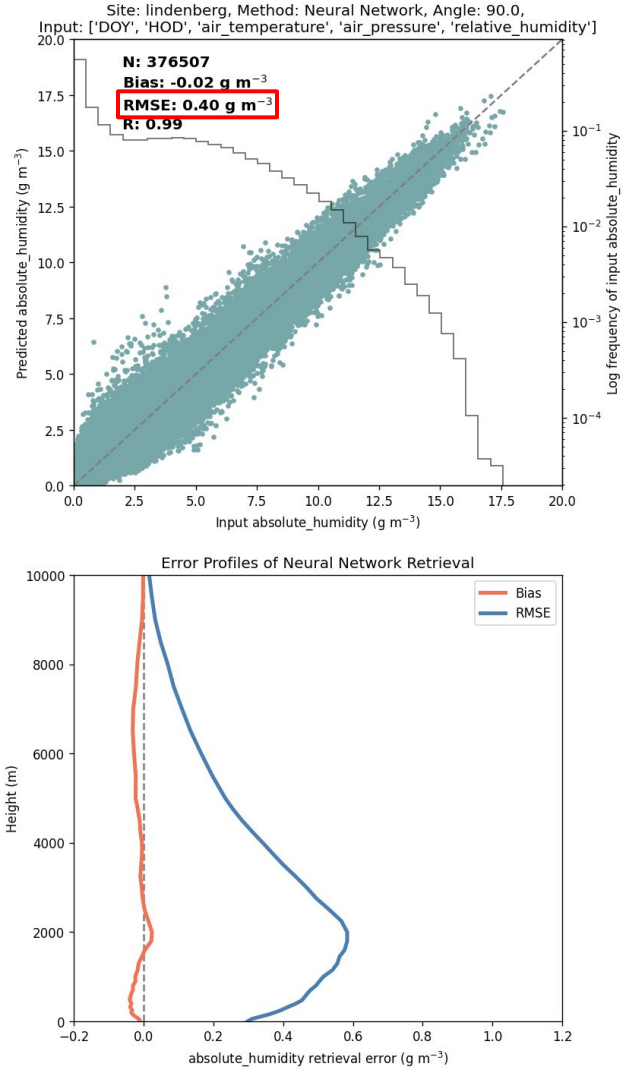


3. Lessons learned
d) MWR: 1-2 channel failures

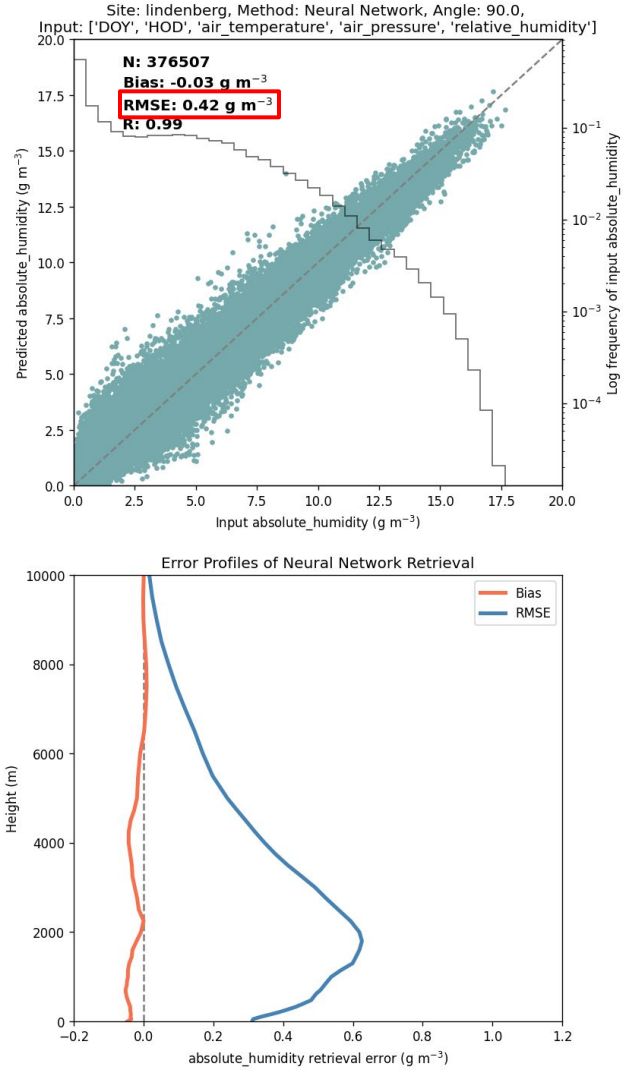
Solution

- Retrievals possible excluding channel 1 with minimal accuracy loss
- New retrieval framework under development → Available late summer 2026
- Reprocessing to fill data gaps

With all channels



Channel 1 excluded

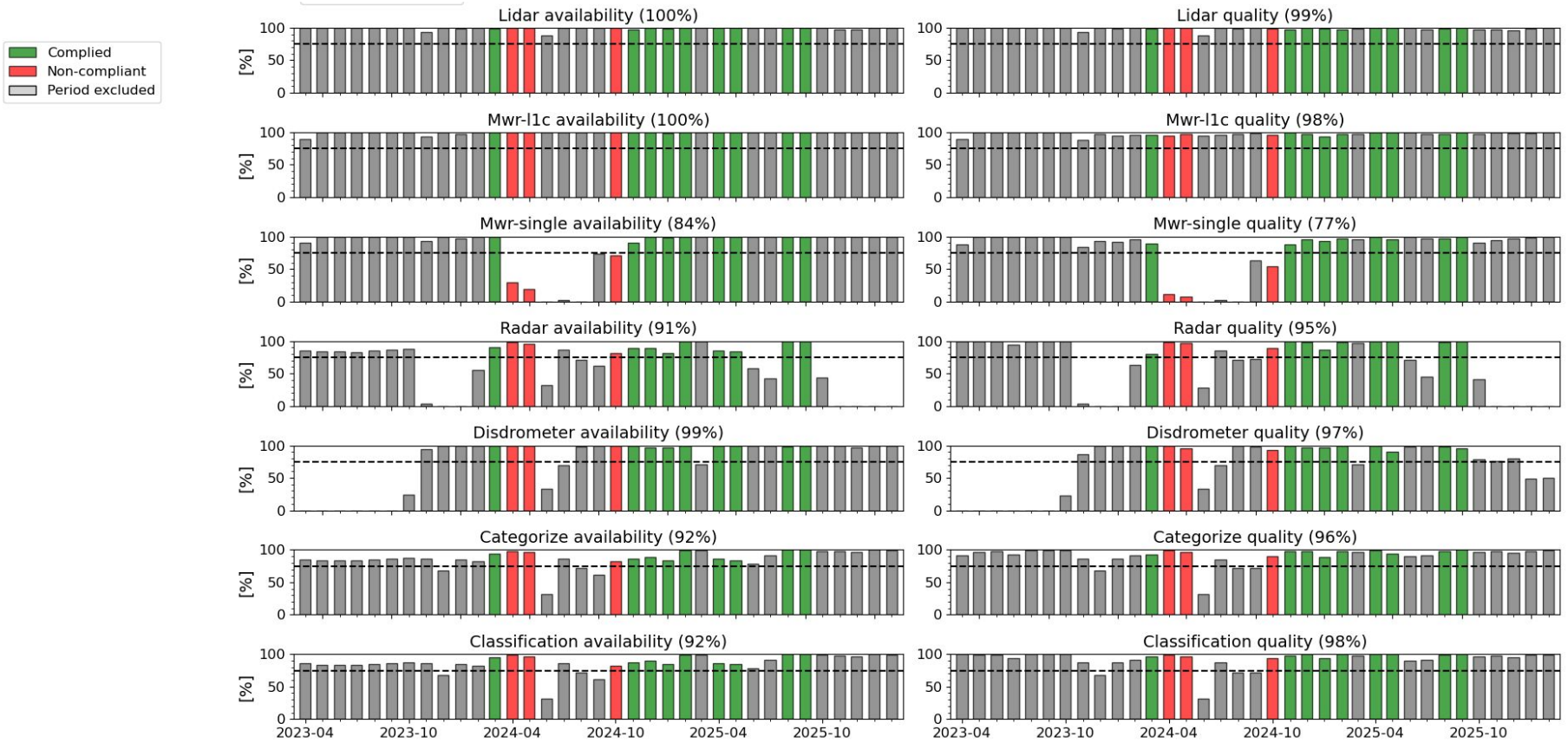


3. Lessons learned
e) Backup instruments : challenges & considerations

- **Advantage:** backup instruments → improve resilience in case of instrument failure

Example of a NF facing successive issues with radar & MWR

1st analysis
9/12 month validated
23 months excluded



Need +15 validated months to reach 24

3. Lessons learned
e) Backup instruments : challenges & considerations

- **Advantage:** backup instruments → improve resilience in case of instrument failure

Example of a NF facing successive issues with radar & MWR

1st analysis
9/12 month validated
23 months excluded

Need +15 validated months to reach 24

3. Lessons learned
e) Backup instruments : challenges & considerations

- **Advantage:** backup instruments improve resilience in case of instrument failure

Excluding disdrometer → verify availability for cloud radar monitoring

2nd analysis
17/21 month validated
14 months excluded

Need +7 validated months to reach 24

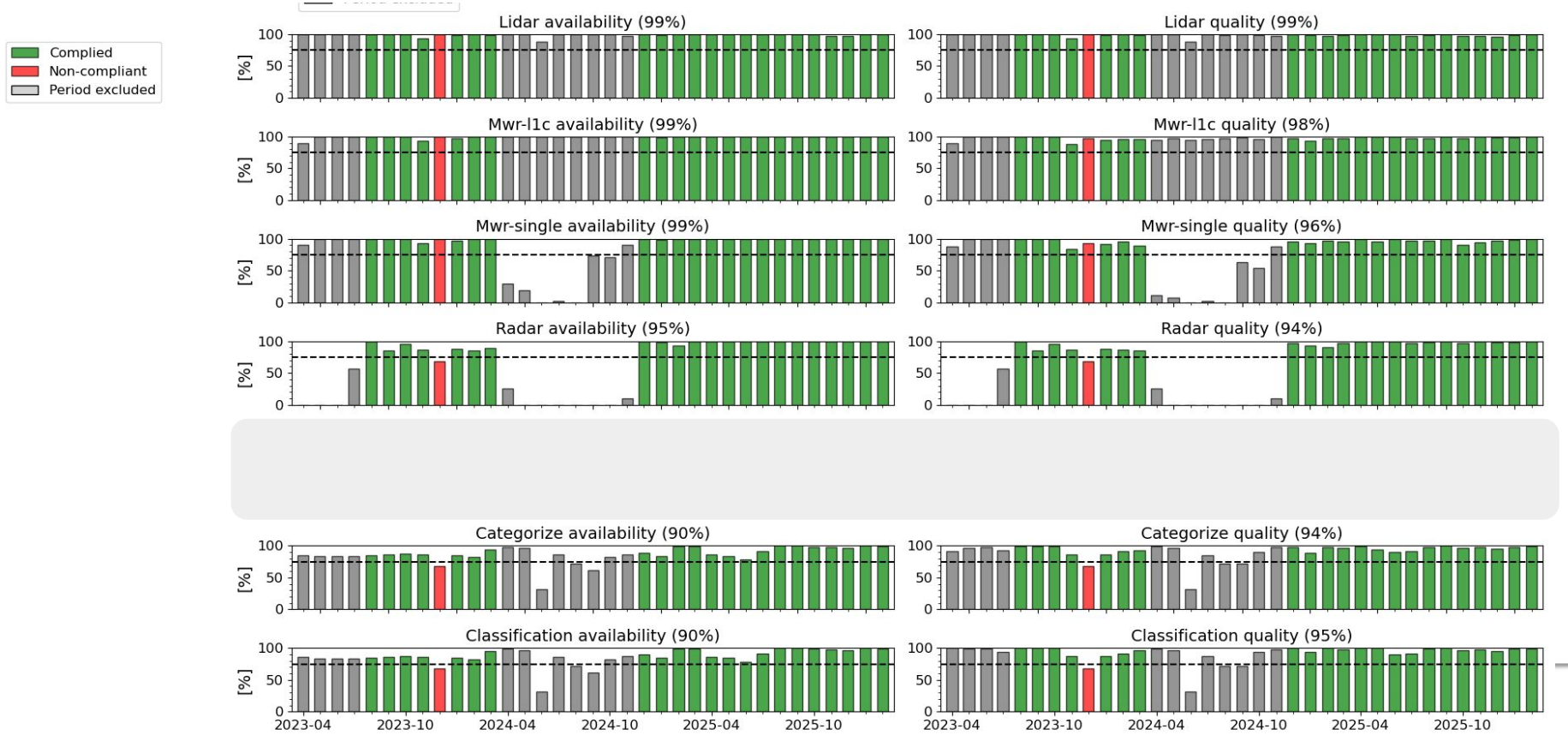
! 36-month rolling window ! → Can remove validated months for upcoming months !

3. Lessons learned
e) Backup instruments : challenges & considerations

- **Advantage:** backup instruments improve resilience in case of instrument failure

Excluding disdrometer
Considering backup radar as nominal

3rd analysis
22/23 month validated
12 months excluded



Need +2 validated months to reach 24

3. Lessons learned
e) Backup instruments : challenges & considerations

- **Limitation:** no seamless monthly switch possible (now and/or in the future ?)

  → only 1 nominal instrument should be considered for the 36 month period analysis

  - ACTRIS requires long-term consistency
  - If so, how to ensure continuity between 35 GHz and 94 GHz radar products and derived outputs ?
  - Multiple switch between nominal and backup is not consistent with ACTRIS long-term consistency

- **Requirement:** Fill the CLU Logbook for all instruments (nominal + backup)

  → backup instrument must be “CCRES compliant”

Conclusions & Perspectives

- **Lessons learned from the 1st round of step 1b analysis for 6 NFs**
  - 3 NFs have already validated step 1b
  - 3 NFs are delayed to end 2026 / early 2027
  - Potential for +2-3 additional NFs by the next GA ?
  - 36-month data requirement

- **Challenges delaying step 1b analysis**
  - Insufficient maintenance/calibration
  - MWR 1-2 channel failures → data reprocessing required
  - Backup instrument usage remains challenging and requires community discussion

- **CLU Logbook: critical tool for step 1b analysis**
  - Without a logbook: NFs were asked to provide internal logs to assess SOPs
  - Now mandatory: all step 1b analyses will be based on the CLU logbook

→ **Please fill in historical and new technical actions**

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Thank you !