

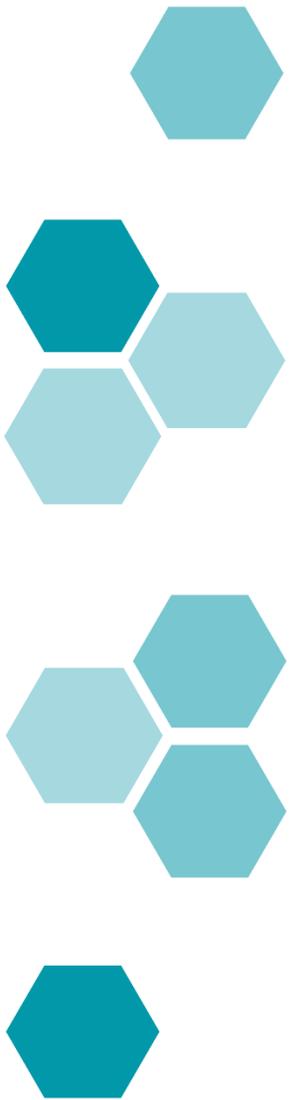


CCRES Labelling process
Martial Haeffelin

CCRES Workshop, Online – May 3-5th, 2022



This project receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreements No 871115



I. CCRES labelling process in a nutshell

II. The initial acceptance

- Step 1 a workflow
- CCRES requirements
- Pre-labelling form
- CCRES conformity Matrix

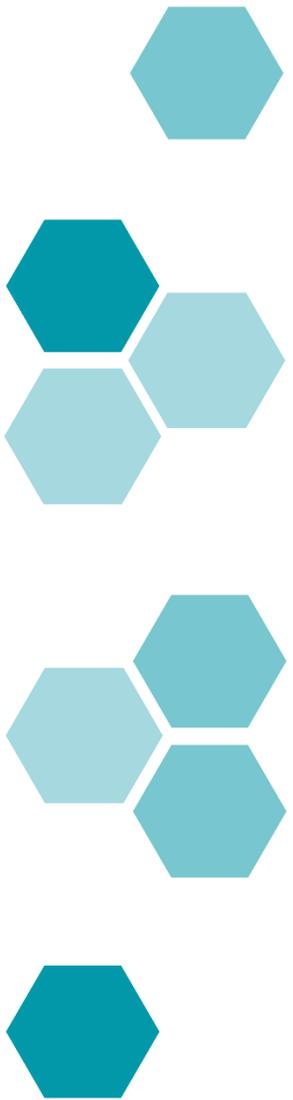
III. The performance evaluation

- Step 1 b workflow

IV. Initiating the process with pilot facilities

- Selection of NF pilots
- Pilot conformity matrix

IV. Next steps



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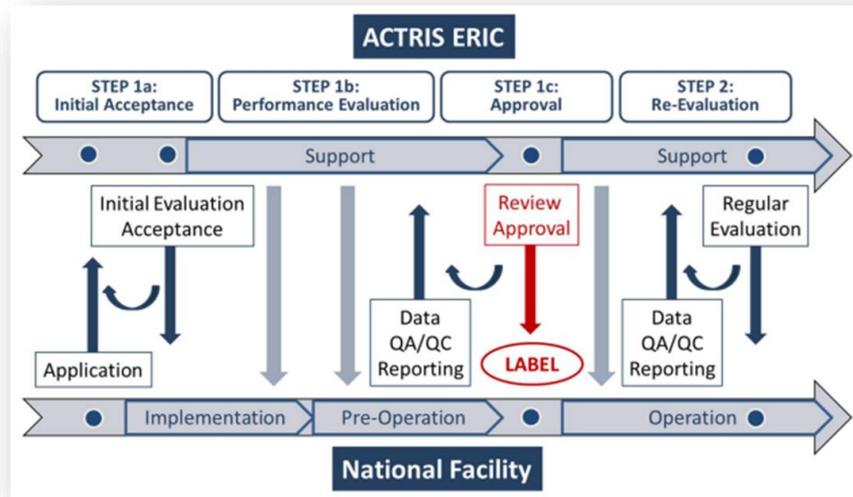
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I. CCRES labelling process in a nutshell



STEP 1 a: Initial acceptance

General feasibility check, collect of information on variables, instruments and personnel

→ [Compliance with CCRES requirements](#)



STEP 1 b: Performance evaluation

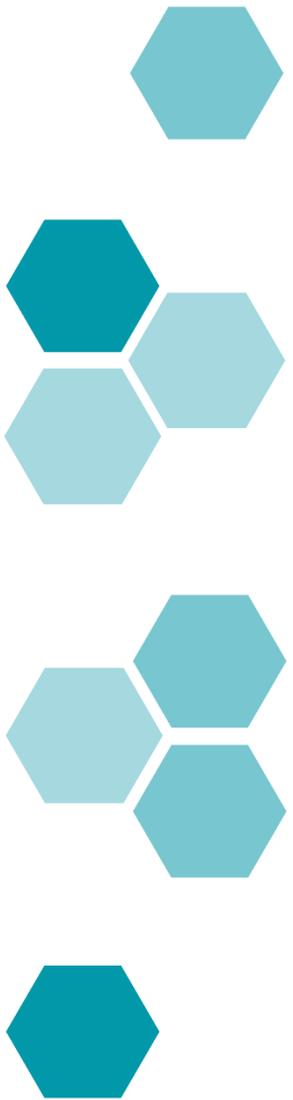
Data flow and operation support schedule created, Tracking of NF data (2 years), Upgrade of the facility (if necessary),

→ [Compliance with CCRES/CLU data requirements](#)



STEP 1 c: Approval

Full label is granted. Signature of ERIC and NF agreement.



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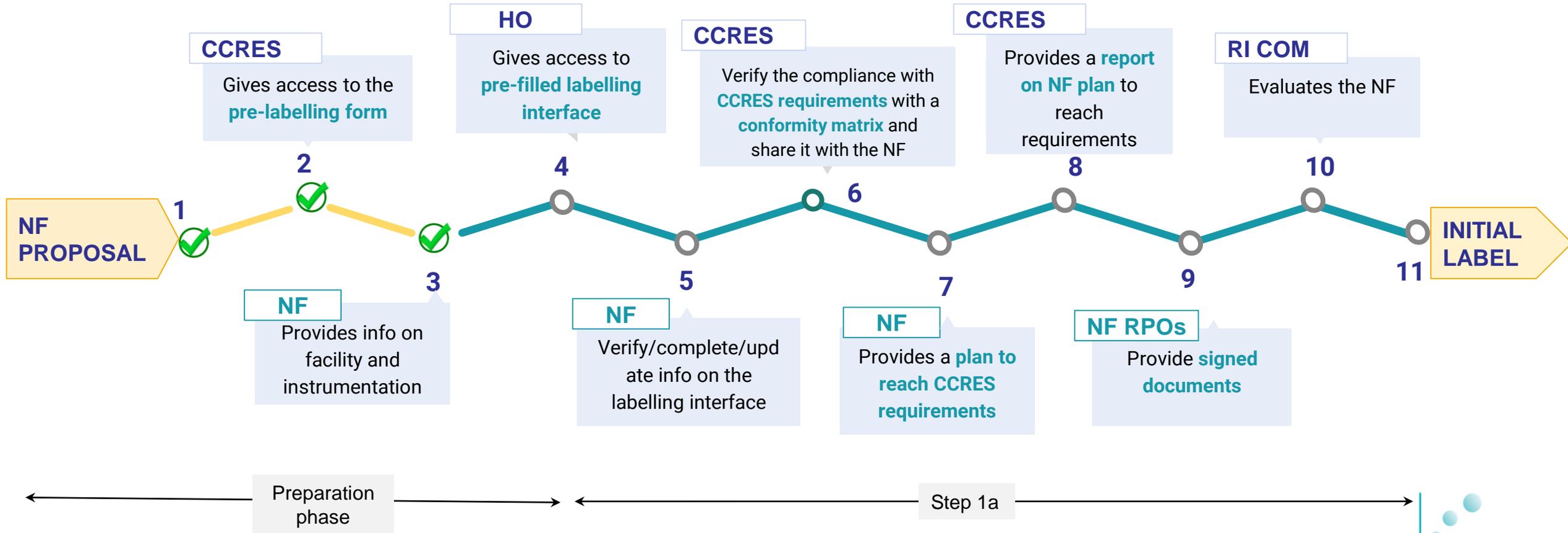
IV. Initiating the process with pilot facilities

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II. The initial acceptance Step 1 a workflow

- 11 stages to reach initial label:



II. The initial acceptance CCRES pre-labelling form

- The CCRES pre-labelling form has been sent to **NF representatives** (Stage 2-3).
- This form will feed the future **HO labelling interface** (Stage 4-5).

Have you received the pre-labelling form?

ACTRIS
Centre for Cloud Remote Sensing

Cloud Remote Sensing National Facility

This form is meant to prepare the labellisation of the ACTRIS Cloud Remote Sensing National Facilities. The information provided will be used to have an overview of the stations instruments and to collect the contact in order to facilitate the NF labellisation. Please note that you can complete the first information of the form and come back to it later. You will receive an email with your answer and a link to modify it.

Please complete the form by April 29th.

The different sections of the form are:

- General information on the NF
- Instrument 1: Doppler Cloud Radar
- Instrument 2: Microwave radiometer
- Instrument 3: Doppler lidar
- Instrument 4: ALC
- Instrument 5: Disdrometer
- Additional instruments

CCRES Management board is happy to answer to all of your questions, please do not hesitate to contact alexandra.froment@jpsl.fr

With many thanks!

alex.fromentv@gmail.com [Switch accounts](#)

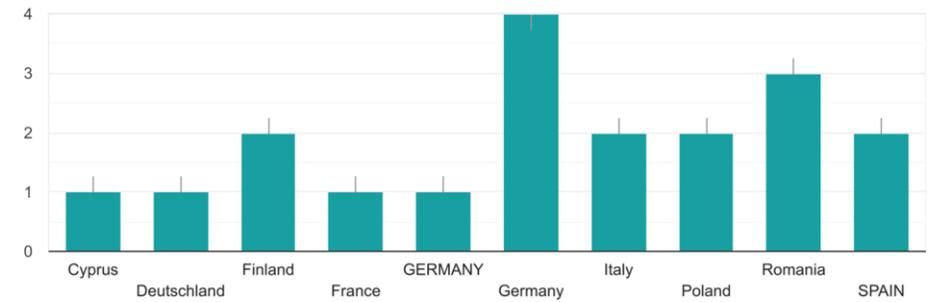
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Email *

Your email address

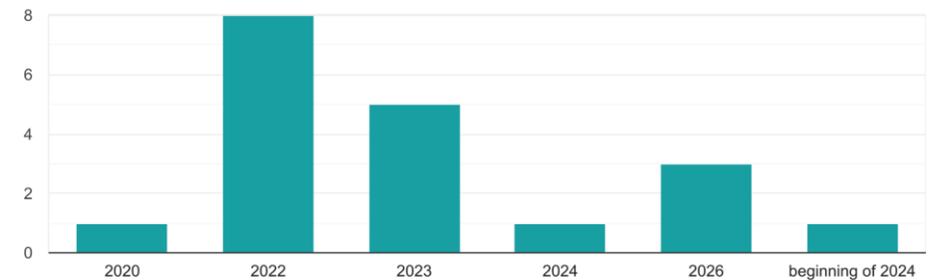
Country

19 réponses



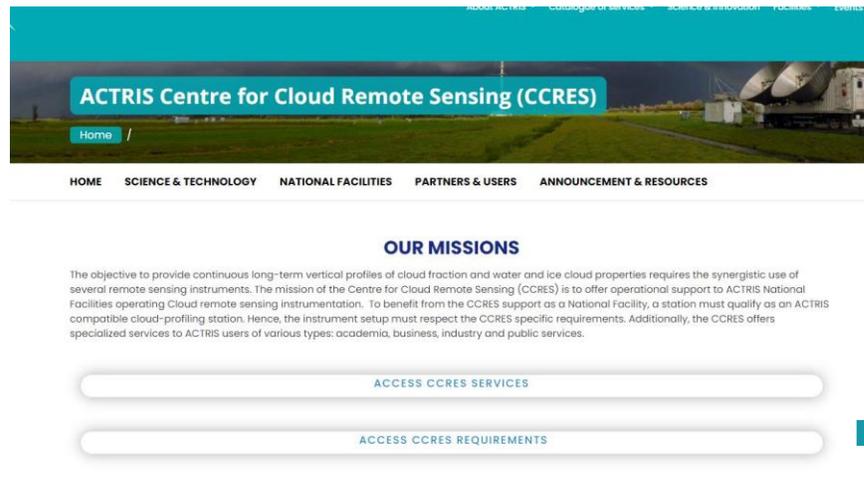
Year of readiness to start labelling

19 réponses



II. The initial acceptance CCRES requirements

- Once the **labelling interface** is completed by the NF (Stage 5), CCRES verify the compliance with **CCRES requirements** thanks to a **conformity matrix** (Stage 6).
- CCRES requirements are composed of 3 main parameters:
 - **Instruments requirements** are checked: option A or B is verified
 - Instruments are **on site and operational** (or installed on site and plan to be operational in less than 3 months)
 - Each instrument has **an identified contact point for CCRES**



Requirements are available in
the CCRES website !

<https://www.actris.eu/topical-centre/ccres>

II. The initial acceptance CCRES requirements

- Instrument requirements, option A: Known compliant instruments

1. Doppler cloud radar	2. Microwave radiometer	3. Lidars & ceilometers	4. Disdrometer	5. Doppler lidar	Other instruments
Metek Mira 35	RPG HATPRO series	Vaisala CL61	OTT Parsivel2	Halo Photonics Streamline	Weather station
Metek Mira 35 C	Radiometrics MP 3000 series	Vaisala CL51	Thies LNM	Halo Photonics Streamline Pro	Rain gauge
BASTA FMCW 94 GHz		Vaisala CL31	Distromet Joss-Waldvogel	Halo Photonics Streamline XR	Lidar (Raman, DIAL, HSRL, etc)
RPG FMCW 94 SP		Vaisala CT25k (SkyVUEPRO)		Vaisala (Leosphere) Windcube WLS 100s	Micro Rain Radar
RPG FMCW 94 DP		Lufft CHM15k		Vaisala (Leosphere) Windcube WLS 200s	All-sky camera
RPG 35 GHz		Lufft CHM8K		Vaisala (Leosphere) Windcube WLS 400s	Global radiation
RPG 35 GHz+ 94 GHz		Campbell Scientific SkyVUE			In situ probes (clouds, aerosols)
Copernicus		Raymetrics RAP			Sensible and latent heat flux measurements
Galileo					GPS water vapor

II. The initial acceptance CCRES requirements

- Instrument requirements, option B: Compliant criterias for unknown instruments

1. Doppler Cloud Radar

Criteria	Minimum requirements	Optimum set up
Minimum sensitivity	-40 dBZ at 1 km in the absence of attenuation.	-50 dBZ at 1 km in the absence of attenuation.
Temporal resolution	30 seconds and 60 m resolution in the vertical	1 second and 10 m resolution (or better) in the vertical
Velocity resolution	10 cm s ⁻¹ or better	5 cm s ⁻¹ or better
Doppler spectrum	No	Yes
Polarisation diversity	No	Yes (LDR preferred but SLDR also suitable)
Type of instruments that fulfill the Min. requirement or the optimum setup	35 or 95 GHz cloud radar in vertical pointing mode	Polarisation and Doppler spectrum capabilities. Elevation scanning capabilities with angular resolution better than 2°

2. Microwave radiometer

Criteria	Minimum requirements	Optimum set up
Parameters observed	Cloud liquid water path (LWP) Integrated water vapor (IWV)	Cloud liquid water path (LWP) Integrated water vapor (IWV) Temperature profile Humidity profile
Temporal resolution	1 minute (LWP, IWV)	1 second (LWP, IWV) 15 minutes (T-profile)
Accuracy	30 g/m ² (LWP), 1 kg/m ² (IWV)	15 g/m ² (LWP), 0.5 kg/m ² (IWV)
Type of instruments that fulfill the Min. requirement or the optimum setup	Dual-frequency radiometers in K-Band (e.g. 23.8/31.4 GHz)	Multi-frequency radiometers with elevation scanning capabilities.. Measurements at 5-10 frequencies in both K- (22-32 GHz) and V-Band (51-59 GHz), potentially additional channels in higher bands (89 GHz)

3. Automatic Lidars & ceilometers

Criteria	Minimum requirements	Optimum set up
Minimum sensitivity	Sufficient SNR for detection of liquid water layers in the near range (< 200 m)	Far range detection > 7.5 km
Advanced capabilities	...	Depolarization channel
Advanced capabilities	...	Ability to retrieve extinction directly through high-spectral-resolution or Raman methods
...		
Type of instruments that fulfill the Min. requirement or the optimum setup		

II. The initial acceptance CCRES requirements

- Instrument requirements, option B: Compliant criterias for unknown instruments

4. Disdrometer

Criteria	Minimum requirements	Optimum set up
Observed parameter	Speed class histogram Size class histogram	Particle velocity for each hydrometeor by a single particle counter. Particle size for each hydrometeor by a single particle counter.
Temporal resolution	30sec	30sec
Particle size range	0.2 to 8 mm	0.05 to 8 mm
Velocity range	0.2 to 20 m/s	0.1 to 20m/s
Type of instruments that fulfill the Min. requirement or the optimum setup	Laser disdrometer. Clear space on a radius of 30m around the sensor.	Laser disdrometer with single particles capabilities

5. Doppler Lidar

Criteria	Optimum set up
Sensitivity	Able to capture the full depth of the boundary layer (in most conditions)
Scanning capability	Ability to scan required for deriving profiles of the horizontal wind. VAD is preferred over DBS, with full hemispheric scanning enabling optimisation for specific location (elevation angle(s), maximum expected wind speeds). Vertical operation provides turbulent properties, although can be obtained from scanning.
Temporal resolution	< 10 s (for turbulent properties)
Velocity resolution	< 10 cm s ⁻¹
Nyquist range	> -15 to +15 ms ⁻¹ for scanning operation (elevation angle dependent)
Range resolution	< 50 m (for turbulent properties), < 50 m in vertical extent (for wind), range resolution can be greater (elevation angle dependent)

6. Weather station

Minimum requirements to be defined

7. Rain gauge

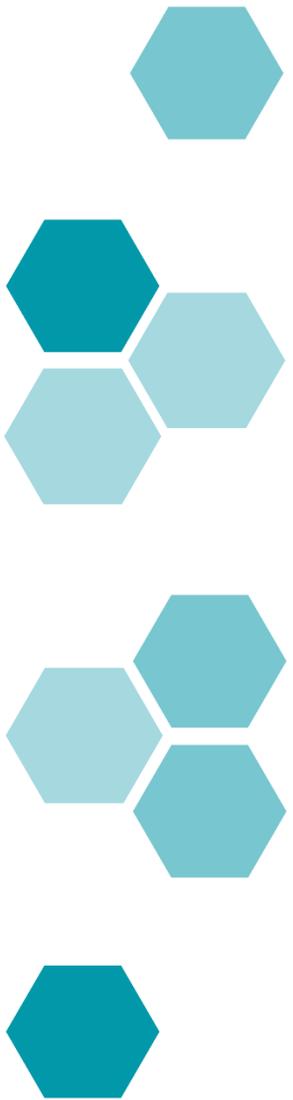
Minimum requirements to be defined

II. The initial acceptance

Example of a conformity matrix of the NF xxx

	1. Doppler cloud radar	2. Microwave radiometer	3. Lidar & ceilometers	4. Disdrometer	5. Doppler lidar	Other instruments
Instruments	RPG 94 GHz SP	No MWR	Lufft CHM15k	OTT Parsivel	Vaisala WLS200S	Comprehensive weather station and rain gauge
On-site and operational	Operational	Planned	Installed	Operational	Operational	Operational
Personnel	X.X	Y.Y	No	No	Z.Z	U.U

C
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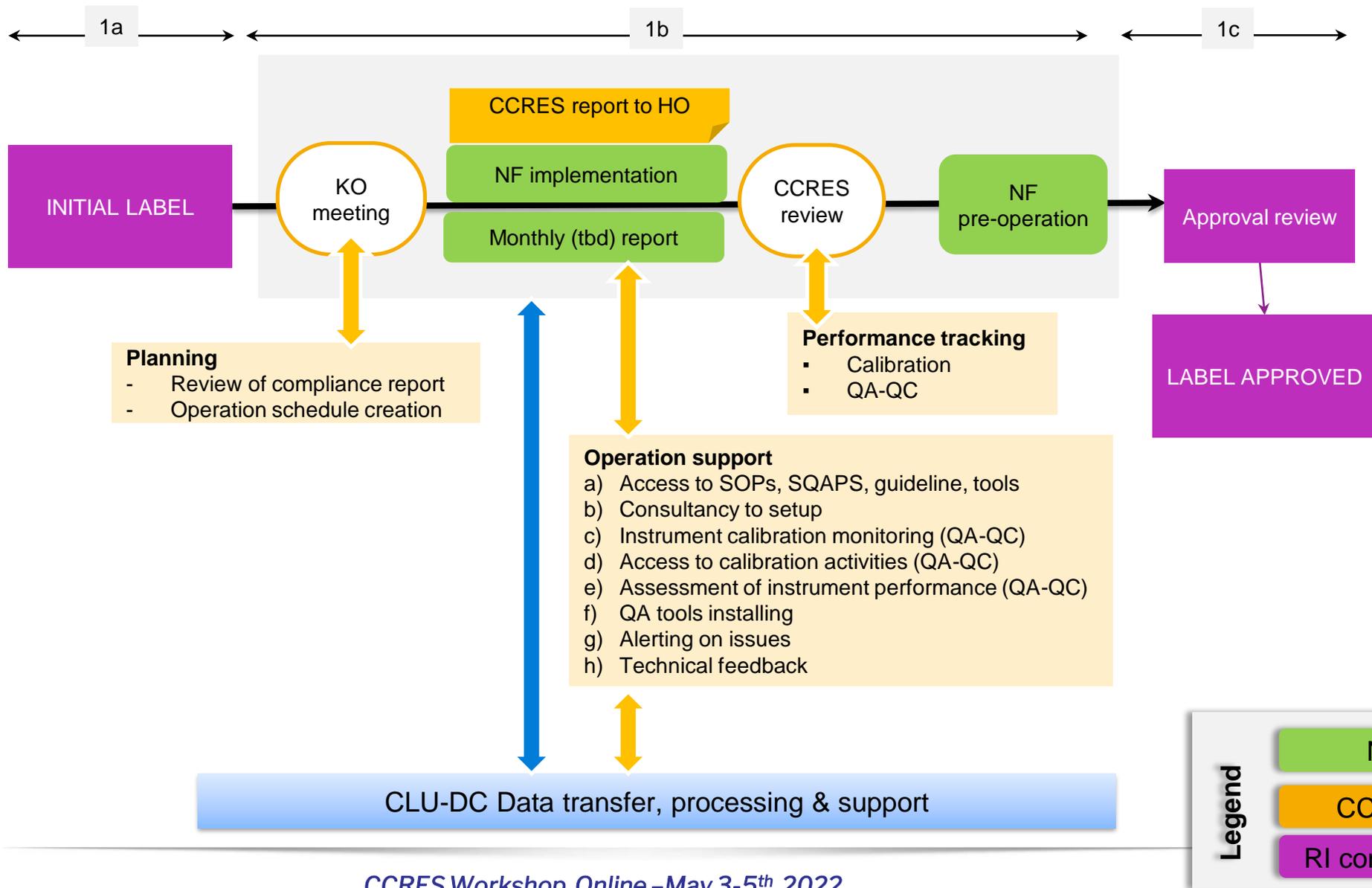
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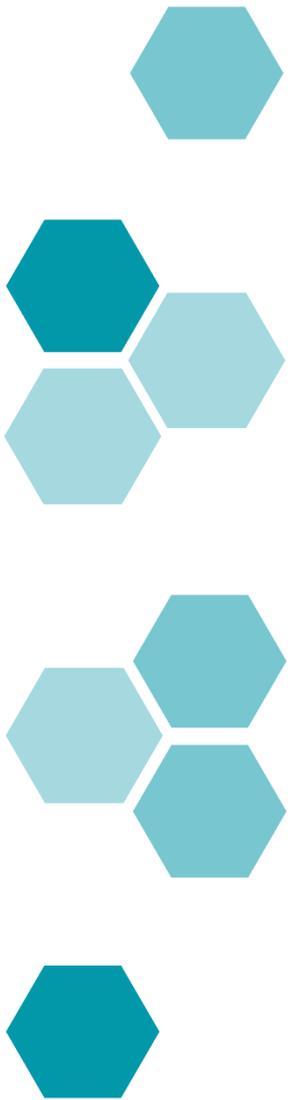
IV. Initiating the process with pilot facilities

- Selection of the pilots
- Pilot conformity matrix

IV. Next steps

III. The performance evaluation Step 1 b workflow





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IV. Initiating the process with pilot facilities

Selection of pilots NFs

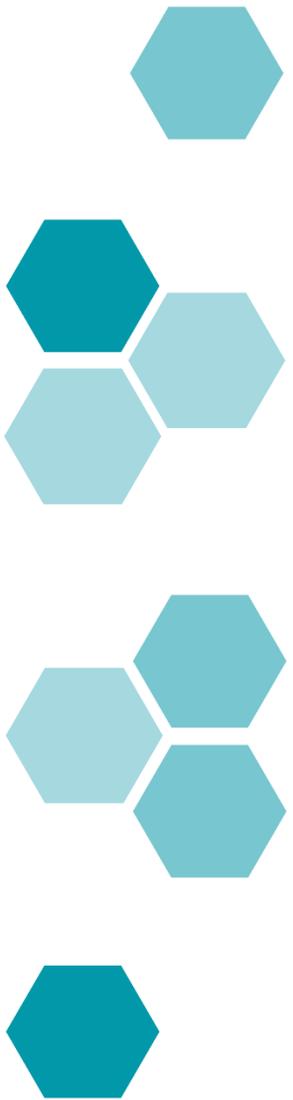
- Cabauw: not eligible
- Warsaw: not eligible
- Hyytiälä (Finland): ready
- Sirta (France): ready
- Joyce (Germany): ready
- *Bucharest (Romania): ready, but DCR in Cabo verde*
- *Potenza (Italy) : ready, but instrument upgrade in progress*
- Lindenberg: not ready at least before May 2022



IV. Initiating the process with pilot facilities

Pilot conformity matrix

	1. Doppler cloud radar	2. Microwave radiometer	3. Lidar & ceilometers	4. Disdrometer	5. Doppler lidar	Other instruments
JOYCE - Germany	Metek Mira 35 Dr L.P Op	RPG HATPRO series Dr B.P Op	Lufft CHM15k Dr J.S Op	OTT Parsivel2 Dr L.P Op	Halo Photonics Streamline XR Dr T.M Op	- Radiosonde ground station <u>Planned</u> : - a scanning RPG polarimetric dual wavelength Ka-W cloud radar - a Raman Lidar with temperature and humidity channel
<i>Bucharest - Romania</i>	<i>RPG FMCW 94 DP D.C Op</i>	<i>RPG HATPRO series D.C Op</i>	<i>Lufft CHM15k A.R Op</i>	<i>OTT Parsivel2 A.R I</i>		
<i>Potenza - Italy</i>	<i>Metek Mira 35 F.M I</i>	<i>RPG HATPRO series M.R I</i>	<i>Vaisala CL51 A.G I</i>	<i>TBD S.L P</i>	<i>Halo Photonics Streamline XR M.R I</i>	
SIRTA - France	Basta FMCW 94 GHz J.D. Op	RPG HATPRO G5 J-C.D Op	Lufft CHM15k S.K. Op	OTT Parsivel J-C.D Op	Leosphere WLS70 E.D. Op	
Hyttiälä - Finland	<i>RPG FMCW 94 DP D.M Op</i>	<i>RPG HATPRO series D.M Op</i>	<i>Vaisala CL51 D.M Op</i>	<i>OTT Parsivel2 D.M Op</i>	<i>Halo Photonics Streamline XR E O'C Op</i>	- rain gauge (Ott pluviat 200 and 400), - C-band radar, global radiation (500 m away)
...						



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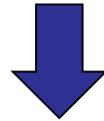
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IV. Next steps

V. Next steps

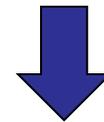
Preparation phase (spring - summer 2022)

- Complete pre-labelling form
- Installation of all instruments
- Look for CCRES documents and recommendations in CCRES website
- Participation to CCRES trainings and workshops



When ready for labelling process (Fall 2022)

Go to the (soon to be ready) ACTRIS-CCRES interface on ACTRIS website and start the NF registration for labelling



STEP 1 A

The logo features the text "ACTRiS" in a teal, sans-serif font with a white circle inside the letter 'C'. Below it, "CCRES" is written in a dark blue, sans-serif font. A dark blue arc curves over the text. A vertical teal line extends from the top of the 'C' in "ACTRiS" upwards, ending in three teal circles of varying sizes. The entire logo is centered on a white background.

ACTRiS
CCRES

AOB

- **September workshop**

- Cologne + Jülich

- DATES: 19-23? 26-30 ? September 2022

- DURATION: 2 days

- WORKSHOP CONTENT:

- Disdrometer operation implementation

- Results from DCR absolute calibration campaign

- ALC calibration implementation (see PROBE)

- BL classification: DL+ALC+MWR

- Wind retrievals from DCR + DL

- New MWR processing (full python version)

- TRAININGS: Disdrometer + MWR training

- PHYSICAL/REMOTE: Preferably in person meeting

- **Other events in the CRS community?**

- (EMS in Bonn 5-9 Sept)





Thank you