ACTRIS
CCRES

Communication to **Cloud Remote Sensing National Facilities**

- April 2026 -

SUMMARY

1. CCRES/CLU Workshops, Training and Consultancy

CCRES/CLU Spring Workshop

Our CCRES/CLU spring workshop 2026 will take place online **on June 1st and 2d (9-12pm)**.

Program :

The first day will focus on :

- CCRES and CLU updates on services to the community.

The second day will be dedicated :

- to NF scientific and technical developments - including ACTRIS Science Conference 2026 presentations - and
- to collect feedback from the NFs on CCRES and CLU services.

Please register here if you wish to participate.

In case of any question, please contact Elisa Villard (evillard@ipsl.fr).

Training on RPG Doppler Cloud Radar

We are pleased to announce a **training on RPG Doppler Cloud Radar operation and maintenance**, hosted by CCRES-NL in TU Delft (The Netherlands) from June 17 to 19, 2026.

The program will be composed of lectures and hands-on, covering the following topics :

- **June 17:**
  - FMCW radar principle (lecture)
  - Chirp tables for different climatology (hands-on)
  - DCR MDF, MBF and triggering (hands-on)
  - DCR radome change (hands-on)
- **June 18 :**
  - Comparison between pluvio and disdrometer (lecture)
  - DCR calibration (clear sky and LN2) (lecture and hands-on)
- **June 19:**
  - Horizontal wind profiling (cloud radar) (lecture and hands-on)

Please take note that the agenda may be adjusted depending on the weather conditions (DCR calibration hands-on with the clear sky method).

Registrations are open at this link until May 15.

In case of any questions, please contact Renju (R.Nandan@tudelft.nl) or Christine (c.m.h.unal@tudelft.nl).

2. CCRES Operational Services for NFs

Cloud radar calibration campaigns

After the CCRES DCR campaigns in Germany in Leipzig and Lindenberg (with 7 radars calibrated since early 2025) and Granada, Spain (2 radars calibrated), the BASTA-CCRES was deployed in Romania for a 6-months campaign. The first two months (January–March) were conducted in Galați to calibrate the RPG 94 GHz radar. The campaign is now continuing in Bucharest for a four-month period (March–July) to calibrate the RPG 94 GHz radar from Cluj, the RPG-ESA 94 GHz radar from Bucharest, and the MIRA-35S radar from Bucharest.

Site (NF)	Radar	Updates
Leipzig / Melpitz	2 RPG 94 GHz 2 MIRA 35 GHz	Review process completed
Lindenberg / Rzecin	1 MIRA 35 GHz 1 RPG 94 GHz 1 BASTA 94GHz	Review process completed
Granada	1 RPG 35-94 GHz 1 RPG 94 GHz	First analysis
Galati	1 RPG 94 GHz	Just ended
Bucharest / Cluj	1 MIRA 35 GHz 2 RPG 94 GHz	March-July 2026 **(on-going)**
Payerne	1 RPG 94 GHz	October-November 2026

Status of the DCR calibration campaigns

RADO-Galati and CCRES-FR team (16/03/2026). From left to right: Jean-Charles Dupont (CCRES-FR), Daniel-Eduard Constantin (Galati), Mirela Voiculescu (Galati), Jean-François Ribaud (CCRES-FR) and Adrian Rosu (Galati).

RADO-Bucharest and CCRES-FR team (17/03/2026). From left to right: Livio Belegante (Bucharest), Jean-Charles Dupont (CCRES-FR), Anca Nemuc (Bucharest) and Jean-François Ribaud (CCRES-FR)

In case of any question on DCR calibration campaign, please contact Jean-François Ribaud (jean-francois.ribaud@ipsl.fr), Felipe Toledo (felipe.toledo@latmos.ipsl.fr) and/or Jean-Charles Dupont (jean-charles.dupont@ipsl.fr).

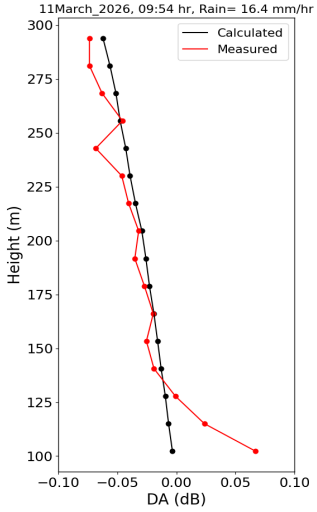
DCR calibration with polarimetric self-consistency technique

A. Myagkov et al. (2020) introduced the self-consistency calibration technique, which exploits the **polarization capabilities of W-band cloud radars.** The objective of our research is to assess the suitability of this self-consistency calibration method and to identify the modifications required to make the approach more user-friendly and practical for operational applications. For this study,

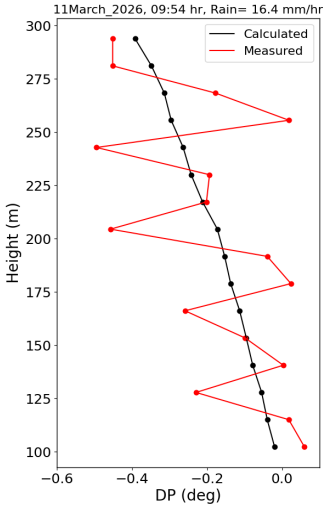
we have used 94 GHz cloud radar data operated at 30 degree elevation angle during days having rainfall rate less than 20 mm/hr. The methodology of the self-consistency method consists of 4 steps.

1. Using Rayleigh Plateau detection method (Unal and van den Brule,2024), retrieve propagational ($2\int_0^r Kdp\ dr$) and backscattering (δ) components from differential phase (φ).
2. Estimate DP= CDP + $2\int_0^r Kdp\ dr$ and DA = CDA- $2\int_0^r Adp\ dr$ from measurements, where CDP and CDA are polarimetric calibration constants.
3. Calculate DP and DA using Z0, δ and the coefficients given in A. Myagkov et al, 2020.
4. Compare the measured and calculated DA and DP, and find the best fit for calibration coefficient.

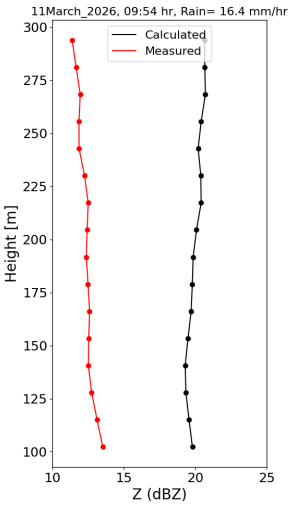
We have compared the calculated and measured DA and DP using Cabauw cloud radar data on 11 March 2026 as shown in Figure 1, 2 and 3. The obtained **calibration coefficient is 5.56 dB**. Currently checking for a few more cloud data on rainy days and applying the methodology.



(Figure 1)



(Figure 2)



(Figure 3)

In case of any question, please contact Renju Nandan (R.Nandan@tudelft.nl).

Disdrometer calibration procedure and campaign at SIRTA Observatory

A CCRES Disdrometer campaign was conducted at SIRTA between March 23 and April 3d, aiming to **assess the operational status of the network's disdrometers, compare the results and**

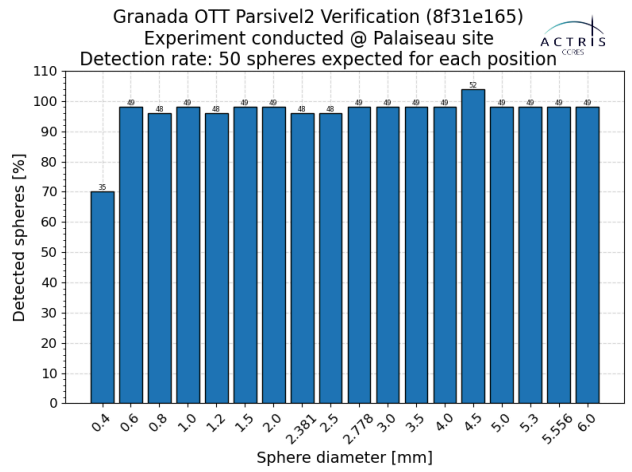
provide recommendations to each National Facility. The procedure implemented for the evaluation of the instruments (OTT Parsivel2 and Thies LPM) is based on LMU methodology (Kneifel et al., 2025). Ten disdrometer were calibrated during this pilot campaign.

#	NF	Contact		Model	PID
		Nom	Mail		
1	Lindenberg	Ulrich Görsdorf	ulrich.goersdorf@dwd.de	OTT Parsivel 2	https://hdl.handle.net/21.12132/3.1b0966f63b2d41f2
2	Granada	Maria J. Granados-Muñoz	mjgranados@ugr.es	OTT Parsivel 2	- https://hdl.handle.net/21.12132/3.8f31e16545d14ff3
3	L'Aquila	Andrea Balotti	andrea.balotti@graduate.univaq.it	Thies LPM	https://hdl.handle.net/21.12132/3.7cd404bd07d74e93
4	Payerne	Renaud Matthey	renaud.matthey@unibe.ch	OTT Parsivel 2	https://hdl.handle.net/21.12132/3.bb12977029a94d8f
5	Bucharest	Anca Nemuc	anca@inoe.ro	OTT Parsivel 2	https://hdl.handle.net/21.12132/1.85a2aa7ce0c64b3a
6	Lampedusa	Giandomenico Pace	giandomenico.pace@enea.it	Thies LPM	https://hdl.handle.net/21.12132/3.4e7765c0c8bd4d1d
7	Warsaw	Lucja Janicka	Lucja.Janicka@fuw.edu.pl	OTT Parsivel 2	https://hdl.handle.net/21.12132/3.0b70b7b738cb4593
8	Cluj	Nicolae Ajtai	nicolae.ajtai@ubbcluj.ro	OTT Parsivel 2	https://hdl.handle.net/21.12132/3.5a6e24d0ff9042b1
9	Leipzig	Patric Seifert	seifert@tropos.de	OTT Parsivel 2	https://hdl.handle.net/21.12132/3.0bc7d48784f14637
10	Palaiseau	Jean-Charles Dupont	jean-charles.dupont@ipsl.fr	OTT Parsivel 2 (nominal)	https://hdl.handle.net/21.12132/3.7e13f3f243854ae8
11	Palaiseau	Jean-Charles Dupont	jean-charles.dupont@ipsl.fr	Thies LPM	https://hdl.handle.net/21.12132/3.11d3217867474e22

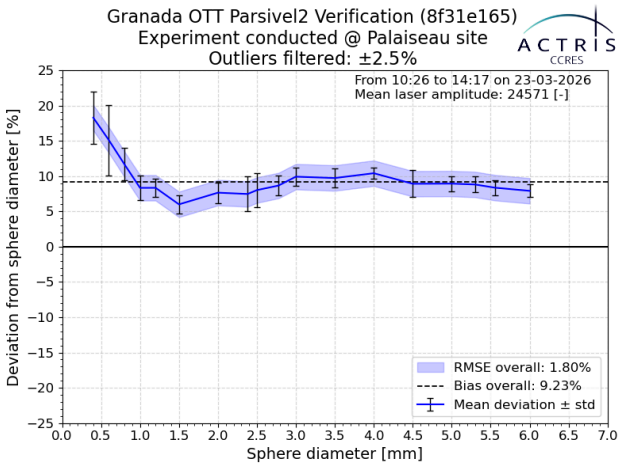
Disdrometer included into the calibration campaign

The objective of this evaluation is to compare the diameter derived with the disdrometer for metallic steel spheres whose diameter is known. We use 18 metallic sphere diameters and 50 metallic spheres are used for each size class. The accuracy for each sphere is 20µm.

The first experiment is focused on the evaluation of the disdrometer performances to measure the size distribution of particles between 0.4 and 6mm. For this standard evaluation, a total of 900 metallic spheres have been compared for each disdrometer to evaluate (1) the detection rate, and (2) the bias for each size.

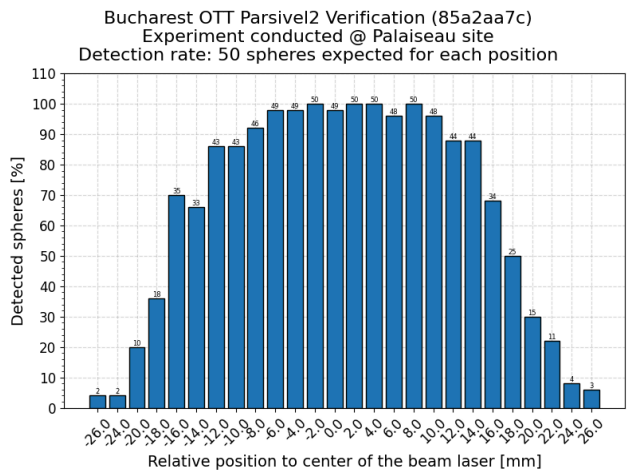


Sampling for each metallic sphere diameter for the retained number of metallic spheres after filtering to remove the outliers (2.5%-97.5%) for Granada NF disdrometer

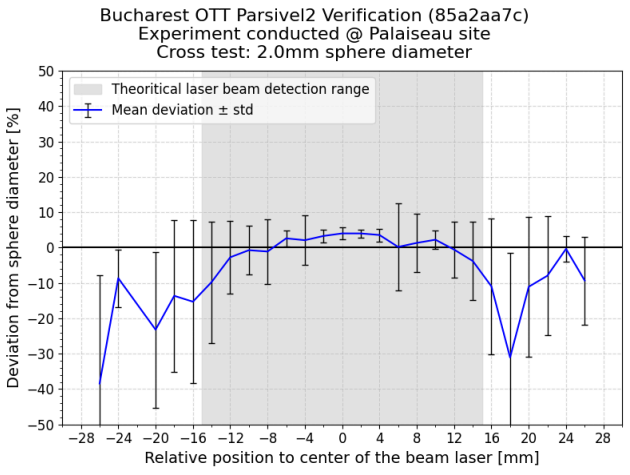


Deviation from metallic sphere diameter for the 18 metallic sphere diameters for Granada NF disdrometer

The second experiment evaluates the stability and accuracy of the laser beam along a cross section for a metallic sphere of 2mm. For this cross laser check, a total of 1450 metallic spheres allows us to evaluate (1) the detection rate, and (2) the stability / accuracy of the laser, along the cross section.



Sampling for each position along the cross section (2mm step between -26 and +26mm from the axis) for the retained number of metallic spheres after filtering to remove the outliers (2.5%-97.5%), Bucharest NF disdrometer



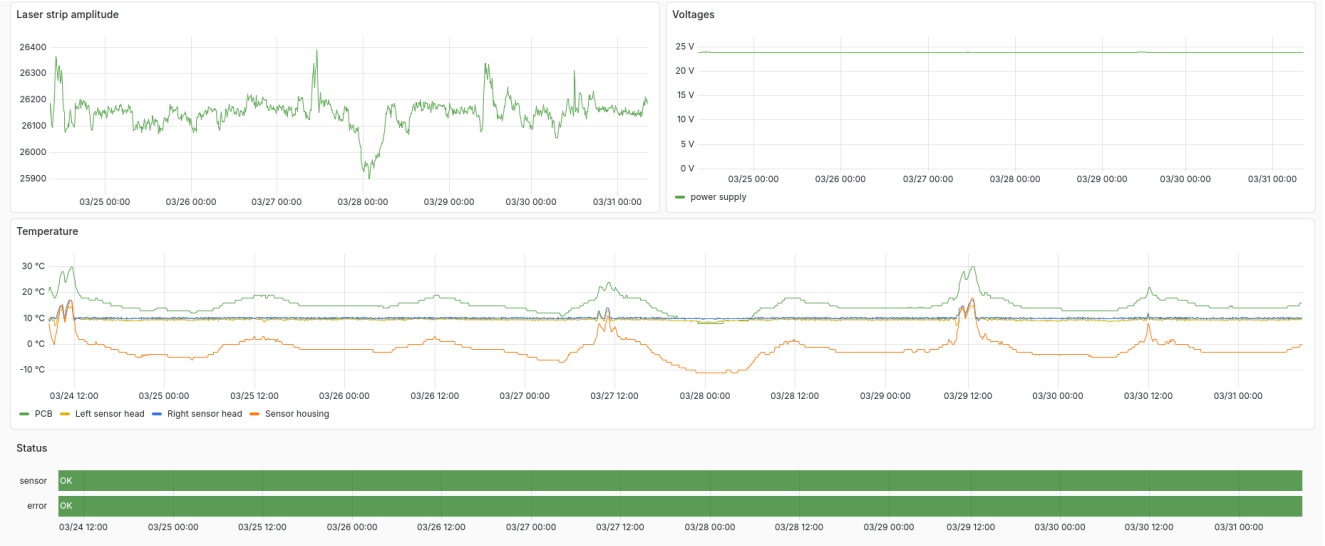
Deviation from 2mm metallic sphere diameter for the 26 positions along the cross section (theoretical laser beam detection of 30mm for the Parsivel2 disdrometer), Bucharest NF disdrometer

The preliminary results of this pilot disdrometer evaluation campaign are very encouraging and an evaluation report will be sent to each NF instrumental PI within a few weeks.

In case of any question, please contact Jean-Charles Dupont (jean-charles.dupont@ipsl.fr) and Jean-François Ribaud (jean-francois.ribaud@ipsl.fr).

Housekeeping Data Monitoring

The HKDs dashboards for the disdrometers OTT Parsivel² and THIES LPM are now **available on CCRES grafana** starting February 2026.



For Parsivel² depending on the method used to acquire the data some parameters may be missing. We are working on an update of the SOPS.

In case of any question, please contact Marc-Antoine Drouin from CCRES-FR (marc-antoine.drouin@lmd.ipsl.fr). Documentation to access the service is available at https://ccres.ipsl.fr/docs/services/grafana-server/

3. Labelling process

Labelling step 1b

Latest information on labelling step 1b and step 1c was delivered during our autumn 2025 workshop in Evora : **Labelling step 1b _ updates**

A **"to-do" list** has been shared with the National Facilities which provides recommendations on check-ups, maintenance and calibration of the instruments, summarizing the SOPs, including the frequency of the expected actions : **CCRES NF to-do list**

A **detailed procedure for labelling step1b validation** has been prepared and shared with the NFs. It includes a logbook developed by the CLU (see CLU updates below), allowing CCRES and CLU to **track the actions performed by the NF**, as well as a conformity matrix to summarize the state of readiness of the NF for the step 1b and share their status to the NFs. Meetings between the CCRES and each candidate NF will be organised to discuss the evaluation for step 1b.

Three NFs successfully passed the Step 1B labeling tests, by validating instrument operation, maintenance and calibration and data quality for 24 months or more (evaluated over a 3 year period): Lindenberg, Germany; Juelich, Germany; Palaiseau, France. The **NFs have been approved by the ACTRIS Research Infrastructure committee**, and will be presented to the General Assembly in June 2026. Other NFs are in the process.

Note: All technical maintenance actions performed on the instruments since the initial acceptance (step 1a) must be recorded in the logbook developed by CLU. This ensures a traceable record of these actions and facilitates the evaluation of non-conformities for the step 1b procedure.

If you have any questions, please contact Jean-François Ribaud (jean-francois.ribaud@ipsl.fr).

4. EarthCARE Cal/Val campaign

EarthCARE Cal/Val

EarthCARE was successfully **launched on May 29, 2024**. Read more about the mission at this link : EarthCARE launched to study the role of clouds and aerosols in Earth's climate (European Space Agency). Global information about the mission is available on the ESA website and **updated SOPs** for NFs participating in EarthCARE Cal/Val are available here.

ACTRIS Supports Validation of ESA–JAXA EarthCARE Cloud Radar Observations

A new preprint, "*Validation of EarthCARE CPR reflectivity using the ACTRIS cloud radar network*," highlights the key role of ACTRIS in verifying measurements from the recently launched EarthCARE satellite. The study, supported by CNES, statistically compares reflectivity profiles from EarthCARE's Cloud Profiling Radar (CPR) with calibrated measurements from seven ACTRIS cloud radar sites across Europe, over a time period of more than a year. The results show a minimal bias between space-borne and ground-based measurements, confirming the high quality of the CPR calibration and its readiness for climate and atmospheric research applications.

The ground-based cloud radars used in this analysis were calibrated by the ACTRIS Centre for Cloud Remote Sensing (CCRES), whose mission is to ensure the traceability and consistency of cloud remote sensing observations across the network. This work once again demonstrates the value of ACTRIS as a reference infrastructure that can support the validation of new satellite missions. These results also pave the way for a future use of EarthCARE's CPR as a reference to monitor the calibration of the ACTRIS radar network over a long time period.

The preprint is available here: https://doi.org/10.5194/egusphere-2026-925.

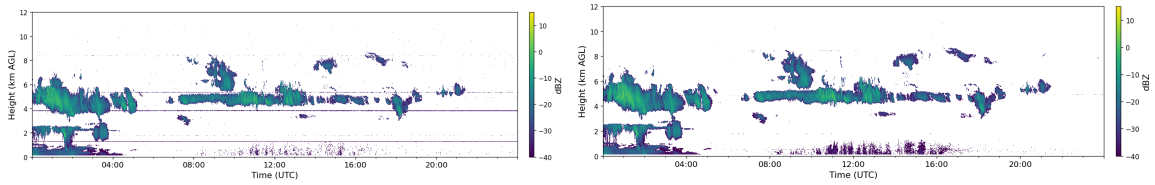
To go further

- The **Best Practice Protocol for the Validation of Aerosol, Cloud, and Precipitation Profiles (ACPPV) is now available** to the public. The protocol outlines state-of-the-art practices, methods, and tools for validating Atmospheric Satellite Profiles using ground-based and airborne measurements. It also includes a section with gaps and open questions in validation. If you are now interested, please have a look at the following link:
  Marinou, E., & Amiridis, V. (2025, May 14). Best Practice Protocol for the Validation of Aerosol, Cloud, and Precipitation Profiles (ACPPV). Zenodo. https://doi.org/10.5281/zenodo.15400055.
- **Explore a fascinating piece of science communication related to EarthCARE and cloud and aerosol profiling.** I strongly recommend watching this YouTube video: https://www.youtube.com/watch?v=6VsrIXwVg3Q. ESA and Jamie Perera, an artist and composer, collaborated to transform real EarthCARE measurements into sound. The YouTube video is a demonstration of a single orbit, including some visualisation. ESA plans to make the sound available near real-time soon. You will be able to listen today to what the satellite measured yesterday. So stay tuned for the EarthCARE radio.
- In general, if you want to stay up to date and view nice pictures, https://www.earthcarescience.net/home is the webpage to visit. It provides a brief background on the Satellite Mission, as well as nice illustrative examples of what was found and measured.

If you have any questions, please contact Nathan Feuillard (nathan.feuillard@latmos.ipsl.fr).

5. CLU Data Centre updates

- **Instrument logbook** has been released for testing. If you want to start using the logbook, please contact CLU Data Centre (actris-cloudnet@fmi.fi).
- Cloudnet now incorporates real-time data from the Finnish Meteorological Institute's (FMI) operational network of 12 C-band **polarimetric weather radars**, which perform vertical "birdbath scans" every 15 minutes for ZDR calibration—incidentally producing cloud radar-like profiles (reflectivity, Doppler velocity, etc.); the data are currently viewable in the portal (download restricted).
- Two **new sites** added to Cloudnet: ATTO-Campina, Brazil, and campaign data from Tāwhaki, New Zealand.
- The Cloudnet data portal now has a **News section**.
- CloudnetPy now contains **improved methods** for cleaning radar artefacts:



Original reflectivity, Hyytiälä 3.4.2026 Cleaned reflectivity (in categorize file)

6. Calendar

- January -July 2026 **: BASTA CCRES calibration campaign** in Bucharest, Galati and Cluj (Romania)
- April 21-23 2026: **ACTRIS science conference** in Oslo, Norway.
- April 27-30th 2026 : **18th Specialist Meeting on Microwave Radiometry & Remote Sensing of the Environment** in L'aquila (Italy)
- May 3 - 8th 2026 : **EGU**, Vienna (Austria)
- June 1 - 2 2026 : **CCRES/CLU workshop**, online
- June 17 - 19 2026 : **RPG DCR training,** Delft, The Netherlands
- July 5 - 10th 2026 ; **ILRC** (Hiroshima, Japan)
- August 24 - 28th 2026 : **ERAD 2026**, Belgrade (Serbia)
- Sept. 21 - 25th 202**6 : EUTMETSAT Meteorological Satellite Conference, Darmstadt (Germany)**

- **Oct. 6 - 8th 2026 : Meteorological Technology World Expo co-located with WMO TECO conference, Amste**rdam (The Netherlands)
- Oct. 13 - 23d 2026 : **ACTRIS week 2026**, Katowice (Poland)
- Nov. 3 - 4th 2026 : **E-Profile ET Meeting**, Toulouse (France)

7. List of abstracts accepted for the 2026 ACTRIS science conference from CCRES and CRS National Facilities

Presentations

- Atmospheric stability and transport processes in the urban boundary layer from ground-based remote sensing profile observations – a heatwave case study ; Kotthaus et al
- Cal/Val of the EarthCARE Cloud Profiling Radar using the ACTRIS Cloud Radar Network ; Toledo et al
- Atmospheric processes in the natural or controlled atmospheres, including aerosol-cloud-climate interactions ; Granados-Muñoz et al
- Identification of ice particle types using radar and ceilometer depolarisation observations ; Moissev et al
- Vertical Structure and Seasonal variability of hydrometeors at different Cloudnet stations, Nemuc et al

Posters

- Thermodynamic and cloud profile variability and statistics over Europe based on ACTRIS cloud remote sensing high-quality data ; Haeffelin et al
- Applicability of self-consistency calibration method for polarimetric cloud radar ; Nandan and Unal
- Investigating the Venturi Effect in Urban Airflows Using Doppler Lidar ; Janicka et al
- Life-cycle Analysis of Low Clouds and Fog in a Mountainous Region ; Vuellers et al
- Characteristics and vertical distribution of clouds and precipitation measured at the ENEA Lampedusa station in 2024–2025 derived from Cloudnet retrieval ; Pace et al

8. Resources

CCRES website for operational services

A **website** has been implemented by CCRES to provide a platform for National Facilities to access **operational services**. Facilities can now **monitor the stability of operations and data quality**, and **track instrument parameters** of their station, while accessing **documentatio**n about CCRES operational services, **SOPs, codes** and available tools on the interface. https://ccres.aeris-data.fr/ **CCRES Newsletters** are available on this website as well.

General information about ACTRIS and CCRES units, communication, procedures and news can still be found on the ACTRIS website at this address : https://www.actris.eu/topical-centre/ccres

Cloudnet data portal (https://cloudnet.fmi.fi/) provides access to **all ACTRIS Cloud Remote Sensing data.** It hosts **data processing and curation service** for ground-based cloud remote sensing measurements.

NF instrument diversity : online resources

An **interactive map** showing the stations status and their instruments is available on **ACTRIS CCRES website**, as well as on **OpenStreetMap** : click on the layers and filters on the left in order to view instruments diversity, or click on a station to get to know the details about its instruments.

Presentation of CCRES and CLU at conferences

A short **presentation of CCRES and CLU** is available **at this link.** It can be **used for conferences** involving Cloud Remote Sensing community related activities. Please inform us (evillard@ipsl.fr) when CCRES is mentioned at an event, or in any publication you have been involved in.

Labelling process

The procedure for labelling is explained further in detail in this document presented during our last workshop :**3. CCRES_CLU workshop_Evora_Labelling_process.pdf**

SOPs

SOPs : At this link, you can find the Standard Operating Procedures for each instrument**.**

EarthCARE Cal/Val

Presentations from the different workshops to which CCRES participated are available **here.**

Housekeeping data

The training session on HKD monitoring was organised in May 2024, here is the presentation :
Grafana training session
Last updates were presented during our May 2025 workshop and are available here **5. CCRES_CLU workshop May2025_Housekeeping_Data.pdf**
Documentation and access to Grafana are accessible on **CCRES operational services website.**

Workshop material

All CCRES workshops presentations are available **here.**

Publications

CCRES publications are available **here.**