



# ACTRIS

# CCRES

## Agenda

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Alexander Haefele (Meteoswiss)

***CCRES Workshop, Online – May 26th 2023***



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

# ACTRIS / E-PROFILE communities

ACTRIS and E-PROFILE have in common:

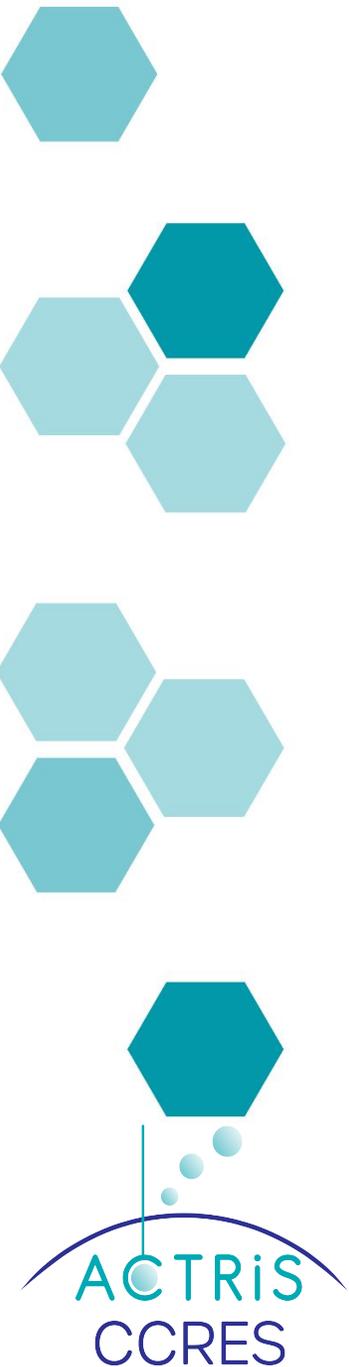
- Operating similar instruments (ALC, MWR, DL)
- A few common stations
- Working on consistent SOPs
- Working on consistent processing and data quality (formatting, pre-processing, calibration)
- Sharing expertise on geophysical variable retrievals

ACTRIS and E-PROFILE have

- Possibly different instruments
- Different (number of) sites

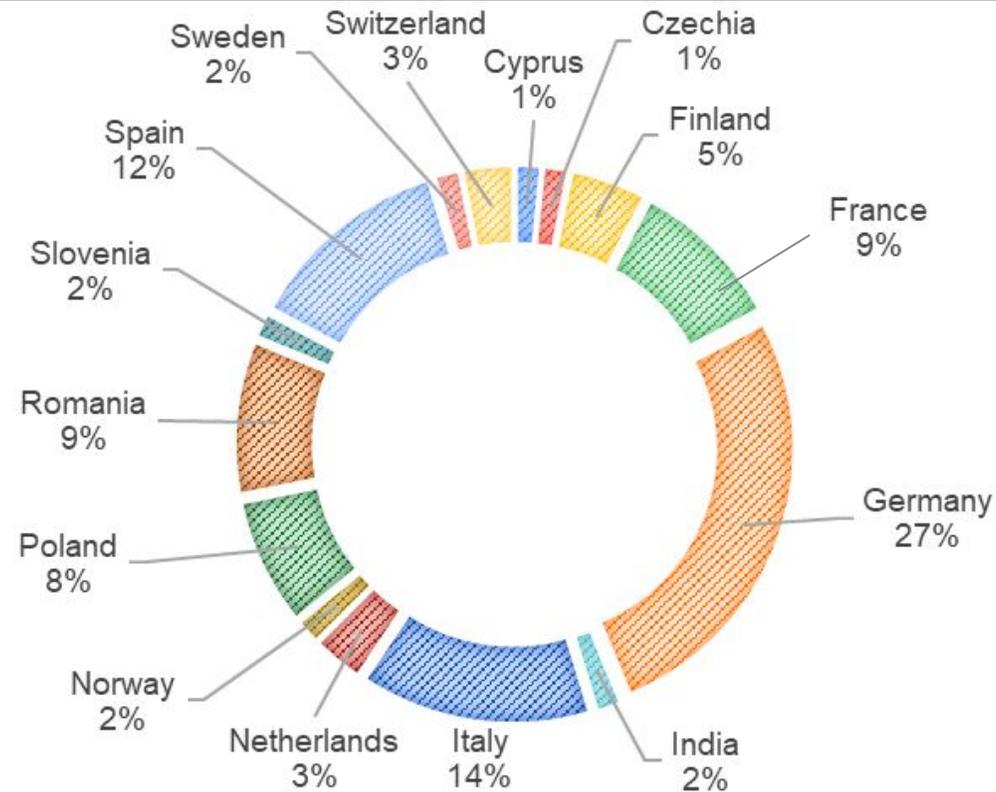
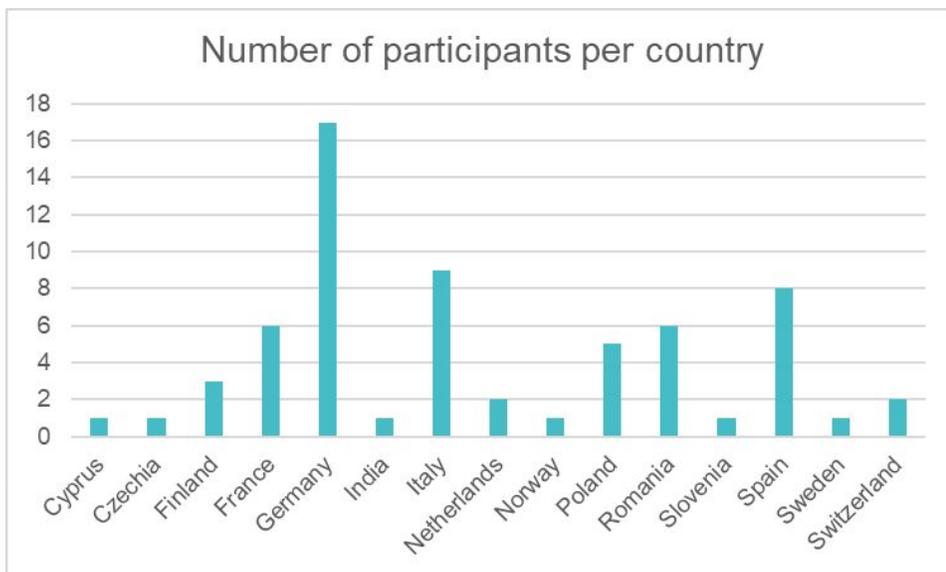
Consistency for users:

- Questions about implementation consistency (SOPs, QC, processing)
- Data product consistency



# Workshop Participants

**64 PARTICIPANTS**



# Workshop Participants

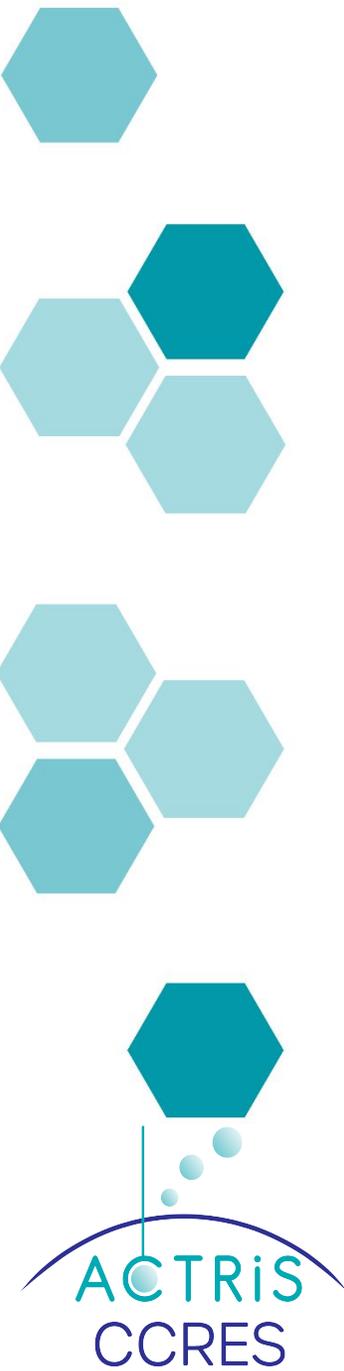
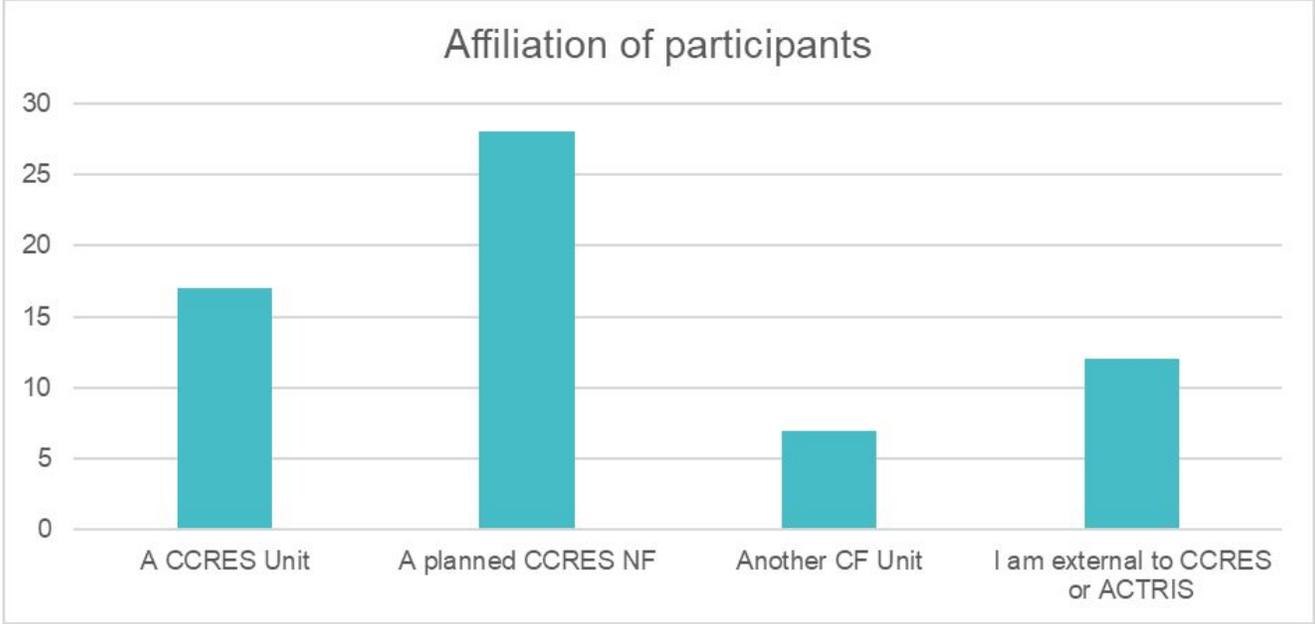
**64 PARTICIPANTS**

17 from CCRES Units

28 from a planned  
ACTRIS CRS NF

7 from another ACTRIS  
CF Unit

5 are from E-PROFILE  
and PROBE



- Develops methods, tools and scientific and technical documents, relevant for ABL network applications
- Engages a large scientific community

a framework  
to support  
consistency



**Complex terrain**      **Urban environments**

**Knowledge exchange**



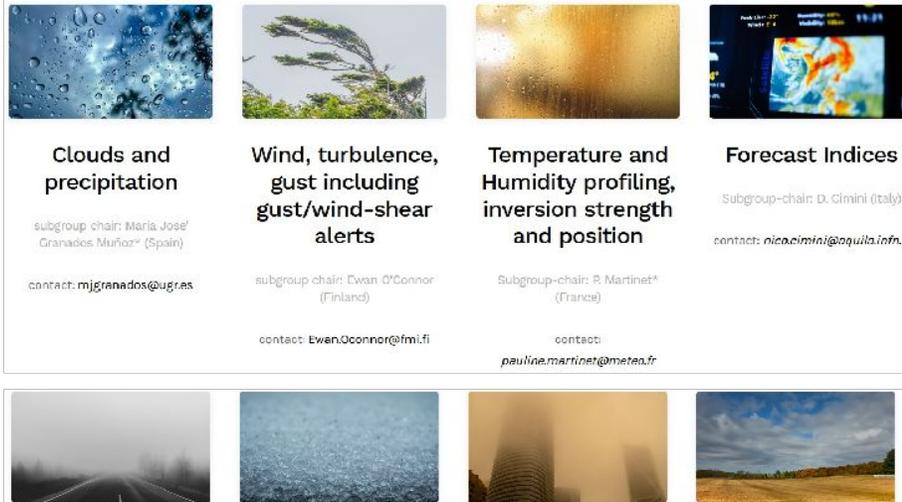
**Network overview**  
 Subgroup chair: Joella C. Buxmann, Jens Preisler  
 contact: joella.c.buxmann@metoffice.gov.uk, jens.preisler@ecmwf.com

**Automatic lidars and ceilometers (ALC)**  
 Subgroup chair: Joella C. Buxmann, Simone Kotthaus  
 contact: joella.c.buxmann@metoffice.gov.uk, simone.kotthaus@ipst.polytechnique.fr

**Doppler wind lidar (DL)**  
 Subgroup chair: Maxime Hervo, Markus Kayser  
 contact: Maxime.Hervo@meteoswiss.ch, Markus.Kayser@dlw.de

**Doppler cloud radar (DCR)**  
 Subgroup chair: Chris Walden, Lukas Pitznermaier  
 contact: Chris.Walden@ipst.ac.uk, Lukas.Pitznermaier@bunlikoeln.de

**Networks and data quality**



**Clouds and precipitation**  
 subgroup chair: Maria Jose' Granados Muñoz\* (Spain)  
 contact: mjgranados@ugr.es

**Wind, turbulence, gust including gust/wind-shear alerts**  
 subgroup chair: Ewan O'Connor (Finland)  
 contact: Ewan.Oconnor@fmi.fi

**Temperature and Humidity profiling, inversion strength and position**  
 Subgroup chair: P. Martinet\* (France)  
 contact: pauline.martinet@meteo.fr

**Forecast Indices**  
 Subgroup chair: D. Cimini (Italy)  
 contact: nicacimini@aquila.infn.it

**Fog alerts**  
 Subgroup chair: Martial Haefelin (France)  
 contact: martial.haefelin@ipsl.fr

**Icing alert**  
 Subgroup chair: E. O'Connor, Finland  
 contact: Ewan.Oconnor@fmi.fi

**Aerosols, including volcanic ash, pollen, forest fires and air quality alerts**  
 Subgroup chair: J. Buxmann\* (UK), R. Ruefenacht\* (Switzerland), H. Rickerts\* (UK)  
 contacts: joella.c.buxmann@metoffice.gov.uk, Rolf.Ruefenacht@meteoswiss.ch, h.ricketts@manchester.ac.uk

**ABL characterisation**  
 Subgroup chair: J. A. Bravo Aranda\* (Spain) and S. Kotthaus\* (France)  
 contacts: jabravo@ugr.es, simone.kotthaus@ipst.polytechnique.fr

**Advanced profiling**

- Develops methods, tools and scientific and technical documents, relevant for ABL network applications
- Engages a large scientific community

Task Groups

<p><b>Network overview</b></p> <p>subgroup chair: Joelle C Buxmann, Jana Preissler</p> <p>contact:</p> <p>Joelle C Buxmann (joelle.c.buxmann@metoffice.gov.uk)</p> <p>Jana Preissler (jpreissler@leosphere.com)</p>	<p><b>Automatic lidars and ceilometers (ALC)</b></p> <p>subgroup chair: Joelle C Buxmann, Simone Kotthaus</p> <p>contact:</p> <p>Joelle C Buxmann (joelle.c.buxmann@metoffice.gov.uk)</p> <p>Simone Kotthaus (simone.kotthaus@ipsl.polytechnique.fr)</p>	<p><b>Doppler wind lidar (DL)</b></p> <p>Subgroup-chair: Maxime Hervo, Markus Kayser</p> <p>contact:</p> <p>Maxime Hervo (Maxime.Hervo@meteoswiss.ch)</p> <p>Markus Kayser (Markus.Kayser@dwd.de)</p>	<p><b>Doppler cloud radar (DCR)</b></p> <p>Subgroup-chair: Chris Walden, Lukas Pfitzenmaier</p> <p>contact:</p> <p>Chris Walden (chris.walden@stfc.ac.uk)</p> <p>Lukas Pfitzenmaier (lpfitzenmaier@uni-koeln.de)</p>	<p><b>Microwave radiometer (MWR)</b></p> <p>Subgroup-chair: Christine Knist, Bernhard Pospichal</p> <p>contact:</p> <p>Christine Knist (Christine.Knist@dwd.de)</p> <p>Bernhard Pospichal (bernhard.pospichal@uni-koeln.de)</p>	<p><b>Uncrewed Aerial Systems (UAS)</b></p> <p>Subgroup-chair: Andreas Platis, Jens Bange</p> <p>contact:</p> <p>Andreas Platis (andreas.platis@uni-tuebingen.de)</p> <p>Jens Bange (jens.bange@uni-tuebingen.de)</p>	<p><b>Impact of current and future ABL networks</b></p> <p>Subgroup-chair: Ulrich Löhnert</p> <p>contacts:</p> <p>Ulrich Löhnert (ulrich.loehnert@uni-koeln.de)</p>

# Agenda

09:00 – 09:30	Plenary	Introduction, presentation of ACTRIS organization, presentation of E-PROFILE, state of data in ACTRIS Cloud Remote Sensing Data Center (CLU)
09:30 – 12:00	Break-Out	ALC Task Group*
	Break-Out	MWR Task Group*
	Break-Out	DL Task Group*
	Break-Out	DCR Task Group*
12:00 – 14:00	<b>LUNCH BREAK</b>	
14:00 – 15:00	Plenary	Feedback from task groups
15:00 – 15:30	Plenary	Discussion on advanced and multi-instrument products
15:30 – 16:00	Plenary	CRS NF Labelling: identify which stations are ready to start step 1A
16:00 – 17:00	Plenary	Scientific highlights including EarthCare Cal/Val Activities



# ACTRIS Cloud Remote Sensing Facility network

13

COUNTRIES



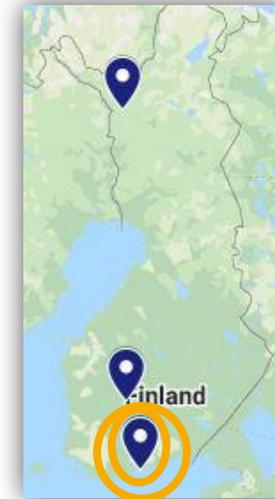
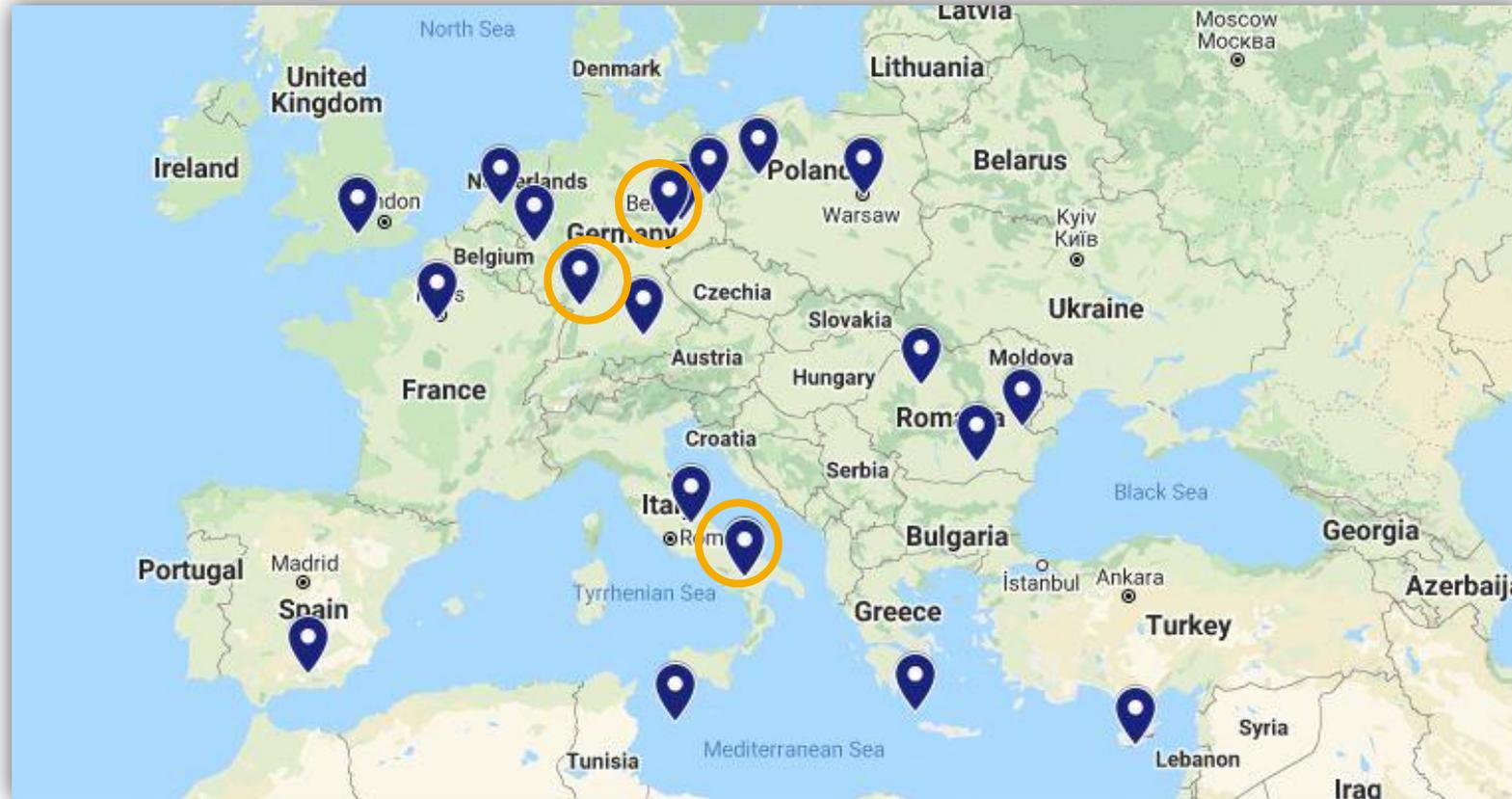
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OBSERVATIONAL  
PLATFORMS

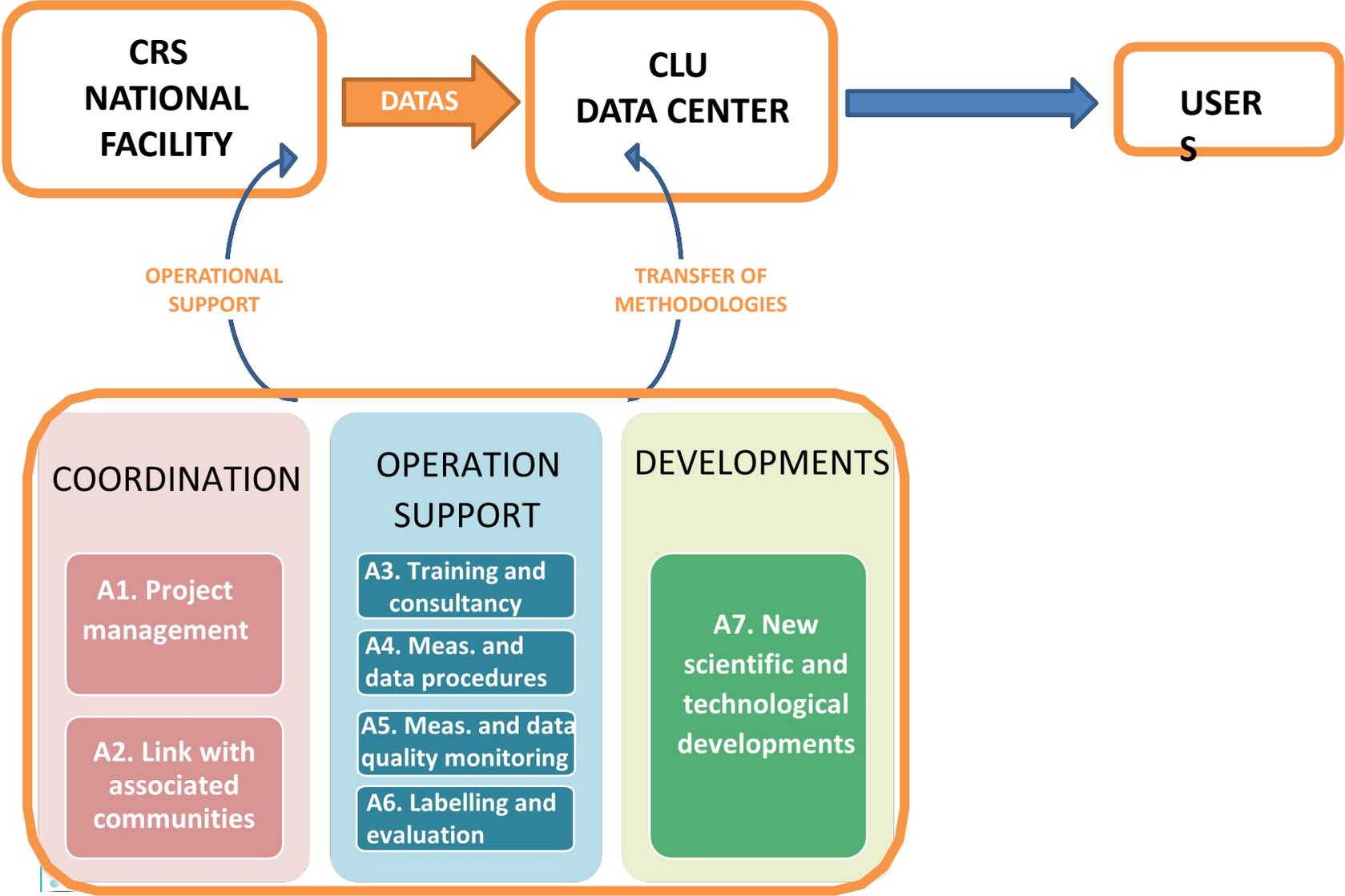


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EXPLORATORY  
PLATFORMS



# ACTRIS CCRES



# HOW TO ACCESS CCRES SERVICES?

## CCRES website

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

**OUR MISSIONS**

The mission of the Centre for Cloud Remote Sensing (CCRES) is to offer operational support to ACTRIS National Facilities operating Cloud remote sensing instrumentation. Additionally, the CCRES offers specialized services to ACTRIS users of various types: academia, business, industry and public services.

**ACCESS CCRES SERVICES**

**OUR INSTRUMENTS**

Click on the 5 CCRES instruments to know more about the methods and procedures available:

- Doppler Cloud Radar
- Microwave radiometer
- Doppler lidar
- Low power lidar and ceilometer
- Disdrometer

Services	Operation support	Frequency	User	Link to the service
<b>1. Methods</b>	Quality assurance guidelines and procedures for calibrating and operating the instruments and processing the observation data. Tools for controlling the quality of measurements to develop, update and implement central processing of observation data.	1 update/year	<ul style="list-style-type: none"><li>NF</li><li>External users</li></ul>	<ul style="list-style-type: none"><li>Doppler Cloud Radar</li><li>Microwave radiometer</li><li>Doppler lidar</li><li>ALC</li><li>Disdrometer</li></ul>
<b>2. Calibration</b>	Provision of network-wide accurate calibration of the instruments following harmonized protocols and tools to put all measurements on a common absolute scale.	TBD	<ul style="list-style-type: none"><li>NF</li><li>External users</li></ul>	TBD

Access the different CCRES services and download all our updated documents!

# The E-PROFILE network for thermodynamic profiling and the detection of airborne hazards



**EUMETNET**  
EUROPEAN METEOROLOGICAL  
SERVICES NETWORK

# E-PROFILE networks

## Wind

- Radar wind profilers
- Weather radar wind profilers
- Doppler lidar wind profilers



## Ash, Aerosols and clouds

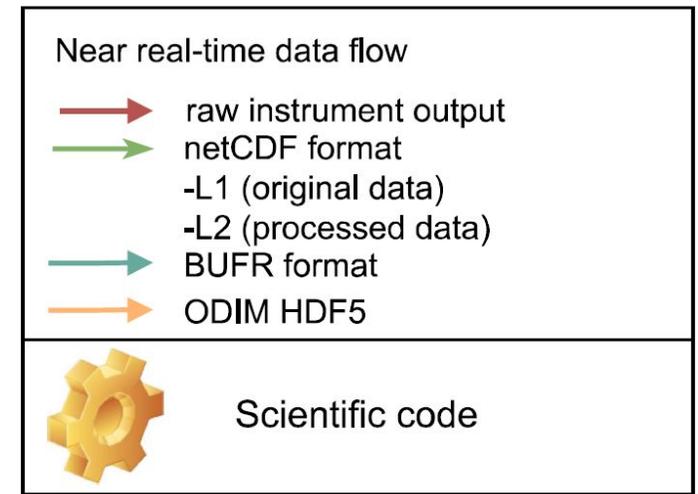
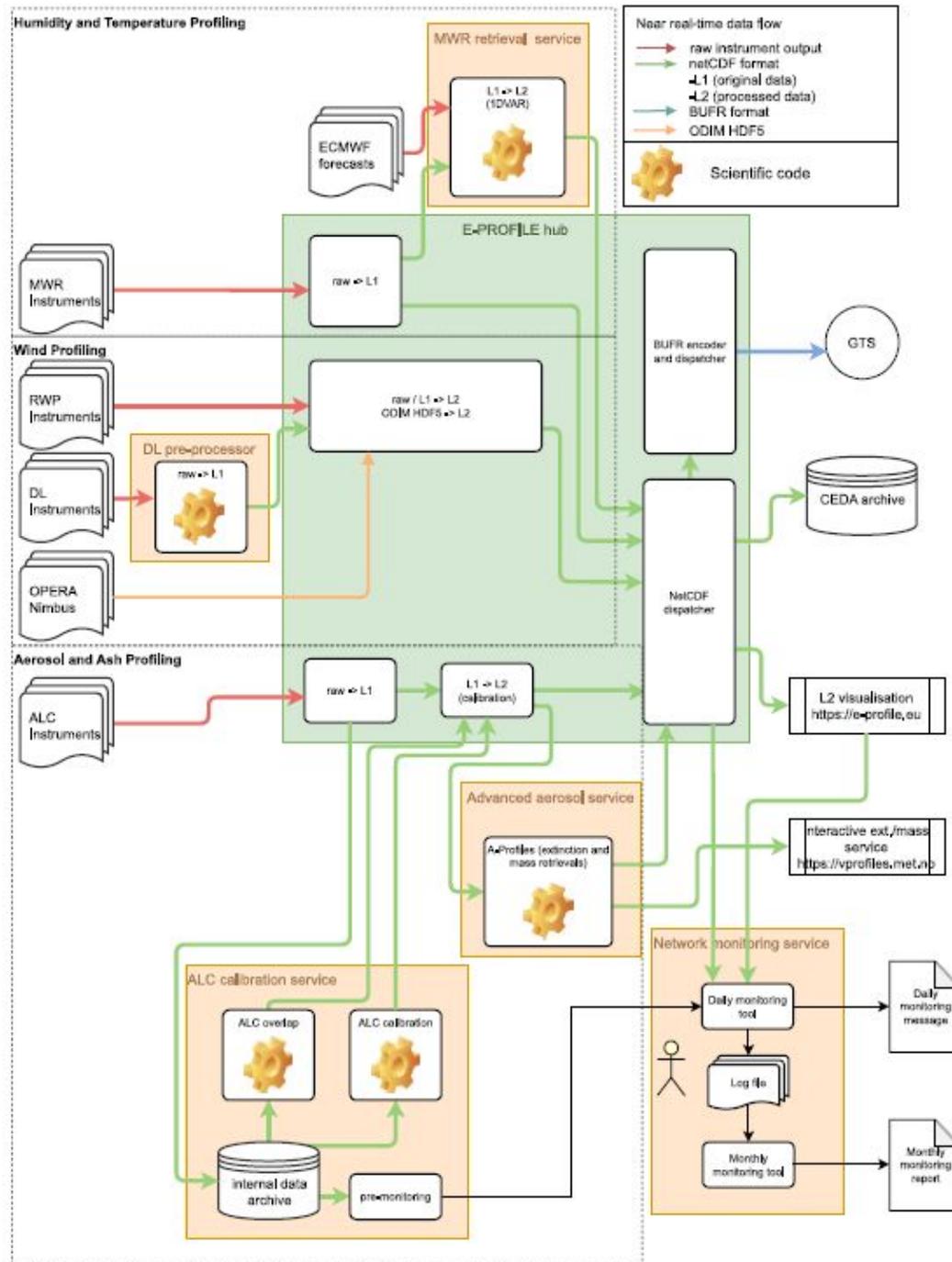
- Ceilometers
- Automatic lidars



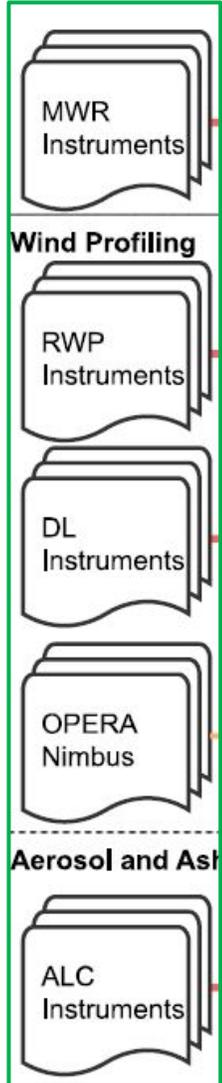
## ABL temperature profiles and humidity

- Microwave radiometers

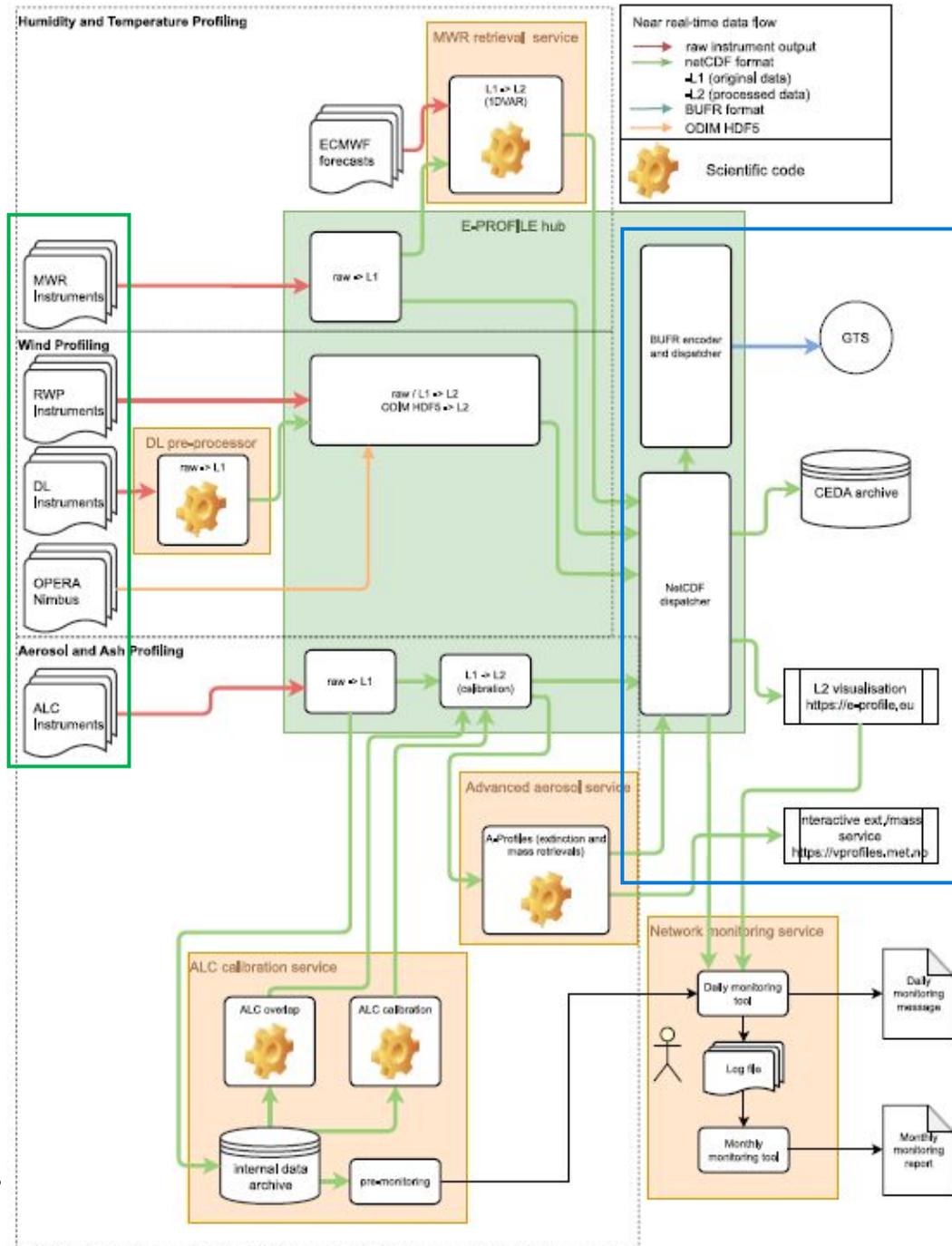




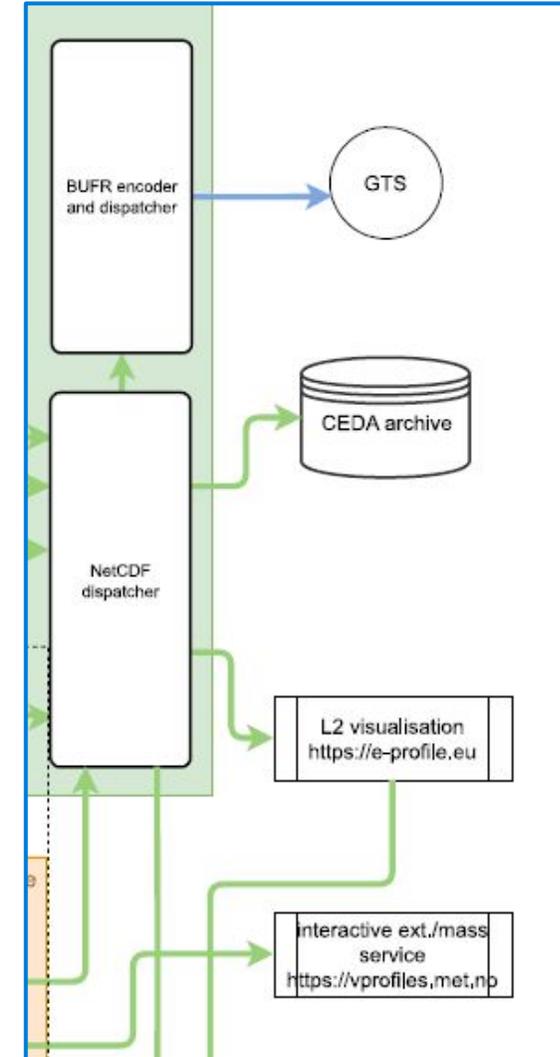
Input (every 5'):



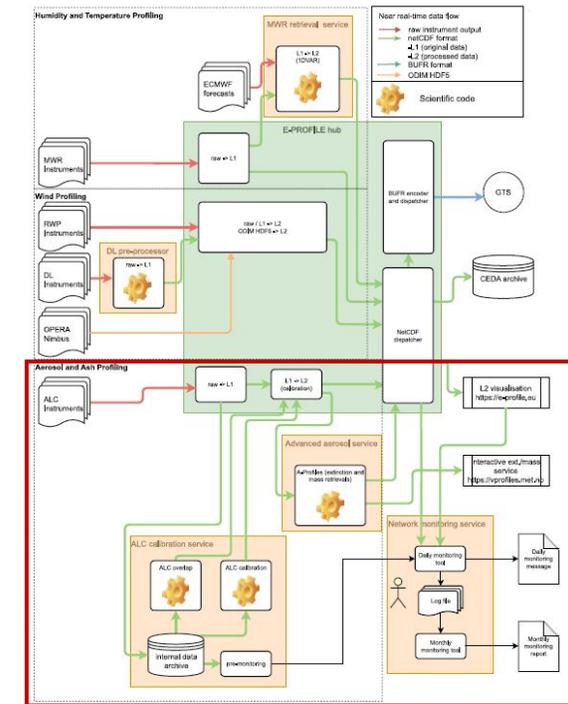
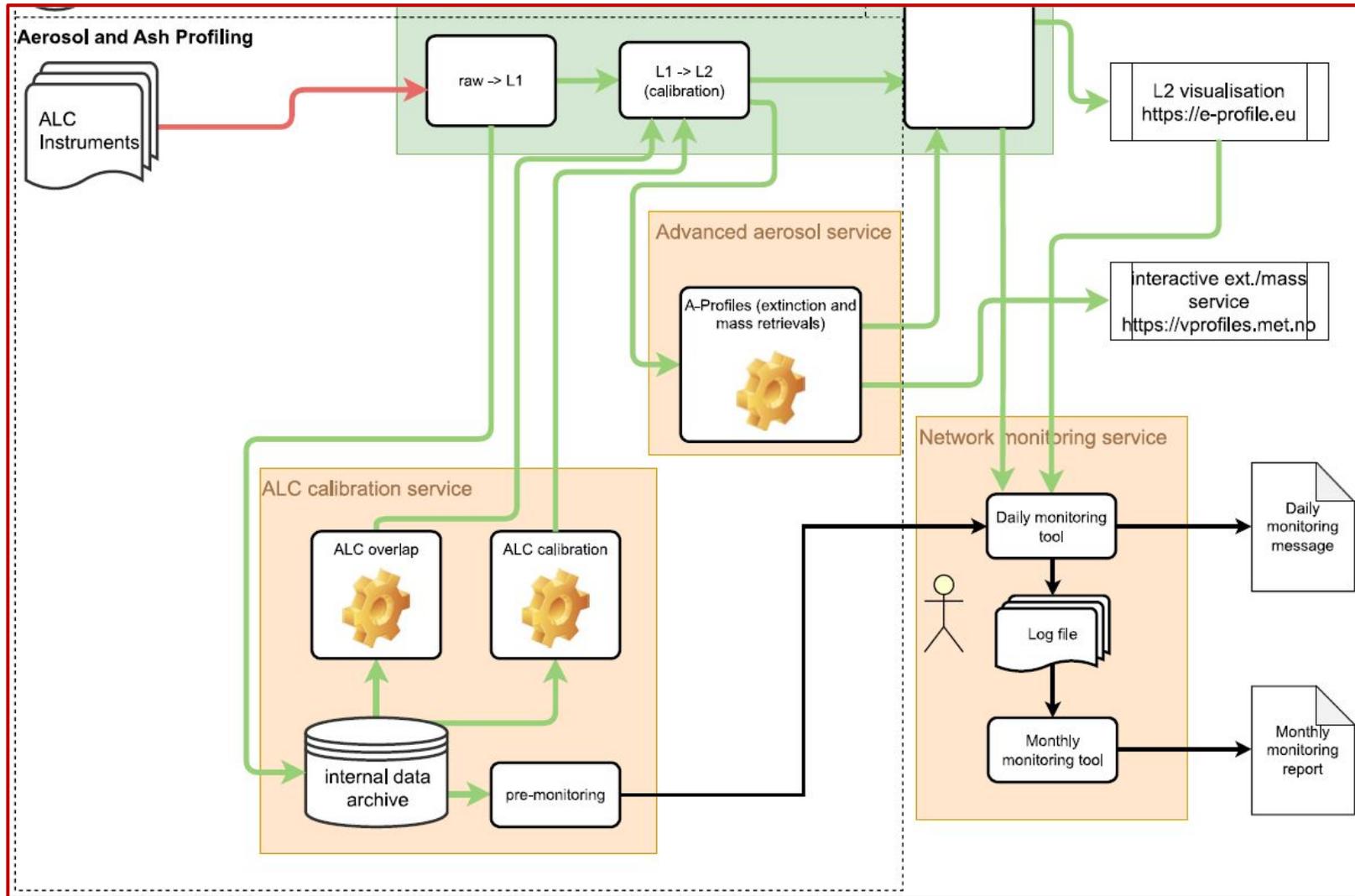
- Some SoPs tbd.



Output (every 5'):

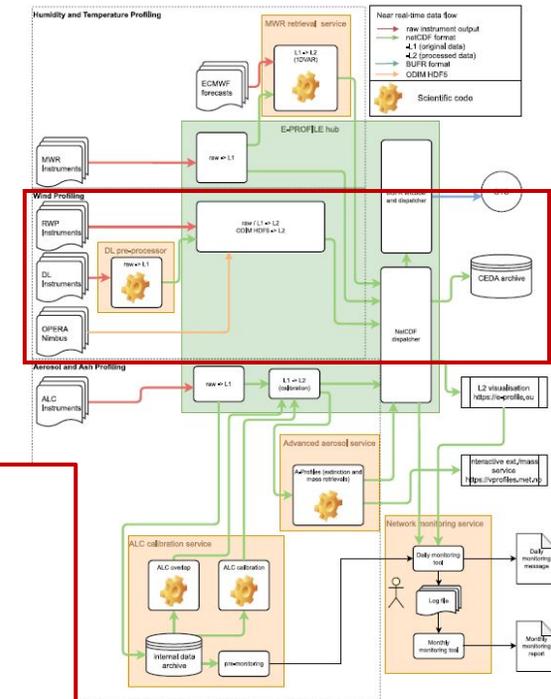
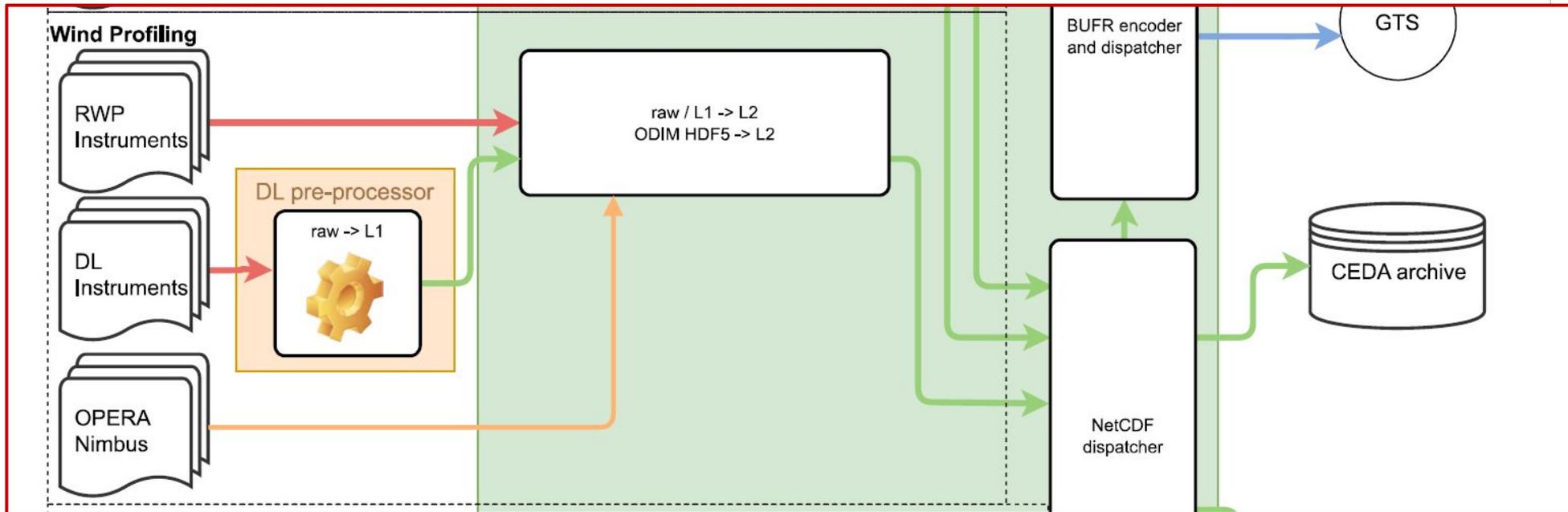


- NetCDF mostly defined.
- MWR BUFR submitted.

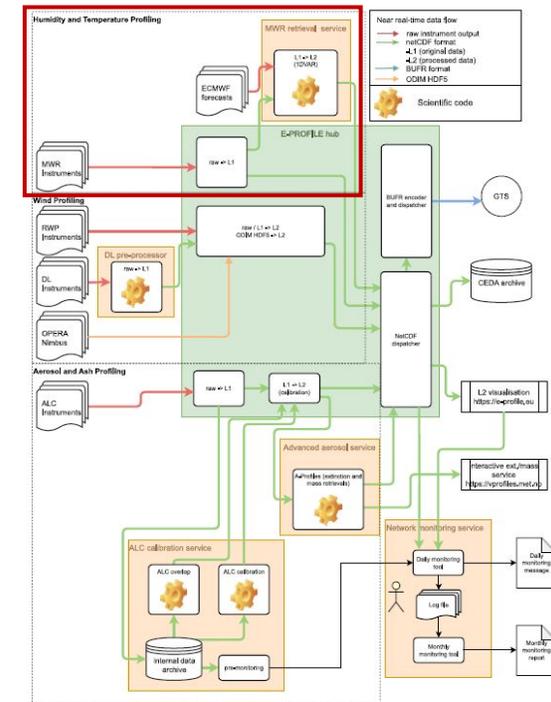
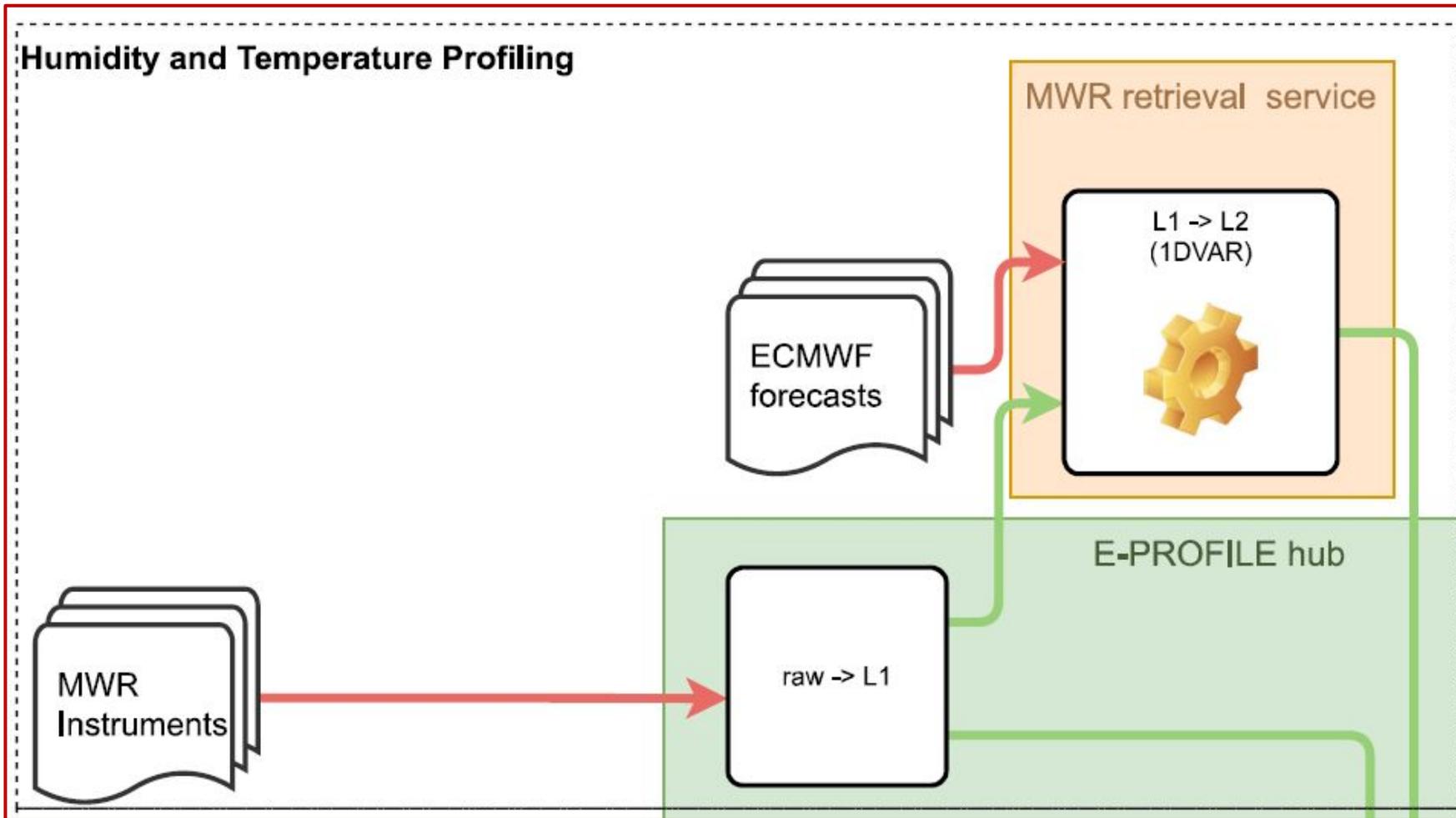


- Calibration needs validation and maybe improvements.
- Overlap model being implemented for CHM15k.
- Advanced aerosol products need further validation.

# Overview



- DL pre-processor: DL Toolbox -> vertical profiles of wind!
- Where shall the pre-processor be implemented? Centralized or distributed?



- Pilot stations are sending data.
- Issues generating 5' files with RPG instruments.
- TROPOe is being implemented for 1DVAR retrieval.

# Summary

## ALC

- Calibration -> Joelle, Melania, Rolf
- Overlap correction -> Melania, Simone, Martin
- New instruments and SOPs -> Simone

## DL

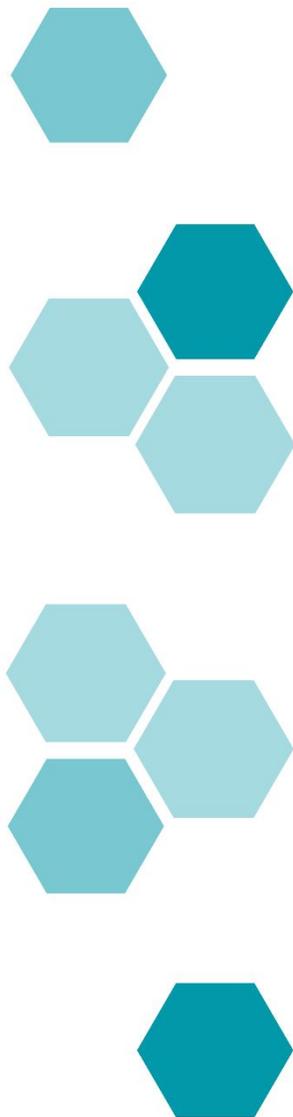
- Implementation of DL toolbox -> Rolf
- Scan strategy producing 5' vertical profile of wind -> ?

## MWR

- Best practice to obtain 5' calibrated data from instruments -> RPG, Rolf
- Details of 1DVAR retrieval -> Rolf
- Scan strategy including elevation scan every 5' -> ?

# Topics to be discussed in Task Group breakout meetings

- List proposed activities, conducted within ACTRIS, PROBE, E-PROFILE.
  - SOPs – incl. scanning and scheduling requirements
  - Data format (« RAW2L1-like »)
  - Calibration
  - Corrections / pre-processing
  - Quality control (Housekeeping variables, Geophysical variables)
  - Single-instrument products
  - Necessary ancillary data (if any)
- List available resources (repositories for codes, documents, ...)
- Identify contributions towards PROBE / ACTRIS / E-PROFILE deliverables
- List needs for PROBE support grants (in-person visits STSM; virtual mobility grants VMG)
- Calendar of activities
- Identify areas that lack activity
- Propose specific workshops and training



# ACTRIS/E-PROFILE/PROBE meeting agenda

- Spring Cross-community meeting (ACTRIS/E-PROFILE/PROBE) 26 May (Online)
- Fall PROBE meeting 25-27 Sept (Budapest)
- Fall CCRES workshop during ACTRIS week 23-27 Oct (Heraklion):
  - focus on NF oriented topics,
  - data center, products, quality control procedures.
- Fall E-PROFILE meeting 15-16 Nov (Oslo)
- Fall cross-community meeting (ACTRIS/E-PROFILE/PROBE): Nov/Dec 2023 (Online)

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**Thank you**

# CRS Facility network

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**24** OBSERVATIONAL PLATFORMS

**5** EXPLORATORY PLATFORMS

