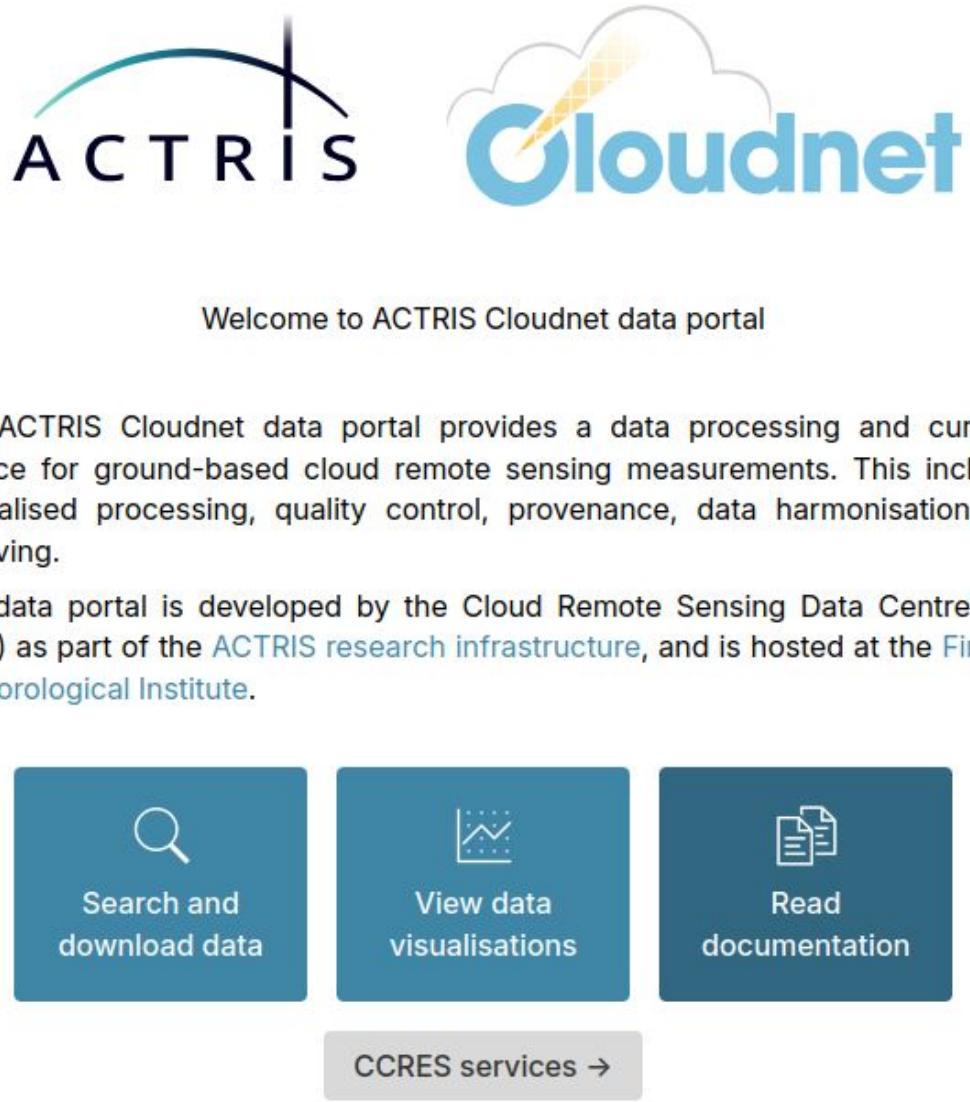


ACTRIS

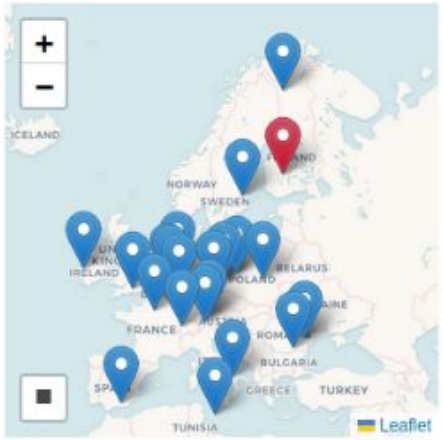
CCRES

CCRES Workshop
CLU updates
May 2025

CCRES Workshop, 19 May, 2025

Attenuation corrections

Cloudnet DATA PORTAL | Search data | Visualise data | Documentation | Sites | Instruments | Products | Contact



Location

Hyytiälä ×

Show all sites

Date

2024-04-28

Product

Disdrometer ×

Radar ×

Microwave radiometer ×

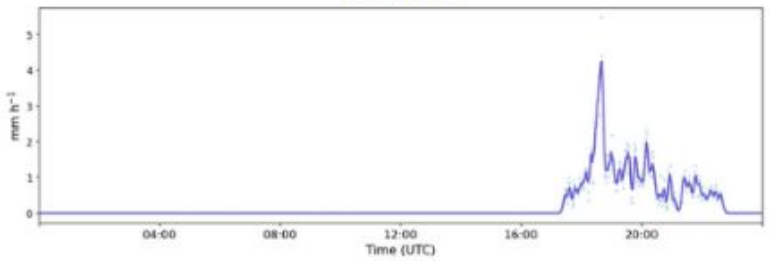
Lidar ×

Visualisations for 28 April 2024

comparison view

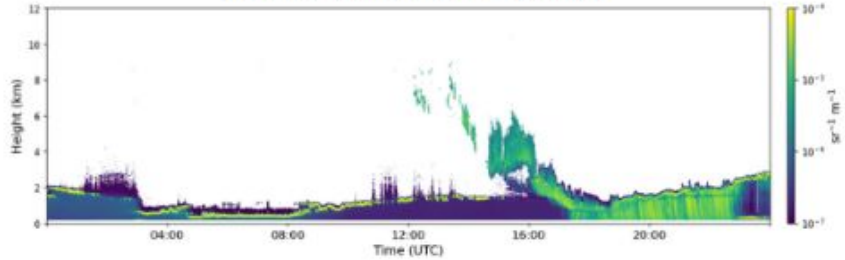
Hyytiälä Parsivel2 disdrometer Volatile

Rainfall rate



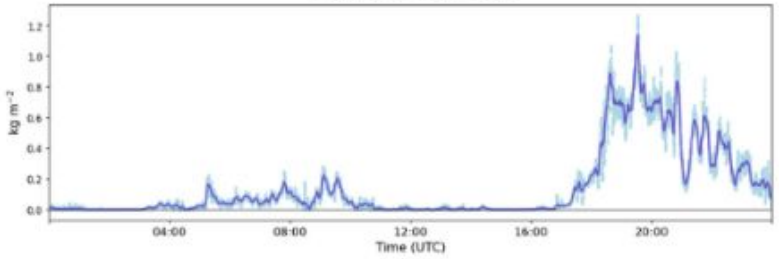
Hyytiälä CL61 ceilometer Volatile

Attenuated backscatter coefficient



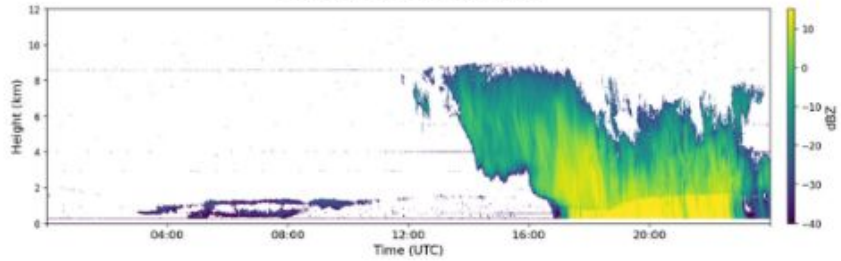
Hyytiälä HATPRO microwave radiometer Volatile

Liquid water path



Hyytiälä RPG-FMCW-94 cloud radar Volatile

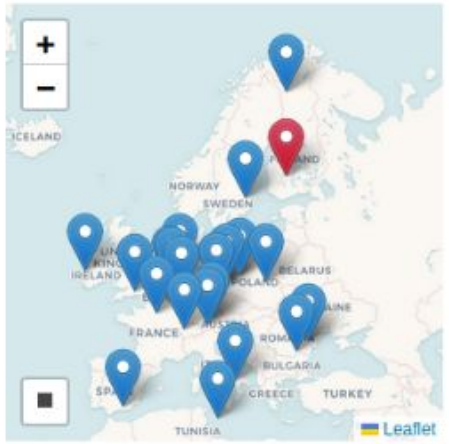
Radar reflectivity factor



CLU updates

Attenuation corrections

Cloudnet DATA PORTAL | Search data | Visualise data | Documentation | Sites | Instruments | Products | Contact



Location

Hyytiälä ×

Show all sites

Date

2024-04-28

Product

Classification ×

Ice water content ×

Show experimental products

Instrument model

Select

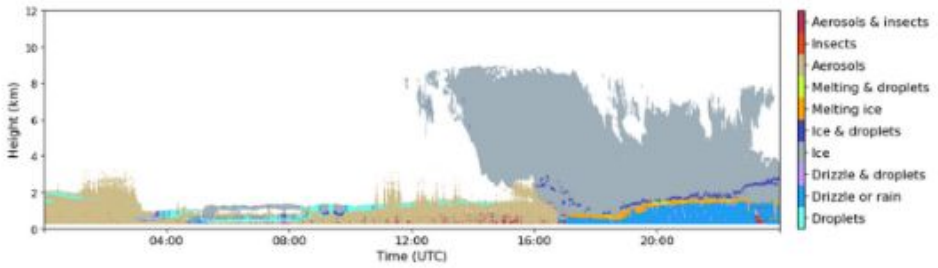
Variable

Visualisations for 28 April 2024

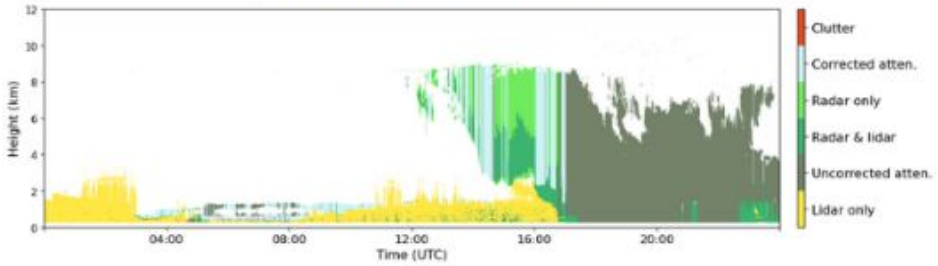
comparison view

Hyytiälä Classification Volatile

Target classification

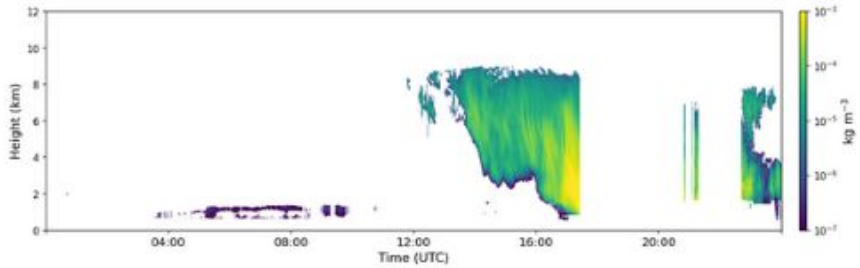


Radar and lidar detection status

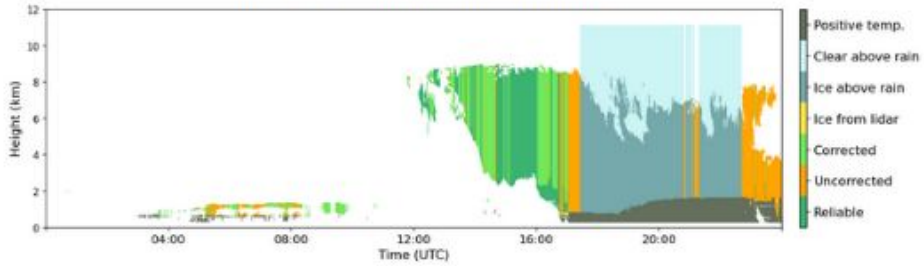


Hyytiälä Ice water content Volatile

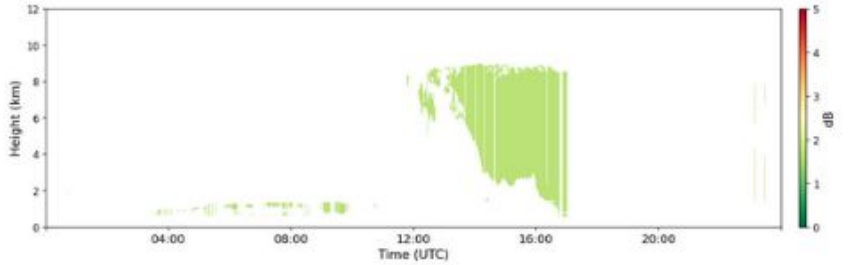
Ice water content



Ice water content retrieval status

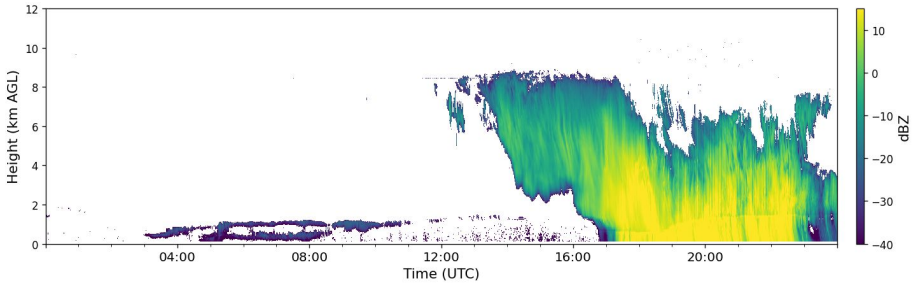


Ice water content error

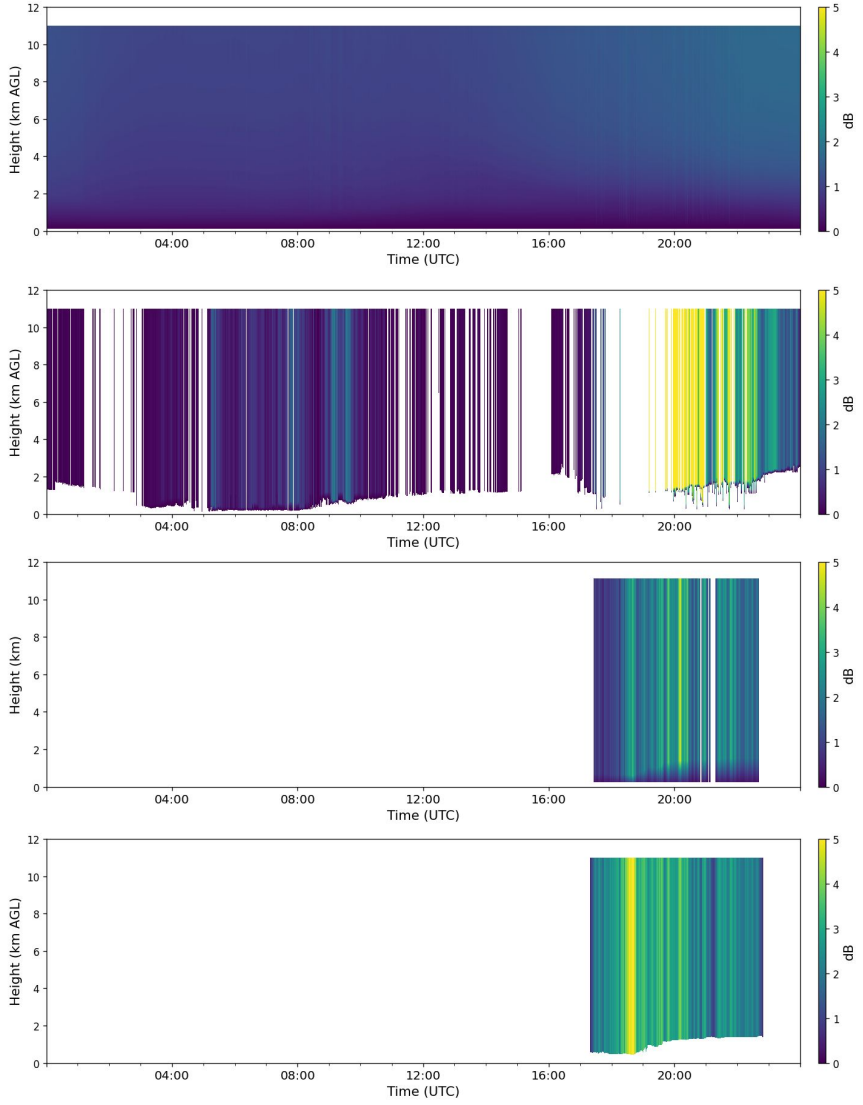


Attenuation corrections

Cloudnet radar data is corrected for **gas** and **liquid water** attenuation. Now, we have initial implementation for **rain** and **melting layer** attenuation.



Hyytiälä 2024-04-28



gas

liquid

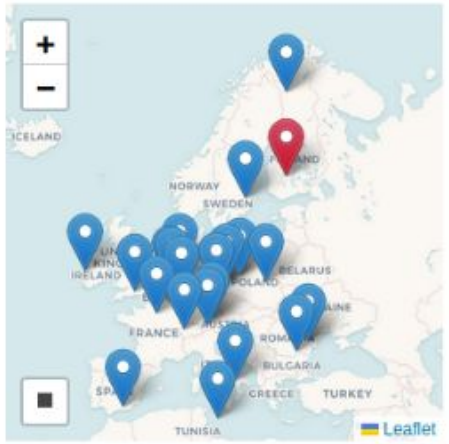
rain

melting layer

CLU updates

Attenuation corrections

Cloudnet DATA PORTAL | Search data | Visualise data | Documentation | Sites | Instruments | Products | Contact



Location

Hyytiälä ×

Show all sites

Date

2024-04-28

Product

Classification ×

Ice water content ×

Show experimental products

Instrument model

Select

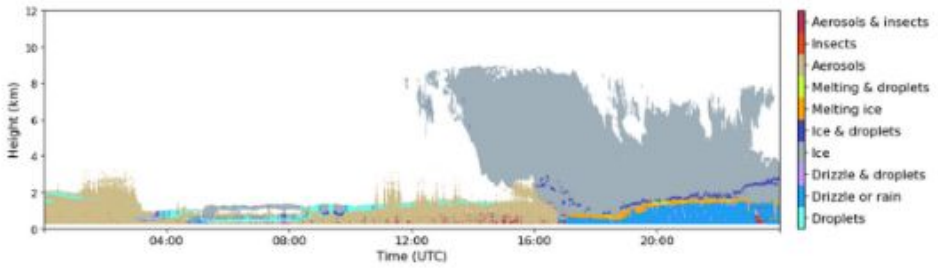
Variable

Visualisations for 28 April 2024

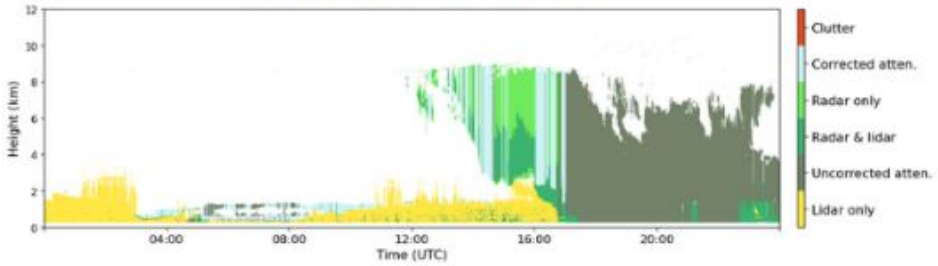
comparison view

Hyytiälä Classification Volatile

Target classification

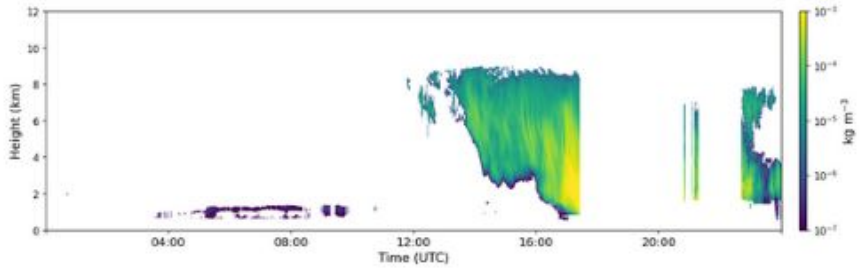


Radar and lidar detection status

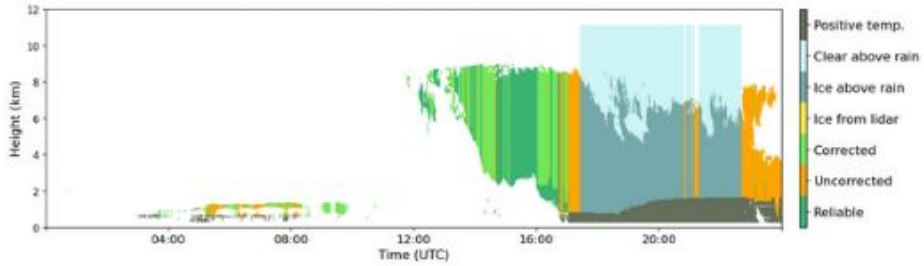


Hyytiälä Ice water content Volatile

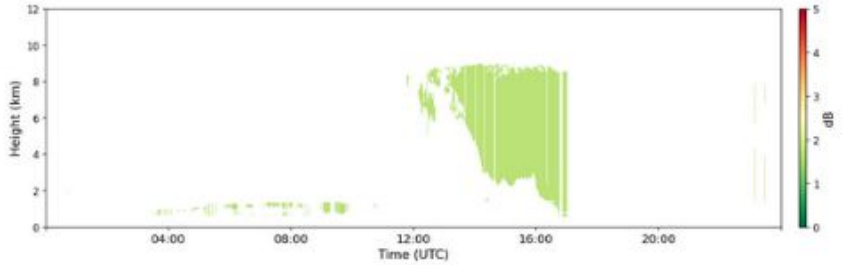
Ice water content



Ice water content retrieval status

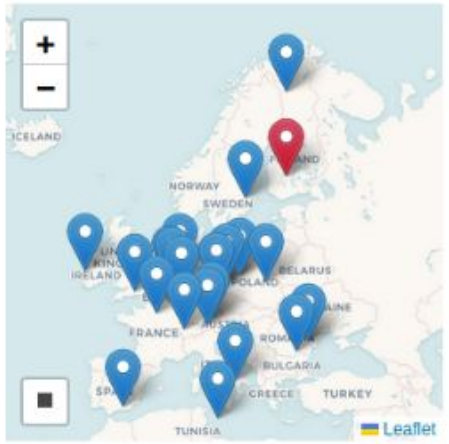


Ice water content error



CLU updates
Attenuation corrections

Cloudnet DATA PORTAL | Search data | Visualise data | Documentation | Sites | Instruments | Products | Contact



Location

Hyytiälä ×

Show all sites

Date

2024-04-28

Product

Classification ×

Ice water content ×

Show experimental products

Instrument model

Select

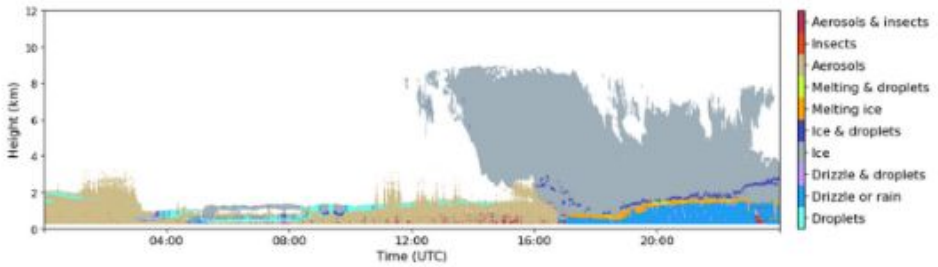
Variable

Visualisations for 28 April 2024

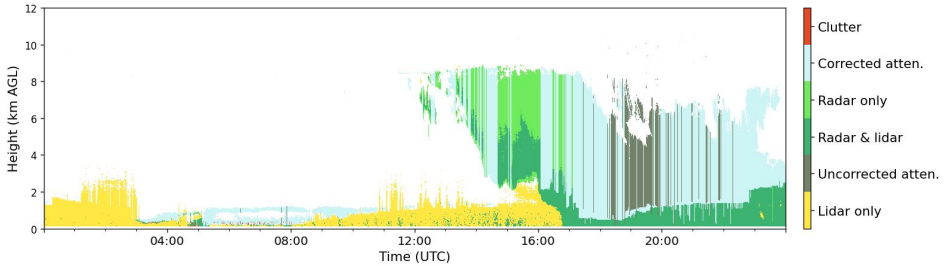
comparison view

Hyytiälä Classification | Volatile

Target classification

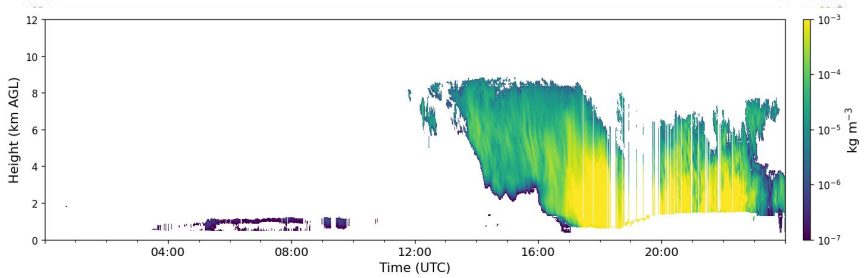


Radar and lidar detection status

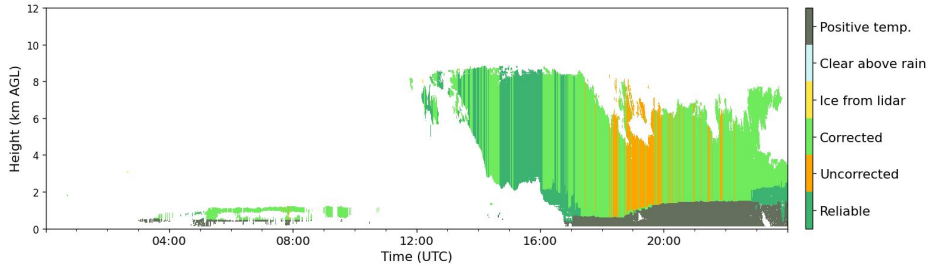


Hyytiälä Ice water content | Volatile

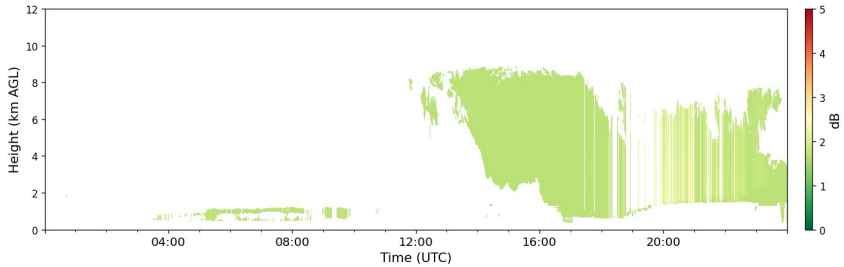
Ice water content



Ice water content retrieval status



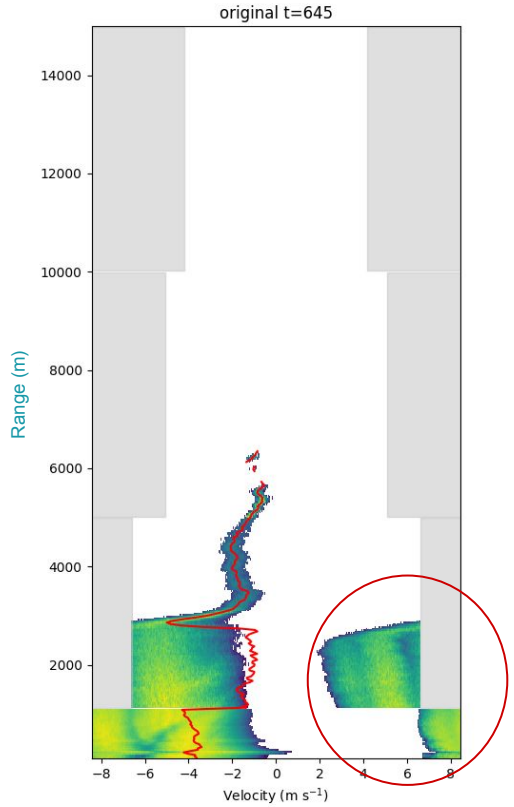
Ice water content error



Velocity unfolding

RPG-FMCW-94

Doppler spectra with mean velocity



folding!

Chirp 4: v_{ny} = 4.1 m s^{-1}

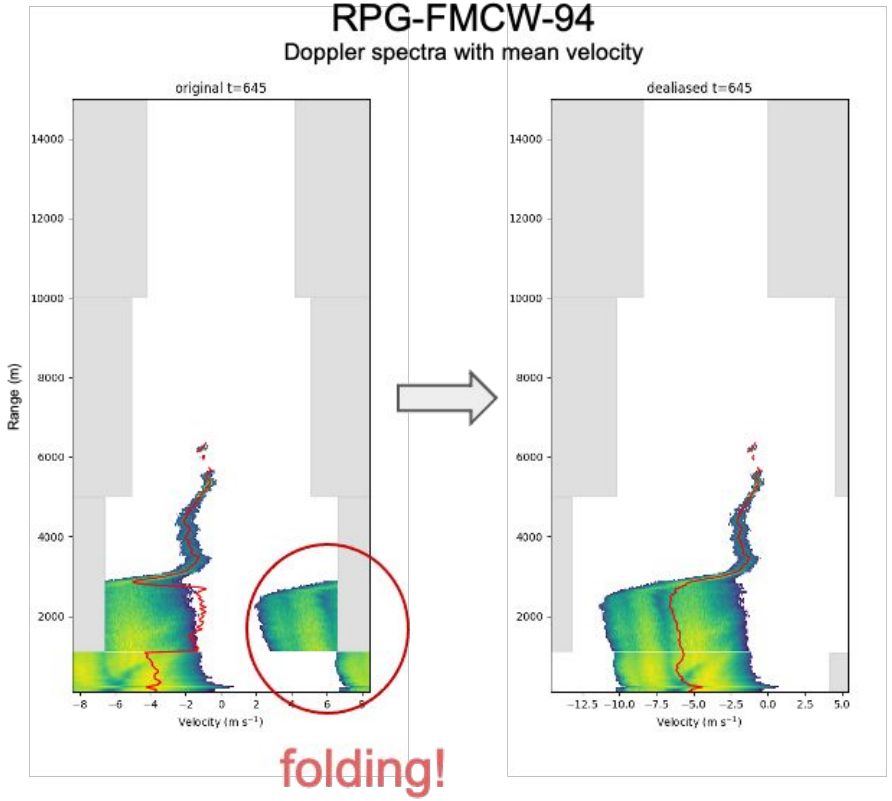
Chirp 3: v_{ny} = 4.9 m s^{-1}

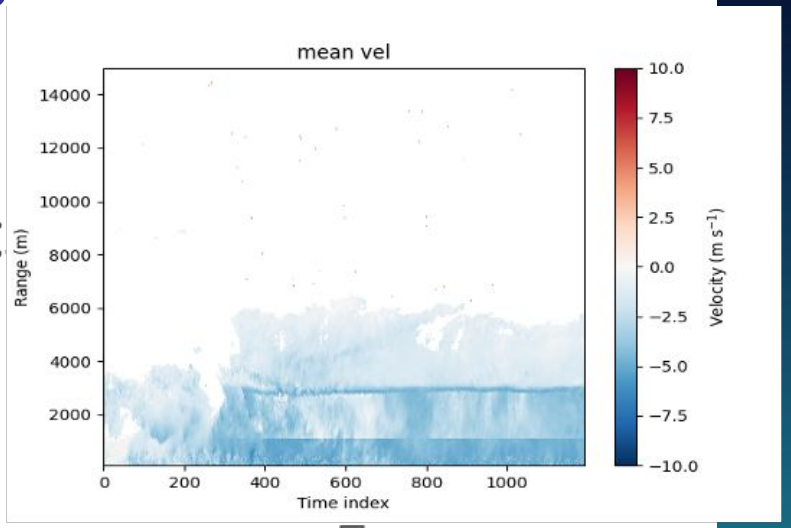
Chirp 2: v_{ny} = 6.1 m s^{-1}

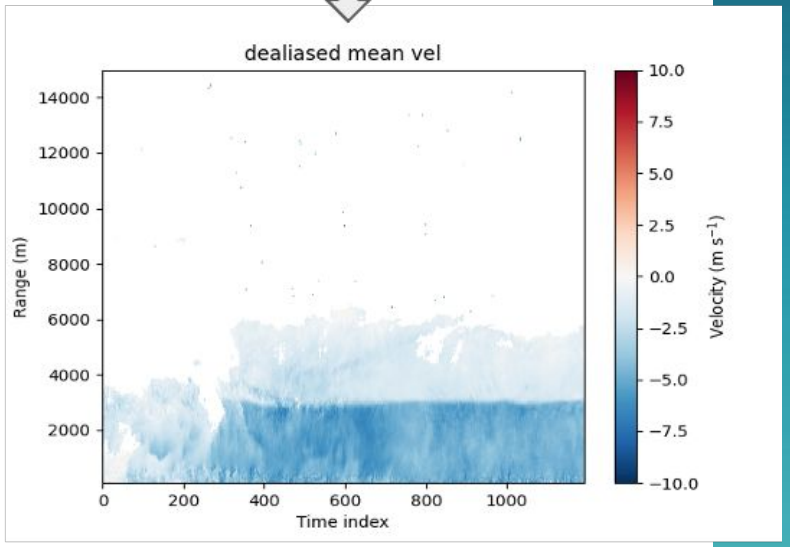
Chirp 1: v_{ny} = 8.4 m s^{-1}

Velocity unfolding

Folding in ground-based measurement

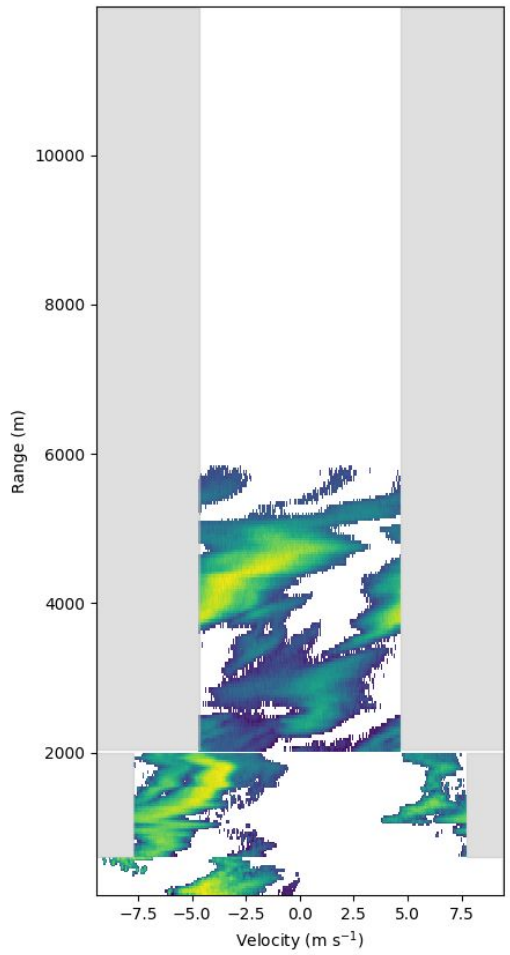


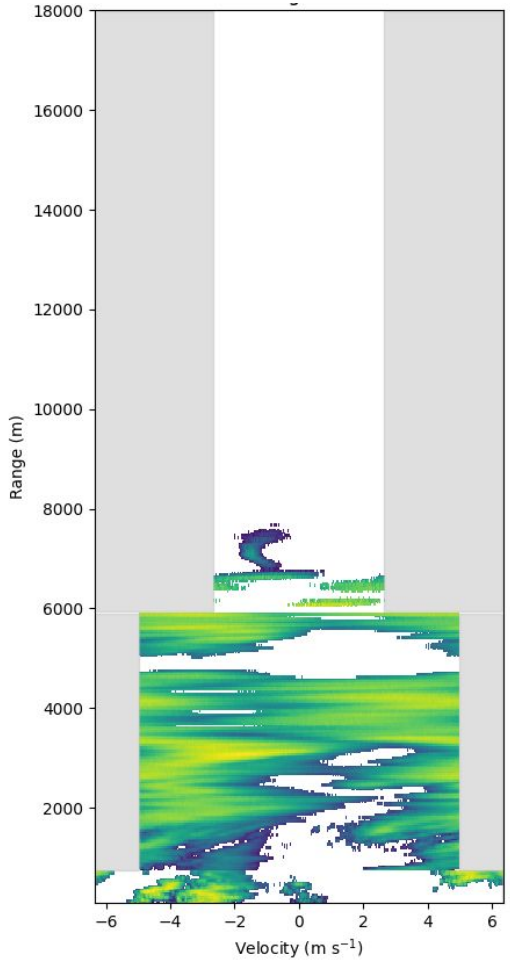




Velocity unfolding

Folding: tricky cases





Next steps

- Implement operational dealiasing method for ground-based radar measurements – with status flags
- Validate attenuation corrections, including radome
- Need to evaluate at stations with multi-frequency radar
  - Will ask for volunteers!

NWP model data

More NWP models will become available

default: IFS

IFS (open data) is quick to access and ensures RRT.

Not all fields, low resolution

Instrument log book

Instruments Logbook Edit JSON XML Log out

FMI CL61-B

PID
https://hdl.handle.net/21.12132/3.f33e53dddde44495


Photo: Niko Leskinen, 2023

OWNER
Finnish Meteorological Institute (FMI) ROR

MANUFACTURER
Vaisala Oyj ROR

MODEL
Vaisala CL61

INSTRUMENT TYPE
depolarisation lidar ceilometer

MEASURED VARIABLES
- volume linear depolarisation ratio
- attenuated backscatter coefficient

LOCATION

2021-07-14 – now	Kenttärova

PRINCIPAL INVESTIGATOR

2021-07-14 – now	Ewan O'Connor

SERIAL NUMBER
T2520357

CITATION
O'Connor, E. (2025). FMI CL61-B. ACTRIS Cloud remote sensing data centre unit (CLU). https://hdl.handle.net/21.12132/3.f33e53dddde44495

If you notice any incorrect or outdated information, please send email to actris-cloudnet@fmi.fi.

InstrumentDB 1.3.1

Instruments » FMI CL61-B Add entry Log out

Logbook

Dec. 19, 2024 – viet edit delete

Calibration hood: Henri
Date on: 2024-12-18
Time on: 12:12 UTC (14:12 EEST)
Date off: 2024-12-19
Time off: 09:27 UTC (11:27 EEST)

Aug. 14, 2024 – ewan edit delete

Calibration hood: Eija Asmi
Date on: 2024-08-14
Time on: 11:34 UTC (14:34 EEST)
Date off: 2024-08-14
Time off: 12:41 UTC (15:41 EEST)

July 25, 2024 – ewan edit delete

Lightning strike hit the tower on 25th July 2024.

June 14, 2024 – niko edit delete

Hat calibration (German):

Hat on: 2024-06-14 11.47 UTC (14.47 EEST)
Hat off: 2024-06-14 14.50 UTC (17.50 EEST)

March 5, 2024 – niko edit delete

Hat calibration (in colder temperature)

Hat on: 2024-03-05 13.10 UTC (15.10 EET)
Hat off: 2024-03-06 10.43 UTC (12.43 EET)

March 4, 2024 – niko edit delete

Hat calibration:

CLU updates

- Client library written in Python

README MIT license

Run tests passing pypi package 0.5.1

Cloudnet API client

Official Python client for the Cloudnet data portal API.

Installation

```
python3 -m pip install cloudnet-api-client
```

Quickstart

```
from cloudnet_api_client import APIClient

client = APIClient()

sites = client.sites(type="cloudnet")
products = client.products()

metadata = client.metadata("hyytiala", "2021-01-01", product=["mwr", "radar"])
client.download(metadata, "data/")

raw_metadata = client.raw_metadata("granada", date="2024-01", instrument_id="parsivel")
client.download(raw_metadata, "data_raw/")
```

Documentation

`APIClient().metadata()` and `raw_metadata()` → `list[Metadata]`

Fetch product and raw file metadata from the Cloudnet data portal.

Parameters:

+ 10 releases

Contributor

tukiains

siiptuo

Languages

Python 100

README MIT license

Documentation

`APIClient().metadata()` and `raw_metadata()` → `list[Metadata]`

Fetch product and raw file metadata from the Cloudnet data portal.

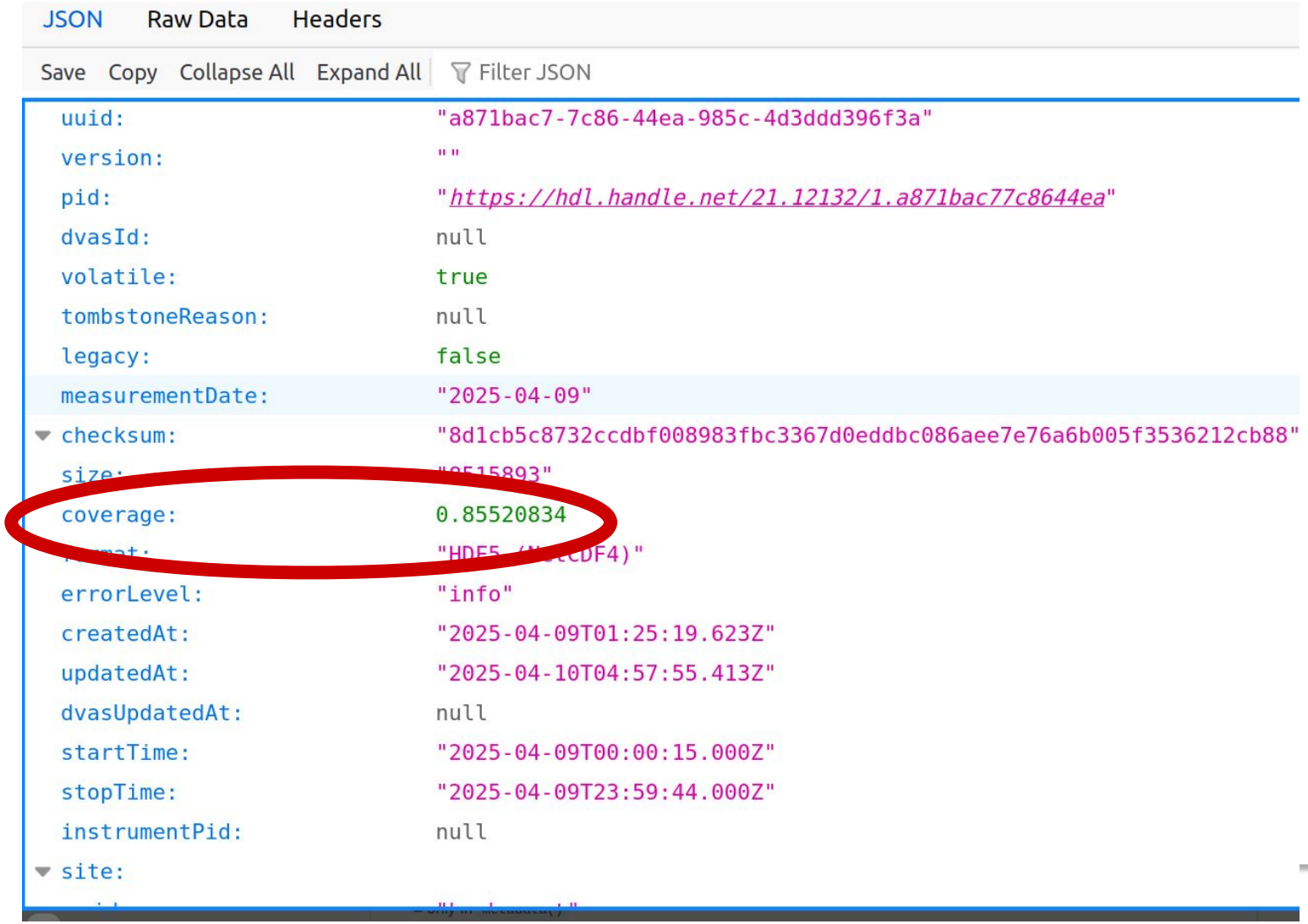
Parameters:

name	type	default	example
site_id	`str`		"hyytiala"
date	`str` or `date`	`None`	"2024-01-01"
date_from	`str` or `date`	`None`	"2025-01-01"
date_to	`str` or `date`	`None`	"2025-01-01"
updated_at	`str`, `date` or `datetime`	`None`	"2025-01-01T12:00:00"
updated_at_from	`str`, `date` or `datetime`	`None`	"2025-01-01T12:00:00"
updated_at_to	`str`, `date` or `datetime`	`None`	"2025-01-01T12:00:00"
instrument_id	`str` or `list[str]`	`None`	"rpg-fmcw-94"
instrument_pid	`str` or `list[str]`	`None`	"https://hdl.handle.net/21.12132/3.191564170f8a4686"
product*	`str` or `list[str]`	`None`	"classification"
show_legacy*	`bool`	`False`	
filename_prefix**	`str` or `list[str]`	`None`	"stare"
filename_suffix**	`str` or `list[str]`	`None`	".lv1"
status**	`str` or `list[str]`	`None`	"created", "uploaded", "processed" or "invalid"

* = only in `metadata()`

CLU updates

- Client library written in Python
- Data coverage in JSON metadata - for help in labelling process



CLU updates

- New stations