



ACTRIS



Status of the mobile instruments for exploratory platforms

The pilot calibration workshop for mobile instruments (drones and balloons)

Jakub Ondracek, PACC
ACTRIS CAIS-ECAC



Draft of the Preliminary recommendation for aerosol in situ measurements on mobile platforms in ACTRIS

First draft:

- December 2022!!!

Participating institutions:

- FMI
- CYI
- TROPOS
- ???

Any contribution from the community very welcome

Draft of the Preliminary recommendation for aerosol in situ measurements on mobile platforms in ACTRIS

Content so far:

- Scope
- Variables covered
- General recommendations
- Specific recommendations for ACTRIS variables
- Data treatment
- References, links and contacts

Mobile instruments guidelines also part of the newly prepared
GAW measurement guidelines

PARTICIPANTS

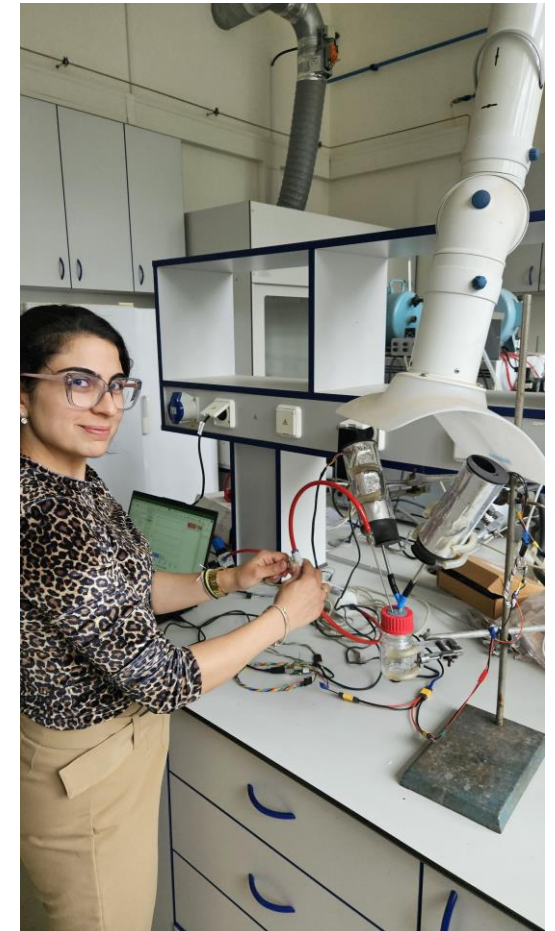
FMI (David Brus):

- 5x CPC 3007
- 2x POPS
- 1x miniCDA
- 2x UCASS aerosols
- 2x UCASS droplets



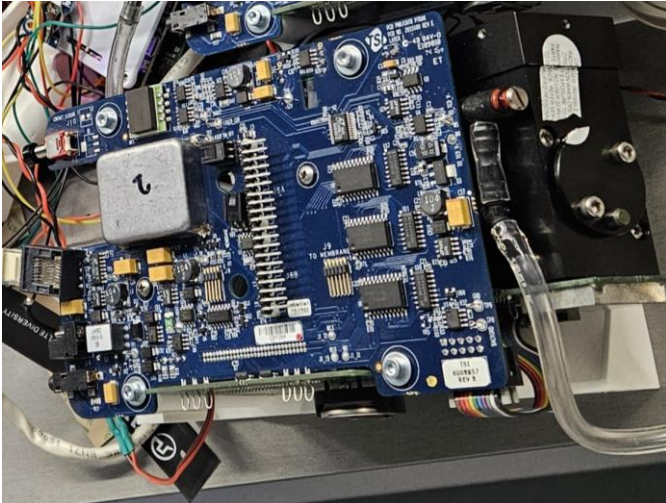
CYI (Maria Kezoudi):

- 2x POPS
- 2x UCASS aerosols
- 2x UCASS droplets



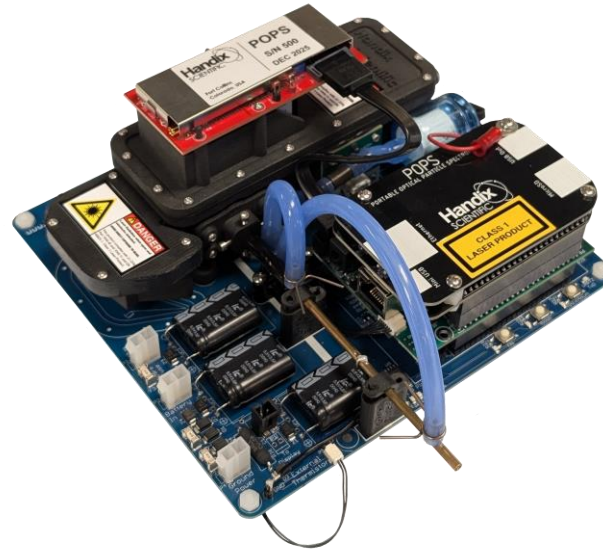
Pilot calibration workshop for mobile instruments

CPC 3007 5x (TSI)
7 (10,13) nm – 1 μ m



INSTRUMENTS

POPS 4x (Handix)
0.15 – 3 μ m



miniCDA 1x (Palas)
0.12 – 16 μ m



UCASS (Uni Hertfortsheer)
4x aerosol 0.4 – 15 μ m (high gain)
4x droplet 0.8 – 35 μ m (low gain)



CPC 3007

Reference instruments:

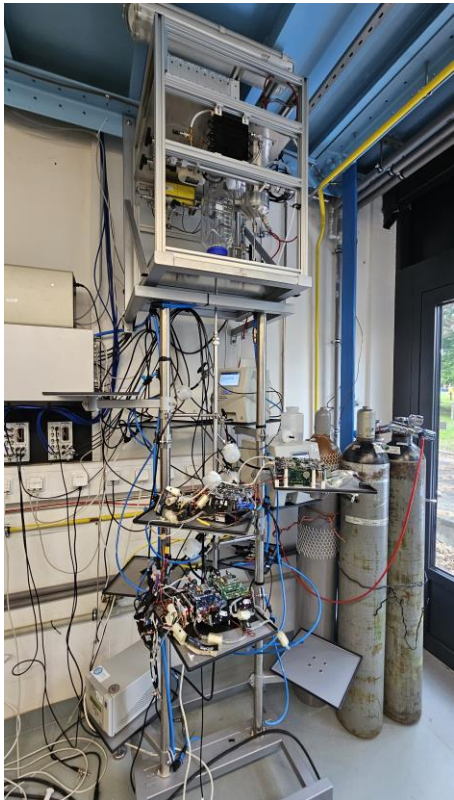
- AE 3068B (TSI)
- Reference CPC 3750 (TSI)
- Reference MPSS (TROPOS)

Calibration aerosols:

- Monodisperse silver
- Ambient aerosol

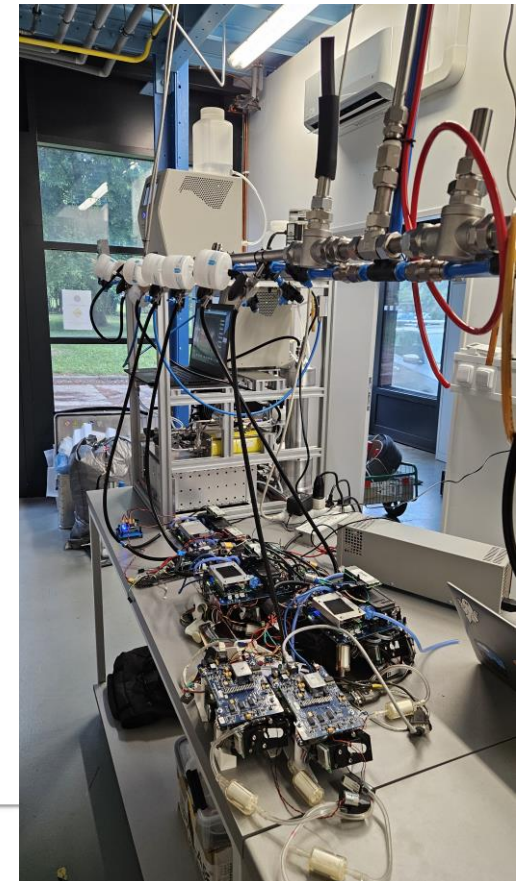
Tested instruments:

- 5x CPC 3007

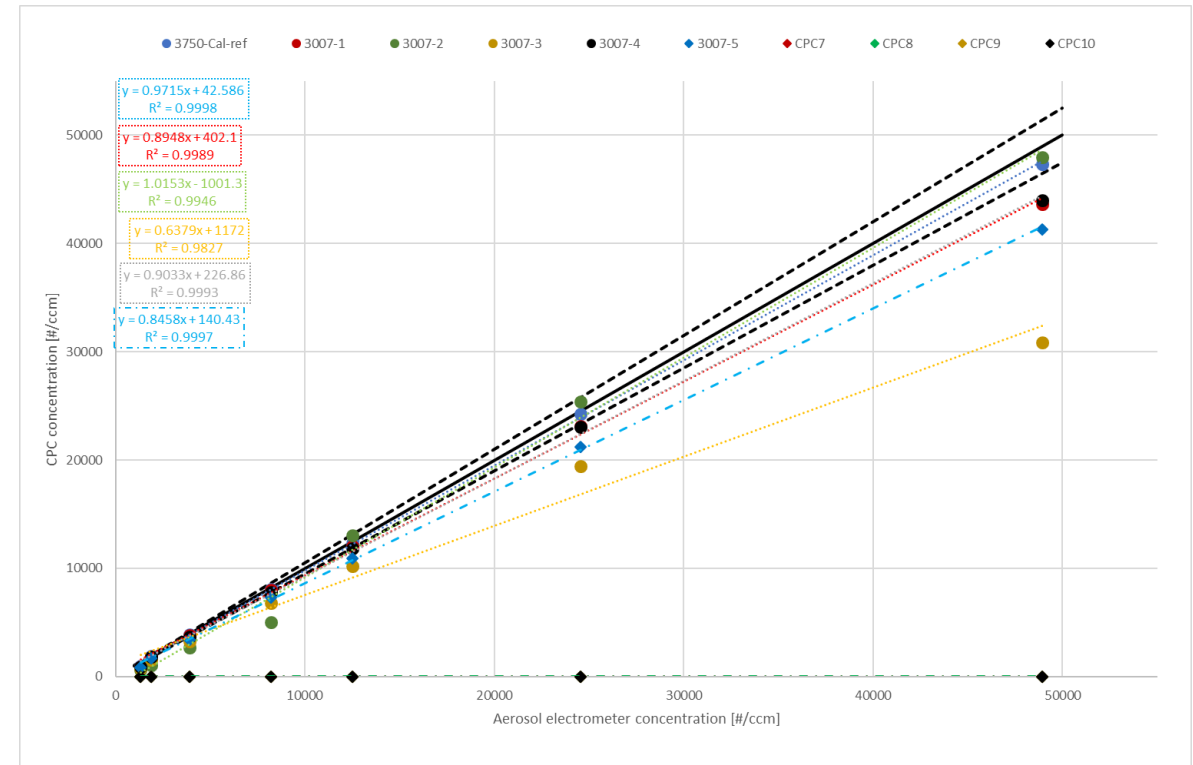
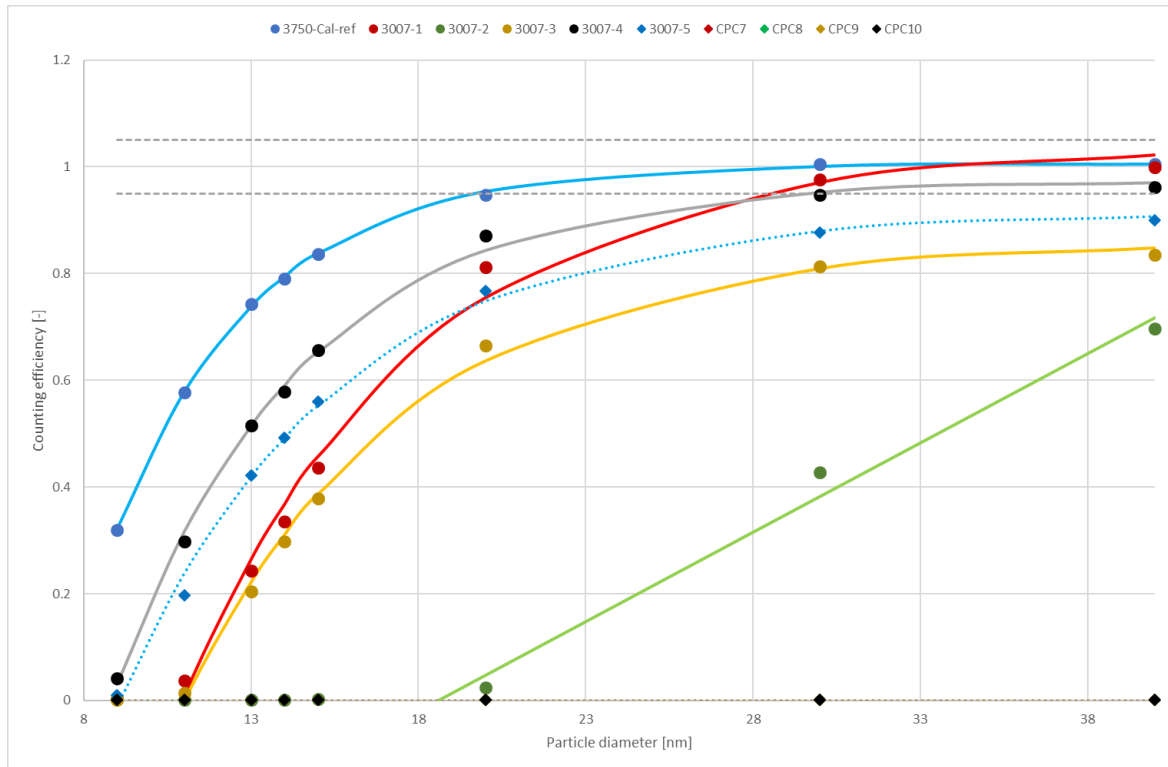


Measurements performed:

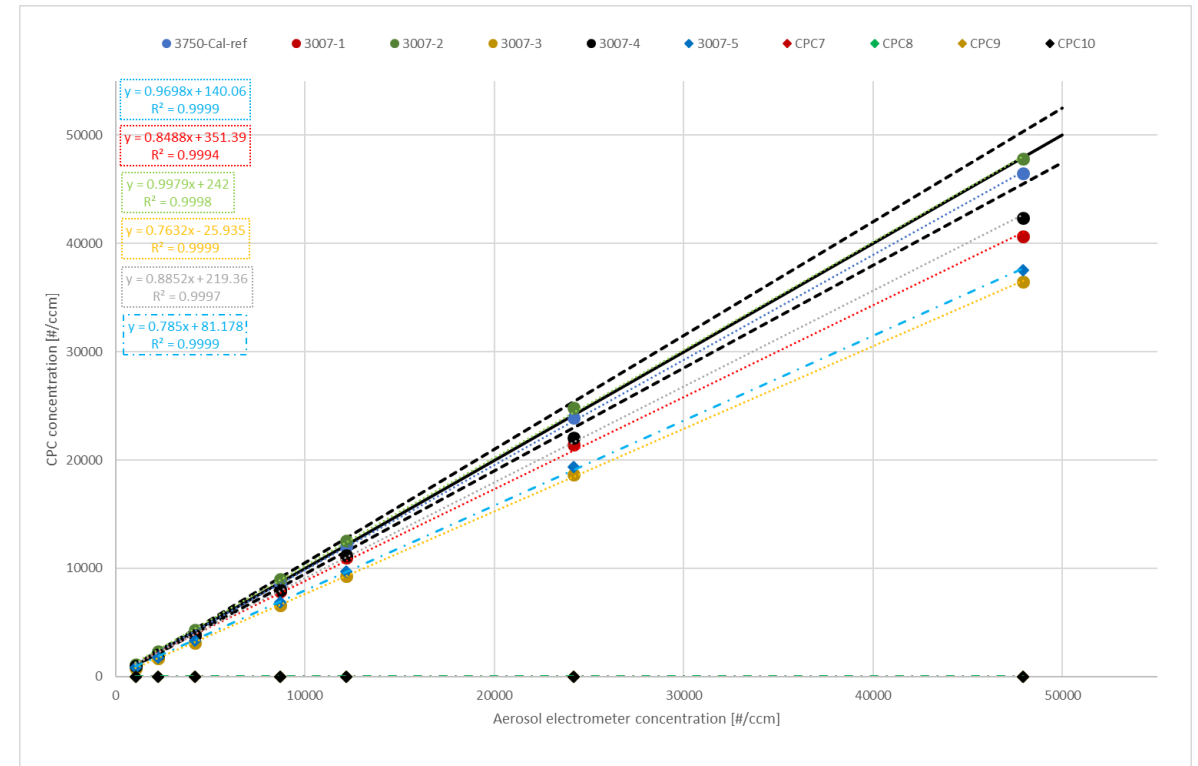
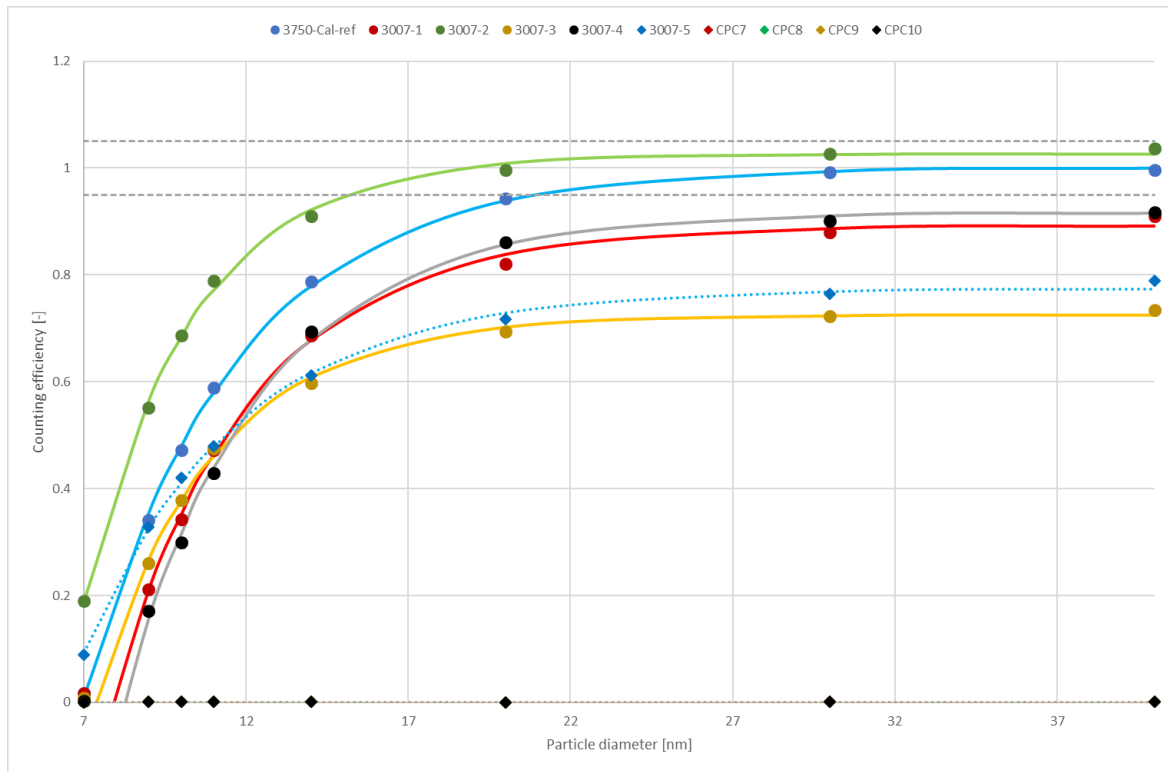
- Counting efficiency (size based range on CPC temp.):
 - TEC1000: 9, 11, 13, 14, 15, 20, 30, 40 nm
 - TEC1500: 7, 9, 10, 11, 14, 20, 30, 40 nm
 - TEC2000: 6, 7, 8, 10, 12, 14, 20, 30, 40 nm
- Linearity (@40 nm: 1k, 2k, 4k, 8k, 12k, 25k, 50k #/cm³)
- Ambient aerosol



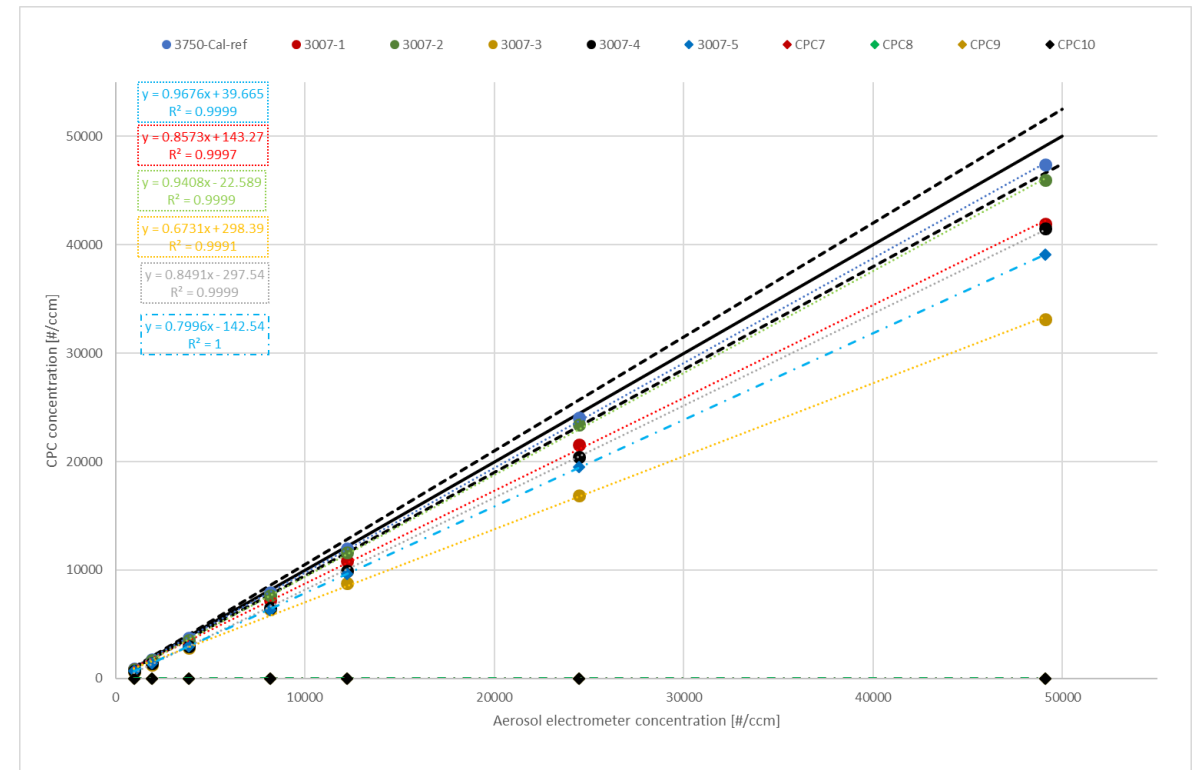
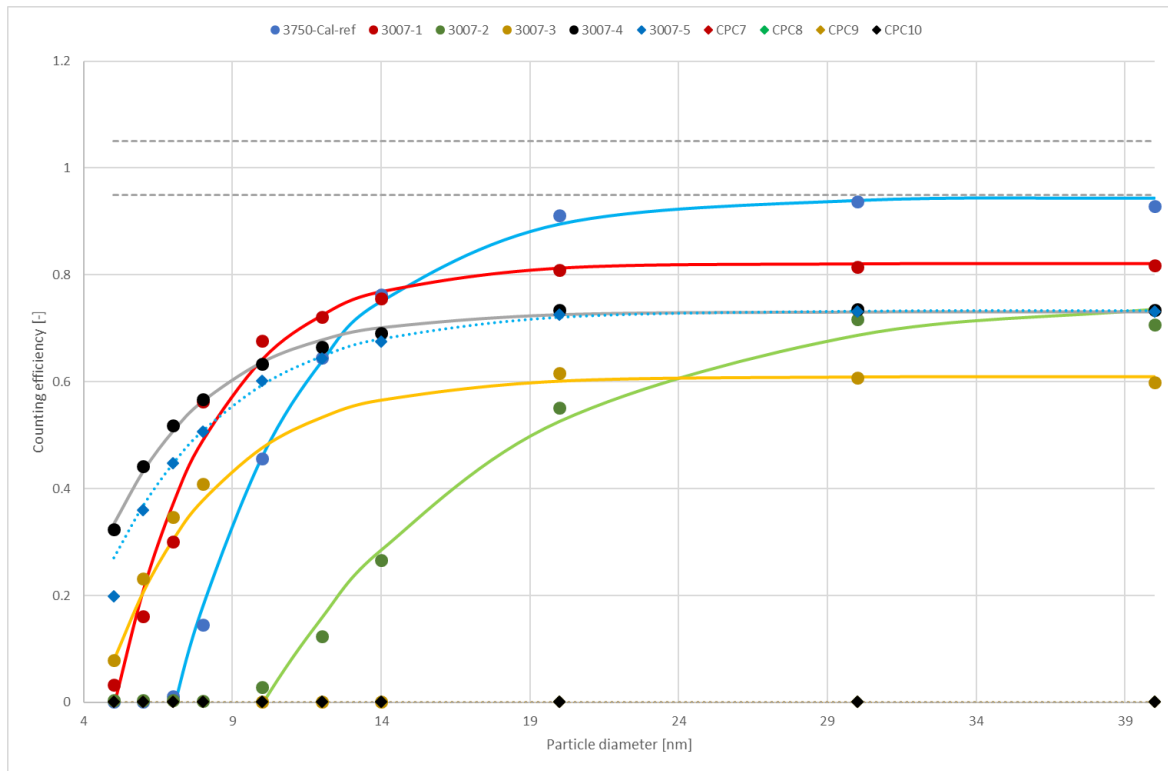
CPC 3007 –TEC1000



CPC 3007 –TEC1500



CPC 3007 –TEC2000



POPS

Reference instruments:

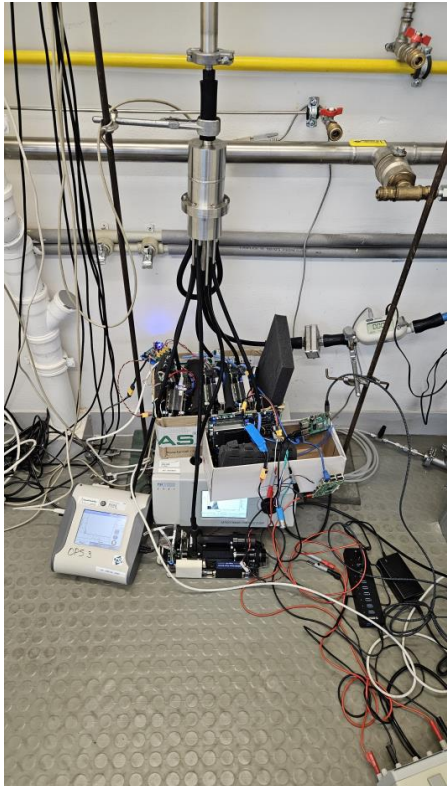
- APSS 3321 (TSI)
- OPSS 3330 (TSI)
- CPC 3750 (TSI)

Calibration aerosols:

- PSL (0.2, 0.7, 0.8, 1, 2, 3 μm)
- AS (monodisperse 70 – 300 nm)
- Ambient aerosol

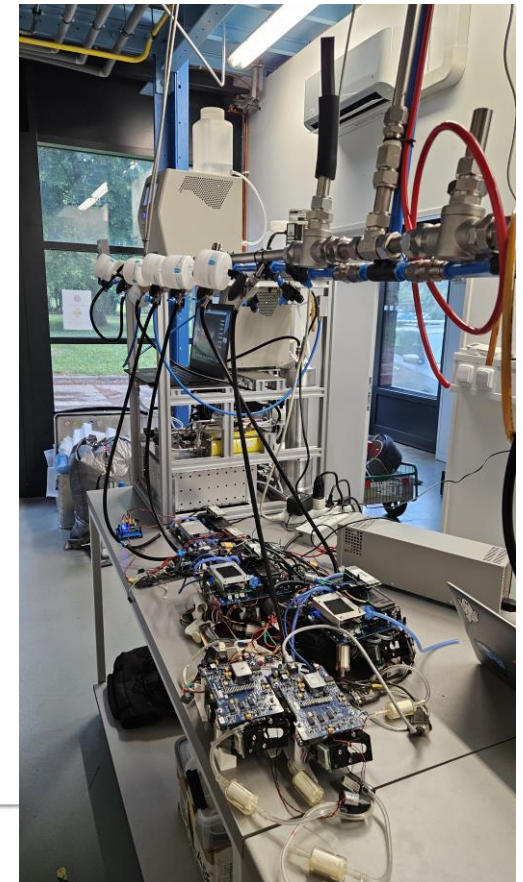
Tested instruments:

- 4x POPS

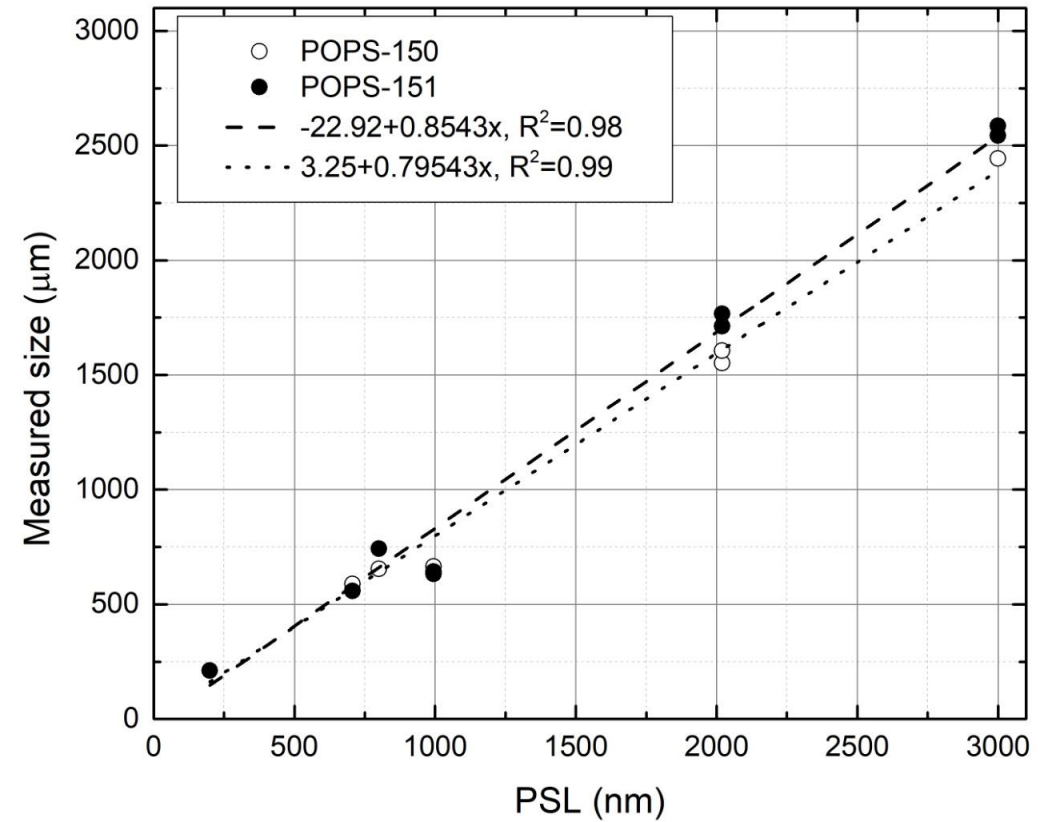
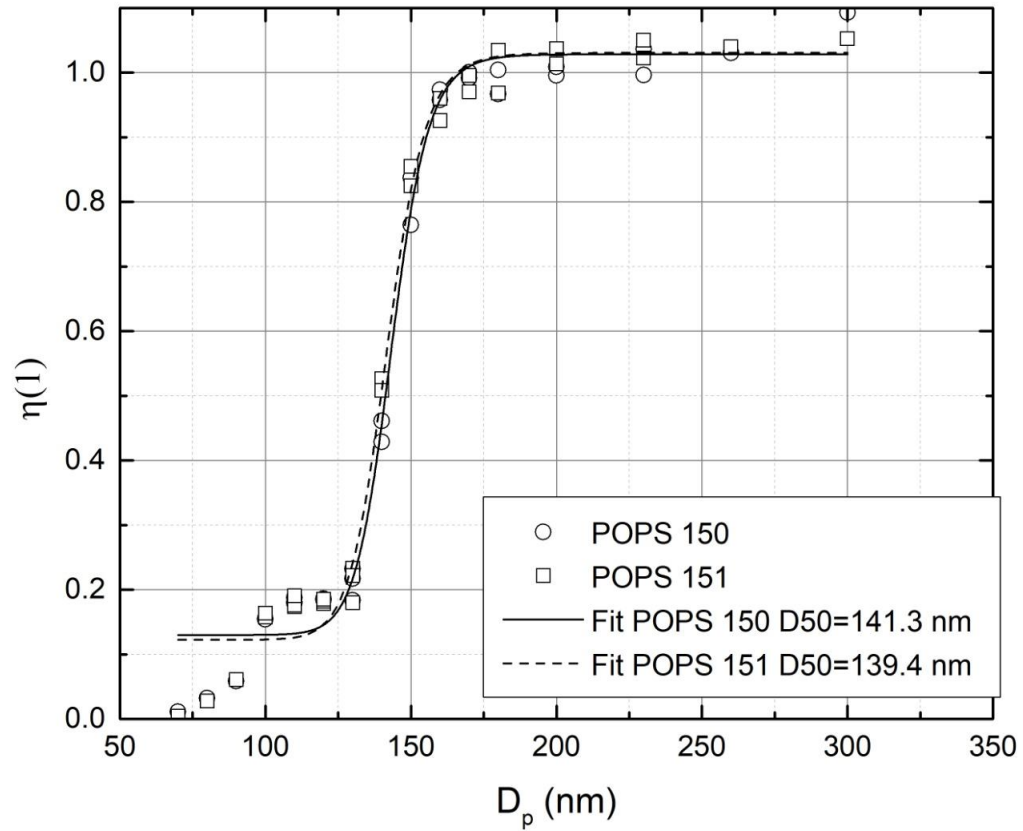


Measurements performed:

- Counting efficiency (monodisperse AS: 70 – 300 nm)
- Linearity:
 - @200 nm: 100 – 4000 $\#/\text{cm}^3$
 - @300 nm: 50 – 500 $\#/\text{cm}^3$
- Ambient aerosol



POPS - FMI



miniCDA

Reference instruments:

- APSS 3321 (TSI)
- OPSS 3330 (TSI)
- CPC 3750 (TSI)

Calibration aerosols:

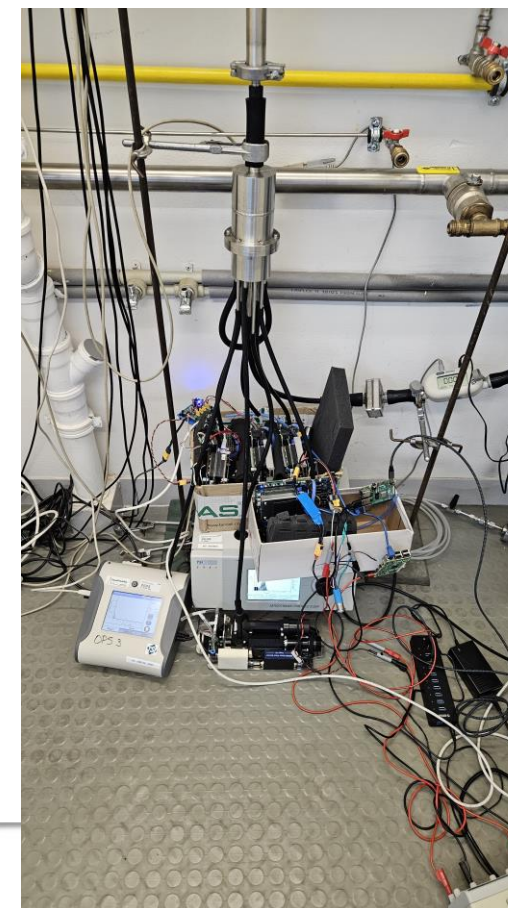
- PSL (0.2, 0.7, 0.8, 1, 2, 3 μm)
- AS (monodisperse 70 – 300 nm)

Tested instruments:

- 1x miniCDA

Measurements performed:

- Counting efficiency (monodisperse AS: 70 – 300 nm)
- Linearity:
 - @200 nm: 100 – 4000 $\#/\text{cm}^3$
 - @300 nm: 50 – 500 $\#/\text{cm}^3$



UCASS

Reference instruments:

- APSS 3321 (TSI)
- OPSS 3330 (TSI)

Calibration aerosols:

- PSL (0.7, 0.8, 1, 2, 3 μm)
- Borosilica beads (5, 8, 10, 15, 20, 30 μm)

Tested instruments:

- 4x UCASS aerosols
- 4x UCASS droplets



Measurements performed:

- Counting efficiency (PSL: 0.7, 0.8, 1, 2, 3 μm)
- Intercomparison (BS: 5, 8, 10, 15, 20, 30 μm)



Possible 2nd pilot workshop on mobile instruments

- PACC
- November 2026 (one week - exact dates t.b.d.)
- Instruments (Partector2, ...)
- Participants (FMI, ...)

Thank you for your attention

