ACTRIS Whitelist for aerosol in-situ instrumentation at observatories

The list of instruments will be amended and expanded based on reported calibration results (by CF and/or reported in scientific literature)

Particle number concentration > 10nm (WCCAP, PACC)

- TSI: CPC 3750 CEN
- TSI: CPC 3772 CEN (not available any longer, service is still provided)
- TSI: CPC 3010 (must be replaced during the implementation phase; not available and no service any longer)
- GRIMM: CPC 5410/5412 CEN
- GRIMM: CPC 5421 CEN
- Airmodus: A20 CEN

Nano particle number concentration < 10nm (CCC)

- TSI: UCPC 3756
- TSI: UCPC 3776 (not available any longer, service is still provided)
- TSI: UCPC 3025 (not available and no service any longer)
- Airmodus: A10 Particle Size Magnifier plus A20 CEN

Particle number size distribution - mobility diameter 10-800nm (WCCAP, PACC)

- TSI: SMPS 3082 with DMA 3083 CEN
- TROPOS: MPSS CEN
- Other homemade MPSS must be verified

Nano particle number size distribution 1 -10 nm (CCC)

- TROPOS: N-MPSS
- UHEL: Twin-DMPS
- Other homemade Nano-MPSS must be verified.
- Airmodus: A11 nCNC-system
- TSI: SMPS 3082 with DMA 3085
- Airel: Neutral Cluster and Air Ion Spectrometer (NAIS)

Particle number size distribution - aerodynamic diameter 0.8 to 10 µm (WCCAP, PACC)

- TSI: APS 3321

Particle light scattering and backscattering coefficient – multiwavelength (WCCAP, PACC)

- TSI: Integrating nephelometer 3563 (not available and no service any longer)
- ECOTECH: Aurora 4000/3000

Particle light absorption coefficient and black carbon (WCCAP, PACC)

- Thermo Scientific: MAAP 5012 (not available and no service any longer)
- Aerosols: Aethalometer AE33/31

Cloud Condensation nuclei number concentration (WCCAP)

- DROPLET Measurement Technologies: CCN-100/200

Mass concentration of submicron non-refractory aerosol composition (ACMCC)

- The Aerodyne quadrupole Aerosol Chemical Speciation Monitor (ACSM) equipped with PM_1 lens and standard vaporizer is recommended by default at ACTRIS observational platforms.
- ToF-ACSM systems (e.g., where particularly low quantification limits shall be attained) and other types of aerosol mass spectrometers might be used, depending on circumstance and scientific objectives.

Mass concentration of particulate organic tracers (OGTAC-CC)

- Up to now, no dedicated technique is recommended for the direct analysis of organic particulate constituents.
- Classic instrumentation using LC and/or GC with MS or FID detection will be assessed.

Organic and Elemental Carbon (OGTAC-CC, ERLAP)

- DRI Model 2001
- DRI Model 2015
- Sunset 4G
- Sunset 4L
- Sunset 5L

Mass concentration of particulate elements (EMC2)

- For the offline and online analysis of elemental constituents in particulate matter, no dedicated technique or instrumentation is recommended.
- Standard and commercial instrumentation for PIXE, XRF and ICP-MS are considered.
- For offline analysis with ED-XRF, spectrometers with sample holders allowing the analysis of 47 mm diameter filters are recommended.
- For offline PIXE and ED-XRF analysis, the use of pure ring-supported stretched thin polytetrafluoroethylene (PTFE) filters such as Pall Life Science Teflo W/RING 2 □m 47 mm (product id R2PJ047) is recommended.