



Performance & evaluation criteria for calibration workshops & ACTRIS compatibility

ACTRIS aerosol in-situ variable: Particle light scattering and backscattering coefficient

Responsible CAIS-ECAC units: WCCAP

Instrument type: Integrating Nephelometer (IN)

Technical checks & calibration:

- determination of the Nephelometer status values
- performing zero check with min 1h
- performing high span check using CO₂ with min 1h
- comparison to the reference Nephelometer and optical reference using ammonium sulfate
 - particles should be sufficiently small, with an angstrom in the range of 3.2 to avoid any systematic errors due to insufficient truncation correction
 - at least two plateaus with a stable concentration of at least 100Mm⁻¹ are run for at least 1h.

Criteria for evaluation:

- the noise should be below 0.5Mm⁻¹ for 1min sample rate
- the deviation for the high span check should be less equal than 5%
- the deviation for to the reference for ammonium sulfate should be less equal than 10%

Information for the user:

- regular zero and high span checks
- regular cell inspection and cleaning
- possible leak check

Literature:

- Heintzenberg, J., et al. (2006). "Intercomparisons and aerosol calibrations of 12 commercial integrating nephelometers of 3 manufacturers." *Journal of Atmospheric and Oceanic Technology* 23 (7): 902-914.