TROPOS
Leibniz Institute for Tropospheric Research

ACTRiS

Intercomparison of Condensation Particle Counter

Project No.: CPC-2015-2-1

Basic information:

Location of the quality assurance: TROPOS, lab: 130

Delivery date: November 02, 2015

Setup in the laboratory: November 5, 2015

Comparison period: November 5.-12.2015

Principal Investigator	Home Institution	Participant	Instrument
Nicolas Bukowiecki	Paul Scherrer Institut Nicolas Bukowiecki OFLA/106 5232 Villigen PSI Schweiz		TSI CPC Model 3772 # 70634096 (Aug. 2008)

TROPOS Reference Instrument: Electrometer: TSI model 3068B
70838596

Additional Equipment:

- Bubble flow meter 'Gilibrator', Gilian (Sensidyne)

Summary of Intercomparison:

Pre-status:
The TSI CPC 3772 did not pass the quality standards of ACTRIS and GAW.

Final status:
After cleaning and exchange of the laser diode the TSI CPC 3772 passed the quality standards of ACTRIS and GAW.

On November 5.-12. the PSI TSI-CPC 3772 participated the extended TROPOS ACTRIS-2 CPC-Workshop.
After the Initial-Status, which included a night measurement of ambient aerosol against the TROPOS Reference CPC 3772 SN 71105246 we found a deviation of -7% in the total number concentration measured by the PSI instrument. This finding was verified by a first calibration showing a corresponding deviation over the whole size range:

30 nm	20 nm	15 nm	13 nm	11 nm	10 nm	9 nm	8 nm	7 nm	6 nm
-6.92%	-6.58%	-6.84%	-6.79%	-6.58%	-6.23%	-5.87%	-6.62%	-9.21%	-9.65%

Table 1: Initial deviation of the CPC from the reference instrument.

Optics, wick and all internal parts have been cleaned in our electronics workshop. The laser diode, which only delivered 5 mW of laser power, was replaced.

1. Status of the CPC: After repair, the CPC is in a good condition.
2. CPC-Workshop: The CPC 3772 reached at 30 nm the 100% efficiency. The Dp50 is at 7.3 nm. The CPC efficiency curve corresponds to the standard.

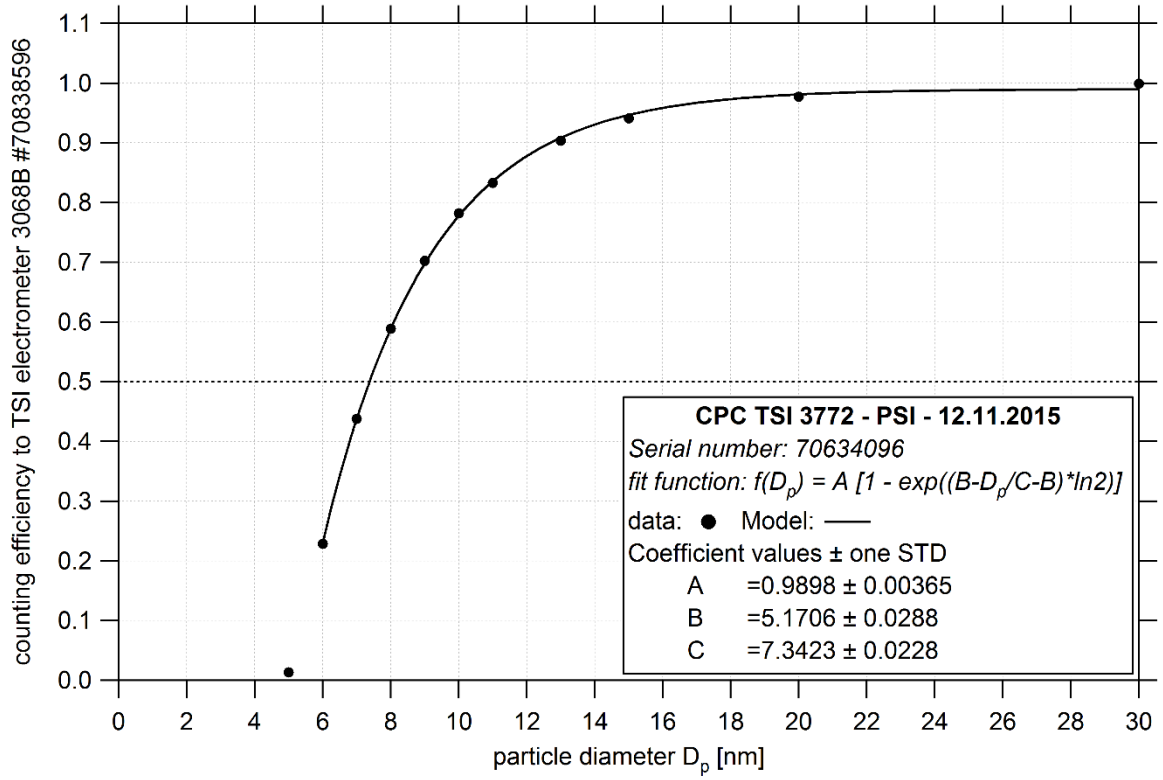

Figure 01: CPC efficiency curve. Based on Electrometer TSI 3068B. Serial number: 70838596