

## Intercomparison of Absorbing Photometers Project No.: AP-2017-1-8

### Basic Information:

**Location of the quality assurance:** TROPOS

**Delivery Date:** 13 September, 2017

Principal Investigator	Home Institution	Participant	Instrument
Robin Modini	Paul Scherrer Institut	R. Modini	Photoacoustic Extinctionmeter (PAX) at 870nm

### 1. Intercomparison summary

**Status on arrival:** No issues due to transportation or other damages. The instrument arrived un-calibrated.

**Noise:** The one minute noise (single standard deviation) of the absorption and scattering channels were  $0.15 \text{ Mm}^{-1}$  and  $0.09 \text{ Mm}^{-1}$ , respectively. For zero air the background was  $0.12 \text{ Mm}^{-1}$  (absorption) and  $0.04 \text{ Mm}^{-1}$  (scattering), respectively.

**Comparison of absorption to a reference setup:** Three CAPS<sub>pmex</sub> Extinction cells and an Aurora4000 nephelometer were used as reference for absorption (=extinction minus scattering). Data from nephelometer were corrected for truncation.

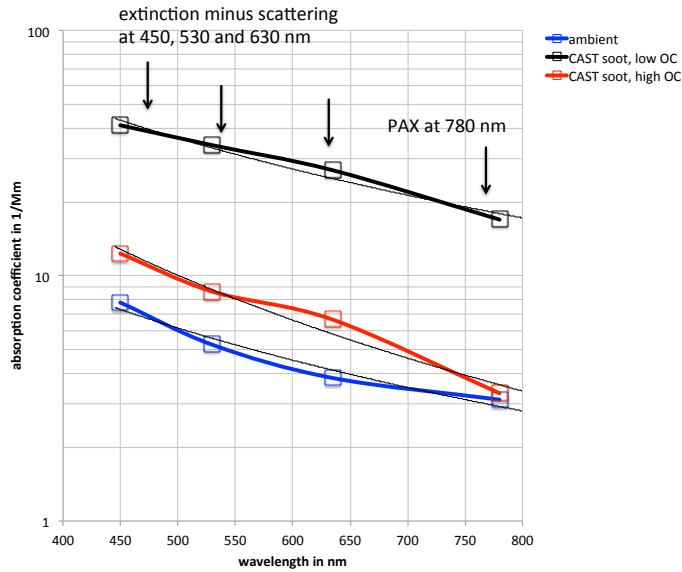


Figure: Absorption coefficient from PAX in relation to the reference absorption system (extinction minus scattering) for ambient air, and two types of soot.

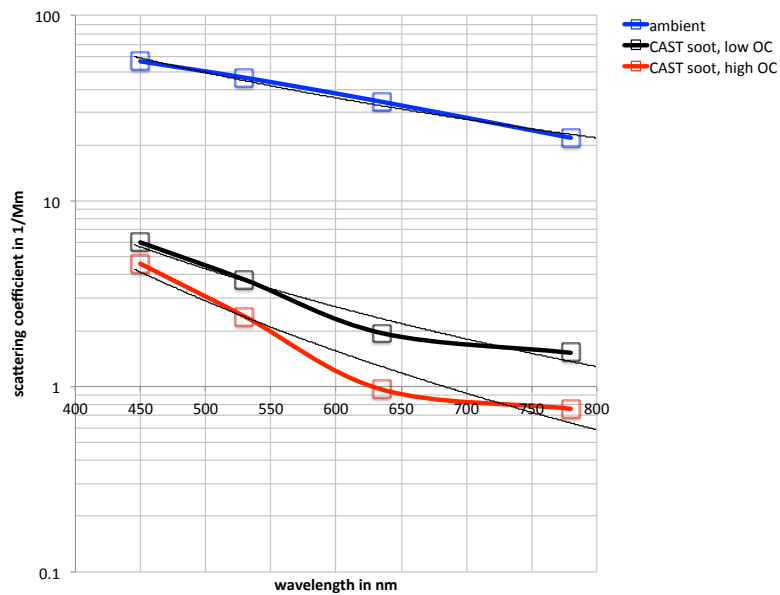


Figure: Scattering coefficient from PAX compared to nephelometer (Aurora 4000) for ambient air, and two types of soot.

**Inspection:** The cell was inspected through the inlet port. The cell was found to be clean. Since the comparison the reference instrument and the span check indicate that the instrument was in good conditions, it was refrained to open the cell.

**Recommendations:** No recommendations.

**Overall assessment:** The instrument meets the requirements.