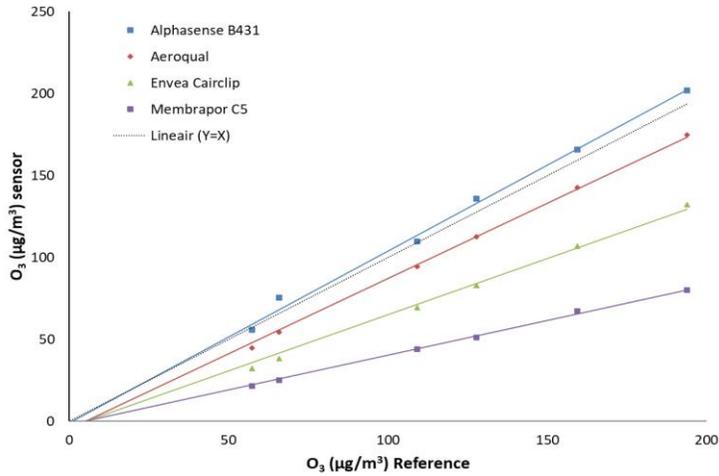
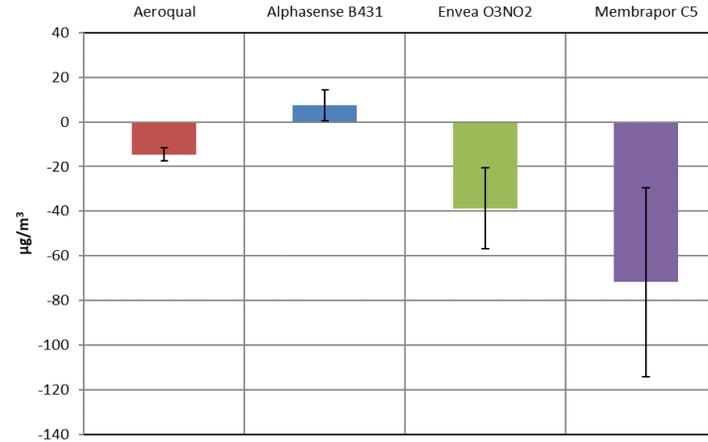




Linearity of sensor system (uncalibrated)



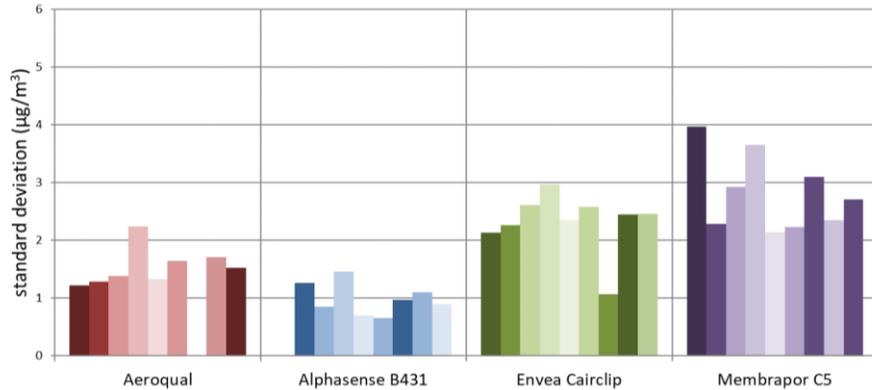
Deviation from reference (uncalibrated)



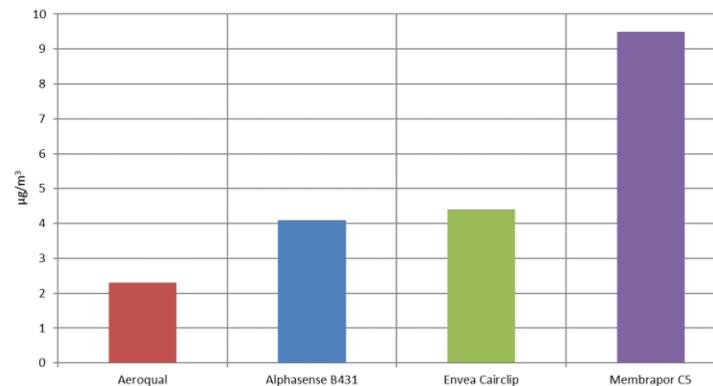
Average linear regression coefficients (uncalibrated)

$y = ax+b$	a	b	n
Aeroqual	0.95	4,3	3
Alphasense B431	1.05	0	4
Envea Cairclip	0.63	-4	5
Membrapor C5	0.43	-2	4

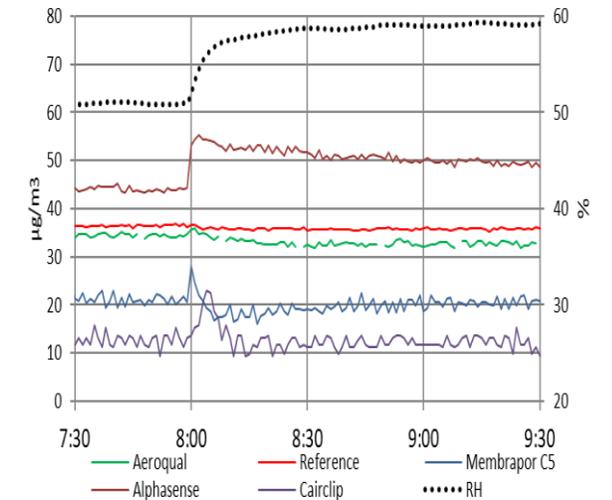
Sensor stability (calibrated)



Between-sensor uncertainty (calibrated)



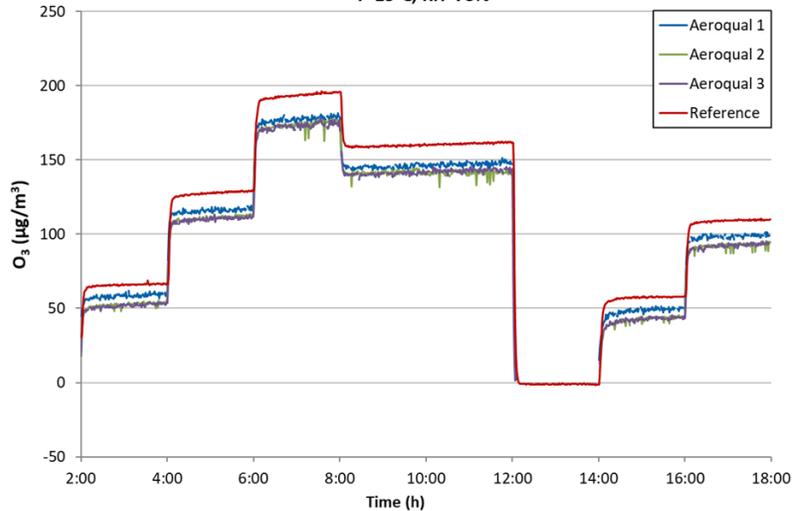
Sensor response to change in relative humidity





Uncalibrated sensor versus reference

Aeroqual
T=15°C, RH=75%



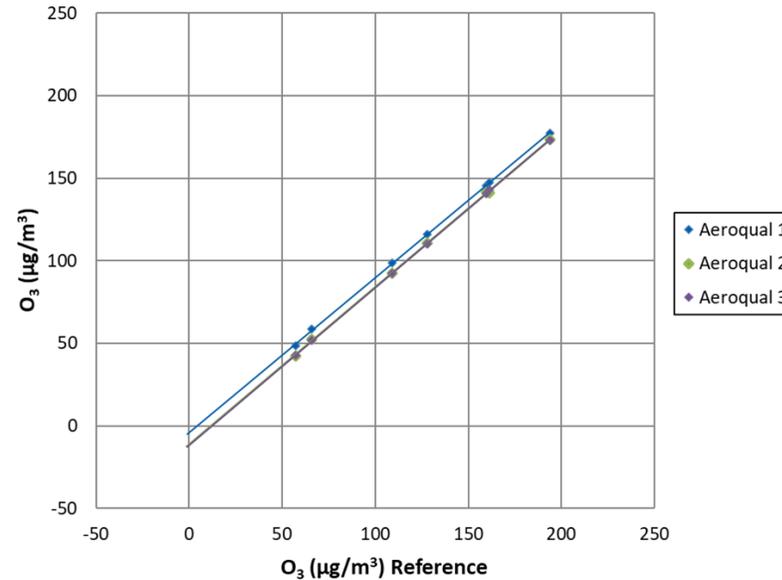
Accuracy (uncalibrated)

Reference mean (µg/m ³)	Sensor mean (µg/m ³)	Accuracy (%)
31	19	62
57	45	78
66	54	82
109	94	86
128	112	88
159	143	89
194	175	90

average
82/100

Linearity before calibration

Aeroqual O₃ Linearity
individual sensor vs reference



- $r^2 > 0.99$
- slope: ≈ 0.95
- intercept (µg/m³): $\ll -4 \text{ --- } -12 \gg$
(used for calibration)

Steady-state stability

SD < 2 µg/m³
(calibrated)

Between sensor uncertainty

2.3 µg/m³
(calibrated)

Influence of RH

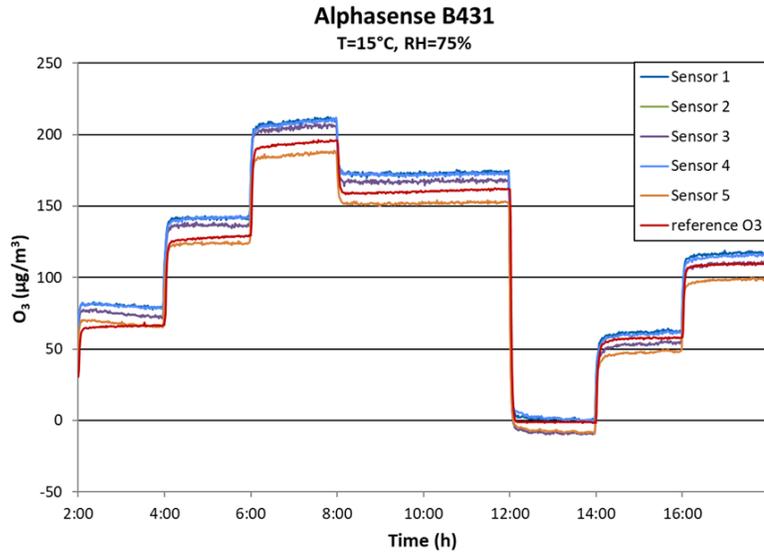
Changes in RH (slightly) affects the sensor (<10%)

NO₂ interference

Sensors are (slightly) affected (<10%; NO₂: 50-200 ppb)



Uncalibrated sensor versus reference

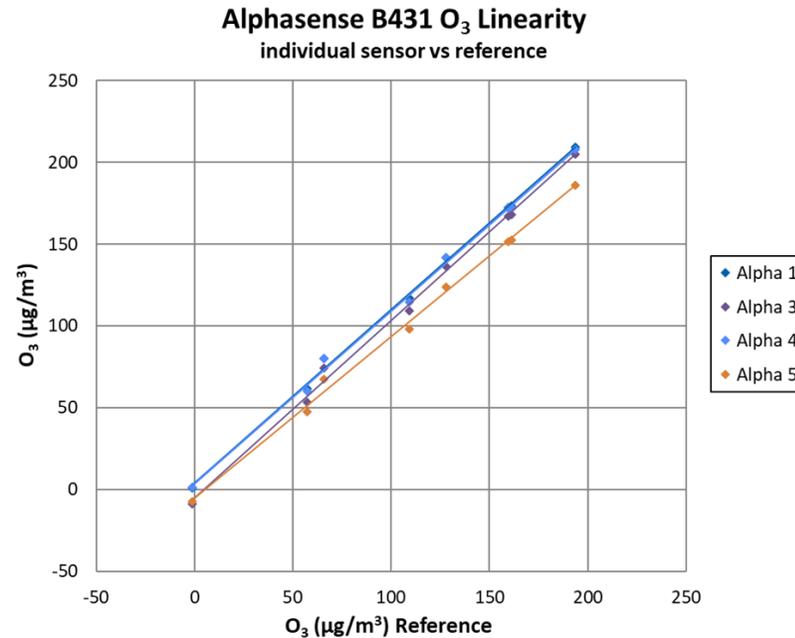


Accuracy (uncalibrated)

Reference mean (µg/m ³)	Sensor mean (µg/m ³)	Accuracy (%)
31	51	35
57	56	97
66	76	85
109	110	99
128	136	94
159	166	96
194	202	96

average
86/100

Linearity before calibration



- $r^2 > 0.99$
- slope: ≈ 0.8
- Intercept (µg/m³): $\ll -5 \text{ --- } 16 \gg \mu\text{g/m}^3$
(used for calibration)

Steady-state stability

SD < 2 µg/m³
(calibrated)

Between sensor uncertainty

4.1 µg/m³
(calibrated)

Influence of T and RH

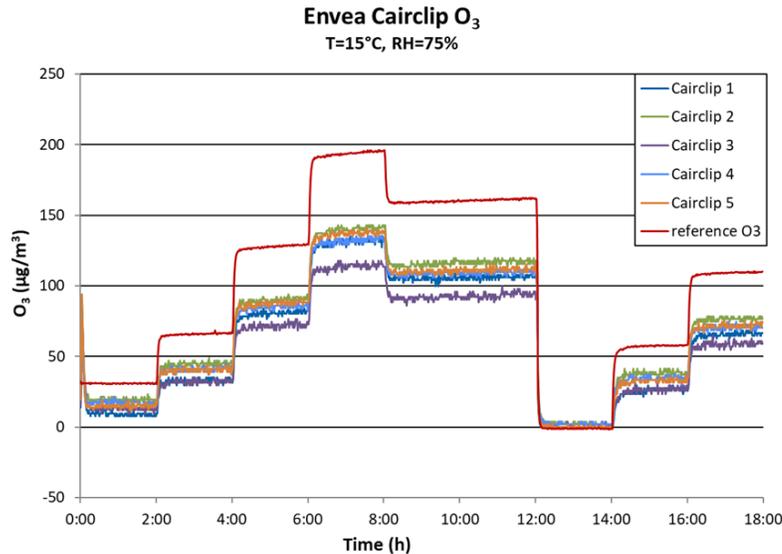
Changes in T and RH **affect** the sensor (up to 100%)

NO₂ interference

Sensors are **affected**
(<40%; NO₂: 50-200 ppb)



Uncalibrated sensor versus reference

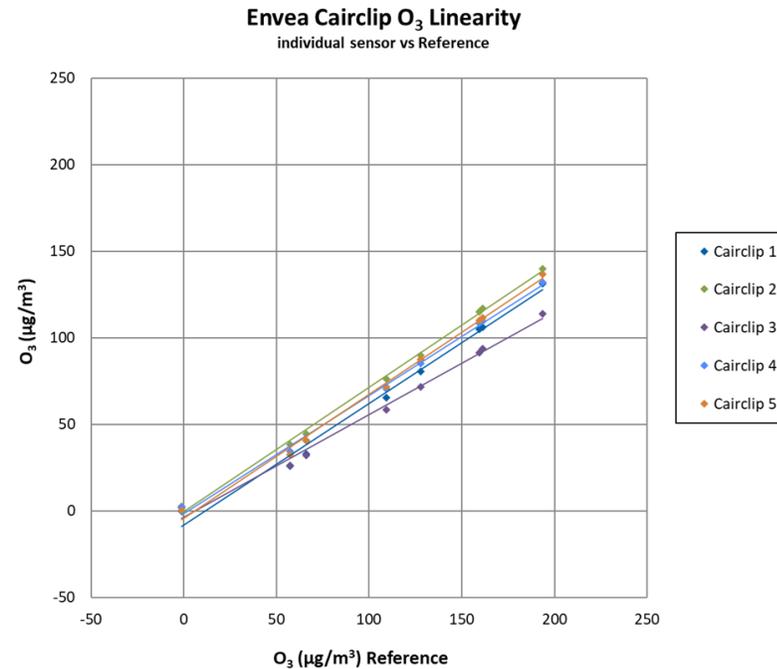


Accuracy (uncalibrated)

Reference mean (µg/m ³)	Sensor mean (µg/m ³)	Accuracy (%)
31	15	48
57	32	55
66	38	58
109	69	63
128	83	65
159	106	67
194	131	68

average
60/100

Linearity before calibration



- $r^2 > 0.99$
- slope: << 0.60-0.72 >>
- intercept (µg/m³): << 0 --- -8 >>
(used for calibration)

Steady-state stability

SD < 3 µg/m³
(calibrated)

Between sensor uncertainty

4.4 µg/m³
(calibrated)

Influence of T and RH

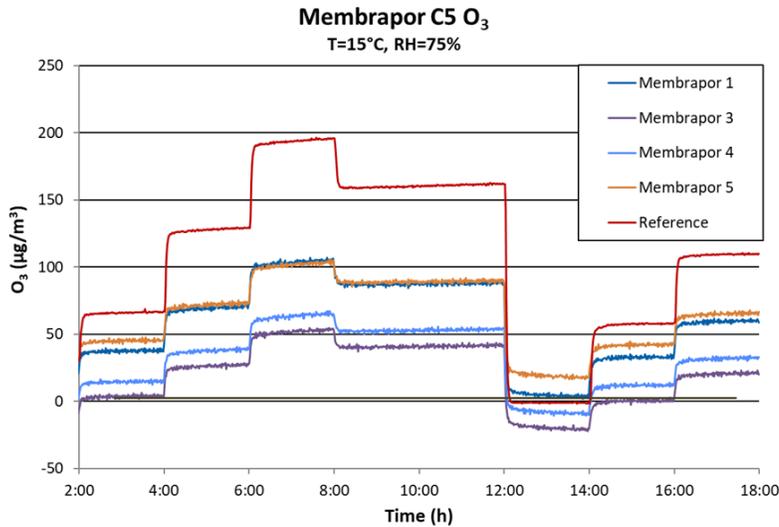
Changes in T and RH (slightly)
affects the sensor (<15 min)

NO₂ interference

Sensors are **affected**
(<35%; NO₂: 50-200 ppb)



Uncalibrated sensor versus reference

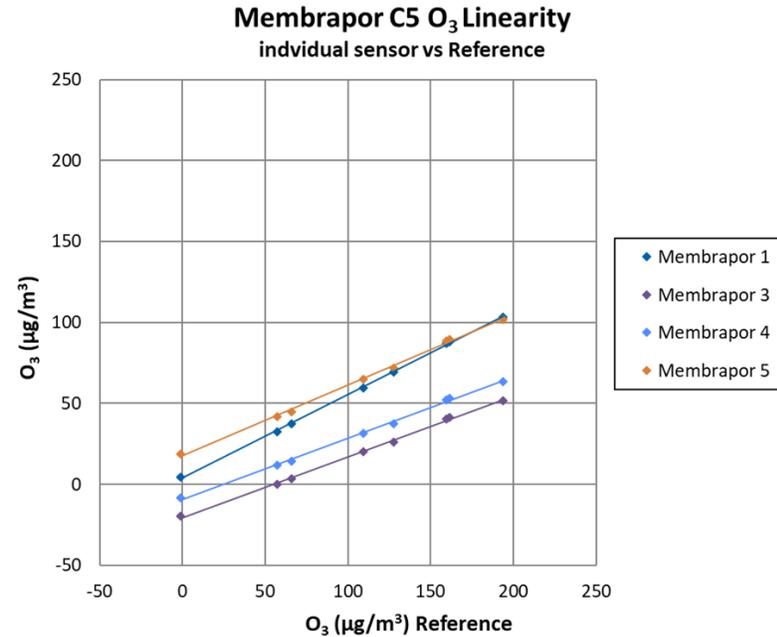


Accuracy (uncalibrated)

Reference mean (µg/m ³)	Sensor mean (µg/m ³)	Accuracy (%)
31	10	32
57	22	38
66	25	38
109	44	40
128	51	40
159	67	42
194	80	41

average
39/100

Linearity before calibration



- $r^2 > 0.99$
- slope: << 0.38 --- 0.52 >>
- intercept (µg/m³): << 18 --- -21 >>
(used for calibration)

Steady-state stability

SD < 4 µg/m³
(calibrated)

Between sensor uncertainty

9.5 µg/m³
(calibrated)

Influence of T and RH

Changes in T and RH affects the sensor (<1 hour)

NO₂ interference

Sensors are **affected**
(>100%; NO₂: 50-200 ppb)