

## *Certificate of calibration*

**For:** Dr Joss Kent  
UK Met Office  
Jupiter Mezzanine  
Fitzroy Road  
Exeter  
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EX1 3PB  
United Kingdom

**Date:** 23rd June 2020

**Instrument:** UK Meteorological Office CAPS instrument for the  
measurement of NO<sub>2</sub>, CAES0363 ISS A S/N 001

**Results:** UKMO NO<sub>2</sub> ppb = 1.1637 NCAS Standard ppb -1.1659  
ppb  
  
Calibration range between 0-275 ppbV.

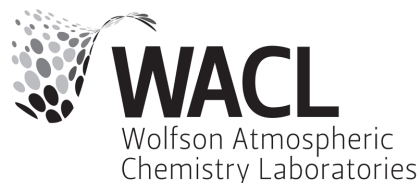
**Carried out and authorised  
by:** Dr Katie Read  
NCAS Scientist  
University of York  
York, UK

**Signed:**





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### Description of calibration:

A multi-gas calibrator (EnviroNics, model 6100) was used to dilute high concentration NO standard into PAG 001 zero air at varying levels. Ozone was added such that NO concentration was in excess. The amount of NO<sub>2</sub> is verified from the added Ozone assuming 1 molecule of O<sub>3</sub> gives one molecule of NO<sub>2</sub>. The concentration of NO<sub>2</sub> was further verified by the COZI CAPS instrument. Seven concentration levels were performed, 10 minutes at each level with the last 7 minutes of data used for calibration.

A zero check was carried out using both PAG zero air and also BTCA. A baseline adjustment was made to the visiting CAPS before the calibration.

### Cylinder Information

Gas	Concentration	Cylinder #
NO in Nitrogen (BOC)	24.9 ppm	243369SG (6/11/20)
NO in Nitrogen (NPL)	1.002ppm	11288 (12/3/23)

### Calibration data

NO <sub>2</sub> concentration, as calculated from drop in NO/CAPS measurement (ppbV)	Measured concentration (ppbV)	Standard deviation
0.5	-0.005	0.034
110.2	133.8	0.63
79.3	93.1	0.45
179.2	205.0	0.89
30.9	34.5	0.25
235.9	276.9	0.52
273.0	317.1	0.89
0	0.036	0.

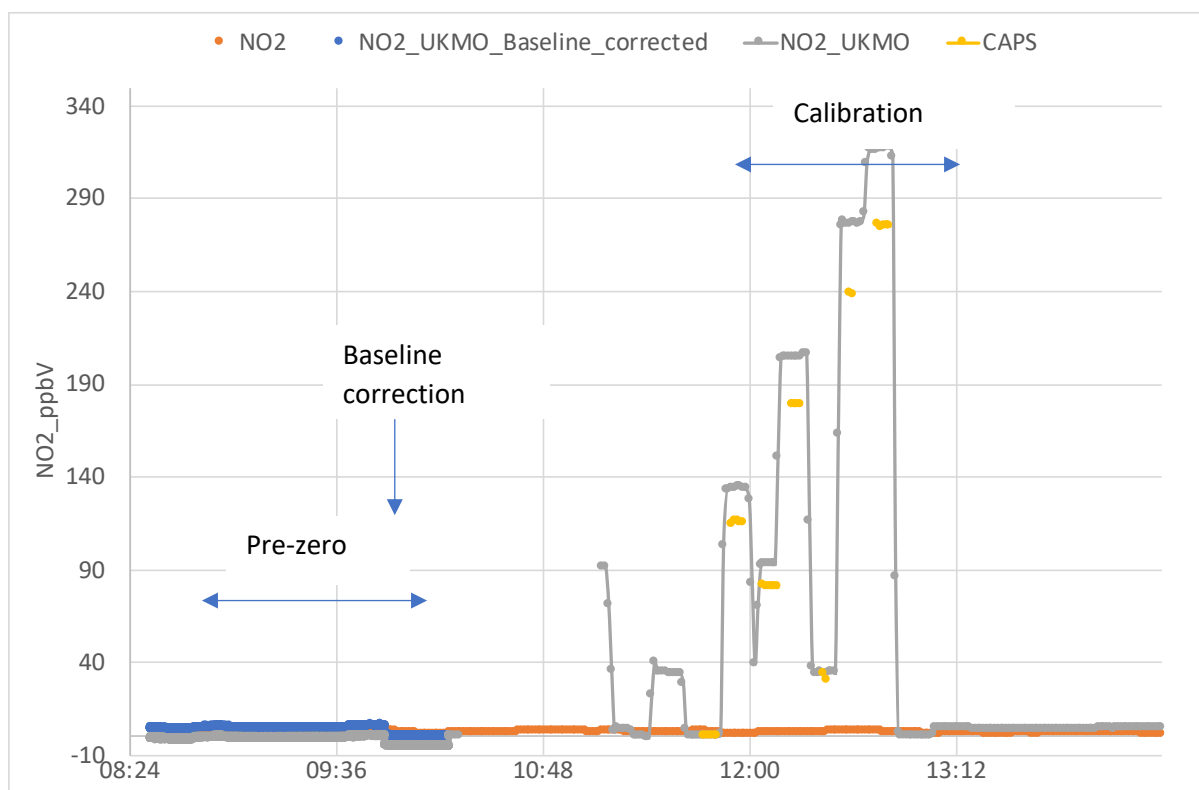
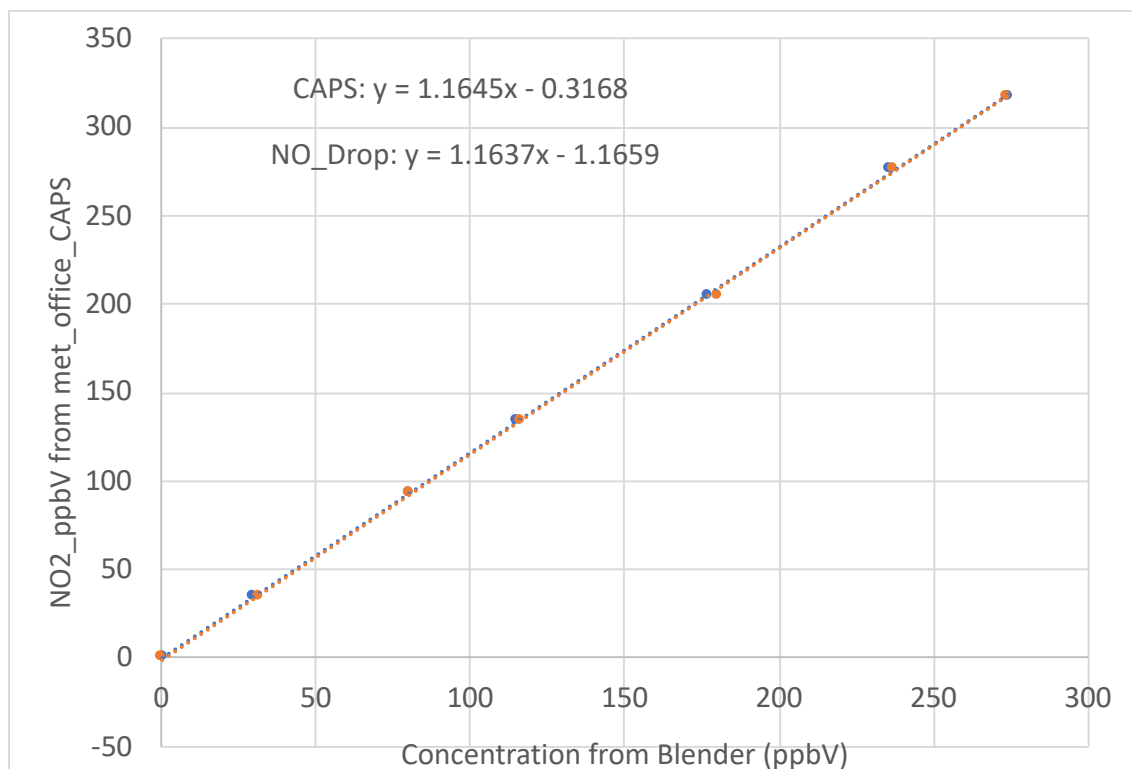


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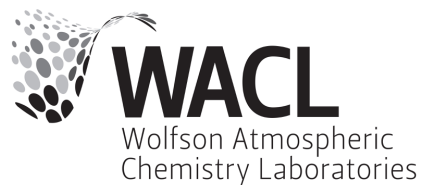
**WACL**

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Based on these results we recommend regular (pre/post-flight) adjustment to the baseline/zero followed by a span adjustment according to the equation above.

We recommend that you carry out baseline/zeros daily and calibrations at least annually to verify the stability of your analyser.

*This work was carried out in the COZI-Lab in the Wolfson Atmospheric Chemistry laboratories (WACL) at the University of York. The COZI-Lab is principally funded through the National Centre for Atmospheric Science (NCAS).*

