

OZONE ANALYZER INTERCOMPARISON  
 Thermo 49c 04275089232

intercomparison place : Lab 103 ISAc Bologna  
 intercomparison operator: Maurizio Busetto, Paolo Cristofanelli  
 Transfer Standard: Thermo 49iPs s/n: CM21267121  
 Transfer Standard has been evaluated by NaN on NaN with SRP#15 giving slope of NaN and intercept of NaN  
 TS has not been warmed-up for more then 12 hours and OA has not been conditioning at 200ppb for more then 2 hour  
 OA has been evaluated at the following 5 concentration levels: 0, 25, 50, 75, 100 e 125 ppb

OA and TS condition:  
 OA 04275089232 BKG=-0.2 ; Coeff=1.010  
 TS CM21267121 BKG=-0.0 ; Coeff=1.017  
 intercomparison start : 2023-06-14 08:45:00 ; intercomparison end : 2023-06-14 15:52:00  
 LinregressResult(slope=1.0201375110314574, intercept=0.09247082619982194, rvalue=0.9999933495122809, pvalue=6.8129087474366375e-43, stderr=0.0009023565359760328, intercept\_stderr=0.047008086053586216)

risultati regressione lineare  $OA_{mean} = TS_{mean} * slope + intercept$   
 TS Transfer Standard  
 OA O3 Analyzer

slope = 1.020138 slope\_stderr = 9.024e-04  
 intercept = 0.092471 intercept\_stderr = 4.701e-02  
 rsquare = 0.999987 covariance = 1.464e-21

TSmean : media [O3] TS ogni step di calibrazione  
 OAmean : media [O3] OA per ogni step di calibrazione. NB: OAmean  $\bar{A}$  ottenuta dalle misure dell'analizzatore riportate a slope=1.0 e bkg=0.0  
 Predicted = TSmean\*slope + intercept  
 TSstd : standard deviation [O3] TS per ogni step di calibrazione  
 OAstdd : standard deviation [O3] OA per ogni step di calibrazione  
 Residual = TS - predicted  
 Deviation = OA - TS

| TSmean  | TSstd | OAmean | OAstdd | predicted | residual | deviation |
|---------|-------|--------|--------|-----------|----------|-----------|
| 0.024   | 0.129 | -0.128 | 0.098  | -0.038    | 0.062    | -0.152    |
| 14.996  | 0.147 | 14.533 | 0.122  | 14.918    | 0.078    | -0.463    |
| 50.000  | 0.096 | 48.916 | 0.180  | 49.994    | 0.006    | -1.084    |
| 24.974  | 0.178 | 24.369 | 0.167  | 24.952    | 0.022    | -0.605    |
| 75.020  | 0.169 | 73.367 | 0.150  | 74.937    | 0.083    | -1.653    |
| 100.011 | 0.102 | 97.786 | 0.226  | 99.848    | 0.163    | -2.225    |
| 0.078   | 0.127 | -0.149 | 0.077  | -0.060    | 0.138    | -0.227    |
| 25.026  | 0.201 | 24.405 | 0.154  | 24.989    | 0.037    | -0.621    |
| 75.011  | 0.092 | 73.521 | 0.138  | 75.094    | -0.083   | -1.490    |
| 99.989  | 0.090 | 98.075 | 0.166  | 100.142   | -0.153   | -1.914    |
| 14.974  | 0.091 | 14.562 | 0.146  | 14.948    | 0.026    | -0.412    |
| 50.022  | 0.194 | 48.886 | 0.277  | 49.963    | 0.059    | -1.136    |
| 0.098   | 0.132 | -0.133 | 0.111  | -0.043    | 0.142    | -0.231    |
| 49.985  | 0.119 | 48.907 | 0.195  | 49.984    | 0.001    | -1.078    |
| 100.000 | 0.134 | 97.943 | 0.166  | 100.008   | -0.008   | -2.057    |
| 24.999  | 0.190 | 24.531 | 0.220  | 25.117    | -0.118   | -0.468    |
| 14.993  | 0.216 | 14.586 | 0.208  | 14.972    | 0.021    | -0.407    |
| 49.995  | 0.087 | 48.989 | 0.160  | 50.068    | -0.073   | -1.006    |
| -0.010  | 0.155 | 0.293  | 1.285  | 0.392     | -0.402   | 0.304     |

|  |         |
|--|---------|
| Unoise : media 0Astd                     | = 0.224 |
| Ulinearity : standard deviation Residual | = 0.129 |
| Urepeat = sqrt(Unoise^2 + Ulinearity^2)  | = 0.258 |
| Udrift = sqrt(0.58^2+(0.0025*C)^2)       | = 0.632 |
| U = sqrt(Urepeat^2+Udrift^2)             | = 0.682 |
| C  | = 100.0 |

compensation equation to obtain unbiased concentration  
[O3unbiased]=[O3]\*1.020)+0.092

# Intercomparison 49c s/n 04275089232 date : 20230614

