

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 15:53:00 ; intercomparison end : 2023-06-14 22:59:00
 LinregressResult(slope=1.0166653242425334, intercept=0.02502769377585423, rvalue=0.9999982659965881, pvalue=7.430355228259803e-48, stderr=0.0004591917607622127, intercept_stderr=0.024025851773867898)

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

slope = 1.016665 slope_stderr = 4.592e-04
 intercept = 0.025028 intercept_stderr = 2.403e-02
 rsquare = 0.999997 covariance = 1.309e-21

TSmean : media [O3] TS ogni step di calibrazione
 OAmean : media [O3] OA per ogni step di calibrazione. NB: OAmean \hat{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
 OAstd : standard deviation [O3] OA per ogni step di calibrazione
 Residual = TS - predicted
 Deviation = OA - TS

TSmean	TSstd	OAmean	OAstd	predicted	residual	deviation
0.027	0.150	-0.045	0.090	-0.021	0.047	-0.071
14.980	0.171	14.799	0.151	15.071	-0.091	-0.181
50.001	0.061	49.237	0.208	50.083	-0.082	-0.764
24.995	0.157	24.514	0.228	24.948	0.047	-0.481
74.977	0.124	73.748	0.225	75.002	-0.025	-1.229
99.979	0.119	98.318	0.127	99.982	-0.003	-1.661
0.051	0.235	-0.080	0.070	-0.057	0.108	-0.131
25.034	0.113	24.681	0.144	25.117	-0.083	-0.353
75.028	0.087	73.651	0.124	74.903	0.125	-1.377
99.980	0.071	98.260	0.128	99.923	0.057	-1.720
14.953	0.207	14.727	0.210	14.997	-0.044	-0.226
49.988	0.128	49.168	0.204	50.012	-0.024	-0.820
-0.015	0.080	-0.029	0.066	-0.005	-0.011	-0.014
50.020	0.137	49.195	0.229	50.040	-0.020	-0.825
100.003	0.195	98.340	0.217	100.004	-0.001	-1.663
24.997	0.100	24.524	0.110	24.958	0.039	-0.473
15.232	0.628	15.011	0.466	15.286	-0.054	-0.221
50.007	0.112	49.236	0.162	50.082	-0.075	-0.771
-0.050	0.127	-0.161	0.094	-0.139	0.088	-0.111

Unoise : media OAstD	= 0.171
Ulinearity : standard deviation Residual	= 0.066
Urepeat = $\sqrt{\text{Unoise}^2 + \text{Ulinearity}^2}$	= 0.183
Udrift = $\sqrt{0.58^2 + (0.0025 \cdot C)^2}$	= 0.632
U = $\sqrt{\text{Urepeat}^2 + \text{Udrift}^2}$	= 0.658
C	= 100.0

compensation equation to obtain unbiased concentration
 $[\text{O3unbiased}] = ([\text{OA}] \cdot 1.017) + 0.025$

Intercomparison 49c s/n 04275089232 date : 20230614

