

OZONE ANALYZER INTERCOMPARISON  
 Thermo 49i CM08460046

intercomparison place : Lampedusa  
 intercomparison operator: Maurizio Busetto, Damiano Sferlazzo  
 Transfer Standard: Thermo 49iPs s/n: 1404860524  
 Transfer Standard has been evaluated by NaN on NaN with SRP#15 giving slope of 0.9995 and intercept of -0.19  
 TS has 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 6 concentration levels: 0, 25, 50, 75, 100 e 125 ppb

OA and TS condition:  
 OA CM08460046 BKG=-0.2 ; Coeff=1.020  
 TS 1404860524 BKG=-0.3 ; Coeff=1.0  
 intercomparison start : 2023-08-15 08:32:00 ; intercomparison end : 2023-08-15 15:47:00  
 LinregressResult(slope=0.9830260500354049, intercept=0.1600458924272914, rvalue=0.9999911682192072, pvalue=7.594253137927147e-42, stderr=0.0010020342846201204, intercept\_stderr=0.07335635780657636)

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

slope = 0.983026 slope\_stderr = 1.002e-03  
 intercept = 0.160046 intercept\_stderr = 7.336e-02  
 rsquare = 0.999982 covariance = 1.040e-20

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  
 OAstdev : standard deviation [O3] OA per ogni step di calibrazione  
 Residual = TS - predicted  
 Deviation = OA - TS

TSmean	TSstd	OAmean	OAstdev	predicted	residual	deviation
0.319	0.100	0.313	0.101	0.467	-0.148	-0.007
25.010	0.070	24.851	0.107	24.589	0.421	-0.159
74.966	0.127	75.734	0.202	74.609	0.357	0.768
49.924	0.103	50.537	0.168	49.839	0.085	0.613
99.970	0.070	101.440	0.242	99.878	0.092	1.470
125.040	0.156	127.030	0.149	125.034	0.006	1.990
0.399	0.088	0.377	0.071	0.531	-0.132	-0.022
49.982	0.078	50.542	0.209	49.844	0.138	0.560
99.974	0.057	101.540	0.191	99.977	-0.003	1.566
125.020	0.117	127.170	0.135	125.171	-0.151	2.150
24.981	0.094	25.212	0.211	24.944	0.037	0.231
74.992	0.109	76.224	0.216	75.090	-0.098	1.232
0.372	0.172	0.258	0.219	0.413	-0.041	-0.114
74.991	0.077	76.279	0.219	75.144	-0.153	1.288
125.060	0.102	127.170	0.135	125.171	-0.111	2.110
49.998	0.069	50.613	0.157	49.914	0.084	0.615
25.031	0.131	25.166	0.194	24.899	0.132	0.135
74.995	0.137	76.317	0.255	75.182	-0.187	1.322
0.311	0.086	0.487	0.198	0.638	-0.327	0.175

Unoise : media OAstd	= 0.178
Ulinearity : standard deviation Residual	= 0.185
Urepeat = $\sqrt{\text{Unoise}^2 + \text{Ulinearity}^2}$	= 0.257
Udrift = $\sqrt{0.58^2 + (0.0025 \cdot C)^2}$	= 0.632
U = $\sqrt{\text{Urepeat}^2 + \text{Udrift}^2}$	= 0.682
C	= 100.0

compensation equation to obtain unbiased concentration  
 $[O3_{\text{unbiased}}] = ([O_A] \cdot 0.983) + 0.160$

# Intercomparison 49i s/n CM08460046 date : 20230815

