

OZONE ANALYZER INTERCOMPARISON
 Thermo 49iPS_ACTRIS CM21267121

intercomparison place : Monte Cimone
 intercomparison operator: Paolo Cristofanelli, Francescopiero Calzolari
 Transfer Standard: Thermo 49iPs s/n: 1404860524
 Transfer Standard has been evaluated by ENPA on 1900-01-01 with SRP#15 giving
 slope of 1.000 and intercept of -0.3
 TS has been warmed-up for more then 12 hours and OA has been conditioning at
 200ppb for more then 2 hour
 OA has been evaluated at the following 9 concentration levels: 0, 15, 25, 50,
 75, 80, 100, 125 e 150 ppb

OA and TS condition:
 OA CM21267121 BKG=0.0 ; Coeff=1.017
 TS 1404860524 BKG=-0.3 ; Coeff=1.000
 intercomparison start : 2023-11-30 06:39:00 ; intercomparison end : 2023-11-30
 21:14:00
 LinregressResult(slope=0.9665947071680074, intercept=0.0915622436591832,
 rvalue=0.9999977769889917, pvalue=5.483552479683628e-106,
 stderr=0.00032636128751376003, intercept_stderr=0.028487675472486096)

Linear regression results OAmean = TSmean*slope + intercept:
 TS Transfer Standard
 OA 03 Analyzer

slope	= 0.966595	slope_stderr	= 3.264e-04
intercept	= 0.091562	intercept_stderr	= 2.849e-02
rsquare	= 0.999996	covariance	= -6.536e-22

TSmean: TS average [03] for each calibration step
 OAmean: OA average [03] for each calibration step
 Predicted = OAmean*slope + intercept
 TSstd: TS standard deviation [03] for each calibration step
 OAst: OA standard deviation [03] for each calibration step
 Residual = TS - predicted
 Deviation = OA - TS

TSmean	TSstd	OAmean	OAst	predicted	residual	deviation
-0.031	0.156	-0.042	0.274	0.051	-0.081	-0.012
74.716	0.087	77.302	0.138	74.811	-0.095	2.586
149.751	0.127	155.163	0.201	150.071	-0.321	5.412
124.714	0.044	129.048	0.263	124.829	-0.115	4.334
25.230	0.841	26.056	0.973	25.277	-0.048	0.826
99.672	0.120	103.085	0.210	99.733	-0.062	3.414
79.661	0.116	82.394	0.224	79.733	-0.072	2.733
49.692	0.095	51.247	0.234	49.626	0.065	1.555
14.965	0.363	15.447	0.458	15.022	-0.057	0.482
99.715	0.092	103.078	0.222	99.726	-0.012	3.364
149.691	0.142	154.895	0.306	149.812	-0.121	5.203
0.082	0.148	-0.032	0.148	0.061	0.022	-0.115
50.548	1.818	52.211	1.896	50.558	-0.010	1.663
24.702	0.100	25.468	0.161	24.709	-0.007	0.766
99.706	0.100	102.995	0.148	99.646	0.060	3.289
124.661	0.084	128.778	0.246	124.568	0.093	4.117
14.922	0.405	15.398	0.448	14.976	-0.053	0.476
74.683	0.067	77.289	0.153	74.799	-0.115	2.606
99.692	0.081	103.118	0.253	99.765	-0.073	3.426
79.745	0.112	82.352	0.185	79.693	0.052	2.607
-0.014	0.064	0.026	0.248	0.116	-0.130	0.039
74.700	0.124	77.038	0.198	74.556	0.143	2.338
149.699	0.112	154.646	0.298	149.572	0.127	4.947
124.711	0.106	128.717	0.219	124.508	0.203	4.005
24.690	0.086	25.405	0.224	24.648	0.042	0.715

99.730	0.105	102.967	0.137	99.619	0.111	3.237
79.659	0.122	82.251	0.252	79.595	0.064	2.592
49.691	0.175	51.192	0.280	49.573	0.117	1.502
14.710	0.089	15.164	0.131	14.749	-0.039	0.454
99.692	0.086	103.169	0.106	99.814	-0.122	3.477
149.687	0.087	154.656	0.165	149.581	0.106	4.969
0.128	0.116	-0.015	0.178	0.077	0.051	-0.143
49.691	0.077	51.302	0.226	49.680	0.012	1.610
24.713	0.096	25.314	0.176	24.560	0.153	0.601
99.715	0.108	103.055	0.172	99.704	0.010	3.341
124.688	0.106	128.894	0.128	124.680	0.008	4.206
14.689	0.112	15.058	0.170	14.647	0.043	0.369
74.710	0.171	77.095	0.211	74.611	0.099	2.385
99.667	0.145	103.075	0.152	99.723	-0.056	3.408
79.711	0.119	82.301	0.180	79.644	0.068	2.590
0.023	0.194	-0.009	0.195	0.083	-0.060	-0.032

Unoise: 0Astd average	= 0.273
Ulinearity: Residual standard deviation	= 0.101
Urepeat = sqrt(Unoise^2 + Ulinearity^2)	= 0.291
Udrift = sqrt(0.58^2+(0.0025*C)^2)	= 0.632
U = sqrt(Urepeat^2+Udrift^2)	= 0.695
C	= 100.0

compensation equation to obtain unbiased concentration
 $[O3unbiased] = ([OA] * 0.967) + 0.092$

Intercomparison 49iPS_ACTRIS s/n CM21267121 date : 20231130

