



Supplement of

A consistent regional dataset of dissolved oxygen in the western Mediterranean Sea (2004–2023): CTD-O₂ WMED

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Supplementary material

Table S1. Complementary to Table 1.

Cruise	Cruise ID	Expocode	PI(s) or chief scientist(s)	Cruise report/metadata
MEDGOOS9	2	48UR20041006	Mireno Borghini	https://www.seanoe.org/data/00591/70340/
MEDOCC05/ MFSTEP2	3	48UR20050412	Mireno Borghini	http://ricerca.ismar.cnr.it/CRUISE_REPORTS/2005/URANIA_MEDOCC05.pdf
MEDGOOS11	5	48UR20051116	Angelo Perilli, Mireno Borghini, Massimiliano Dibitetto	https://www.seanoe.org/data/00591/70340/ http://ricerca.ismar.cnr.it/CRUISE_REPORTS/2005/URANIA_MEDGOOS11_05_REP.pdf https://www.seanoe.org/data/00591/70340/
MEDOCC06	6	48UR20060608	Mireno Borghini	http://ricerca.ismar.cnr.it/CRUISE_REPORTS/2006/URANIA_MEDOCC06.pdf
MEDGOOS13/MEDBIO 06	8	48UR20060928	Alberto Ribotti	http://www.seaforecast.cnr.it/reports/Mebio06-Medg13_CR.pdf
MEDOCC07	9	48UR20071005	Angelo Perilli, Mireno Borghini, Alberto Ribotti	http://www.seaforecast.cnr.it/reports/Medocc07-MedCo07_Rapp.pdf
SESAMEIt4 KM3 or SESAME_KM3	10	48UR20080318	Chiara Santinelli	http://ricerca.ismar.cnr.it/CRUISE_REPORTS/2008/URANIA_SESAME_KM3_2008.pdf
SESAMEIT5 (Sesame KM3 September 2008)	11	48UR20080905	Stefania Sparnocchia, Gian Pietro Gasparini, Mireno Borghini	http://ricerca.ismar.cnr.it/CRUISE_REPORTS/2008/
MEDCO08	12	48UR20081103	Alberto Ribotti	http://ricerca.ismar.cnr.it/CRUISE_REPORTS/2008/URANIA_MEDCO08.pdf
TYRRMOUNTS	13	48UR20090508	Gian Pietro Gasparini	http://ricerca.ismar.cnr.it/CRUISE_REPORTS/2009/URANIA_TYRRMOUNTS09.pdf
BIOFUN010	14	48UR20100430	Elena Mannini, Stefano. Aliani	http://ricerca.ismar.cnr.it/CRUISE_REPORTS/SRC/ISMAR-SP/2010/BIOFUN10/
VENUS1	15	48UR20100731	Gian Pietro Gasparini, Mireno Borghini	on request: mireno.borghini@cnr.it
BONSIC2010	16	48UR20101123	Alberto Ribotti	http://www.seaforecast.cnr.it/reports/Bonifacio2010Sic_Rapp.pdf
EUROFLEET11	17	48UR20110421	Gian Pietro Gasparini, Mireno Borghini	https://doi.org/10.1594/PANGAEA.904172
BONIFACIO2011	18	48UR20111109	Alberto Ribotti, Gina La Spada, Mireno Borghini	http://www.seaforecast.cnr.it/reports/Bonifacio2011_Rapp.pdf
ICHNUSSA12	20	48UR20120111	Mireno Borghini	http://www.seaforecast.cnr.it/reports/Ichnussa2012_Rapp.pdf
EUROFLEET2012	21	48UR20121108	Alberto Ribotti	Report on request: mireno.borghini@cnr.it
VENUS 2	211	48UR20130604	Mireno Borghini	on request: mireno.borghini@cnr.it
ICHNUSSA13	22	48UR20131015	Alberto Ribotti	http://www.seaforecast.cnr.it/reports/Ichnussa2013_Rapp.pdf
ICHNUSSA15	222	48QL20151123	Alberto Ribotti, Mireno Borghini	http://www.seaforecast.cnr.it/reports/ICHNUSSA2015_Rapp.pdf
OCEANCERTAIN15	23	48QL20150804	Jacopo Chiggiato	https://doi.org/10.1594/PANGAEA.911046

Cruise report Deliverable D2.12/2016 (Ocean-Certain FP7 project)				
ICHNUSSA17/INFRAO CE17	24	48QL20171023	Alberto Ribotti, Stefania Sparnocchia, Mireno Borghini	http://www.seaforecast.cnr.it/forecast/index.php/it/osservazioni/rapporti-di-campagne-a-mare/
ICHNUSSA/JERICO18	25	48DP20180918	Mireno Borghini	Report on request: mireno.borghini@cnr.it
JERICO-II-2022	27	48DP20221015	Mireno Borghini	Report on request: mireno.borghini@cnr.it
JERICO-III-EurogoShip- 2023	28	48DP20230324	Mireno Borghini	Report on request: mireno.borghini@cnr.it

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Table S2. Geographical limits of subregions adapted from Manca et al. (2004).

ID	COD	REGION	Lat (min)	Lat (max)	Lon (min)	Lon (max)
1	DF2	Gulf of Lion	41.9	43.36	1	6.18
2	DF3 ¹	Ligurian Sea	41	45	6.18	11
3	DS2	Balearic Sea	38.40	41.9	-1	4.3
4	DF1	Algero-Provençal	39.4	41.5	4.3	9.18
5	DS1	Alboran Sea	35.48	37.3	-6	-0.9
6	DS3 ²	Algerian Basin	36.57	39.18	-1	8.24
7	DT1	Tyrrhenian North	39.19	42.36	9.18	13.48
8	DT3	Tyrrhenian South	38.0	39.13	10	16.16
9	DI1	Sardinia Channel	37.6	39.18	8.24	10
10	DI3	Sicily Channel	36	38	10	15

¹merged liguro-provençal and Ligurian East into Ligurian Sea.²merged Algerian West and Algerian South into Algerian Basin.**Table S3.** Median and median absolute deviation (MAD) of CTD dissolved oxygen by cruise and for each region deeper than 800 db. ID is short for cruise identity code.

Cruise ID	Region	Regional Median CTDOXY ($\mu\text{mol/kg}$)	Regional MAD CTDOXY ($\mu\text{mol/kg}$)	Nb profile
2	3 DS2-Balearic Sea	181.70	3.78	3
	5 DS1-Alboran Sea	180.80	4.03	10
	6 DS3-Algerian Basin	184.74	1.77	23
	7 DT1-Tyrrhenian North	177.01	3.35	7
	8 DT3-Tyrrhenian South	177.36	3.03	6
	9 DI1-Sardinia Channel	181.05	3.54	2
3	1 DF2-Gulf of Lion	199.52	3.16	11
	2 DF3-Ligurian Sea	181.90	5.58	37
	3 DS2-Balearic Sea	198.52	5.39	9
	4 DF1-Algero-Provençal	197.58	4.17	10
	6 DS3-Algerian Basin	196.61	3.71	5
	7 DT1-Tyrrhenian North	190.38	4.45	5
	8 DT3-Tyrrhenian South	186.83	3.01	12
	9 DI1-Sardinia Channel	189.33	4.89	4
5	7 DT1-Tyrrhenian North	191.55	2.91	3
	8 DT3-Tyrrhenian South	189.64	2.70	8
6	1 DF2-Gulf of Lion	206.55	2.56	12
	2 DF3-Ligurian Sea	206.85	3.14	20
	3 DS2-Balearic Sea	194.07	6.85	10
	4 DF1-Algero-Provençal	193.78	4.21	10
	6 DS3-Algerian Basin	187.24	2.68	4
	8 DT3-Tyrrhenian South	183.25	3.09	12
	9 DI1-Sardinia Channel	187.10	4.10	4
8	7 DT1-Tyrrhenian North	178.08	2.53	19
	8 DT3-Tyrrhenian South	178.42	2.53	5
9	2 DF3-Ligurian Sea	191.08	2.51	11
	3 DS2-Balearic Sea	192.64	1.65	6
	4 DF1-Algero-Provençal	189.34	3.57	11
	6 DS3-Algerian Basin	189.11	4.06	2
	7 DT1-Tyrrhenian North	179.81	1.02	3
	8 DT3-Tyrrhenian South	179.82	1.39	10
	9 DI1-Sardinia Channel	180.93	3.97	4
10	8 DT3-Tyrrhenian South	186.51	5.31	3
1	10 DI3-Sicily Strait	180.14	0.54	4
11	10 DI3-Sicily Channel	178.02	0.58	4
12	5 DS1-Alboran Sea	188.88	2.67	19
	6 DS3-Algerian Basin	193.16	3.84	13
	8 DT3-Tyrrhenian South	183.36	1.99	10
	9 DI1-Sardinia Channel	186.67	4.23	4
13	7 DT1-Tyrrhenian North	179.25	1.07	47
	8 DT3-Tyrrhenian South	180.66	2.23	9

	9	DI1-Sardinia Channel	186.19	5.15	3
14	3	DS2-Balearic Sea	194.21	2.99	6
	4	DF1-Algero-Provençal	192.82	3.86	10
	6	DS3-Algerian Basin	193.52	3.05	4
	9	DI1-Sardinia Channel	183.53	4.38	6
15	5	DS1-Alboran Sea	183.89	3.41	25
	6	DS3-Algerian Basin	190.31	2.59	14
	7	DT1-Tyrrhenian North	177.72	1.95	27
	8	DT3-Tyrrhenian South	177.18	2.72	12
	9	DI1-Sardinia Channel	184.69	5.72	4
16	7	DT1-Tyrrhenian North	185.50	2.29	3
	8	DT3-Tyrrhenian South	180.11	0.22	4
17	7	DT1-Tyrrhenian North	179.71	1.65	3
	8	DT3-Tyrrhenian South	178.47	1.83	10
18	4	DF1-Algero-Provençal	192.00	2.61	7
	7	DT1-Tyrrhenian North	181.83	1.88	2
	8	DT3-Tyrrhenian South	181.90	1.95	2
	9	DI1-Sardinia Channel	182.80	4.13	3
20	4	DF1-Algero-Provençal	193.79	2.98	8
	7	DT1-Tyrrhenian North	184.32	2.39	5
	8	DT3-Tyrrhenian South	183.49	2.43	11
	9	DI1-Sardinia Channel	182.62	4.04	9
21	2	DF3-Ligurian Sea	190.96	5.72	27
	7	DT1-Tyrrhenian North	184.70	2.35	3
	8	DT3-Tyrrhenian South	184.10	2.71	5
	9	DI1-Sardinia Channel	189.24	6.00	2
211	4	DF1-Algero-Provençal	192.87	2.63	8
	6	DS3-Algerian Basin	192.31	2.33	7
	7	DT1-Tyrrhenian North	182.57	2.68	2
	8	DT3-Tyrrhenian South	180.83	2.16	11
	9	DI1-Sardinia Channel	185.79	5.78	5
22	4	DF1-Algero-Provençal	195.73	3.96	6
	6	DS3-Algerian Basin	197.35	2.74	4
	8	DT3-Tyrrhenian South	186.35	2.93	6
	9	DI1-Sardinia Channel	188.31	6.58	3
222	7	DT1-Tyrrhenian North	181.92	3.58	6
	8	DT3-Tyrrhenian South	180.47	2.27	8
	9	DI1-Sardinia Channel	183.25	5.89	5
23	2	DF3-Ligurian Sea	190.57	4.71	10
	3	DS2-Balearic Sea	191.03	2.49	9
	4	DF1-Algero-Provençal	190.81	3.36	11
	6	DS3-Algerian Basin	192.20	2.65	2
	8	DT3-Tyrrhenian South	178.84	2.39	12
24	4	DF1-Algero-Provençal	198.79	7.49	2
	8	DT3-Tyrrhenian South	188.60	3.55	6
	9	DI1-Sardinia Channel	202.21	6.28	2
25 ^a	10	DI3-Sicily Channel	-	-	-
27					
^a	10	DI3-Sicily Channel	-	-	-
28					
^a	10	DI3-Sicily Channel	178.73	0.12	3

^a Cruises not included in the second QC. regional median and MAD by cruise. Cruises #25, #27, # 28 did not include data below 800 dbar; however, these datasets underwent quality checks and are included in the final dataset.

Figure S1. Vertical distribution of the ratio between the tested reference cruise (top of each subplot) vs the other references (in the legend box below). In the Tyrrhenian Sea (DT1) (zoom: 800-2000dbar). There is no data for cruise #6 in this subregion.

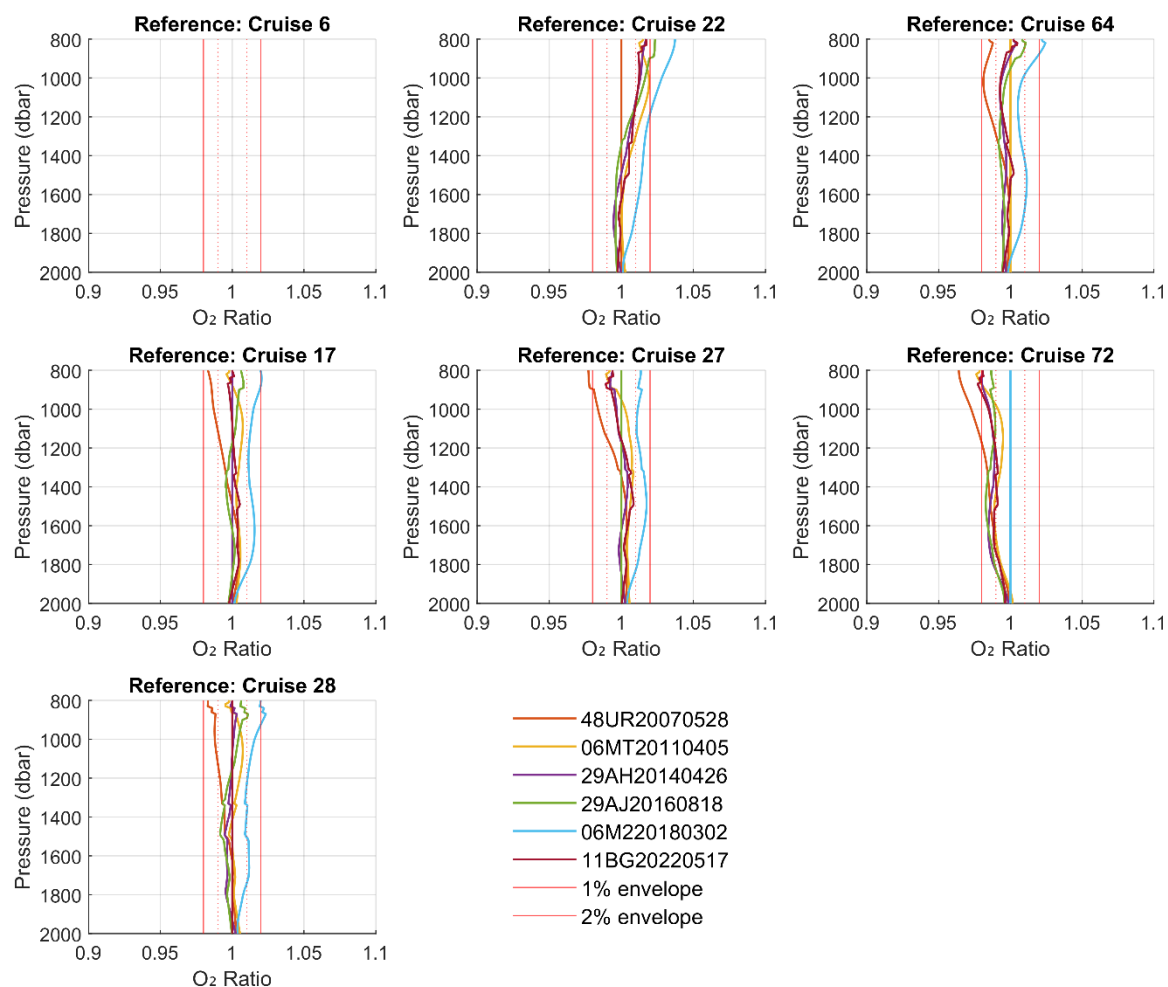


Figure S2. same as figure S1 but for the Algerian basin DS3. There is no data for cruise #22 in this subregion.

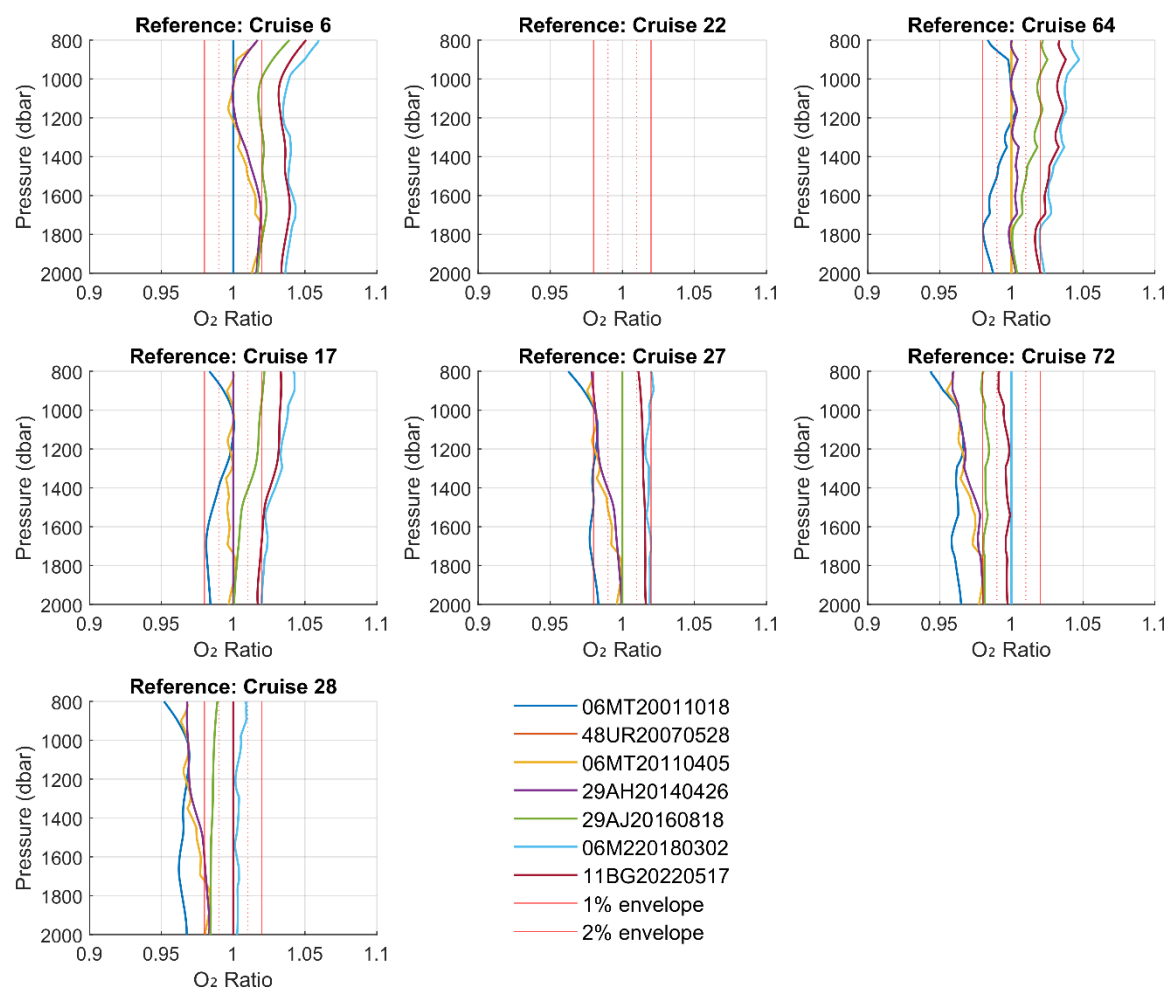


Figure S3. Summary of CTD-O₂ crossover results for cruise #5 (48UR20051116) relative to the reference cruises showed along the x-axis arranged chronologically. Dashed grey lines indicate the $\pm 2\%$ threshold. Black dots with error bars represent the weighted mean offsets and corresponding weighted standard deviation. Colored markers denote the subregions: purple for the Alboran Sea, orange for the Algerian basin, and blue for the Tyrrhenian Sea. Annotated within the figure are the correction factor, standard deviation, and percentage change of the median offsets for each subregion.

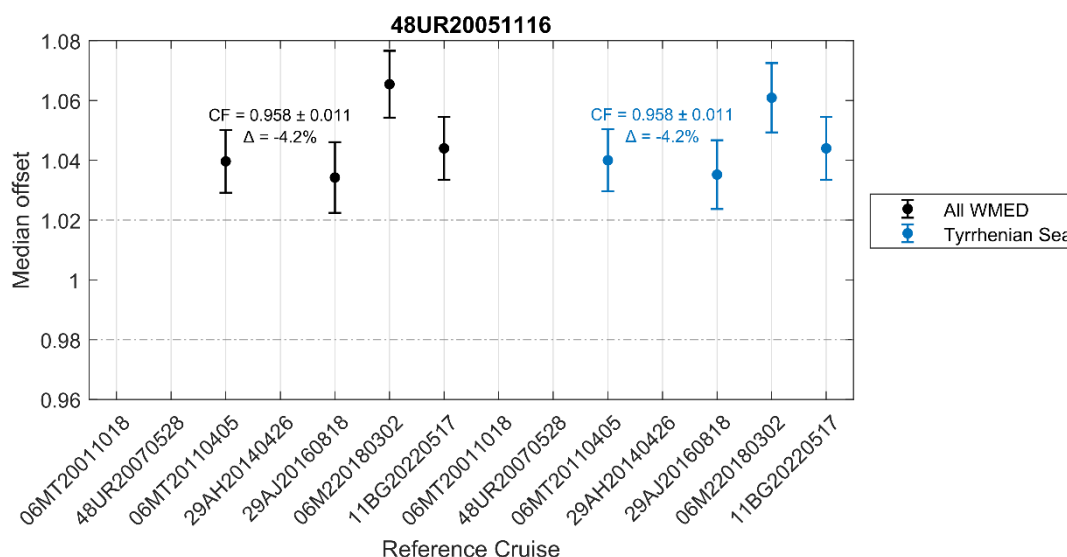


Figure S4. The same as Figure S3 but for Cruise #8 (48UR20060608).

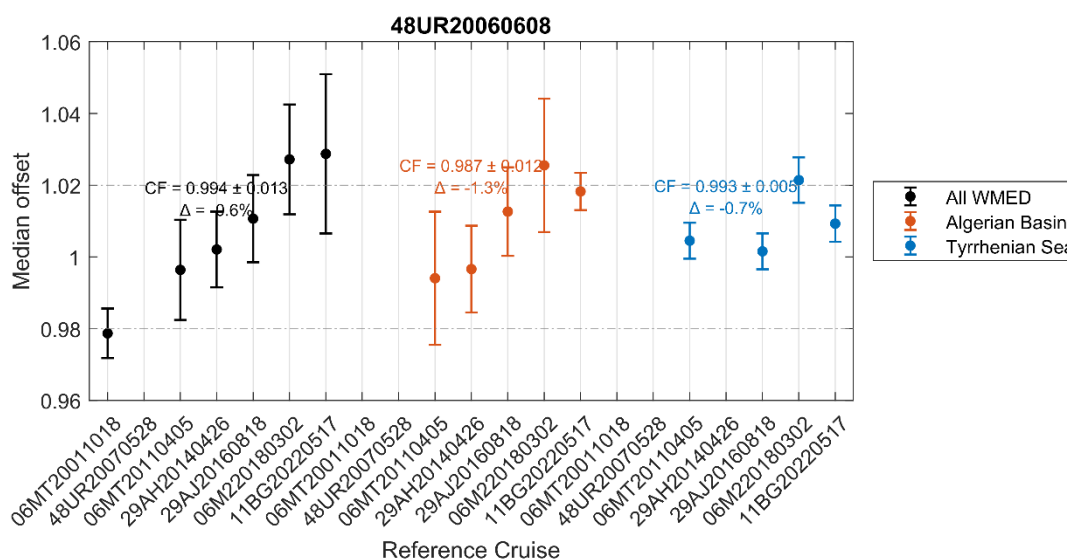


Figure S5. The same as Figure S3 but for Cruise #8 (48UR20060928)

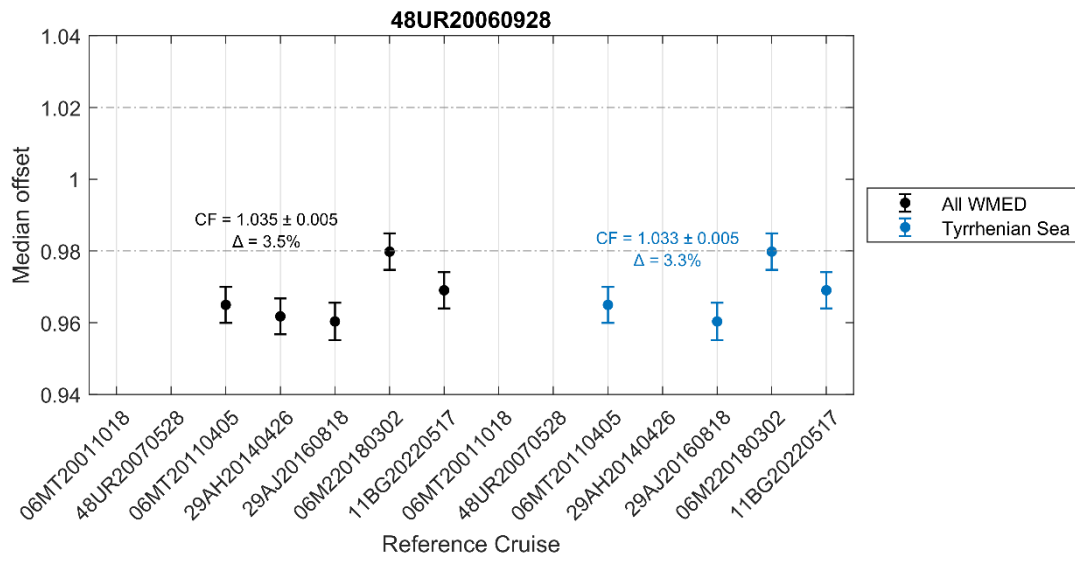


Figure S6. The same as Figure S3 but for Cruise #15 (48UR20100731)

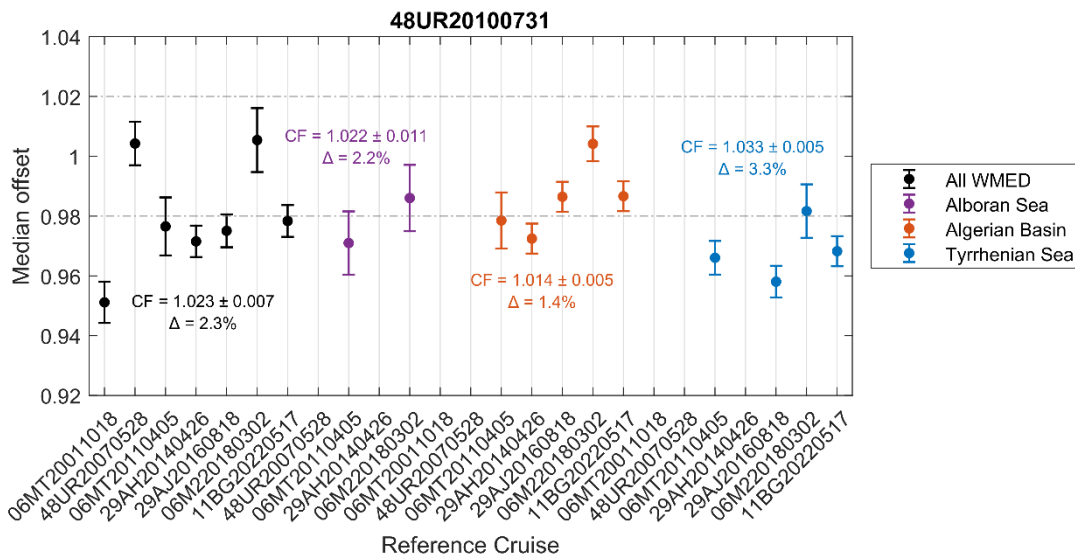


Figure S7. the same as Figure S3 but for Cruise #22 (48UR20131015).

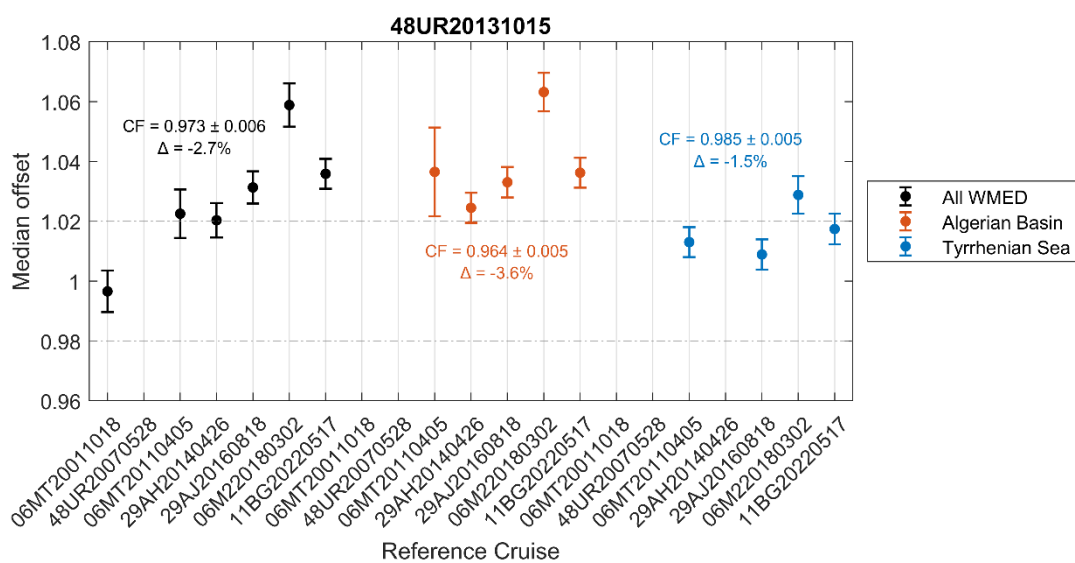


Figure S8. the same as Figure S3 but for Cruise #222 48QL20151123.

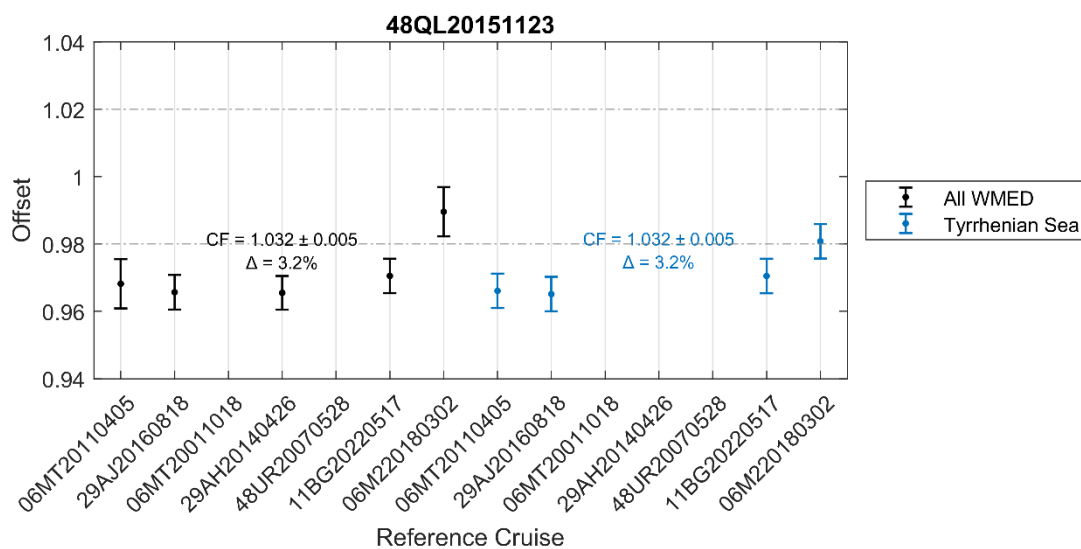


Figure S9. the same as Figure S3 but for Cruise #24 (48QL20171023).

