Supplementary Information

Dissolved organic carbon contribution to oxygen respiration in the central Red Sea

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Remove the super-index "1" and "*".

Figure 1. T-S (Potential Temperature-Salinity) diagram of all vertical profiles sampled within the two-year sampling period showing that the different water masses presents followed a seasonal pattern. The four natural seasons are marked with different colors: Winter (blue), Spring (green), Summer (red) and Fall (orange).

Figure 2. Seasonal variability of the slope of DOC vs depth ($\Delta DOC/\Delta z$, µmol C L^{-1} m^{-1}) in the thermocline (A), and seasonal variability of the central depth from which the slope in A was calculated (B). Seasons are indicated in different colors: Winter (blue), Spring (green), Summer (red) and Fall (orange).

Figure 3. Relationships between AOU and dissolved inorganic nitrogen (DIN, A) and phosphorus (DIP, B) at the isopycnal layer $\sigma\theta$ = 27.8-28.4 Kg m^{-3}. Seasons are indicated in different colors: Winter (blue), Spring (green), Summer (red) and Fall (orange).

Figure 4. Relationships between HIX and AOU (µmol Kg^{-1}) at the deeper isopycnal layer $\sigma\theta$ = 28.4-28.8 Kg m^{-3}. Seasons are indicated in different colors: Winter (blue), Spring (green), Summer (red) and Fall (orange).

Table 1. Seasonal pattern, ANOVA significance (p-value) and posthoc Fisher LSD test results for the epipelagic and mesopelagic layers of Sigma-Theta (σ_θ, Kg m^{-3}), vivo Chla fluorescence (Chla Fluor, R.U.), AOU (µmol Kg^{-1}), DIP:DIN molar ratio, heterotrophic prokaryotes abundance (HP, cells ml^{-1}), DOC (µmol C L^{-1}) and its corresponding fluorescent indices (FI, BIX and HIX).

Replace "layer" by "layers".

Table 2. Pearson correlations results (r, p-value, slope, intercept, n) from the relationship between DOC, its corresponding fluorescent indices (HIX, BIX) and dissolved inorganic nutrients (DIN and DIP) with AOU, within each of the isopycnal layer. Isopycnals 2 and 3 reported together because the number of observations within the thin isopycnal 3 were below 5. Significant correlations are marked in bold.

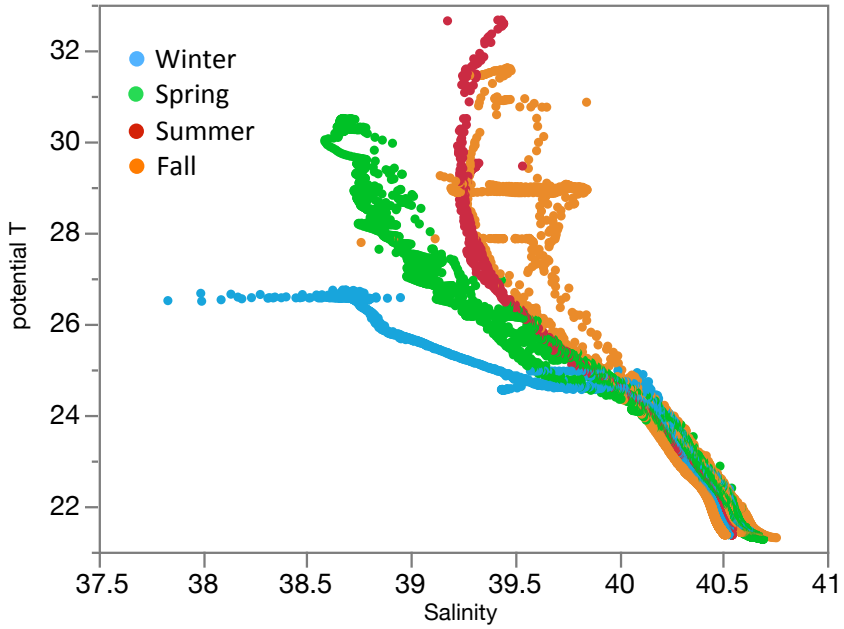
Add "are" between "3" and "reported".

Replace "were" by "was".

note1 : * indicates a p-value < 0.05, ** indicates a p-value < 0.01, *** indicates a p-value < 0.001, **** indicates a p-value < 0.0001

note3 : to be able to compare it with previously published results, when examining the relationship between AOU and dissolved inorganic nutrients AOU is regarded as the dependent variable and DIN and DIP as the independent variables.

53 Fig. 1
54


Winter
Spring
Summer
Fall
potential T
32
30
28
26
24
22
37.5
38
38.5
39
39.5
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40.5
41
Salinity

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56 Fig. 2
57

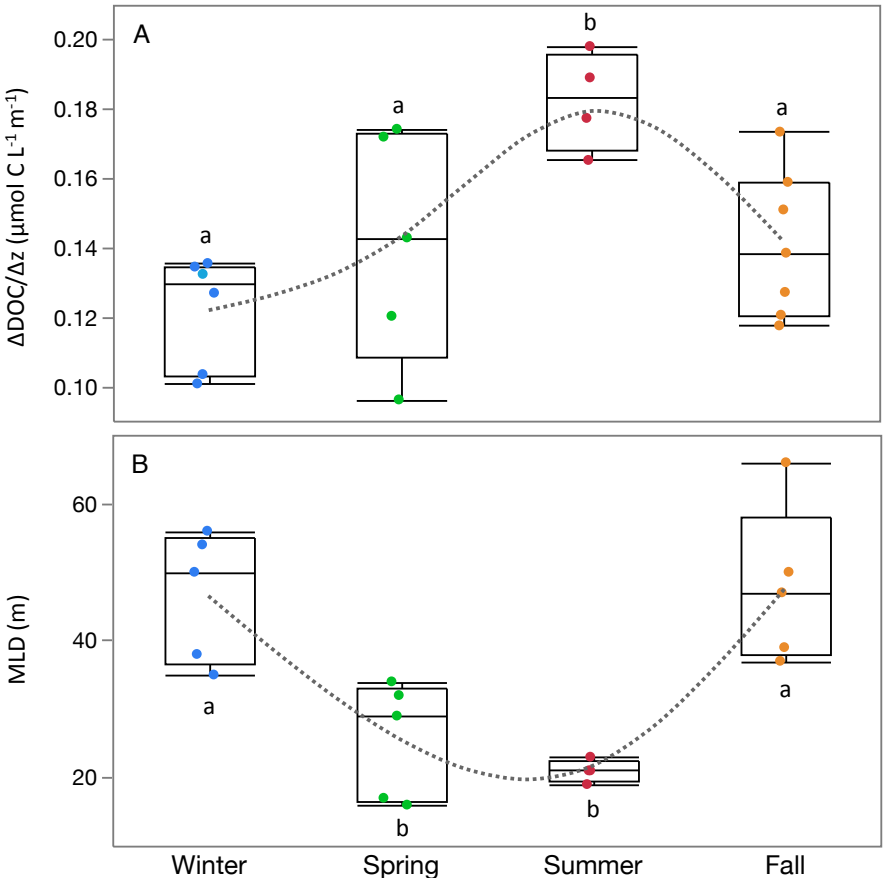
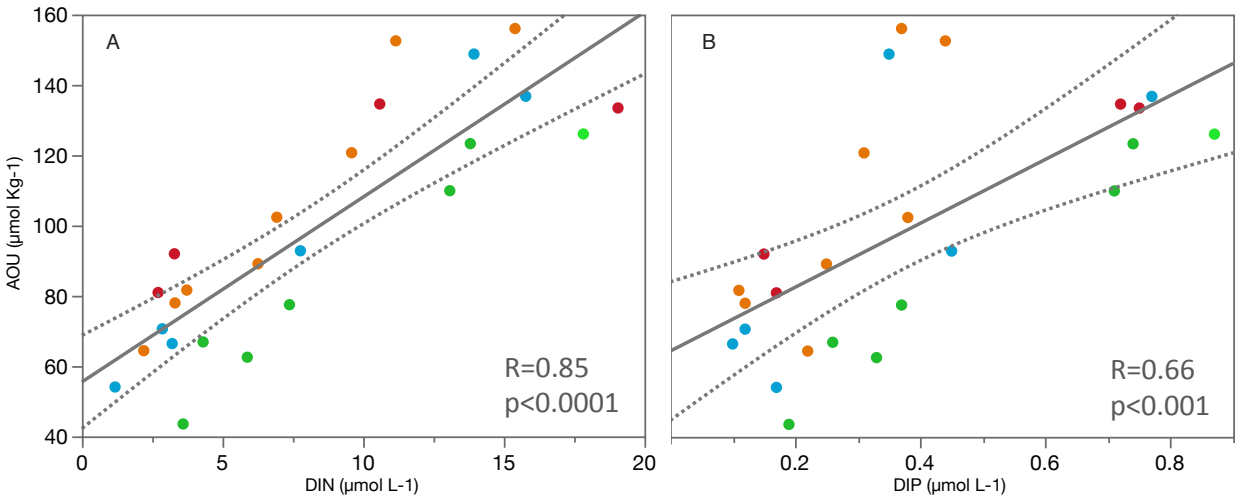

A
B
ΔDOC/Δz (µmol C L-1 m-1)
MLD (m)
0.20
0.18
0.16
0.14
0.12
0.10
60
40
20
a
a
b
a
a
b
b
a
Winter
Spring
Summer
Fall

Fig. 3

Fig. 3 is missing the “A” and “B” legend. I have added it manually to this file



To be able to compare it with previously published results, when examining the relationship between AOU and dissolved inorganic nutrients AOU is regarded as the dependent variable and DIN and DIP as the independent variables.

Pooling all profiles together, AOU significantly increased with increasing DIN ($R=0.93$, $p<0.0001$, slope=6.7) and DIP ($R=0.88$, $p<0.001$, slope=130), displaying oxidative ratios (slopes) of the same magnitude but smaller than those previously reported for the Red Sea (11 for NO_3^- and 230 for PO_4^{3-})[1].

Fig. 4

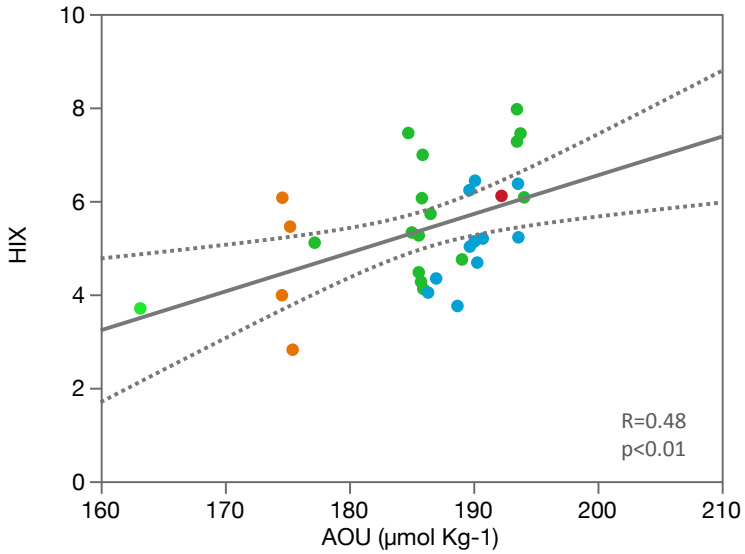


Table 1

	epipelagic					mesopelagic				
	p-value	W	Sp	S	F	p-value	W	Sp	S	F
Sigma-T	***	a	a	b	c	***	a	b	c	d
Chla Fluor	***	a	b	c	d	NA				
AOU	***	a	b	c	d	***	a	ab	c	b
DIN:DIP	**	a	a	b	a	ns	a	a	a	a
HP	ns	a	a	a	a	***	a	a	b	a
DOC	**	a	b	b	b	***	a	b	b	b
FI	*	a	a	b	a	ns	a	a	a	a
BIX	ns	a	a	a	a	ns	a	a	a	a
HIX	ns	a	a	a	a	ns	a	a	a	a

Table 2

isopycnal	DOC (µmol C L-1)					HIX					BIX					DIN (µmol N L-1)					DIP (µmol P L-1)				
	r	p-value	slope	intercept	n	r	p-value	slope	intercept	n	r	p-value	slope	intercept	n	r	p-value	slope	intercept	n	r	p-value	slope	intercept	n
1	0.32	ns	0.06	70.2	69	-0.14	ns	-0.002	1.667	23	-0.22	ns	-4E-04	1.176	23	**0.61**	***	**27.11**	**40.2**	**67**	**-0.32**	*	**-109.1**	**61.6**	**67**
2&3	-0.31	ns	-0.09	71.2	15	0.02	ns	0.000	1.974	7	-0.68	ns	-0.001	1.262	7	-0.14	ns	-3.554	44.0	15	-0.19	ns	-54.7	53.14	15
4	**-0.67**	****	**-0.15**	**75.9**	**31**	**0.79**	**	**0.027**	**0.172**	**10**	**-0.80**	**	**-0.002**	**1.354**	**10**	**0.86**	****	**5.26**	**55.5**	**25**	**0.66**	***	**90.86**	**64.3**	**25**
5	0.20	ns	0.12	27.6	83	**0.48**	**	**0.083**	**-10.03**	**32**	**-0.36**	**	**-0.002**	**1.238**	**32**	**0.27**	*	**0.9446**	**167.1**	**74**	**0.24**	*	**11.8**	**174.7**	**74**

References

1. Naqvi, S. W. A., Hansen, H. P. & Kureishy, T. W. Nutrient uptake and regeneration ratios in the Red Sea with reference to the nutrient budgets. *Oceanol. Acta* **9,** 271–275 (1986).