Supplement of Biogeosciences, 18, 5141–5162, 2021
https://doi.org/10.5194/bg-18-5141-2021-supplement

Biogeosciences Open Access EGU

Supplement of

Active and passive fluxes of carbon, nitrogen, and phosphorus in the northern South China Sea

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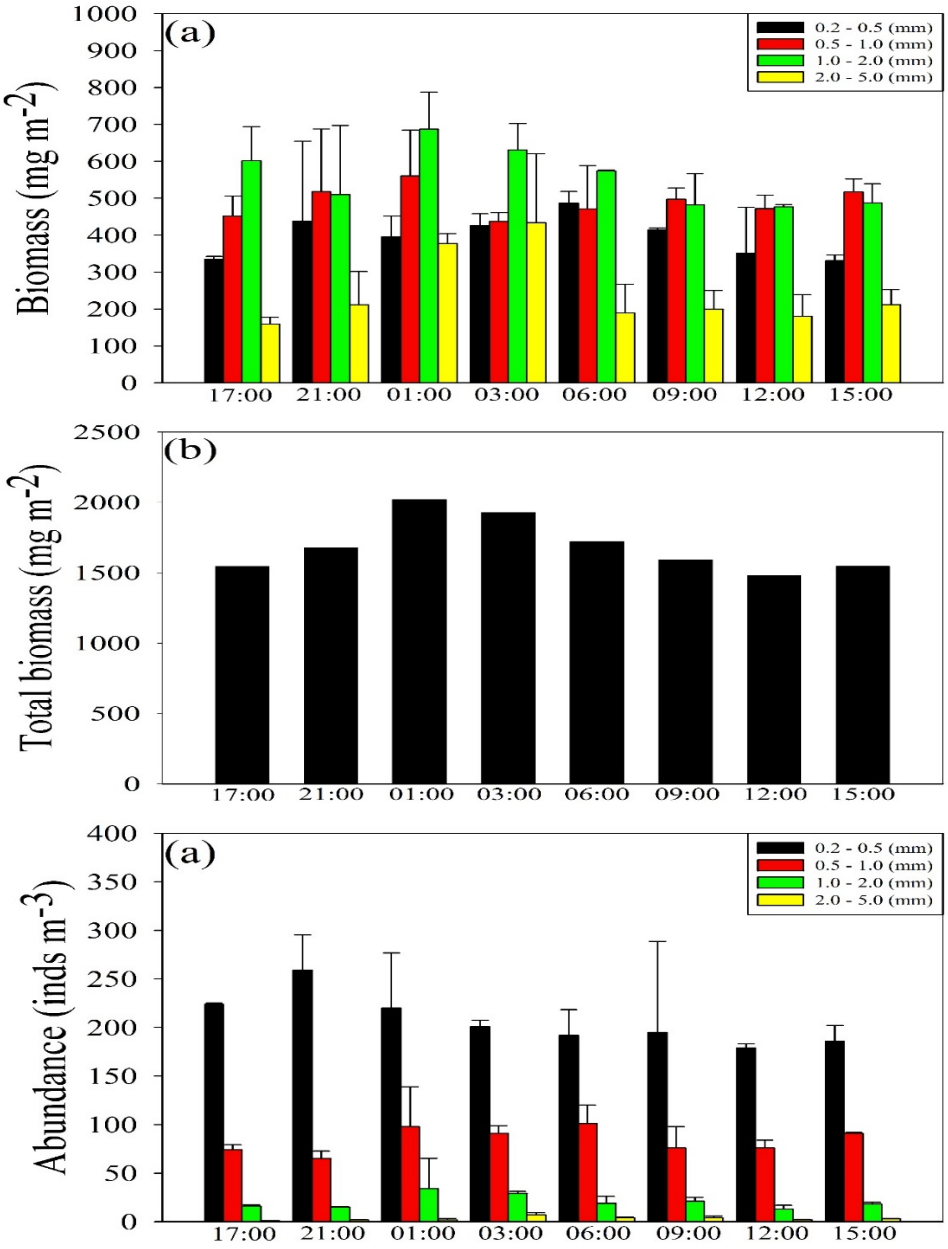
(a)
0.2 - 0.5 (mm)
0.5 - 1.0 (mm)
1.0 - 2.0 (mm)
2.0 - 5.0 (mm)
Biomass (mg m-2)
1000
900
800
700
600
500
400
300
200
100
0
17:00
21:00
01:00
03:00
06:00
09:00
12:00
15:00
(b)
Total biomass (mg m-2)
2500
2000
1500
1000
500
0
17:00
21:00
01:00
03:00
06:00
09:00
12:00
15:00
(a)
0.2 - 0.5 (mm)
0.5 - 1.0 (mm)
1.0 - 2.0 (mm)
2.0 - 5.0 (mm)
Abundance (inds m-3)
400
350
300
250
200
150
100
50
0
17:00
21:00
01:00
03:00
06:00
09:00
12:00
15:00

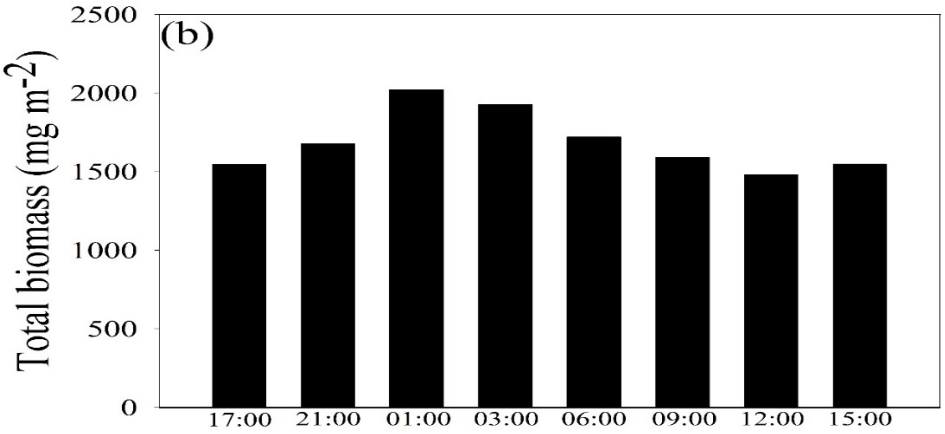

Figure S1 Distributions of biomass and abundance of mesozooplankton in various sizes (a) and total biomass (b) conditions during a sequential tows covering day and night periods in NSCS.

Table S1 A list of all components of migrant fluxes of carbon, nitrogen and phosphorus in various migrant classes under different seasons in the NSCS.

Event/size fraction	Respiratory flux*	Gut flux*	Mortality carbon flux*	Mortality nitrogen flux#	Mortality phosphorus flux+	Excreting DOC*	Excreting nitrogen flux#	Excreting phosphorus flux+
Summer ORI-1039 (2013)								
0.2-0.5 mm	3.55±1.67	0.97±0.63	0.26±0.23	0.04±0.01	0.008±0.002	1.29±0.10	0.73±0.04	0.10±0.01
0.5-1.0 mm	1.62±0.95	0.83±0.28	0.20±0.10	0.02±0.01	0.002±0.001	0.59±0.01	0.33±0.01	0.05±0.01
1.0-2.0 mm	2.17±2.19	0.52±0.06	0.63±0.53	0.13±0.02	0.011±0.004	0.63±0.44	0.33±0.12	0.05±0.02
2.0-5.0 mm	0.14±0.10	0.82±0.69	0.42±0.04	0.08±0.01	0.015±0.001	0.24±0.08	0.12±0.03	0.02±0.01
Total (>0.2 mm)	7.44±2.92	3.14±0.98	1.51±0.59	0.27±0.13	0.04±0.01	2.75±0.46	1.50±0.23	0.29±0.07
Summer ORI-1074 (2014)								
0.2-0.5 mm	5.67±1.05	2.51±0.09	0.41±0.15	0.13±0.04	0.011±0.002	1.06±0.17	0.61±0.10	0.08±0.02
0.5-1.0 mm	5.45±0.41	1.73±0.98	0.75±0.02	0.15±0.06	0.013±0.006	1.21±0.12	0.67±0.06	0.09±0.01
1.0-2.0 mm	3.68±2.81	2.28±0.70	1.22±0.91	0.24±0.14	0.009±0.005	1.28±1.33	0.69±0.41	0.10±.001
2.0-5.0 mm	1.66±2.04	1.38±1.17	1.14±0.23	0.25±0.08	0.027±0.002	0.98±0.28	0.48±0.15	0.08±0.02
Total (>0.2 mm)	16.5±3.65	7.90±1.68	3.53±0.95	0.76±0.17	0.06±0.01	4.53±1.38	0.24±0.74	0.34±0.10
Summer ORI-1082 (2014)								
0.2-0.5 mm	3.57±0.18	4.10±1.97	0.62±0.06	0.17±0.03	0.013±0.010	1.27±0.40	0.72±0.21	0.10±0.03
0.5-1.0 mm	5.30±0.26	2.19±1.95	0.49±0.28	0.14±0.04	0.019±0.008	1.08±0.28	0.59±0.15	0.08±0.02
1.0-2.0 mm	3.47±0.14	0.47±0.26	0.95±0.12	0.25±0.01	0.054±0.031	0.88±0.20	0.46±0.11	0.07±0.01
2.0-5.0 mm	2.68±2.39	0.41±0.47	1.34±0.47	0.33±0.06	0.054±0.026	0.85±0.56	0.41±0.28	0.07±0.04
Total (>0.2 mm)	15.0±2.41	7.17±2.82	3.40±0.57	0.89±0.08	0.14±0.05	4.07±0.77	2.18±0.40	0.31±0.06
Summer (average)								
0.2-0.5 mm	4.25±1.23	2.52±1.56	0.43±0.18	0.11±0.07	0.010±0.003	1.21±0.13	0.69±0.07	0.09±0.01
0.5-1.0 mm	4.13±2.17	1.59±0.69	0.48±0.28	0.10±0.07	0.012±0.008	0.96±0.32	0.53±0.18	0.07±0.02
1.0-2.0 mm	3.11±0.82	1.09±1.03	0.93±0.29	0.21±0.07	0.025±0.020	0.93±0.33	0.49±0.18	0.07±0.02
2.0-5.0 mm	1.49±1.2	0.87±0.49	0.97±0.49	0.22±0.12	0.032±0.020	0.69±0.40	0.34±0.19	0.06±0.03
Total (>0.2 mm)	13.0±4.84	6.07±2.56	2.82±1.31	0.64±0.33	0.079±0.055	3.78±0.92	2.04±0.49	0.029±0.07

Winter (ORI-1059, eddy)								
0.2-0.5 mm	17.8	0.81	1.05	0.14	0.01	2.49	1.39	0.19
0.5-1.0 mm	10.4	0.25	0.64	0.11	0.001	1.31	0.70	0.10
1.0-2.0 mm	8.92	0.18	0.93	0.16	0.02	1.45	0.74	0.12
2.0-5.0 mm	0.84	0.22	2.06	0.51	0.06	0.76	0.35	0.06
Total (>0.2 mm)	37.9	1.46	4.61	0.33	0.09	6.01	3.18	0.48
Summer (ORI-1082; IWs)								
0.2-0.5 mm	17.97±0.86	5.31±0.71	1.78±0.34	0.32±0.09	0.08±0.05	2.53±1.14	2.01±0.56	0.23±0.10
0.5-1.0 mm	21.3±0.73	4.64±0.78	2.15±0.47	0.40±0.12	0.03±0.004	2.52±0.24	1.69±0.17	0.21±0.00
1.0-2.0 mm	15.9±1.01	3.62±1.51	2.77±0.66	0.55±0.19	0.10±0.08	2.29±0.31	1.43±0.18	0.19±0.01
2.0-5.0 mm	3.88±5.21	4.19±0.25	1.68±0.46	0.32±0.08	0.06±0.04	0.96±0.12	0.54±0.07	0.08±0.02
Total (>0.2 mm)	59.0±5.43	17.75±1.86	8.38±0.99	1.59±0.26	0.27±0.12	8.30±1.21	5.67±0.61	0.71±0.10
Fall (ORI-1024, ORI-1240)								
0.2-0.5 mm	1.26	0.19	0.10	0.03	0.001	0.16	0.21	0.03
0.5-1.0 mm	1.52	0.16	0.15	0.04	0.003	0.19	0.25	0.03
1.0-2.0 mm	1.40	0.10	0.20	0.05	0.003	0.19	0.21	0.03
2.0-5.0 mm	0.73	0.21	0.25	0.06	0.008	0.19	0.22	0.03
Total (>0.2 mm)	5.46	0.66	0.70	0.18	0.015	0.74	0.89	0.12

*****Active carbon flux = mg C m^{-2} d^{-1}; $^{\#}$ Active nitrogen flux = mg N m^{-2} d^{-1}; $^{+}$ Active phosphorus flux = mg P m^{-2} d^{-1}; IWs: internal-wave event.

Table S2 Vertical fluxes of DOC and DON in spring and summer in NSCS.

Season/Event	Depth (m)	Sample No.	DOC flux (mg C m^{-2} d^{-1})	DON flux (mg N m^{-2} d^{-1})
Spring	50	2	0.71±0.68	0.08±0.06
(ORI-1074)	100	2	1.13±0.03	0.22±0.07
	150	2	1.71±0.01	0.35±0.02
Summer	50	3	0.78±0.52	0.06±0.06
(ORI-1039 ,ORI-1082)	100	3	1.10±0.13	0.09±0.06
	150	3	1.29±0.15	0.10±0.08
Summer-IWs[#] (ORI-1082, ORIII-1773)	100	2	1.57±1.07	0.36±0.25

[#]IWs (internal-wave event)