Supporting Information for

The impact of coral reef ecosystems and upwelling events on the marine carbon dynamics of Southern Taiwan

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Contents of this file: Table S1, S2 and Fig. S1-S4

Introduction

This supporting information provides the supplemental table and figure cited in the article.

Table S1. Sampling time and depths at different sampling stations.

| St. (bottom depth; m) | Sampling time | | Sampling depth (m) |
	Date_season	Time	
S1 (15)	31/03/2011_spring	14:54	1, 3
	05/07/2011_summer	14:53	1, 3, 10
	20/10/2011_fall	13:32	1, 3, 10
	22/01/2013_winter	12:22	1, 3, 10
S2 (6)	31/03/2011_spring	09:07	1, 3
	05/07/2011_summer	09:52	1, 3
	20/10/2011_fall	09:45	1, 3
	22/01/2013_winter	09:00	1, 3
S3 (55)	31/03/2011_spring	14:28	1, 3, 10, 25, 45
	05/07/2011_summer	14:35	1, 3, 10, 25, 45
	20/10/2011_fall	13:20	1, 3, 10, 25, 50
	22/01/2013_winter	12:09	1, 3, 10, 25, 50
S4 (15)	31/03/2011_spring	13:18	1, 3, 10
	05/07/2011_summer	13:28	1, 3, 10
	20/10/2011_fall	12:30	1, 3, 10
	22/01/2013_winter	11:28	1, 3, 10
S5 (50)	31/03/2011_spring	09:28	1, 3, 10, 25, 45
	05/07/2011_summer	10:04	1, 3, 10, 25, 45
	20/10/2011_fall	09:56	1, 3, 10, 25, 45
	22/01/2013_winter	09:10	1, 3, 10, 25, 45
S6 (78)	31/03/2011_spring	13:40	1, 3, 10, 25, 50, 75
	05/07/2011_summer	13:46	1, 3, 10, 25, 50
	20/10/2011_fall	12:40	1, 3, 10, 25, 50, 65
	22/01/2013_winter	11:35	1, 3, 10, 25, 50, 65
S7 (20)	31/03/2011_spring	13:01	1, 3, 10
	05/07/2011_summer	13:14	1, 3, 10, 20

	20/10/2011_fall	12:22	1, 3, 10
	22/01/2013_winter	11:20	1, 3, 10
S8 (15)	31/03/2011_spring	12:38	1, 3, 10
	05/07/2011_summer	12:57	1, 3, 10
	20/10/2011_fall	12:13	1, 3, 10
	22/01/2013_winter	11:12	1, 3, 10
S9 (50)	31/03/2011_spring	09:37	1, 3, 10, 25, 45
	05/07/2011_summer	10:20	1, 3, 10, 25, 45
	20/10/2011_fall	10:10	1, 3, 10, 25, 45
	22/01/2013_winter	09:24	1, 3, 10, 25, 45
S10 (105)	31/03/2011_spring	09:56	1, 3, 10, 25, 50, 90
		13:55	1, 3, 10, 25, 50, 80
		15:57	CTD only
	05/07/2011_summer	10:48	1, 3, 10, 25, 50, 100
		14:05	1, 3, 10, 25, 50, 80
		16:03	1, 3, 10, 25, 50, 80
	20/10/2011_fall	09:41	1, 3, 10, 25, 50, 100
		12:57	1, 3, 10, 25, 50, 90
		14:02	1, 3, 10, 25, 50, 90
	22/01/2013_winter	09:58	1, 3, 10, 25, 50, 100
		12:05	1, 3, 10, 25, 50, 100
		13:11	1, 3, 10, 25, 50, 100
S11 (90)	31/03/2011_spring	10:37	1, 3, 10, 25, 50, 85
	05/07/2011_summer	11:15	1, 3, 10, 25, 50, 75
	20/10/2011_fall	10:50	1, 3, 10, 25, 50, 80
	22/01/2013_winter	10:03	1, 3, 10, 25, 50, 80
S12 (40)	31/03/2011_spring	10:52	1, 3, 10, 25, 40
	05/07/2011_summer	11:45	1, 3, 10, 25, 40
	20/10/2011_fall	11:20	1, 3, 10, 30
	22/01/2013_winter	10:24	1, 3, 10, 25, 35
S13 (30)	31/03/2011_spring	12:20	1, 3, 10, 25
	05/07/2011_summer	12:45	1, 3, 10
	20/10/2011_fall	12:05	1, 3, 10
	22/01/2013_winter	11:03	1, 3, 10
S14 (48)	31/03/2011_spring	11:23	1, 3, 10, 25, 35
	05/07/2011_summer	12:02	1, 3, 10, 25, 40
	20/10/2011_fall	11:32	1, 3, 10, 25, 45

	22/01/2013_winter	10:34	1, 3, 10, 25, 45
S15 (35)	31/03/2011_spring	11:55	1, 3, 10, 25
	05/07/2011_summer	12:25	1, 3, 10, 20
	20/10/2011_fall	11:51	1, 3, 10, 25
	22/01/2013_winter	10:50	1, 3, 10, 30
S31 (20)	31/03/2011_spring	15:34	1, 3, 10
	05/07/2011_summer	15:23	1, 3, 10
	20/10/2011_fall	14:28	1, 3, 10
	22/01/2013_winter	12:33	1, 3, 10
S33 (20)	31/03/2011_spring	15:23	1, 3, 10
	05/07/2011_summer	15:31	1, 3, 10
	20/10/2011_fall	14:35	1, 3, 10
	22/01/2013_winter	12:38	1, 3, 10

Table S2. The CO_2 air-sea exchange flux (F_{GAS}; mmol m^{-2} day^{-1}) and seasonal

exchange flux (F_{season}; tC season^{-1}) over Nanwan Bay for each season, estimated

using wind speeds (m s^{-1}) recorded on the sampling dates and the average daily

wind speeds over the respective month.

Duration	Sampling Date_Season	Wind speed	F_{GAS}	F_{season}
Sampling date	31/03/2011_spring	10.6±0.8	8.2±12.7	6.2
	05/07/2011_summer	1.4±1.0	0.9±1.2	0.7
	20/10/2011_fall	9.2±2.5	16.0±18.4	11.9
	22/01/2013_winter	3.3±0.7	-1.8±2.4	-1.3
Month (daily wind)	03/2011_spring	11.3±2.8	10.7±4.5	8.0
	07/2011_summer	6.0±2.4	12.4±9.9	9.4
	10/2011_fall	11.4±2.5	29.5±11.9	21.9
	01/2013_winter	–	–	–

–: no data
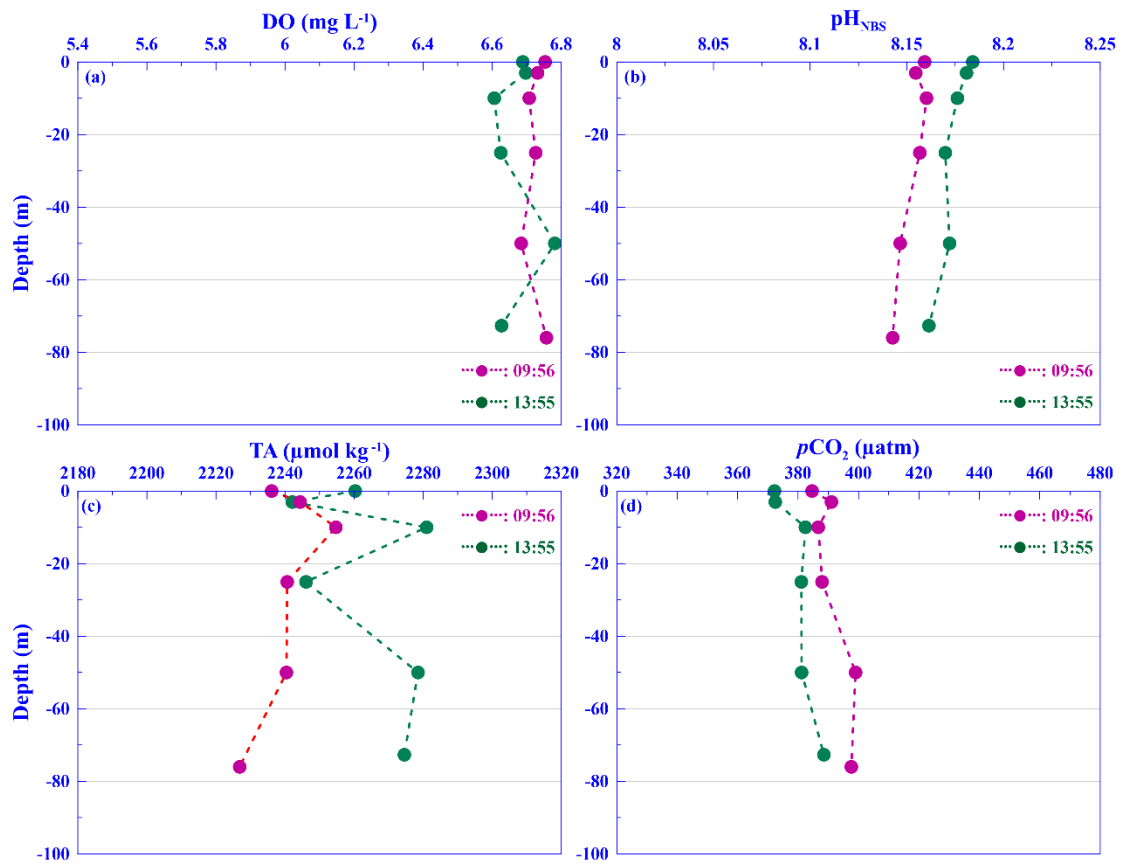
Fig. S1 Vertical profiles of dissolved oxygen (DO; a), pH (b), total alkalinity (TA; c), and $p\mathrm{CO_2}$ (d) in spring (31 March 2011) at station S10 at two sampling times.
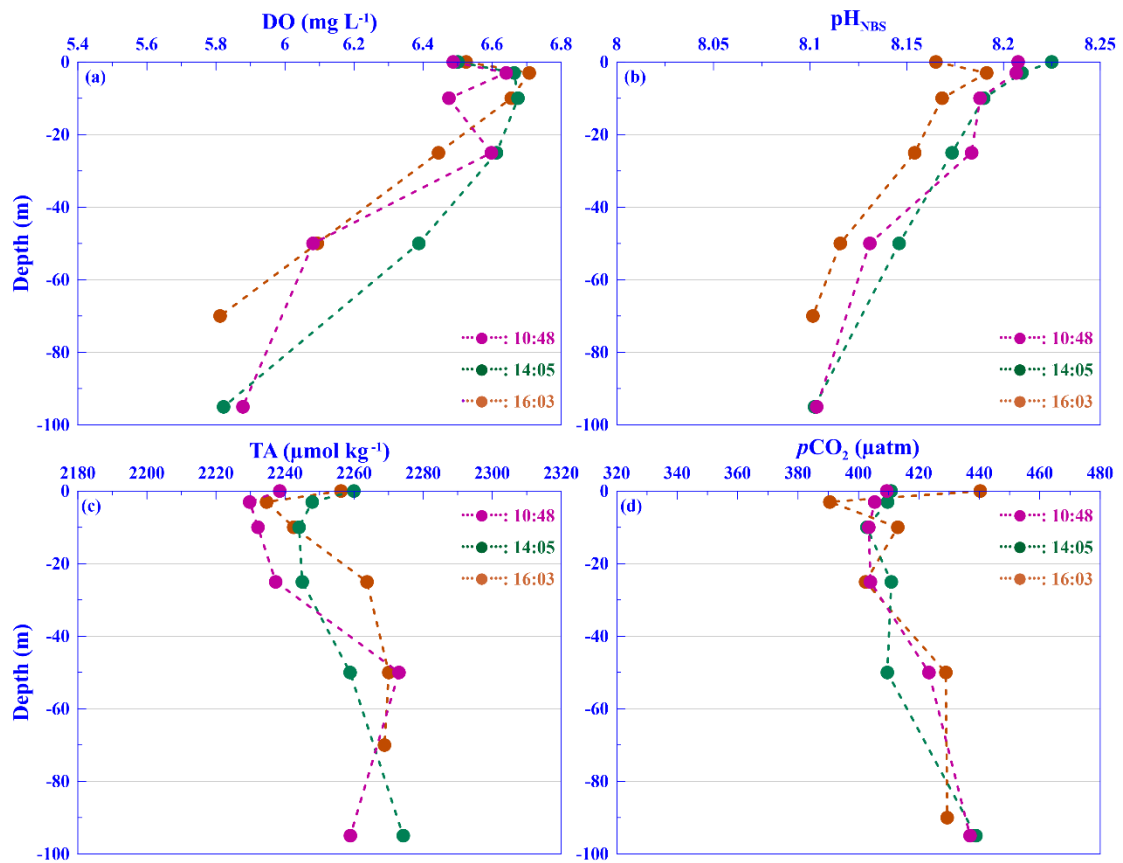
Fig. S2 Vertical profiles of dissolved oxygen (DO; a), pH (b), total alkalinity (TA; c), and pCO$_2$ (d) in summer (7 July 2011) at station S10 at three sampling times.
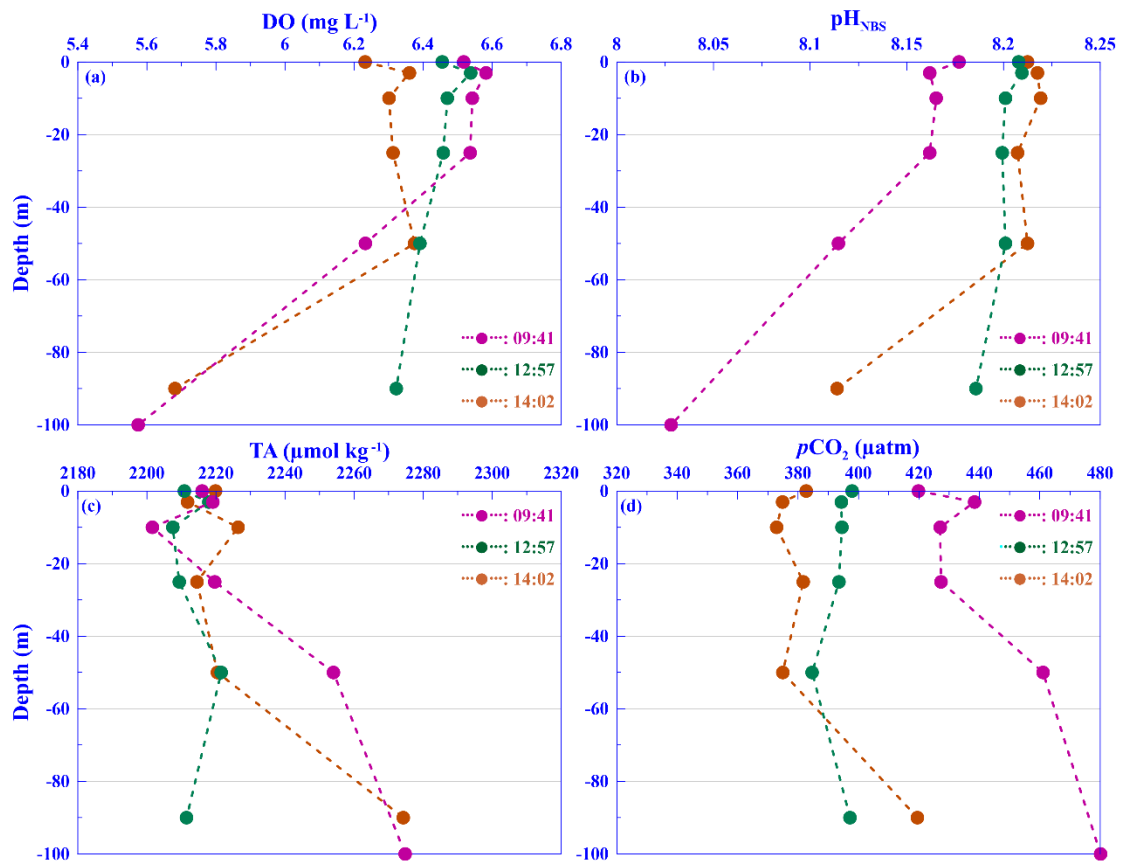
Fig. S3 Vertical profiles of dissolved oxygen (DO; a), pH (b), total alkalinity (TA; c), and pCO$_2$ (d) in autumn (20 October 2011) at station S10 at three sampling times.
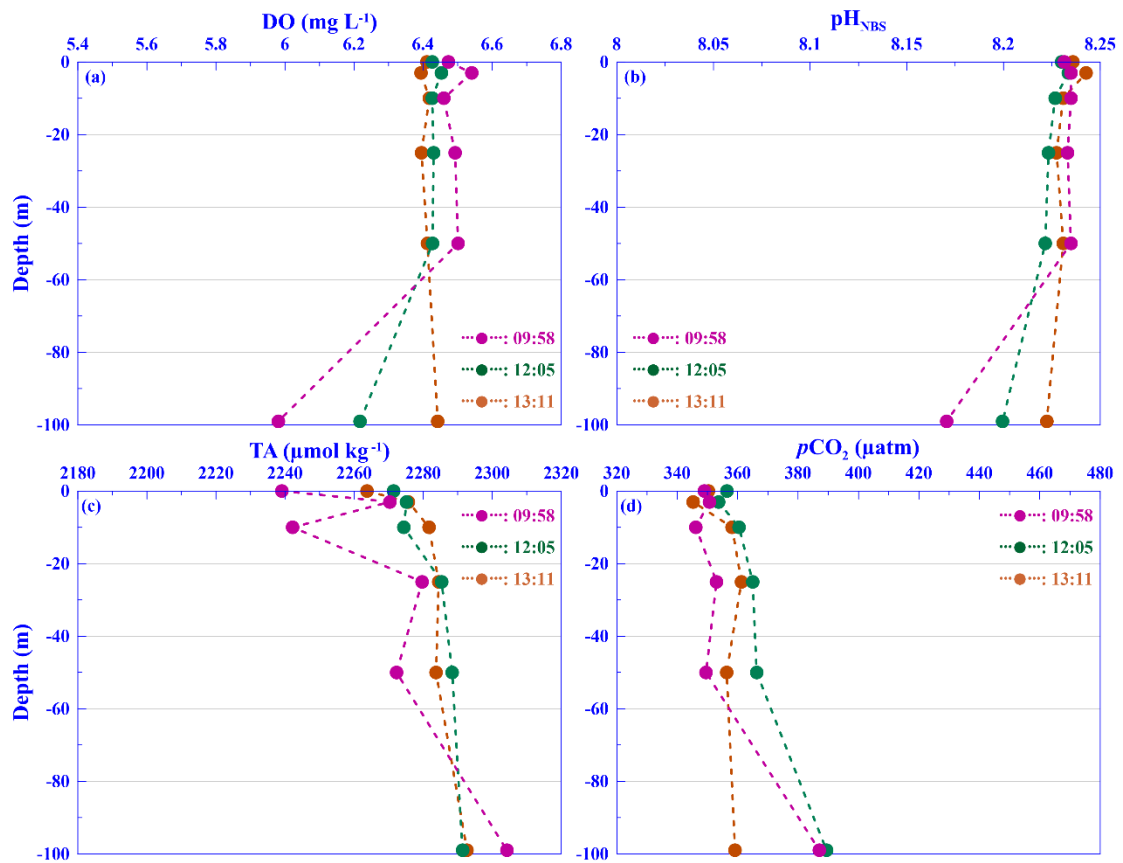
Fig. S4 Vertical profiles of dissolved oxygen (DO; a), pH (b), total alkalinity (TA; c), and pCO$_2$ (d) in winter (22 January 2014) at station S10 at three sampling times.