

*[Global Biogeochemical Cycles]*

Supporting Information for

**Short-term variability in euphotic zone biogeochemistry and primary productivity  
at Station ALOHA: A case study of summer 2012**

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The two Tables included in the Supporting Information include the relevant hydrographic parameters used to calculate the rates of net community production (NCP) and gross primary production (GPP).

Table S1. Water-column properties and additional parameters used to calculate net community production based on O<sub>2</sub>/Ar measurements (O<sub>2</sub>/AR-NCP).

Table S2. Water-column properties and additional parameters used to calculate <sup>17</sup>Δ-GPP.

Date	Temp oC	Sal	O2_m μmol/kg	O2_eq μmol/kg	MLD m	kw m/d	O <sub>2</sub> /Ar delta	O <sub>2</sub> /Ar-NCP mmol/m <sup>2</sup> /d
7/8/12	24.67	35.38	209.7	207.4	73	7.7	0.0058	8.6
7/9/12	24.70	35.39	208.9	207.3	80	7.6	0.0064	10.0
7/10/12	24.71	35.36	208.6	207.3	71	7.3	0.0048	8.2
7/11/12	24.71	35.31	208.3	207.4	62	7.2	0.0037	6.4
7/12/12	24.62	35.29	209.0	207.7	61	7.3	0.0051	7.6
7/13/12	24.64	35.30	209.6	207.6	68	7.3	0.0074	11.2
7/15/12	24.63	35.28	209.6	207.7	62	7.2	0.0049	8.2
7/16/12	24.64	35.26	208.8	207.7	66	7.3	0.0042	6.2
7/17/12	24.65	35.26	208.8	207.6	63	7.3	0.0041	6.6
7/19/12	24.72	35.22	208.1	207.5	53	6.8	0.0058	6.7
7/20/12	24.72	35.21	209.3	207.5	54	6.6	0.0022	3.1
7/20/12	24.94	35.31	209.3	206.6	58	6.3	-0.0017	-1.1
7/21/12	24.76	35.25	207.6	207.3	64	6.1	0.0011	1.8
7/22/12	24.87	35.27	207.0	206.9	50	6.0	0.0047	5.8
7/23/12	24.95	35.25	206.8	206.6	40	6.1	0.0037	4.5
7/24/12	24.94	35.24	206.6	206.7	41	6.2	-0.0001	2.8
8/5/12	25.06	35.25	206.8	206.2	59	5.7	-0.0070	-7.6
8/6/12	25.04	35.25	206.5	206.3	53	5.7	-0.0113	-15.4
8/7/12	25.08	35.27	206.3	206.2	65	5.9	-0.0096	-12.1
8/8/12	25.10	35.23	206.0	206.1	62	5.8	-0.0060	-4.2
8/9/12	25.19	35.21	205.4	205.9	46	5.7	-0.0048	-7.5
8/10/12	25.24	35.25	205.1	205.6	47	5.6	-0.0070	-6.3
8/11/12	25.16	35.25	205.6	205.9	51	5.6	-0.0027	-4.1
8/12/12	25.31	35.16	204.8	205.5	54	5.7	-0.0029	-3.5
8/22/12	25.46	35.35	206.1	204.7	62	4.9	-0.0033	-1.5
8/23/12	25.51	35.40	206.3	204.5	71	4.9	-0.0005	-0.5
8/24/12	25.51	35.35	205.9	204.6	61	4.8	0.0005	0.3
8/25/12	25.56	35.29	205.6	204.5	41	4.8	-0.0020	-1.6
8/26/12	25.55	35.22	205.4	204.6	36	4.9	0.0002	0.5
8/27/12	25.60	35.18	205.6	204.5	40	5.0	0.0029	2.5
8/28/12	25.57	35.16	205.5	204.6	50	5.2	-0.0004	-0.6
8/29/12	25.52	35.17	205.7	204.8	52	5.3	0.0044	2.7
8/30/12	25.50	35.19	205.3	204.8	50	5.4	0.0000	-2.1
8/31/12	25.51	35.21	205.5	204.7	56	5.5	-0.0049	-3.6
9/1/12	25.49	35.19	205.2	204.8	53	5.6	-0.0013	-1.1
9/2/12	25.41	35.28	206.0	205.0	66	5.9	0.0022	4.1
9/3/12	25.45	35.29	205.1	204.9	87	6.1	0.0044	5.7
9/4/12	25.45	35.09	204.5	205.1	56	6.3	-0.0028	-4.6
9/5/12	25.44	35.04	204.9	205.2	58	6.2	-0.0044	-5.6
9/6/12	25.40	35.02	204.6	205.4	42	6.1	-0.0036	-2.3

Table S1. Water-column properties and additional parameters used to calculate net community production based on O<sub>2</sub>/Ar measurements (O<sub>2</sub>/AR-NCP). [O<sub>2</sub>] is the measured dissolved O<sub>2</sub> concentrations for the mixed layer; [O<sub>2</sub>]<sub>eq</sub> is the equilibrium O<sub>2</sub> concentration; MLD is the mixed layer depth calculated using the 0.125 kg m<sup>-3</sup> density offset; *kw* is the weighted gas transfer velocity for O<sub>2</sub>, using the wind speed

parameterization of Wanninkhof [2014] and a 20-day weighting technique following Reuer et al. [2007];  $\Delta(\text{O}_2/\text{Ar})$  delta is the  $\text{O}_2/\text{Ar}$  deviation from equilibrium.

Date (Local)	Time (Local)	Temp oC	Sal	MLD m	kw m/d	$^{17}\Delta\text{-GPP}$ mmol/m <sup>2</sup> /d
8/23/12	0800	24.75	35.38	62	4.9	97.3
8/24/12	0800	25.50	35.40	70	4.9	74.3
8/26/12	0800	25.54	35.30	40	4.8	131.1
8/28/12	0800	25.68	35.17	39	5.0	62.1
8/28/12	0800	25.68	35.17	39	5.0	71.3
8/29/12	0800	25.57	35.16	50	5.2	132.8
8/30/12	0800	25.52	35.17	51	5.3	69.4
8/31/12	0001	25.55	35.18	50	5.4	38.1
8/31/12	0400	25.52	35.17	54	5.4	65.6
8/31/12	0800	25.50	35.18	49	5.4	98.0
8/31/12	1200	25.52	35.21	47	5.4	103.4
8/31/12	1600	25.59	35.19	55	5.4	167.7
8/31/12	2000	25.58	35.19	61	5.4	122.2
9/1/12	0001	25.53	35.22	54	5.5	128.1
9/1/12	0400	25.51	35.21	63	5.5	127.3
9/1/12	1200	25.51	35.20	53	5.5	70.9
9/1/12	1600	25.50	35.18	32	5.5	92.0
9/3/12	0800	25.43	35.28	48	5.9	143.7
9/4/12	0800	25.44	35.28	66	6.1	54.4
9/5/12	0800	25.44	35.10	86	6.3	47.6
9/6/12	0800	25.42	35.05	58	6.2	72.8
9/7/12	0800	25.41	35.02	42	6.1	65.3

Table S2. Water-column properties and additional parameters used to calculate  $^{17}\Delta\text{-GPP}$  as per the method of *Luz and Barkan* [2000]. MLD is the mixed layer depth calculated using the 0.125 kg m<sup>-3</sup> density offset; *kw* is the weighted gas transfer velocity for O<sub>2</sub>, using the wind speed parameterization of Wanninkhof [2014] and a 20-day weighting technique following Reuer et al. [2007].

References:

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