

## Supporting information

**Table S1** Sampling site location, depth, hydrodynamic data, DOC/DIC concentrations and  $\Delta^{14}\text{C}$ -DIC values

Station	Lat. (°N)	Lon. (°E)	Depth (m)	Temp. (°C)	Salinity	DOC ( $\mu\text{M}$ )	DIC ( $\mu\text{mol kg}^{-1}$ )	$\Delta^{14}\text{C}$ - DIC (‰)	AOU ( $\mu\text{M}$ )
<b><i>ECS</i></b>									
<b>Stn.1</b>	28.37	126.69	5	27.5	33.96	78	1805	12	13
			30	26.1	34.19	82	1804	21	20
			50	23.4	34.60	88	1909	30	41
			100	18.9	34.65	74			77
			130	16.9	34.61	63			86
			140	14.1	34.48	69	1923	20	108
			185	13.5	34.48	66	1862	6	111
<b>Stn.7</b>	28.30	126.83	5	27.4	33.88	79	1799	31	12
			40	26.3	34.10	78	1826	36	18
			80	22.0	34.58	64	1888	43	52
			120	20.0	34.66	66			65
			180	17.2	34.67	63	1897	30	75
			256	14.6	34.54	61	1933	21	94
<b>Stn.11</b>	28.43	126.53	5	26.3	33.92	76	1777	31	12
			20	25.5	33.95	76	1821	30	14
			60	23.6	34.21	71	1841	30	31
			80	19.4	34.60	64			72
			100	18.4	34.64	60	1966	4	81
			120	17.8	34.64	61			80
			138	13.4	34.48	60	2045	-42	114
<b>Z1</b>	28.07	127.13	10	29.2	34.45	71	1822	44	13
			25	28.0	34.55	84	1828	38	13
			75	26.7	34.67	77	1793	34	17
			150	22.0	34.82	72	1812	32	42
			200	19.2	34.77	62	1889	25	60
			400	11.6	34.36	52	1894	19	126
			450	10.3	34.31	56			145
			700	6.0	34.32	47	2102	-102	225
			800	5.2	34.35	47	2098	-131	239
<b>Z2</b>	27.93	127.36	10	29.3	34.48	81	1749	31	12
			50	27.9	34.45	78	1720	34	14
			90	24.2	34.82	72	1801	31	34
			125	23.1	34.87	67	1823	43	45
			200	19.7	34.78	63			54
			300	16.7	34.66	59	1829	48	67
			500	10.2	34.32	59	1942	-31	148

To be continued

Station	Lat. (°N)	Lon. (°E)	Depth (m)	Temp. (°C)	Salinity	DOC (µM)	DIC (µmol kg <sup>-1</sup> )	Δ <sup>14</sup> C- DIC (‰)	AOU (µM)
<b>Z3</b>	27.75	126.63	600	8.0	34.30	55	2085	-86	188
			800	5.3	34.34	52	2111	-149	238
			1000	4.3	34.39	54	2142	-188	255
			1295	3.9	34.42	47	2086	-205	261
			10	28.8	34.02	72			12
			60	24.4	34.53	68			31
			150	19.2	34.76	59			65
			300	14.5	34.53	54			100
			500	7.7	34.30	52			193
			700	5.8	34.33	47			229
			900	4.6	34.38	50			249
			1100	4.1	34.41	48			258
			1300	3.8	34.42	49			261
			1400	3.8	34.42	47			262
<b>Z4</b>	28.63	127.00	5	28.0	34.12	78	1760	21	13
			60	25.1	34.64	75	1766	5	20
			120	20.0	34.69	61	1971	2	62
			150	18.2	34.67	55			71
			180	15.8	34.59	62			89
			240	12.6	34.44	65	1962	-10	122
			300	10.3	34.34	56	2008	-13	147
			413	8.9	34.30	57	2034	-56	174
<b><u>NWP</u></b>									
<b>K2</b>	25.10	134.02	5	24.4	34.98	65	1848	45	
			85	20.4	34.91	61			
			100	20.3	34.90	59	1867	49	
			150	19.2	34.84	59			
			300	16.5	34.67	52	1918	56	
			500	10.9	34.30	47	1867	38	
			650	6.8	34.15	44	2056	-64	
			1000	3.9	34.37	41	2110	-180	
<b>A4</b>	34.00	147.80	5	17.5	34.76	53	1822	51	
			50	17.2	34.76	39	1806	45	
			100	17.0	34.77	38	1824	49	
			200	16.9	34.75	42	1836	45	
			500	14.2	34.51	38	2088	-233	
			750	7.8	34.11	39	2087	-231	
			1000	4.8	34.15	44	2063	-229	
			2000	2.2	34.55	44	1975	-226	
<b>A6</b>	34.02	150.04	3000	1.6	34.66	36	2120	-233	
			4000	1.5	34.68	37	2119	-220	
			5	17.7	34.76	54			
			63	17.5	34.76	55			
			100	17.3	34.76	56			
			200	16.9	34.75	53			

To be continued

Station	Lat. (°N)	Lon. (°E)	Depth (m)	Temp. (°C)	Salinity	DOC (μM)	DIC (μmol kg <sup>-1</sup> )	Δ <sup>14</sup> C- DIC (‰)	AOU (μM)
			500	13.3	34.45	46			
			750	6.1	34.03	40			
			1000	4.3	34.25	39			
			2000	2.1	34.57	39			
			3000	1.6	34.66	38			
			3940	1.5	34.68	36			
<b>A8</b>	34.04	152.02	5	17.7	34.79	63	1798	48	
			60	17.1	34.78	62	1834	50	
			100	16.9	34.76	63	1855	41	
			250	16.8	34.74	54	1850	47	
			500	12.6	34.40	54	1887	22	
			650	8.9	34.09	55	1876	30	
			1000	4.3	34.20	44	2056	-137	
			2000	2.2	34.56	43	2112	-230	
			3000	1.6	34.66	42	2141	-231	
			3500	1.5	34.67	42	2138	-222	
<b>B2</b>	37.00	147.00	5	14.7	34.49	43	1850	31	
			50	13.6	34.43	43	1875	20	
			100	11.2	34.32	42	1920	1	
			200	6.5	33.66	43	1926	-8	
			350	5.5	33.90	36	2063	-125	
			500	4.3	34.04	38	2067	-106	
			750	3.7	34.29	36	2115	-166	
			1000	3.0	34.41	35	2102	-234	
			1500	2.3	34.53	37	2125	-226	
			2000	1.9	34.60	36	2108	-219	
			3000	1.6	34.67	37	2050	-220	
			4000	1.5	34.69	37	2080	-228	
<b>A1-b</b>	32.63	145.95	5	18.3	34.77	57			
			50	18.3	34.77	60			
			100	17.2	34.76	57			
			200	16.6	34.72	48			
			500	9.8	34.22	39			
			610	6.2	33.97	42			
			1000	3.7	34.27	42			
			1500	2.6	34.48	38			
			1978	2.1	34.58	36			
<b>B8</b>	30.97	146.99	5	19.4	34.88	63	1833	49	
			50	18.7	34.88	58	1829	52	
			100	18.4	34.86	60	1854	50	
			200	17.7	34.77	52	1854	3	
			500	11.8	34.33	53	1901	-99	
			800	4.9	34.08	49	1893	-105	
			1000	3.9	34.26	48	2073	-157	
			2000	2.0	34.60	43	2008	-213	

To be continued

Station	Lat. (°N)	Lon. (°E)	Depth (m)	Temp. (°C)	Salinity	DOC (μM)	DIC (μmol kg <sup>-1</sup> )	Δ <sup>14</sup> C- DIC (‰)	AOU (μM)
			2500	1.7	34.64	41	1997	-219	
			3000	1.6	34.66	42	2008	-212	
			3500	1.5	34.67	42	2006	-212	
<b>B9</b>	29.86	146.53	5	20.7	34.89	57	1866	42	
			30	19.1	34.90	56	1858	32	
			55	18.3	34.85	54			
			100	17.8	34.81	49	1870	27	
			150	17.6	34.80	43	1865	26	
			200	17.5	34.79	52	1858	18	
			300	17.1	34.75	52	1848	31	
			700	6.8	34.05	42	1961	-59	
			800	5.3	34.07	37			
			1000	3.9	34.28	37	2029	-159	
			1200	3.2	34.40	38			
			1500	2.5	34.51	36	2014	-220	
			2000	2.0	34.60	36	2052	-222	