

Table S1. Location and environmental features of each sampling station in the western Pacific Ocean. -, no data.

Station	Longi (°E)	Lati (°N)	Temperature (°C)				Salinity (psu)				NH ₄ ⁺ (μM)			
			0 m	200 m	1000 m	2000 m	0 m	200 m	1000 m	2000 m	0 m	200 m	1000 m	2000 m
			N-1	122.398	17.590	28.01	18.38	3.76	2.08	32.17	34.79	34.49	34.64	1.01
N-2	123.459	17.989	27.76	19.58	3.61	2.07	32.48	34.81	34.51	34.64	0.43	0.75	0.51	0.31
N-3	125.991	18.023	28.26	19.83	3.87	2.09	34.06	34.85	34.49	34.63	0.13	1.03	0.25	0.45
N-4/ E-1	129.598	17.599	28.78	26.69	3.91	1.68	33.32	34.87	34.50	34.67	1.04	0.53	0.36	-
E-2	129.990	14.916	29.04	20.35	4.19	2.03	33.68	34.91	34.54	34.64	0.22	0.40	0.50	0.37
E-3	129.972	11.975	29.52	17.76	4.08	2.27	33.86	34.73	34.56	34.63	0.53	0.57	0.63	0.20
E-4	129.989	9.003	29.71	15.70	4.76	2.22	33.63	34.61	34.55	34.64	0.29	0.58	0.60	0.33
E-5	129.983	7.999	29.75	12.43	4.91	2.99	33.82	34.48	34.55	34.60	0.31	0.29	0.41	0.36
E-6	129.990	6.503	29.70	12.97	4.78	2.24	33.72	34.47	34.55	34.64	0.98	0.49	1.15	0.07
E-7	129.994	3.003	29.89	20.17	4.63	2.27	34.60	34.90	34.56	34.64	0.72	0.20	1.09	0.99

Station	NO_2^- (μM)				$\text{NO}_3^- + \text{NO}_2^-$ (μM)				SiO_3^{2-} (μM)				PO_4^{3-} (μM)			
	0 m	200 m	1000 m	2000 m	0 m	200 m	1000 m	2000 m	0 m	200 m	1000 m	2000 m	0 m	200 m	1000 m	2000 m
N-1	0.03	0.04	0.04	0.04		1.27	27.34	23.61	0.27	1.73	63.74	77.27	0.09	0.04	1.60	1.86
N-2	0.04	0.11	0.05	0.09	0.38	2.76	31.63	28.96	0.09	1.76	72.77	74.97	0.00	0.00	1.13	1.34
N-3	0.03	0.10	0.09	0.18	0.00	5.79	34.21	19.67	0.22	0.97	66.17	76.61	0.07	0.60	1.76	1.12
N-4/ E-1	0.00	0.06	0.26	-	0.20	3.12	14.85	-	0.27	0.56	73.51	-	0.06	0.00	1.49	-
E-2	0.03	0.06	0.05	0.04	0.00	8.20	26.21	27.67	0.05	1.35	61.48	78.66	0.05	0.35	1.37	2.01
E-3	0.06	0.07	0.04	0.00	0.12	8.07	25.60	20.87	0.31	4.78	63.51	74.06	0.13	0.35	1.09	1.06
E-4	0.01	0.04	0.13	0.08	0.88	10.73	20.62	14.38	0.35	8.76	53.81	73.98	0.07	0.07	0.78	1.16
E-5	0.08	0.07	0.02	0.08	0.93	15.58	28.78	30.21	0.00	9.80	52.86	71.12	0.00	0.91	1.63	2.17
E-6	0.02	0.02	0.04	0.05	0.00	1.66	28.78	15.98	0.33	10.50	55.92	74.19	0.18	0.95	1.13	1.04
E-7	0.04	0.04	0.04	0.08	0.35	3.45	24.19	20.97	0.37	4.03	54.01	68.73	0.04	0.45	1.40	1.03