

Supplemental Table 1: Gross primary production (GPP) values ($\text{gC m}^{-2} \text{d}^{-1}$) values at fixed points along the AWI, as shown in Figure 1a.

Latitude	Longitude	GPP ($\text{gC m}^{-2} \text{d}^{-1}$)					
(°N)	(°W)	Apr	May	Jun	Jul	Aug	Sep
72.58	14.91	0.31	0.91	1.31	1.47	0.85	0.29
74.29	15.13	0.23	0.72	1.09	1.22	0.80	0.24
75.61	13.05	0.18	0.60	1.30	1.25	0.82	0.20
77.06	11.14	0.13	0.48	1.52	1.33	0.82	0.18
78.86	8.31	0.12	0.48	1.50	1.43	0.81	0.15
79.01	4.11	0.14	0.79	1.32	1.27	0.59	0.15
80.57	12.09	0.03	0.25	0.60	0.77	0.57	0.12
81.33	17.95	0.03	0.27	0.52	0.85	0.53	0.11
81.40	26.44	0.03	0.22	0.51	0.61	0.54	0.11

Supplemental Table 2: Growth rate (μ) values (d^{-1}) values at fixed points along the AWI, as shown in Figure 1a.

Latitude	Longitude	Growth (d^{-1})					
(°N)	(°W)	Apr	May	Jun	Jul	Aug	Sep
72.58	14.91	0.14	0.11	0.14	0.24	0.16	0.04
74.29	15.13	0.12	0.10	0.16	0.18	0.11	0.01
75.61	13.05	0.14	0.12	0.11	0.19	0.11	0.02
77.06	11.14	0.15	0.17	0.09	0.23	0.11	0.01
78.86	8.31	0.15	0.20	0.11	0.13	0.13	0.00
79.01	4.11	0.12	0.14	0.09	0.05	0.06	-0.01
80.57	12.09	0.02	0.09	0.08	0.05	0.08	-0.03
81.33	17.95	0.03	0.08	0.08	0.06	0.08	-0.03
81.40	26.44	0.04	0.09	0.08	0.05	0.07	-0.03

Supplemental Table 3: Phytoplankton Biomass (B) monthly average values (gC m^{-2}) at fixed points along the AWI, as shown in Figure 1a.

Latitude	Longitude	Biomass (gC m^{-2})					
(°N)	(°W)	Apr	May	Jun	Jul	Aug	Sep
72.58	14.91	1.39	5.03	6.90	4.64	3.48	3.21
74.29	15.13	0.91	3.81	4.93	4.69	4.07	3.29
75.61	13.05	0.63	2.70	7.77	4.81	3.98	2.68
77.06	11.14	0.45	1.66	10.30	4.67	4.22	2.46
78.86	8.31	0.42	1.34	9.21	8.96	3.99	2.33
79.01	4.11	0.70	4.20	9.49	12.64	5.16	2.53
80.57	12.09	0.40	1.95	4.49	7.41	3.72	1.80
81.33	17.95	0.42	2.28	4.26	7.96	3.67	1.98
81.40	26.44	0.40	1.67	3.93	6.41	4.31	2.35

Supplemental Table 4: Net community production (NCP) values ($\text{gC m}^{-2} \text{d}^{-1}$) values at fixed points along the AWI, as shown in Figure 1a.

Latitude	Longitude	Respiration ($\text{gC m}^{-2} \text{d}^{-1}$)					
(°N)	(°W)	Apr	May	Jun	Jul	Aug	Sep
72.58	14.91	0.14	0.37	0.42	0.42	0.32	0.17
74.29	15.13	0.11	0.35	0.33	0.43	0.38	0.19
75.61	13.05	0.09	0.29	0.47	0.35	0.37	0.15
77.06	11.14	0.06	0.25	0.64	0.31	0.37	0.14
78.86	8.31	0.05	0.22	0.59	0.46	0.29	0.15
79.01	4.11	0.05	0.23	0.50	0.66	0.29	0.15
80.57	12.09	0.02	0.10	0.22	0.36	0.27	0.15
81.33	17.95	0.02	0.11	0.19	0.36	0.25	0.14
81.40	26.44	0.02	0.08	0.17	0.29	0.27	0.17