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Supplement of

Spatial patterns in phytoplankton community composition and their relationship to carbon export on the northwest Weddell Sea continental shelf

Meredith G. Meyer et al.

Correspondence to: Meredith G. Meyer (m.meyer@uea.ac.uk)

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S1. Tables S1 – S2

Table S1. Sampling date (YD), latitude, longitude, depth (m), location, and size fraction of HPLC samples. If POC flux samples were collected at the same location and date, an X is indicated in the last column. UW refers to underway samples from seawater intake at depth 3 m.

Yearday (YD)	CTD	Latitude	Longitude	Depth	Location	Size Fraction	POC flux
32	29	-66.0562	-60.4797	25	Larsen	Total	
32	40	-66.1254	-60.3887	25	Larsen	Total	
32	45	-66.0673	-60.3325	20	Larsen	Total	
32	40	-66.1254	-60.3887	50	Larsen	Total	
33	20	-66.1360	-59.8876	24.5	Larsen	Total	
33	20	-66.1360	-59.8876	37	Larsen	Total	
33	20	-66.1360	-59.8876	70	Larsen	Total	

34	49	-65.6264	-59.297	50	Shelf	Total	
34	49	-65.6264	-59.297	75	Shelf	Total	
35	55	-64.5889	-58.2575	55	Shelf	Total	X
37		-64.5052	-48.5279	UW	Transect	3 µm	
37		-64.5042	-48.5315	UW	Transect	25 µm	
37		-64.5019	-48.5388	UW	Transect	Total	
39		-64.5052	-48.5279	UW	Transect	3 µm	
39		-64.5052	-48.5279	UW	Transect	25 µm	
39		-64.5052	-48.5279	UW	Transect	Total	X
40	77	-64.5314	-49.6071	20	Transect	Total	
40	77	-64.5314	-49.6071	85	Transect	Total	
41	82	-64.4523	-50.8576	20	Transect	Total	
41	82	-64.4523	-50.8576	70	Transect	Total	
42	88	-64.5859	-52.7161	20	Transect	Total	
42	88	-64.5859	-52.7161	100	Transect	Total	
43	94	-64.5404	-53.5848	45	Transect	Total	
43	94	-64.5404	-53.5848	100	Transect	Total	

44	102	-64.5756	-53.9017	48	Transect	Total	
44	102	-64.5756	-53.9017	97	Transect	Total	
45	111	-64.5638	-54.2906	20	Transect	Total	
47		-64.5846	-55.0580	UW	Shelf	3 µm	
47		-64.5861	-55.0614	UW	Shelf	25 µm	
47		-64.5883	-55.0663	UW	Shelf	Total	X
48		-66.1647	-55.5190	UW	Ice	Total	
50		-66.3451	-56.0000	UW	Ice	3 µm	
50		-66.3478	-55.9958	UW	Ice	25 µm	
50		-66.3461	-55.9985	UW	Ice	Total	
54	129	-63.1560	-52.7408	20	Shelf	Total	
54	129	-63.1560	-52.7408	70	Shelf	Total	
55		-62.3307	-50.9881	UW	Shelf	3 µm	
55		-62.3307	-50.9881	UW	Shelf	25 µm	
55		-62.3307	-50.9881	UW	Shelf	Total	
56	132	-64.7839	-56.1539	20	Shelf	Total	
56		-65.1017	-56.9669	3	Ice	Total	

56		-65.1017	-56.9669	3	Ice	Total	
56	132	-64.7839	-56.1539	50	Shelf	Total	
56	132	-64.7839	-56.1539	80	Shelf	Total	
57		-65.4145	-57.8134	3	Ice	Total	X
57		-65.4145	-57.8134	3	Ice	Total	
58		-65.3647	-57.6715	7	Ice	Total	
58		-65.3643	-57.6713	7	Ice	3 µm	
58		-65.3638	-57.6714	7	Ice	25 µm	
58		-65.3662	-57.674	3	Ice	Total	
58		-65.3662	-57.674	3	Ice	Total	
61	134	-64.6983	-56.5475	2.2	Shelf	Total	
61	134	-64.6983	-56.5475	60	Shelf	Total	

Table S2. Key phytoplankton accessory pigments and their likelihood to be present in phytoplankton groups. Adapted from Meyer et al. (2024).

	Fuco	Perid	19-But Fuco	19-Hex Fuco	Allo	Chl b	Zea
Diatoms							
Dinoflagellates							
Haptophytes							
Cryptophytes							
Prasinophytes							
Chlorophytes							
Synechococcus							

	Unique
	Always present
	Often present
	Rarely present
	Trace
	Not present

S2. Figures S1 – S3

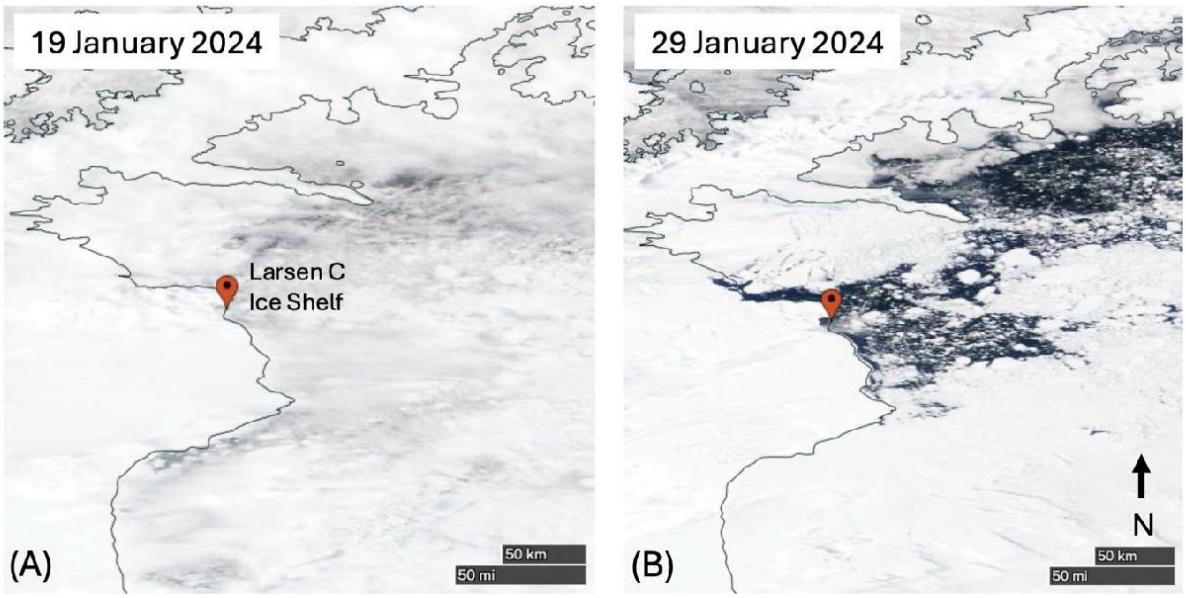


Figure S1. Sea ice change from 19 January to 29 January 2024 in the Larsen C sampling region (red flag). Visible images from NASA Worldview (accessed 17 March 2026).

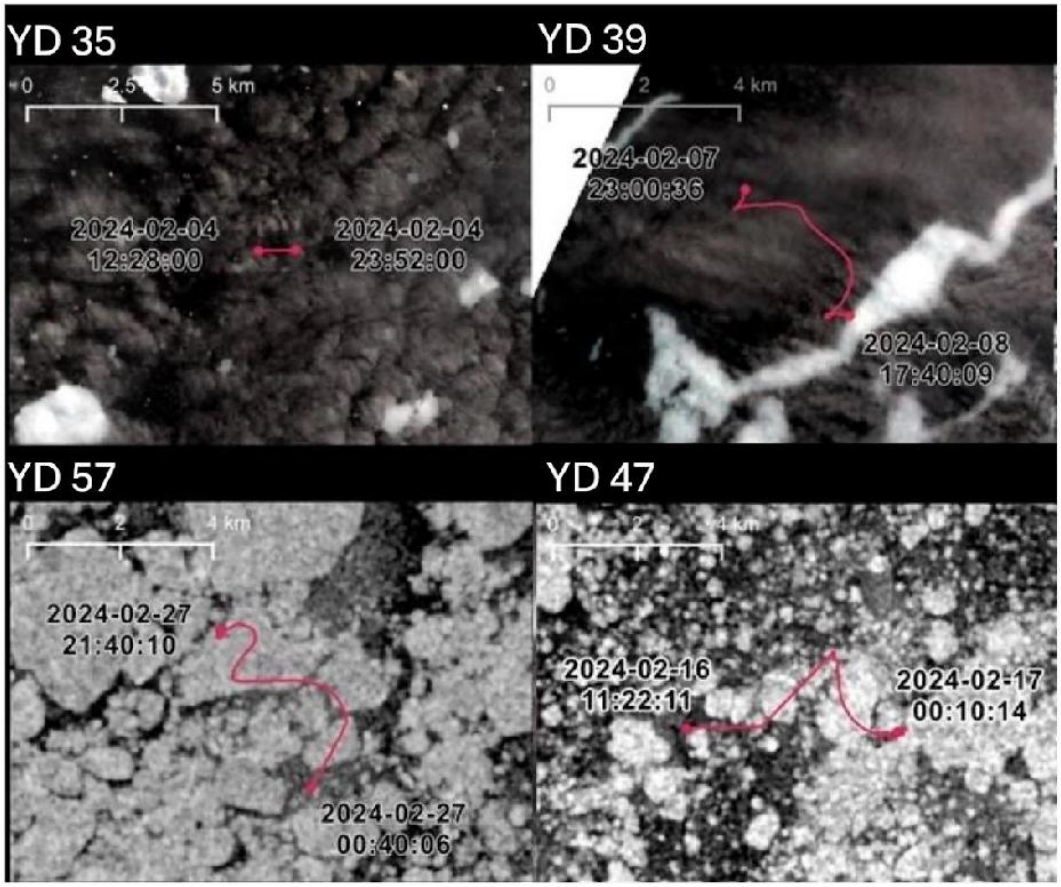


Figure S2. Paths (in pink) of the drifting sediment traps by yearday (YD) of trap recovery. Adapted from Atherden et al. (in press).

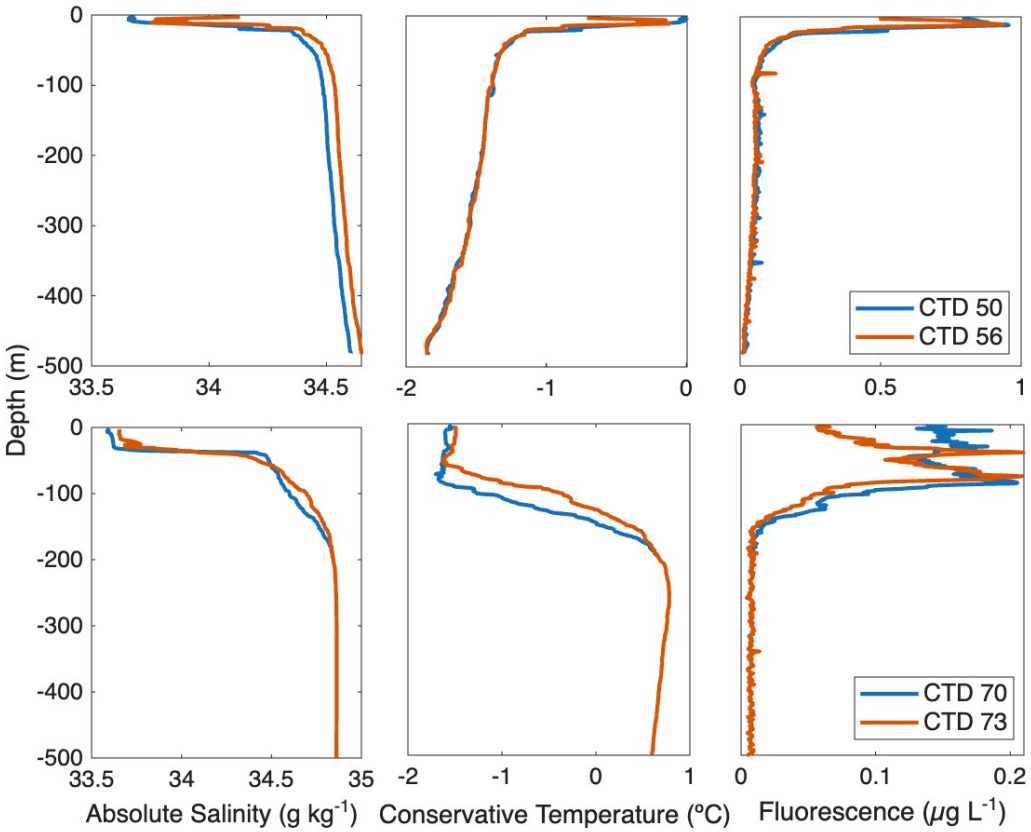


Figure S3. CTD profiles of absolute salinity (g kg^{-1}), conservative temperature (ºC), and fluorescence (µg L^{-1}) immediately preceding (CTD 50, 56) and following (CTD 56, 73) sediment trap deployments on YD 35 and 39. CTD profiles show minimal variability between times.