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Phytoplankton detection study through hyperspectral signalling in the Patagonian fjords

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Supplement

Table S1: Characteristics of in situ sampling locations

Sampling location	Station	Date	Latitude	Longitude	Secchi depth (m)	Characteristics and criteria for selecting sampling locations
Ilque (I)	I1	05/01/2023	-41.621	-73.063	5.01	Semi-enclosed circulation area Clear-turbid waters Strong marine influence HAB moderate risk
	I2	05/01/2023	-41.630	-73.059	4.57	
	I3	31/03/2023	-41.627	-73.064	10.25	
Pulelo (P)	P1	18/01/2023	-41.873	-73.477	3.68	Intense salmon aquaculture activity Open circulation area Clear waters Strong marine influence HAB medium risk
	P2	18/01/2023	-41.864	-73.480	4.00	
	P3	18/01/2023	-41.861	-73.467	4.38	
	P4	18/01/2023	-41.855	-73.476	5.22	
	P5	08/03/2023	-41.856	-73.459	12.31	
	P6	08/03/2023	-41.868	-73.467	10.59	
	P7	08/03/2023	-41.868	-73.482	7.43	
	P8	08/03/2023	-41.865	-73.498	8.15	
Isla Tenglo (T)	T1	26/01/2023	-41.524	-72.991	3.74	Open circulation area Clear waters Strong marine influence HAB moderate risk
	T2	26/01/2023	-41.531	-72.987	4.05	
	T3	26/01/2023	-41.539	-72.969	4.33	
Yaotal (Y)	Y1	12/04/2023	-42.672	-73.548	13.08	Intense salmon aquaculture activity Open circulation area Clear waters Strong marine influence HAB medium risk
Chaparano (C)	C1	14/04/2023	-41.724	-72.520	4.48	Intense mussel farm activity Enclosed circulation area Turbid waters Freshwater influence HAB high risk Historical HAB occurrence
	C2	14/04/2023	-41.725	-72.527	4.00	
	C3	14/04/2023	-41.727	-72.536	4.73	
Canal Tenglo (CT)	CT1	09/05/2023	-41.495	-72.984	4.16	Enclosed circulation area Turbid waters Marine influence HAB moderate risk
	CT2	09/05/2023	-41.499	-72.984	4.68	

Table S2: Phytoplankton community characterization

Sampling location	Date	Season	Station	Total R*	Diatoms R	Flagellates R	Diversity	Dominance
Ilque (I)	05/01/2023	Summer	I1	12	9	3	0.127	0.977
			I2	11	8	3	0.118	0.982
Pulelo (P)	18/01/2023	Summer	P1	22	17	5	0.572	0.762
			P2	24	18	6	0.495	0.816
			P3	20	14	6	0.557	0.740
			P4	21	16	5	0.551	0.768
Isla Tenglo (T)	26/01/2023	Summer	T1	21	15	6	0.535	0.804
			T2	18	13	5	0.592	0.775
			T3	20	14	6	0.496	0.832
Pulelo (P)	08/03/2023	Autumn	P5	19	16	3	1.236	0.465
			P6	25	18	7	1.115	0.584
			P7	22	17	5	1.229	0.459
			P8	22	18	4	0.931	0.646
Ilque (I)	31/03/2023	Autumn	I3	14	11	3	0.637	0.784
Yaotal (Y)	12/04/2023	Autumn	Y1	10	6	4	0.974	0.627
Chaparano (C)	14/04/2023	Autumn	C1	27	18	9	1.253	0.466
			C2	30	22	8	1.069	0.581
			C3	26	19	7	0.863	0.670
Canal Tenglo (CT)	09/05/2023	Autumn	CT1	16	12	4	0.317	0.914
			CT2	16	11	5	0.339	0.901

*R: richness

Table S3: Kolmogorov-Smirnov test

Sampling location	Season	Station	Total spectrum (400-750 nm)		Blue band (400-492 nm)		Green to red bands (500-750 nm)	
			D	p value	D	p value	D	p value
Ilque (I)	Summer	I1 vs. I2	0.238	0.0001	0.733	1.40e-11	0.336	1.81e-6
Pulelo (P)	Summer	P1 vs. P2	0.190	0.004	0.578	2.38e-7	0.126	0.282
		P1 vs. P3	0.196	0.003	0.267	0.067	0.277	0.0002
		P1 vs. P4	0.250	4.06e-5	0.689	2.87e-10	0.353	4.34e-7
		P2 vs. P3	0.238	0.0001	0.400	0.001	0.336	1.81e-6
		P2 vs. P4	0.250	4.06e-5	0.400	0.001	0.353	4.34e-7
		P-3 vs. P4	0.173	0.012	0.556	7.93e-7	0.134	0.215
Isla Tenglo (T)	Summer	T1 vs. T2	0.137	0.078	0.378	0.002	0.126	0.282
		T1 vs. T3	0.196	0.003	0.444	0.0002	0.277	0.0002
		T2 vs. T3	0.274	4.71e-6	0.178	0.437	0.387	2.03e-8
Pulelo (P)	Autumn	P5 vs. P6	0.125	0.134	0.222	0.189	0.151	0.119
		P5 vs. P7	0.119	0.172	0.267	0.067	0.176	0.043
		P5 vs. P8	0.262	1.41e-5	0.311	0.020	0.370	9.71e-8
		P6 vs. P7	0.065	0.853	0.156	0.610	0.092	0.669
		P6 vs. P8	0.208	0.001	0.244	0.115	0.294	4.71e-5
		P7 vs. P8	0.178	0.008	0.156	0.610	0.218	0.006
Chaparano (C)	Autumn	C1 vs. C2	0.155	0.03	0.556	7.93e-7	0.092	0.669
		C1 vs. C3	0.089	0.496	0.111	0.930	0.126	0.282
		C2 vs. C3	0.155	0.032	0.578	2.38e-7	0.092	0.669
Canal Tenglo (CT)	Autumn	CT1 vs. CT2	0.167	0.016	0.644	4.86e-9	0.160	0.087

p value: significant differences at $p<0.05$. Total spectrum N=168; blue band N=45; green to red bands N=119.