

1 **Supplemental Information**

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3 **Upward nitrate flux and downward particulate organic carbon flux under contrasting**
4 **situations of stratification and turbulent mixing in an Arctic shelf sea**

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16 **Table S1: Parameters used in the calculation of nitrate uptake.**

Station, sample	Depth (m)	Nitrate (mmol m ⁻³)	PON (mg m ⁻³)	Chl <i>a</i> (mg m ⁻³)	Temperature (°C)	Y _o	V _{max} ^a	α ^b	β ^c
M1, surface	5	0.45	26.3	0.16	-1.23	0.00029	0.00054	0.000011	0.000000
M1, SCM ^d	31	3.93	86.5	4.95	-1.73	0.00127	0.02105	0.002995	0.000000
M4, surface	5	0.46	38.1	0.55	5.27	0.00134	0.00049	0.000018	0.0000010
M4, SCM	38	1.53	35.8	0.80	1.53	0.00000	0.00577	0.001550	0.0000054
M2, surface	5	0.37	27.1	0.23	-0.79	0.00003	0.00062	0.000013	0.0000003
M2, SCM	65	3.59	46.3	1.39	-0.41	0.00019	0.00321	0.000054	0.0000224
M3, surface	5	0.7	21.3	0.17	1.29	0.00000	0.00170	0.000028	0.0000018
M3, SCM	35	3.07	38.0	1.08	0.21	0.00000	0.01782	0.000782	0.0000350

17 ^a Maximum observed uptake of nitrate

18 ^b Photosynthetic efficiency at low irradiance (initial slope of the relationship: h⁻¹ (μmol quanta m⁻² s⁻¹)⁻¹)

19 ^c Photoinhibition parameter (h⁻¹ (μmol quanta m⁻² s⁻¹)⁻¹)

20 ^d Subsurface chlorophyll *a* maximum

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