Supplementary Material

Algal hot spots in a changing Arctic Ocean: Sea-ice ridges and the snow-ice interface

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1 Supplementary Video

The video file "Ridge_compilation.mp4" shows a compilation of under-water recordings of the FYI ridge studied during the N-ICE2015 expedition in May 2015.

https://figshare.com/s/d31c7742e889e31c6b32

2 Supplementary Figures and Tables

2.1 Supplementary Tables

Table S1: Percentage coverage of different ice types and open water based on the Radarsat-2 scene analysis.

Floe 3

Date	Open water [%]	Young ice [%]	Smooth sea ice [%]	Deformed sea ice and ridges [%]
26 May	2	3.3	41.2	53.5
30 May	2.9	3.5	41.8	51.8
31 May	0.8	5	46.9	47.3
Mean	**1.9**	**3.9**	**43.3**	**50.9**

Floe 4

Date	Open water [%]	Young ice [%]	Smooth sea ice [%]	Deformed sea ice and ridges [%]
13 June	6.5	5.4	43.3	44.9
15 June	4.6	4.8	43	47.6
Mean	**5.6**	**5.1**	**43.2**	**46.3**

Table S2: Ice fauna data collected below the ridge with a suction pump by divers. Units are individuals per sample.

Sample name	IceFauna_01	IceFauna_02	IceFauna_03	IceFauna_04	IceFauna_05
Date (2015)	13 May	14 May	15 May	18 May	19 May
Species name					
Calanus glacialis	2			2	
Microcalanus spp.	1			1	5
Pseudocalanus spp.	1		2		
Harpacticoida indet.	1	3	20		
Oithona similis	8	44	8		19
Oncaea spp.				1	
Triconia (=Oncaea) borealis			1		
Copepoda nauplii	4	9	2		5
Themisto libellula	3	1			
Apherusa glacialis	84	31	50		16
Eusirus holmi	2			1	2
Gammarus wilkitzkii				1	
Onisimus glacialis			1		

4.1 Supplementary Figures

Figure S1: A) Coincident Radarsat-2 satellite images over RV *Lance* during N-ICE2015. The images were acquired from 26 May to 15 June. B) Radarsat-2 satellite backscatter in decibels (dB) from 26 May is shown and C) segmented to distinguish various sea ice features.

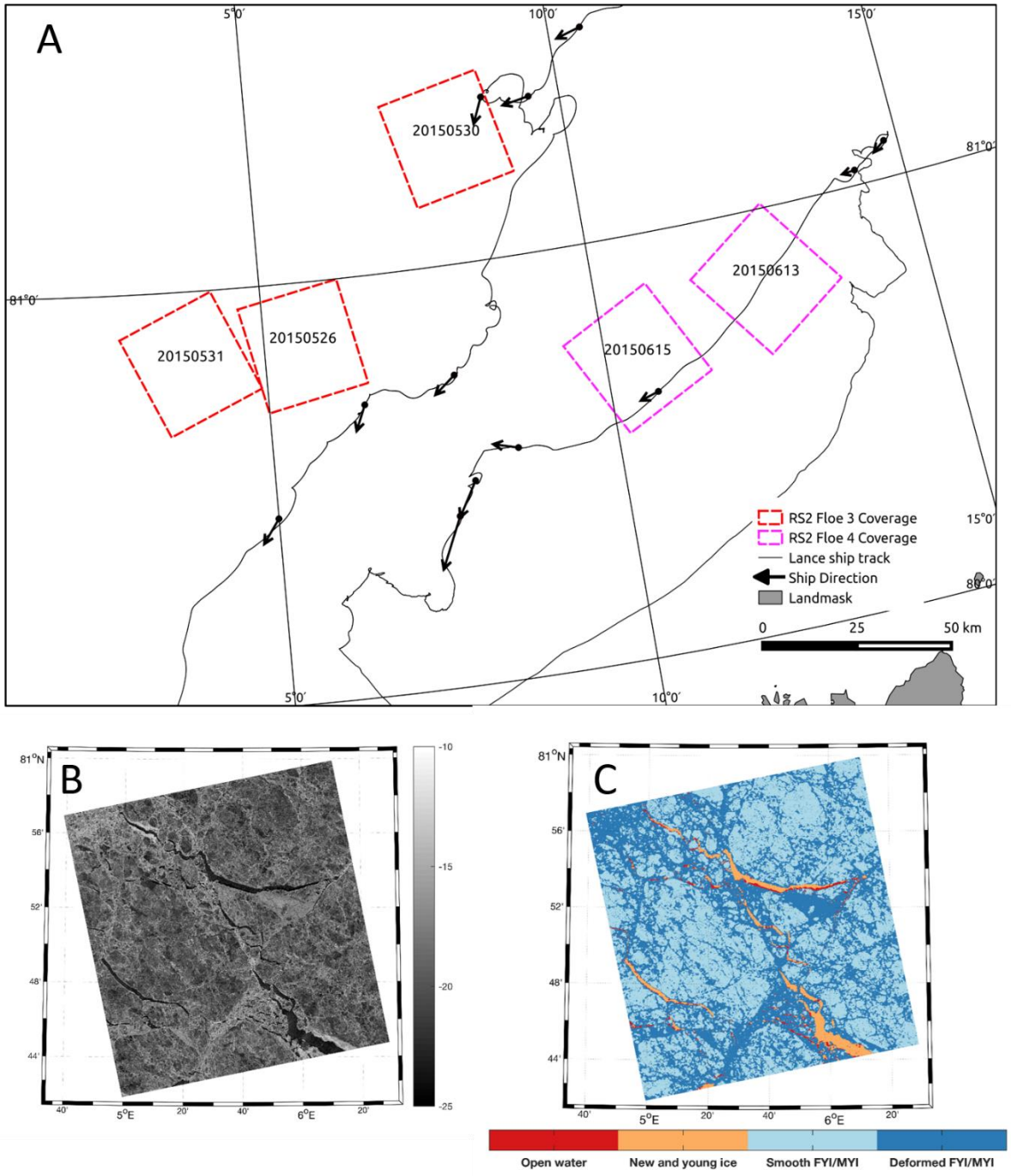


Figure S2: Wind-rose plot of ocean current speeds at 23 m depth relative to the ice showing the direction in which the current flows (angle in degree), its frequency (%) and intensity (color in m s^{-1}); values refer to the period 23 April to 5 June 2015. The axis of the ridge is indicated with the black dashed line with the thin ice north to the north and thick ice to the south.

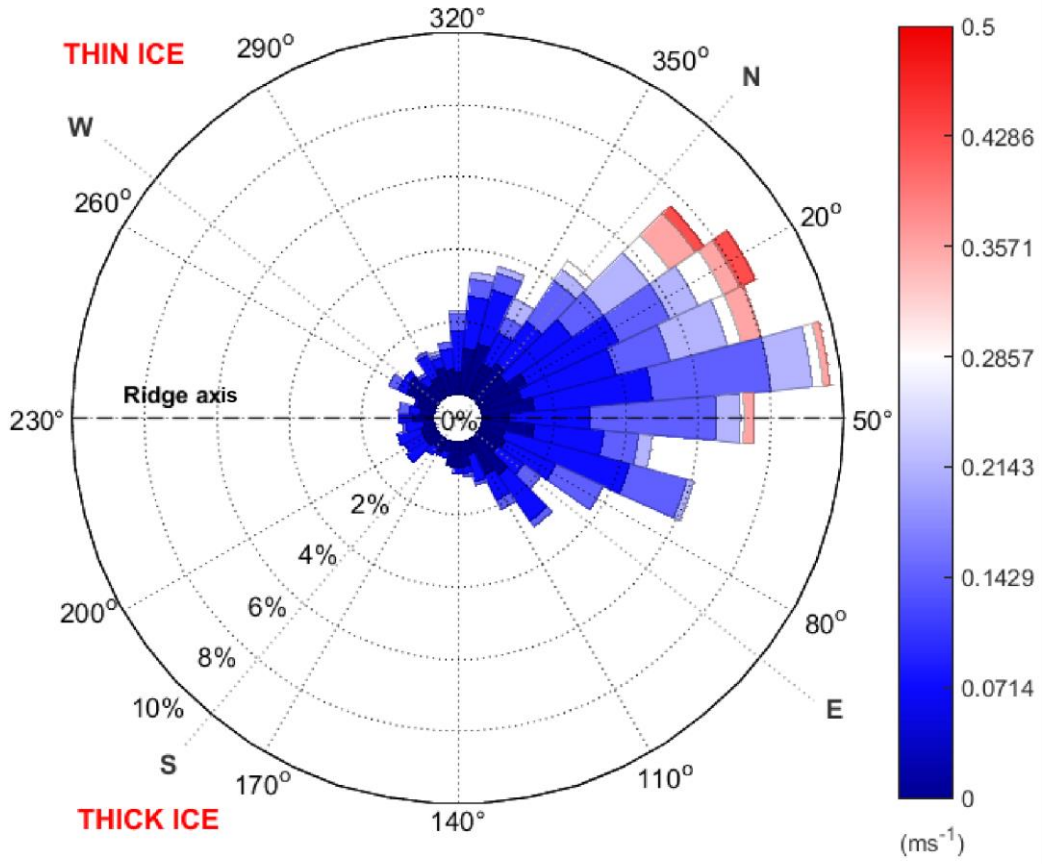


Figure S3: Microscopy images from the ridge-bottom ledge *Nitzschia frigida* (A and B) top ledge *Shionodiscus bioculatus* dominated community (C and D) and the snow-ice interface community at SI1 (E and F). Images A, C and E were taken with normal light while images B, D and F show the UV fluorescence where red indicates Chl *a* and blue indicates areas where silicate from the fluorescent dye DMSPO has been incorporated in the cell wall of the diatom.

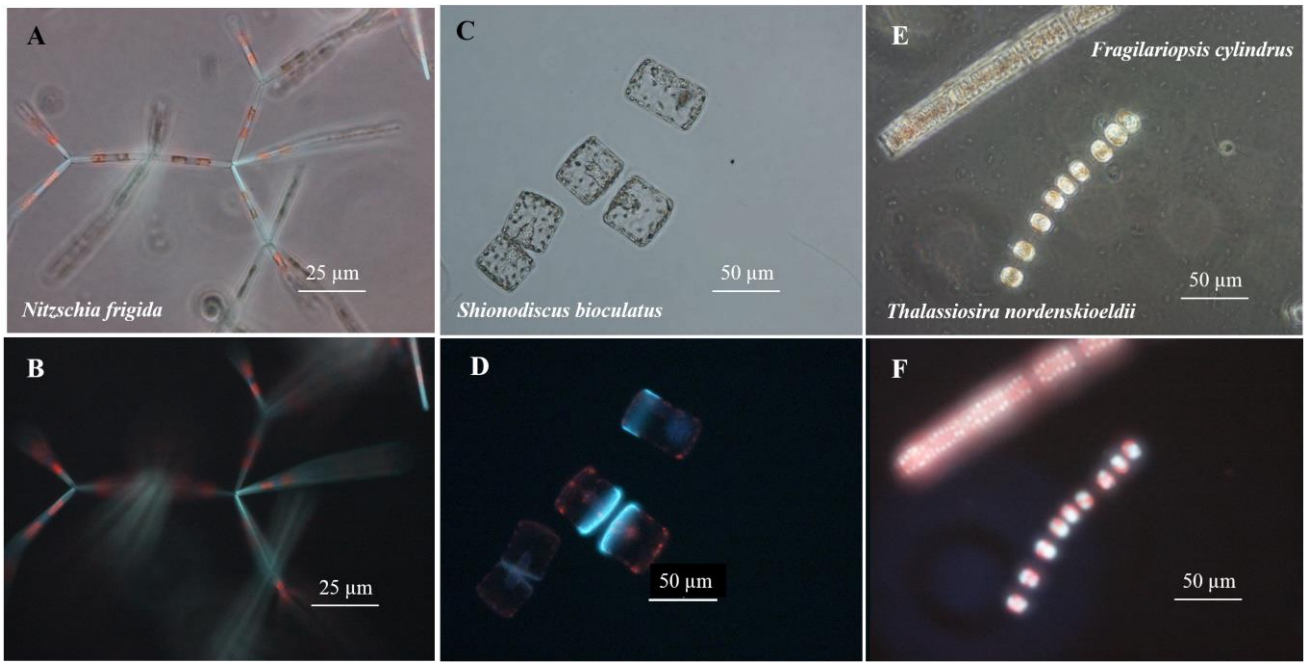


Figure S4: Snow pit from snow-infiltration community SI1 on 13 June 2015.

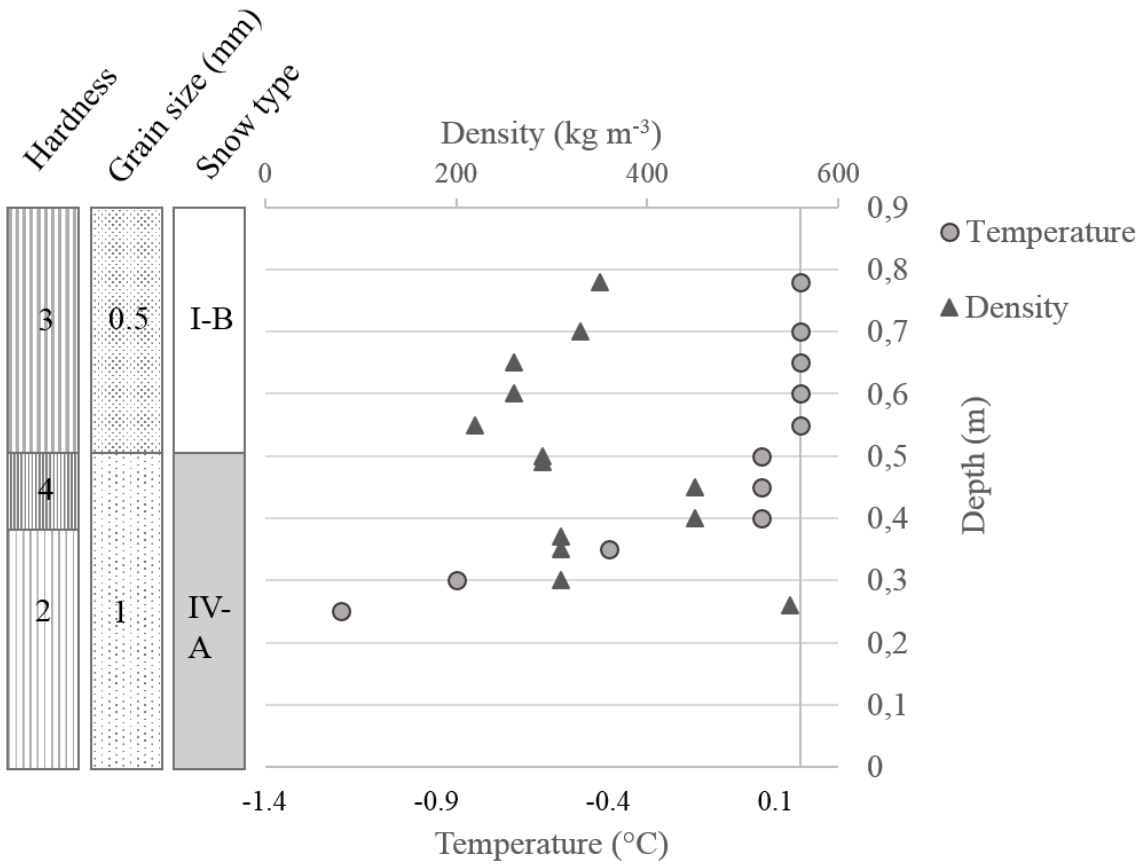


Figure S5: Abundance of infiltration community at SI1 before and after 24 hours of snow removal.

