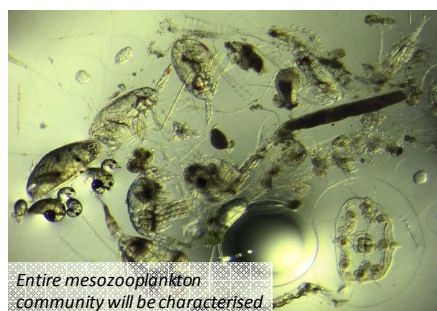
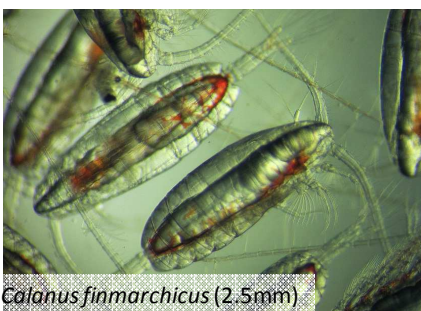
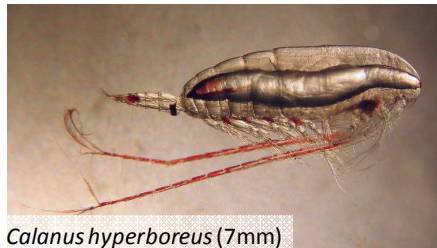


**Mechanistic understanding of the role of diatoms in the success of the Arctic *Calanus* complex and implications for a warmer Arctic**



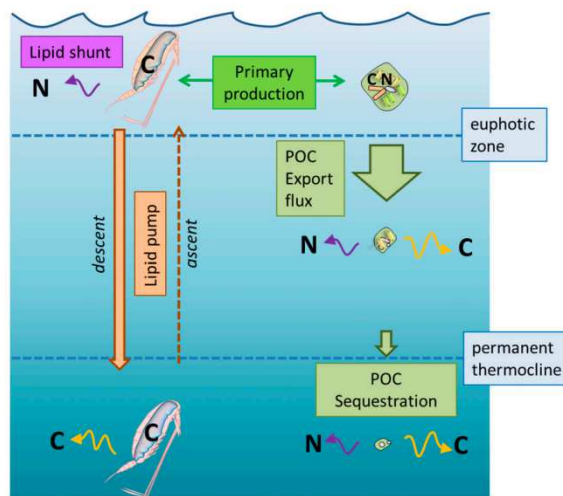
### Dominant large calanoid copepods in the Arctic: sentinel species and barometers of ecosystem function in a changing Arctic



### Seasonal copepod lipid pump promotes carbon sequestration in the deep North Atlantic

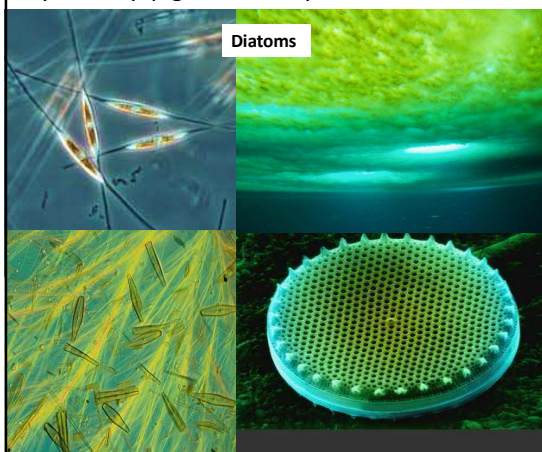
Sigrún Huld Jónasdóttir<sup>a,1</sup>, André W. Visser<sup>a,b</sup>, Katherine Richardson<sup>c</sup>, and Michael R. Heath<sup>d</sup>

PNAS | September 29, 2015 | vol. 112 | no. 39 | 12123

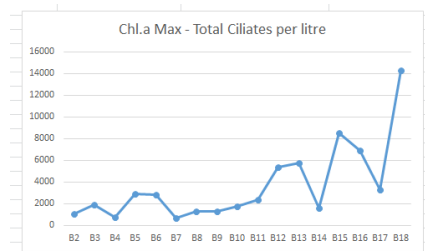
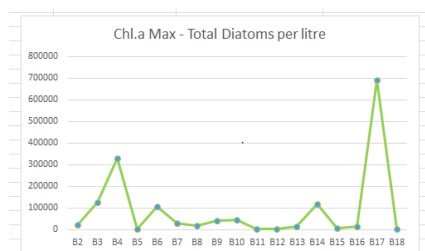


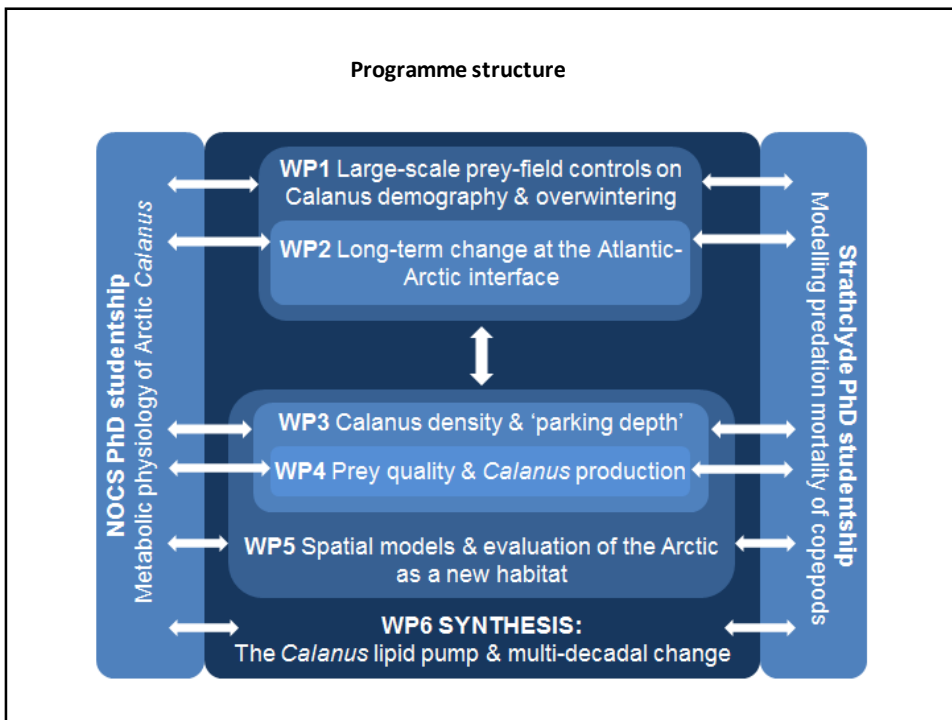
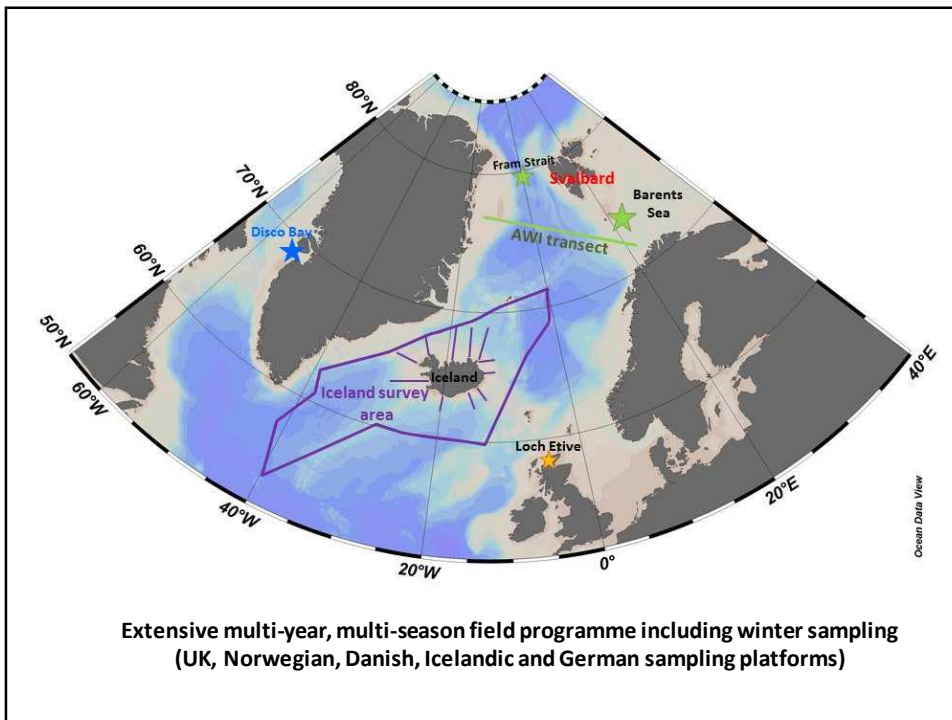
**Diatoms characterise hotspots of production and are crucial for facilitating successful overwintering in *Calanus*.**

Note that all elements of the microplankton prey field will be characterised. Lugols, Flow cytometry, pigments, fatty acids C/N.

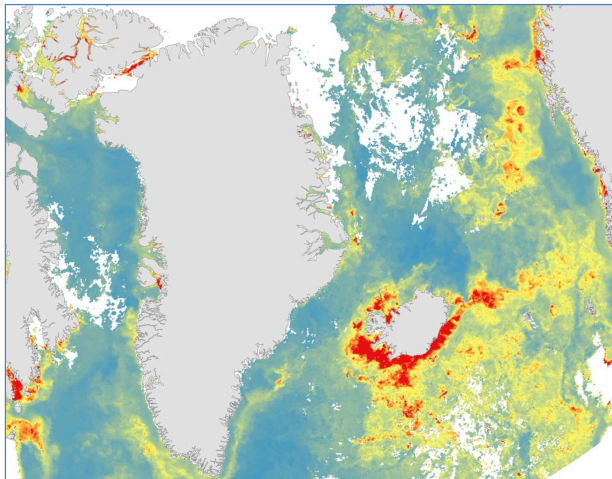


	A	B	C	D	E	F	G	H	I	J
6										
7								DIATOMS		
8	Location	CTD	Event	Depth	Date	Vol. settled	Scan	<i>Ps.nitzschia delicatissima</i>	<i>Ps.nitzschia seriata</i>	<i>Leptocylindricus minimus</i>
9	B2	2	6	25m	08/07/2017	50ml	Full - except for*	441	4	0
10	B3	55	374	25m	05/08/2017	50ml	Full - except for*	102	106	0
11	B4	3	18	37m	09/07/2017	50ml	Full - except for*	239	4	0
12	B5	52	365	25m	04/08/2017	50ml	Full	119	30	2
13	B6	4	32	20m	10/07/2017	50ml	Full - except for*	120	31	26
14	B7	48	357	28m	03/08/2017	50ml	Full - except for*	445	0	3
15	B8	5	47	18m	11/07/2017	50ml	Full - except for*	100	0	0
16	B9	12	69	20m	13/07/2017	50ml	Full - except for*	429	0	0
17	B10	8	57	15m	12/07/2017	50ml	Full - except for*	480	2	0
18	B11	14	78	30m	14/07/2017	50ml	Full	39	0	0
19	B12	16	90	15m	15/07/2017	50ml	Full - except for*	1	2	0
20	B13	17	105	12m	16/07/2017	50ml	Full - except for*	115	14	170
21	B14	38	296	48m	30/07/2017	50ml	Full - except for*	101	0	529
22	B15	19	147	26m	19/07/2017	50ml	Full - except for*	20	0	1
23	B16	20	186	15m	22/07/2017	50ml	Full - except for*	12	0	0
24	B17	23	235	12m	25/07/2017	50ml	Full - except for*	257	17	0
25	B18	26	247	35m	26/07/2017	50ml	Full - except for*	37	0	0





“The goal of this project is to separate the mechanistic effects of prey timing from prey composition and nutritional constraints on copepod growth and egg production”

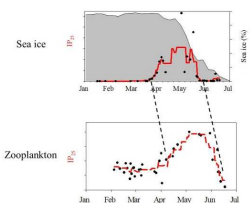


“**Satellite imagery will provide a multiyear perspective of the microplankton prey field to determine broad scale concentrations of PUFA**”

Approach following Budge et al. 2014. Estimating concentrations of essential omega-3 fatty acids in the ocean: Supply and demand. ICES Journal of Marine Science 71: 1885-1893.



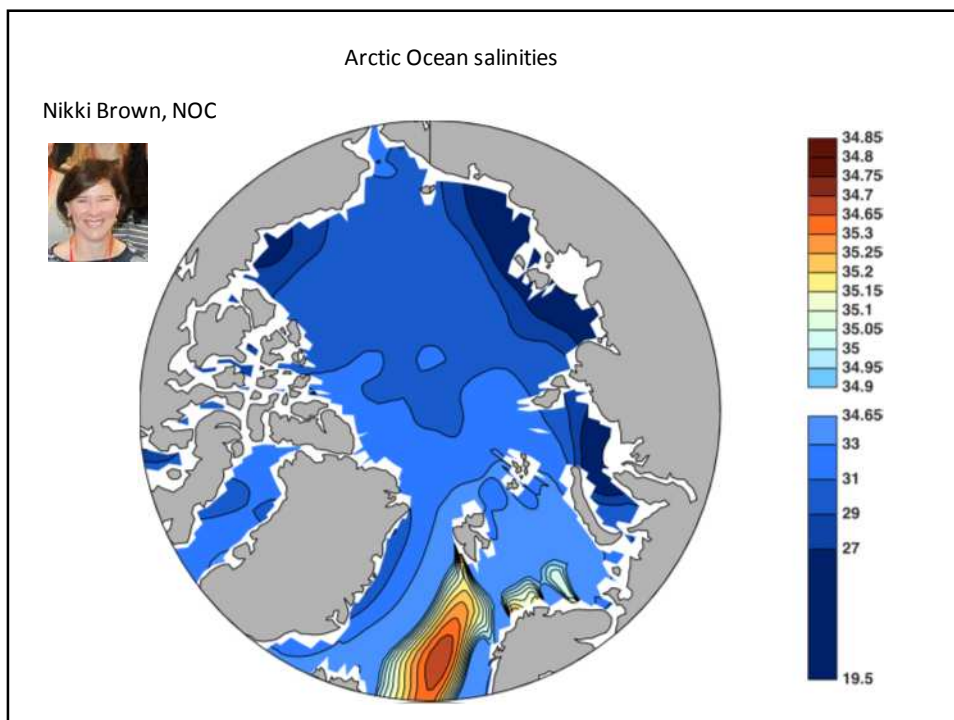
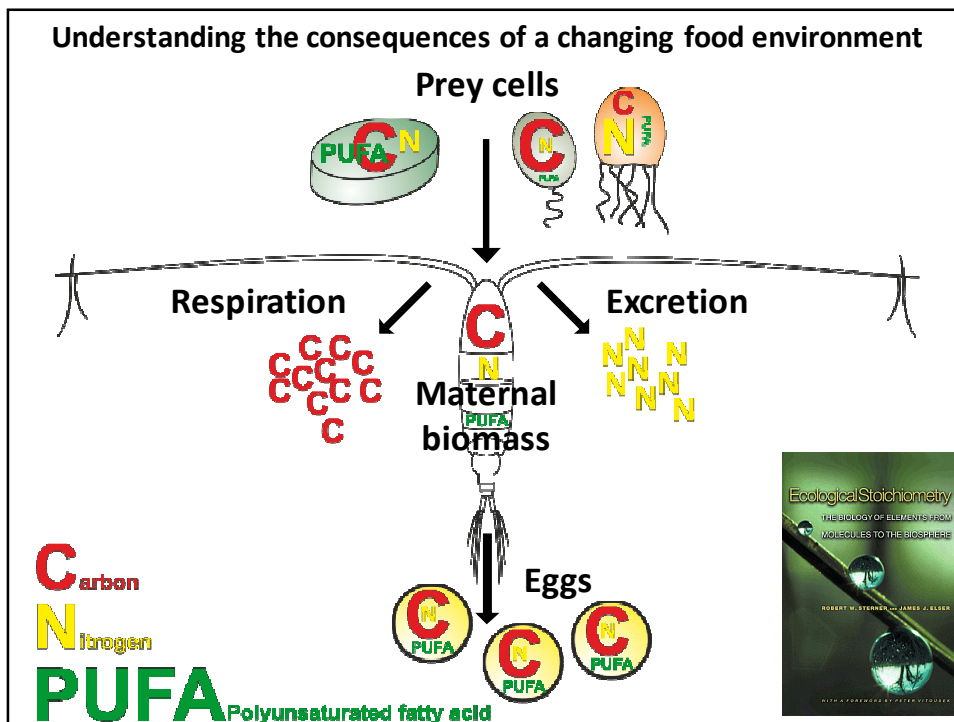
**Molecular identification** of the *Calanus* complex – crucially important to distinguish species.

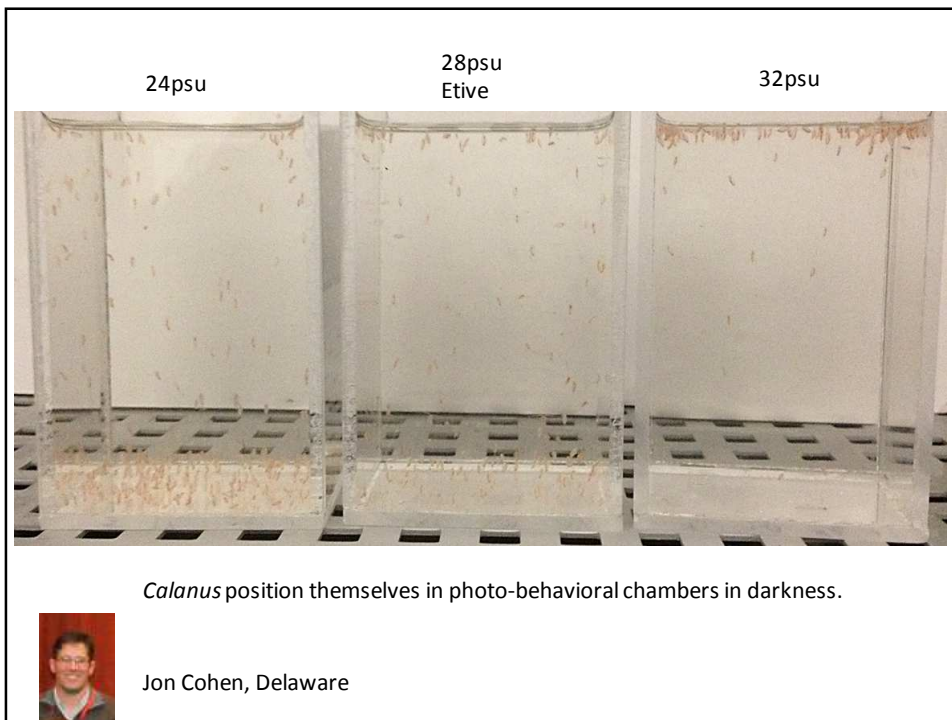
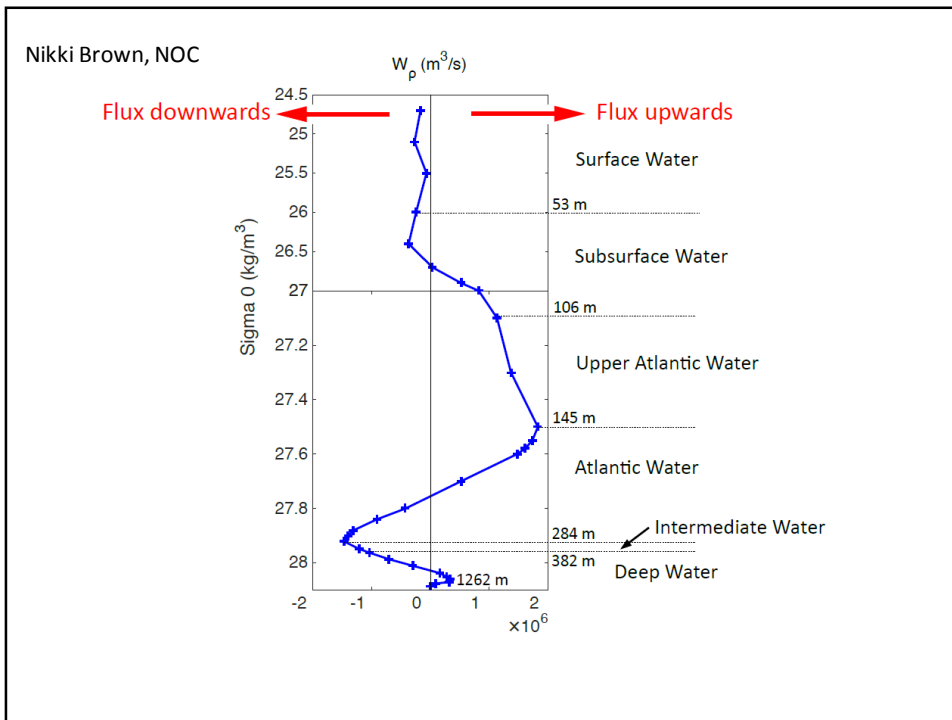


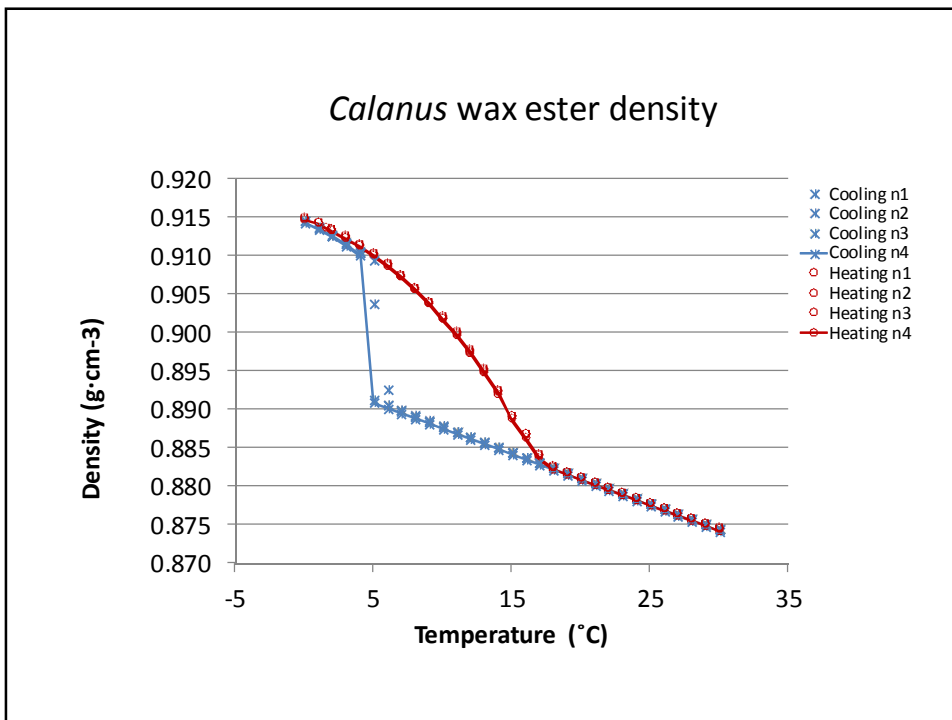
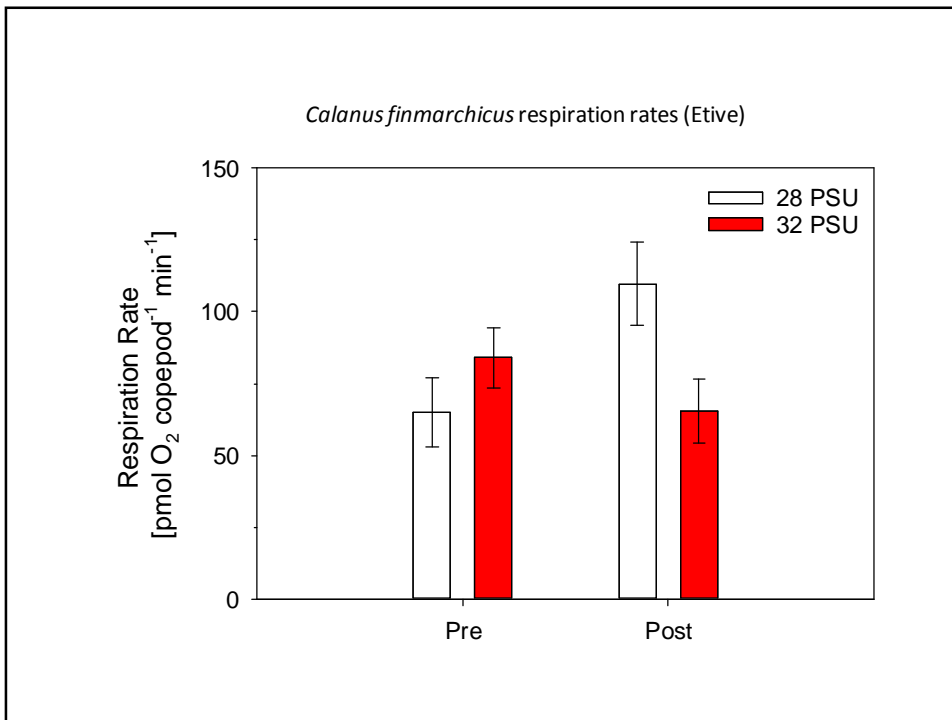
Highly branched isoprene (HBI) **markers of sea ice algal carbon** – link to diapause behaviour of *Calanus*.



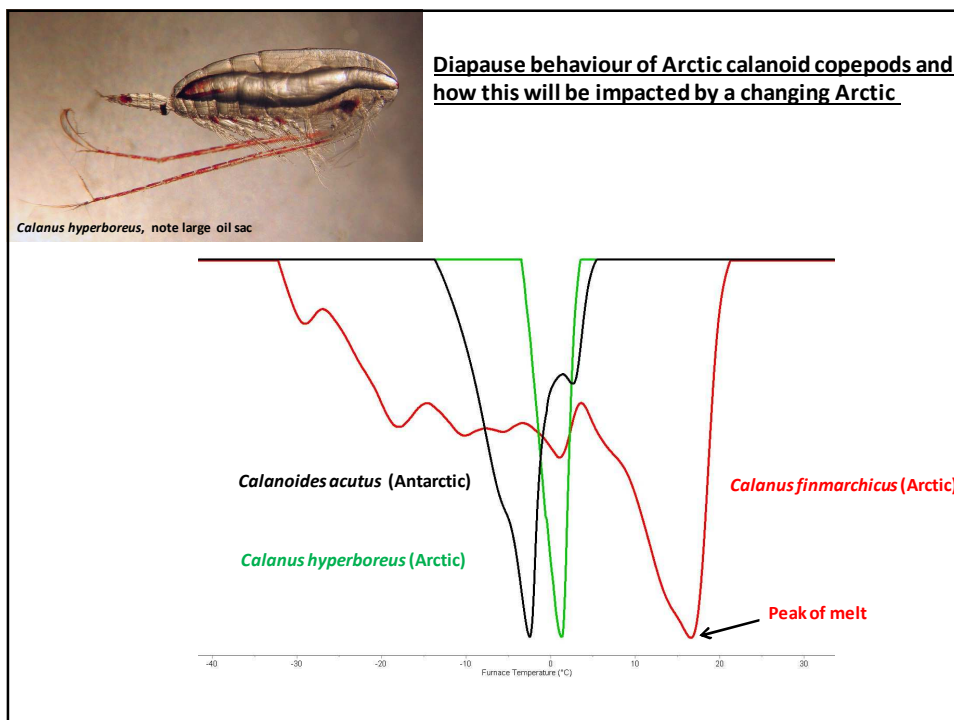
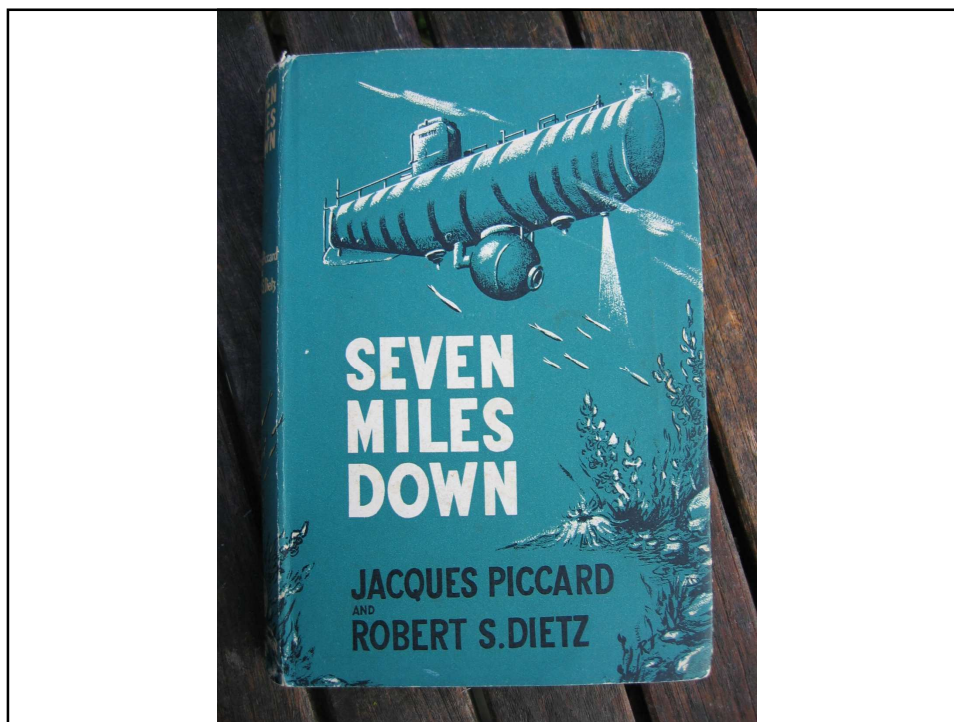
SAFHOS/CPR **historical perspective** of zooplankton species and Interface with Atlantic/Arctic.  
- Respiration rates.











Parallel application for 3 Days beamtime on PETRA III synchrotron radiation source

**Nanodiffraction of copepod wax esters at high hydrostatic pressure: Role of solid liquid phase transitions of lipids in regulating buoyancy of copepods in the deep sea.**



“Parking depth”

- Lipid density
- Phase transitions
- Lattice geometry and intermolecular distances

*Calanus finmarchicus* wax ester – X-ray diffraction

