

There and back again:

En forskares berättelse om en resa till ishavet

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ACSE

Arctic Clouds in Summer Experiment

To understand the properties and life cycle of Arctic low-level clouds in summer and the links to the vertical structure of the lower troposphere, to surface processes and to long-range transport (advection):

To determine:

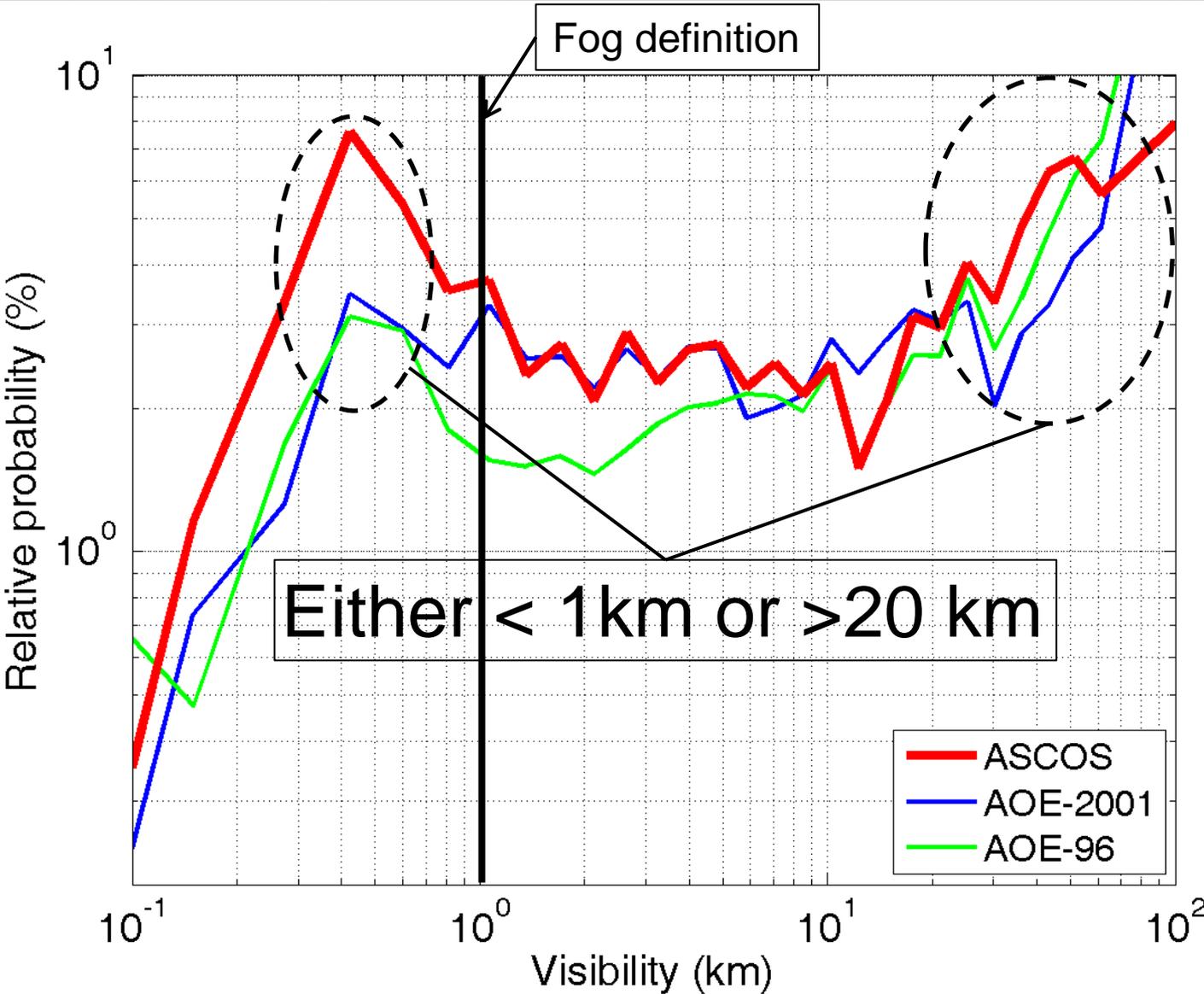
- *the **vertical structure of the lowest troposphere** during episodes of low-level clouds.*
- *the **phase partitioning** of cloud water in low clouds during different parts of summer*
- *the vertical structure of the troposphere in relation to the **dynamics of large-scale meteorology** and how this affects the clouds.*
- *the effects of the low-level clouds on the **surface energy budget**.*

And also:

- **to provide comprehensive process-level data to develop and evaluate Earth system and climate models**



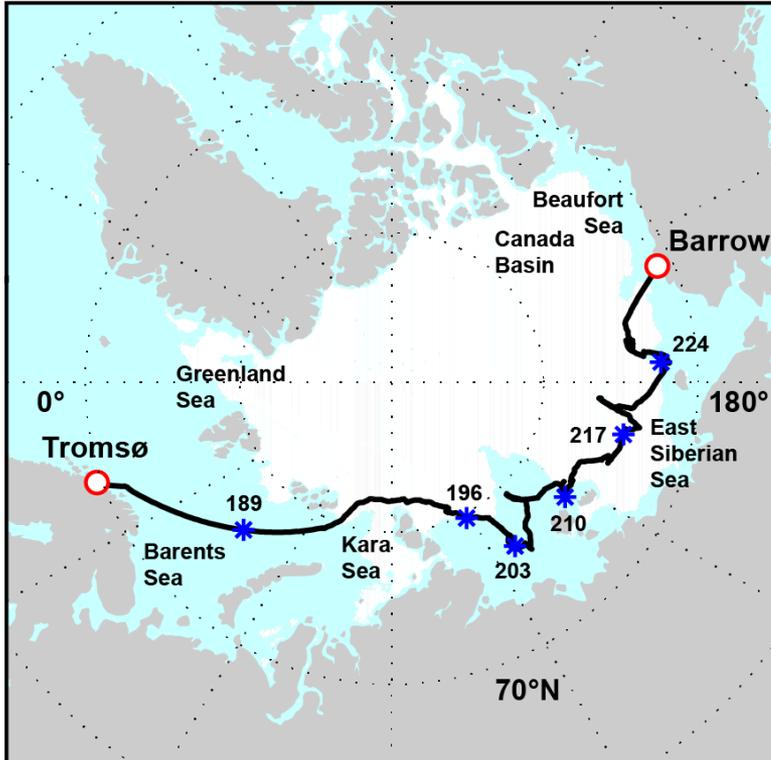
Icebreaker Oden near the North Pole (89°N 00°W), 2001-08-02



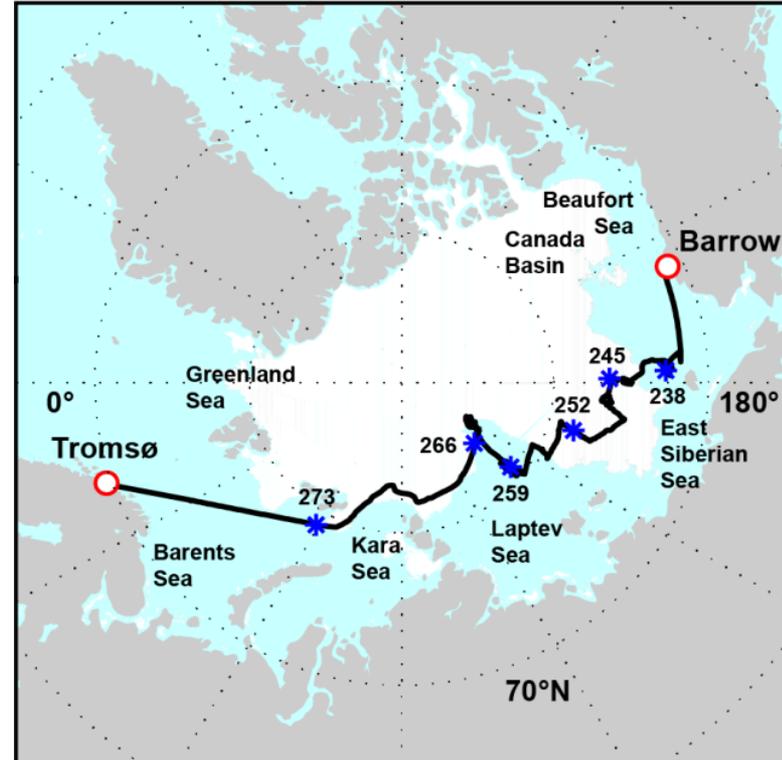
Arctic Clouds in Summer Experiment

ACSE; Swedish-Russian-US Arctic Ocean Investigation of Climate-Cryosphere-Carbon Interactions: SWERUS-C³)

There: Tromsø → Barrow
5 July to 19 August



And back: Barrow → Tromsø
21 August to 4 October





Doppler wind radar for vertical wind profiles

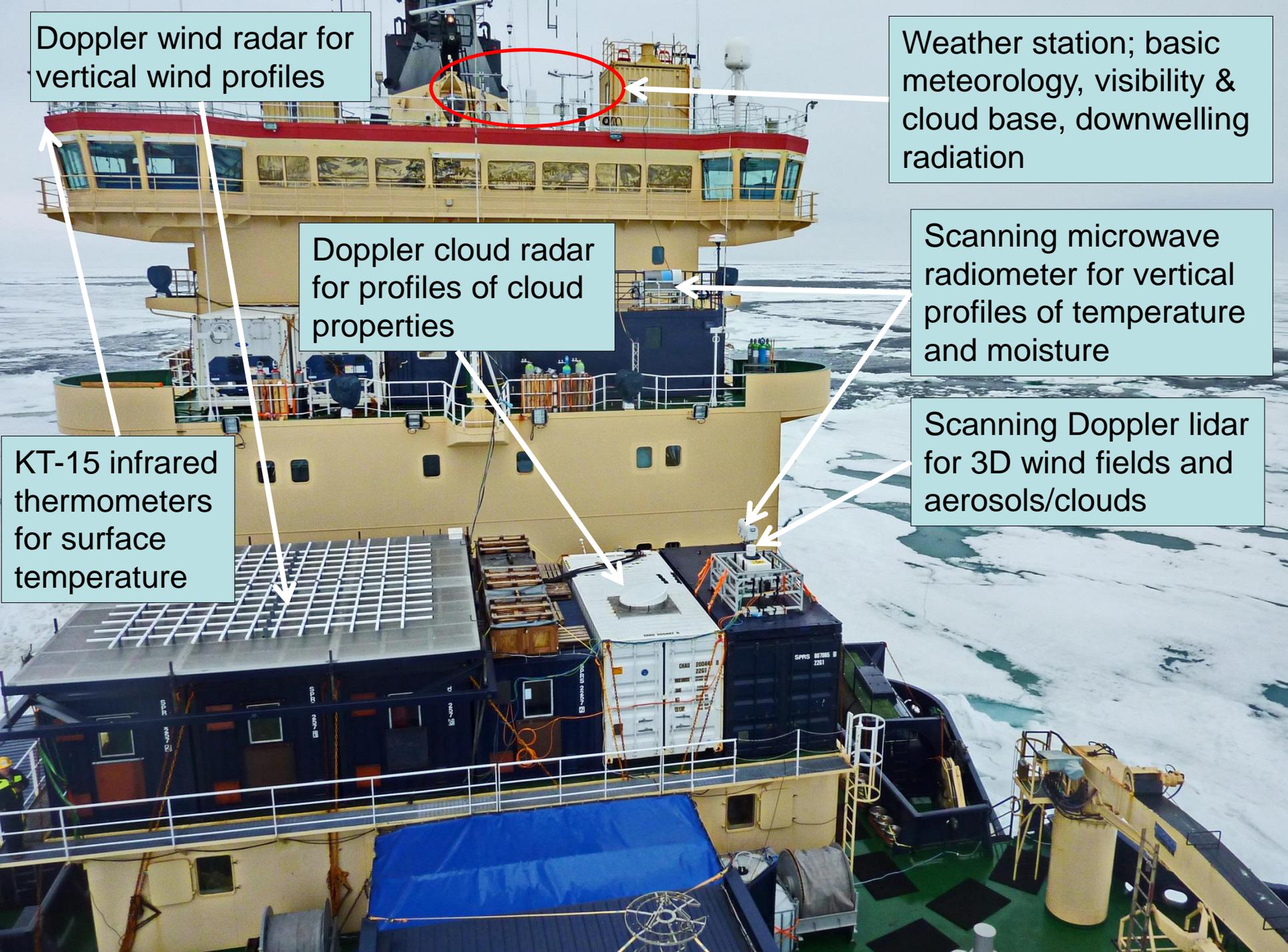
Weather station; basic meteorology, visibility & cloud base, downwelling radiation

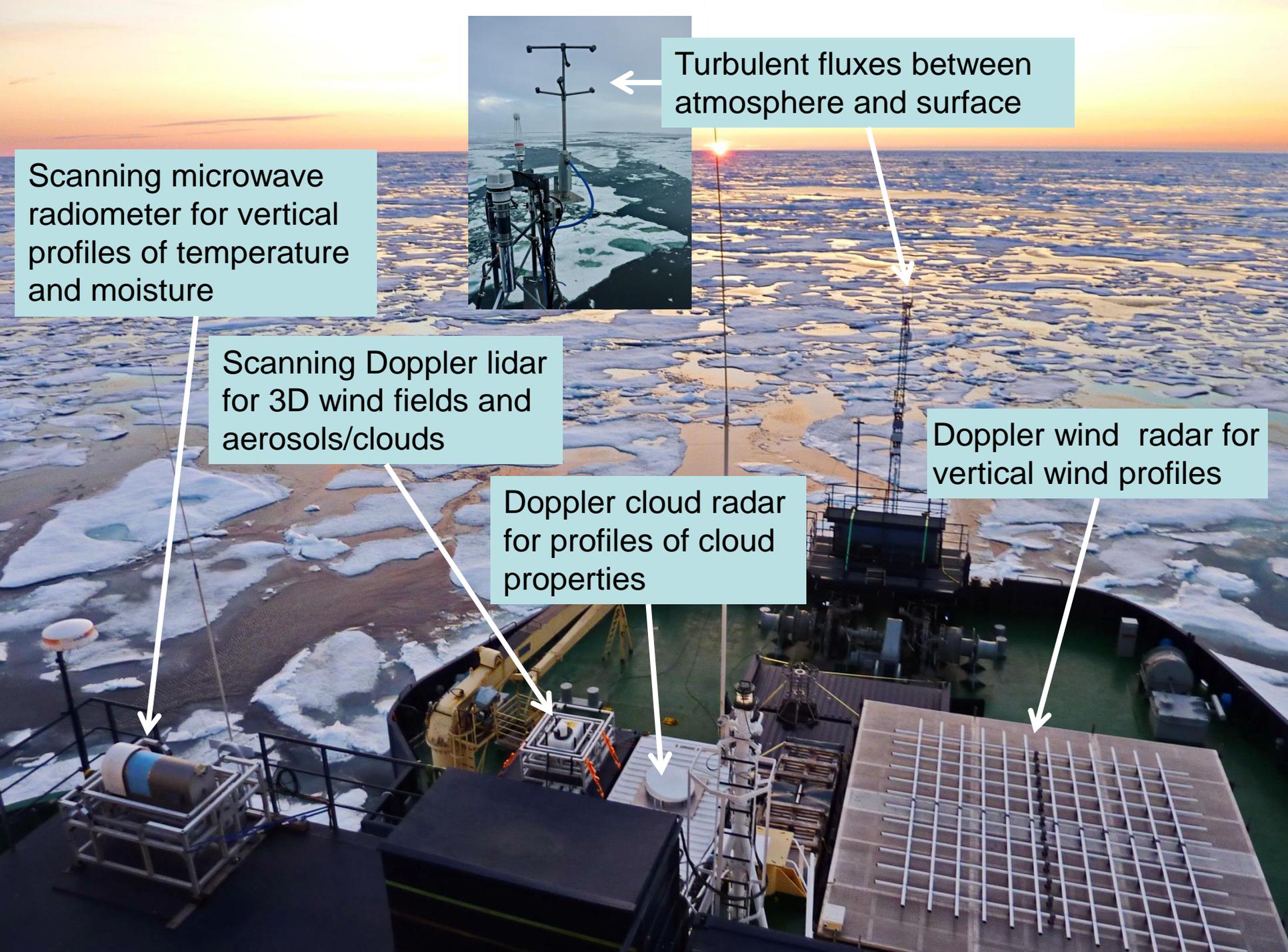
Doppler cloud radar for profiles of cloud properties

Scanning microwave radiometer for vertical profiles of temperature and moisture

KT-15 infrared thermometers for surface temperature

Scanning Doppler lidar for 3D wind fields and aerosols/clouds





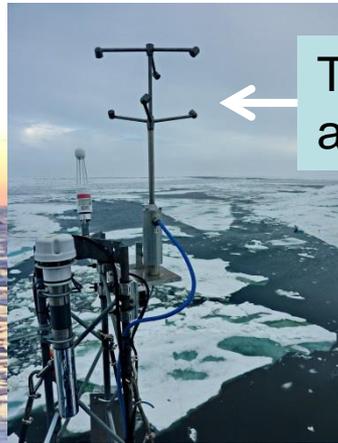
Scanning microwave radiometer for vertical profiles of temperature and moisture

Scanning Doppler lidar for 3D wind fields and aerosols/clouds

Doppler cloud radar for profiles of cloud properties

Doppler wind radar for vertical wind profiles

Turbulent fluxes between atmosphere and surface

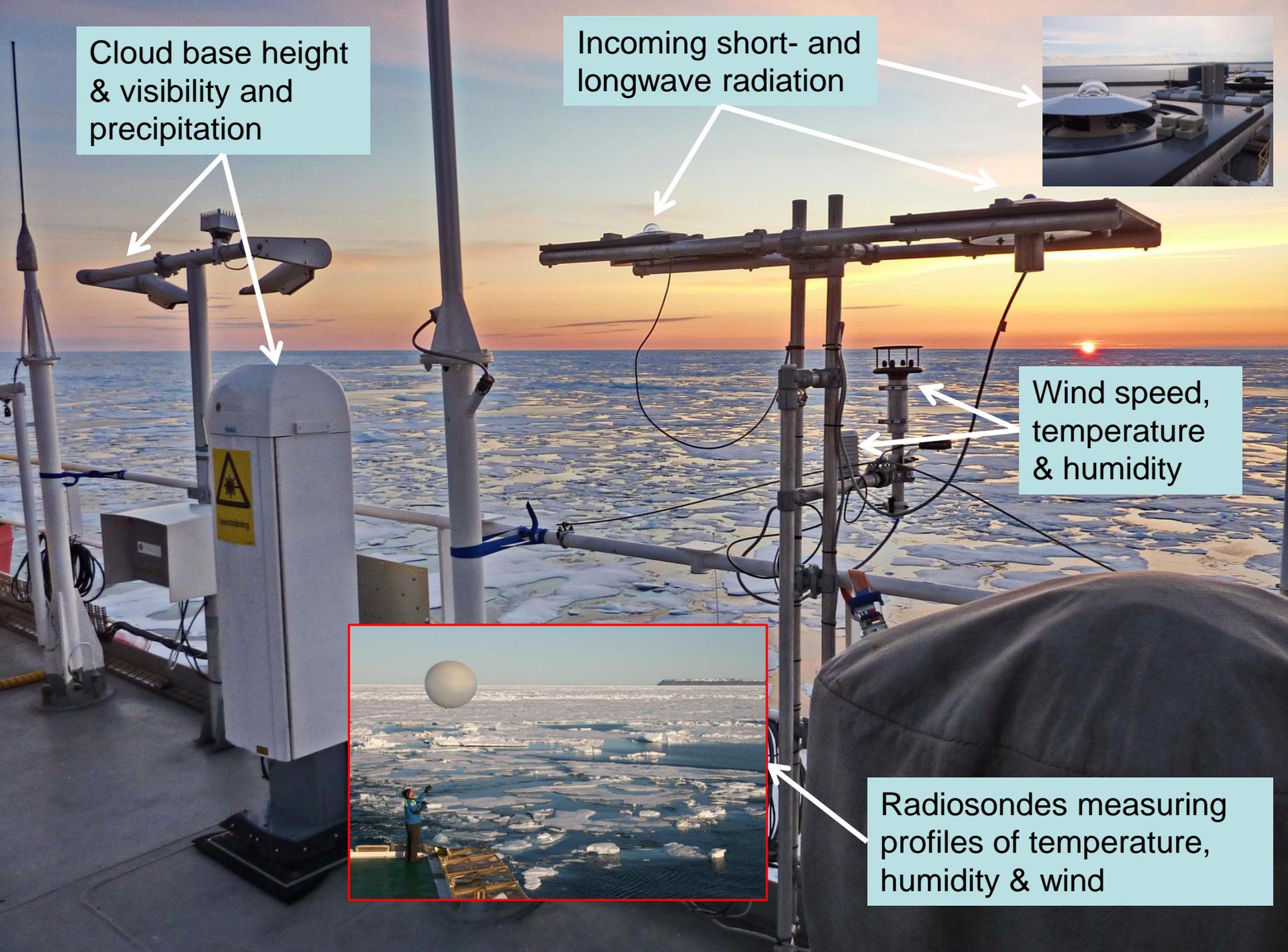


Cloud base height
& visibility and
precipitation

Incoming short- and
longwave radiation

Wind speed,
temperature
& humidity

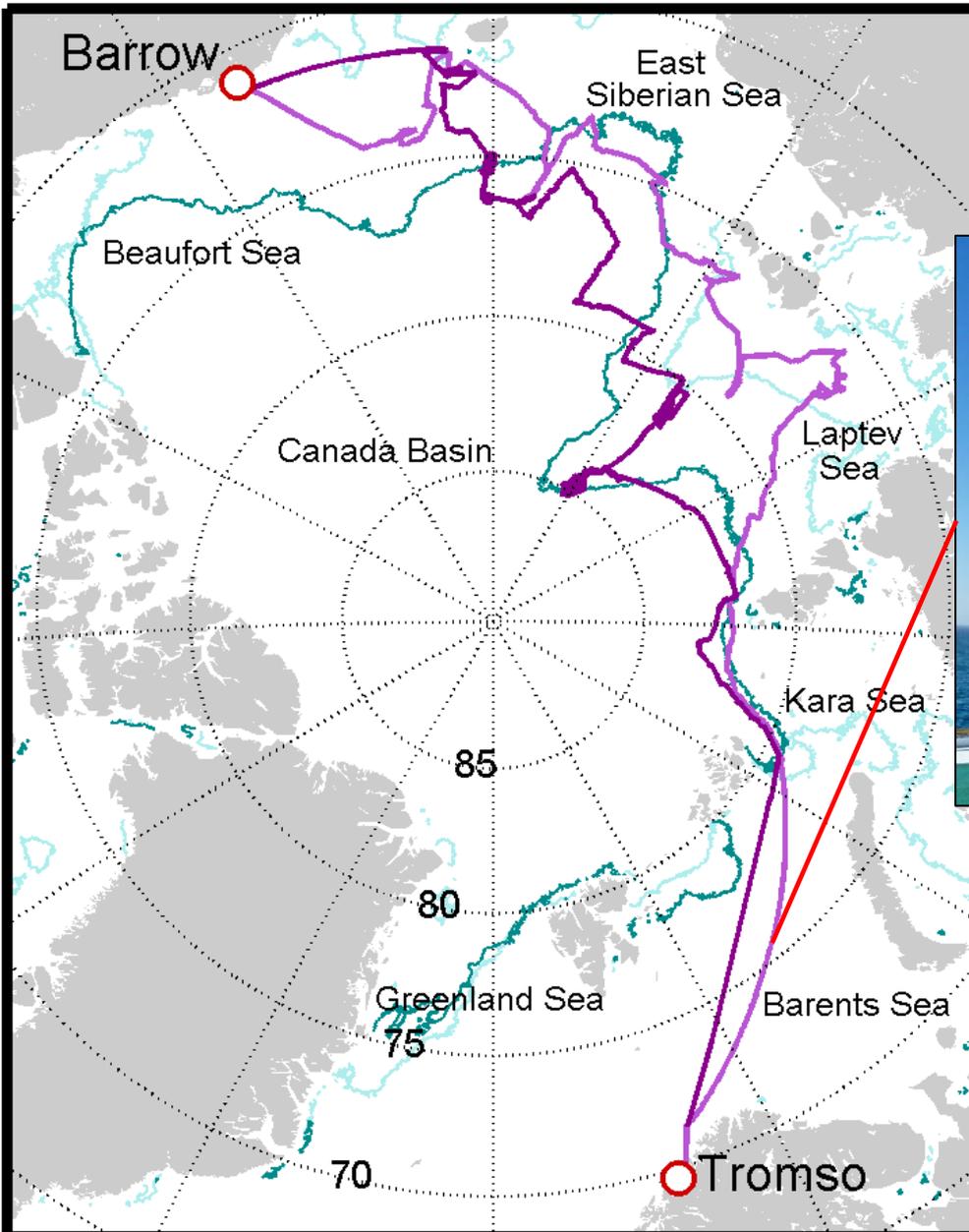
Radiosondes measuring
profiles of temperature,
humidity & wind





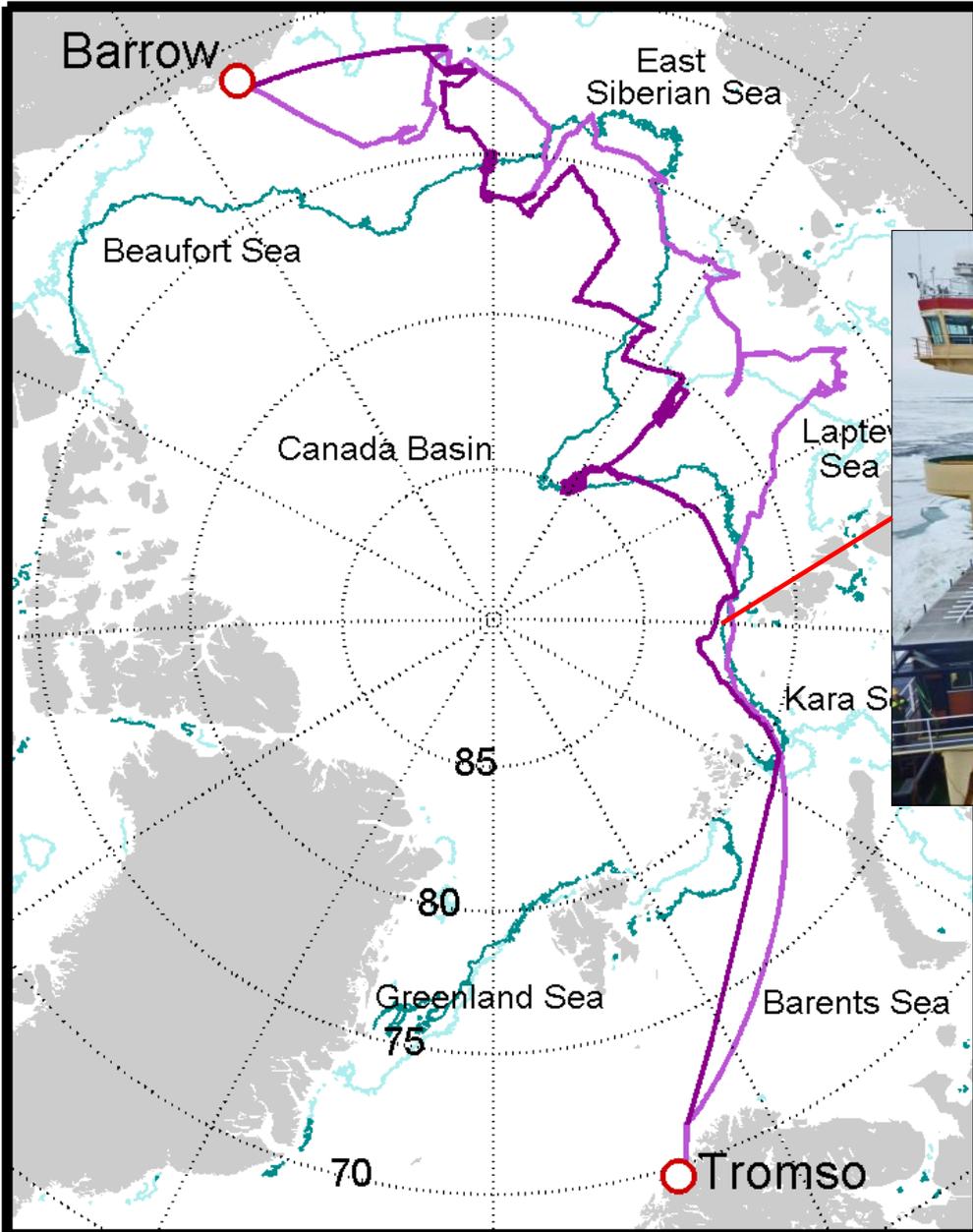
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Isfritt i Barents hav





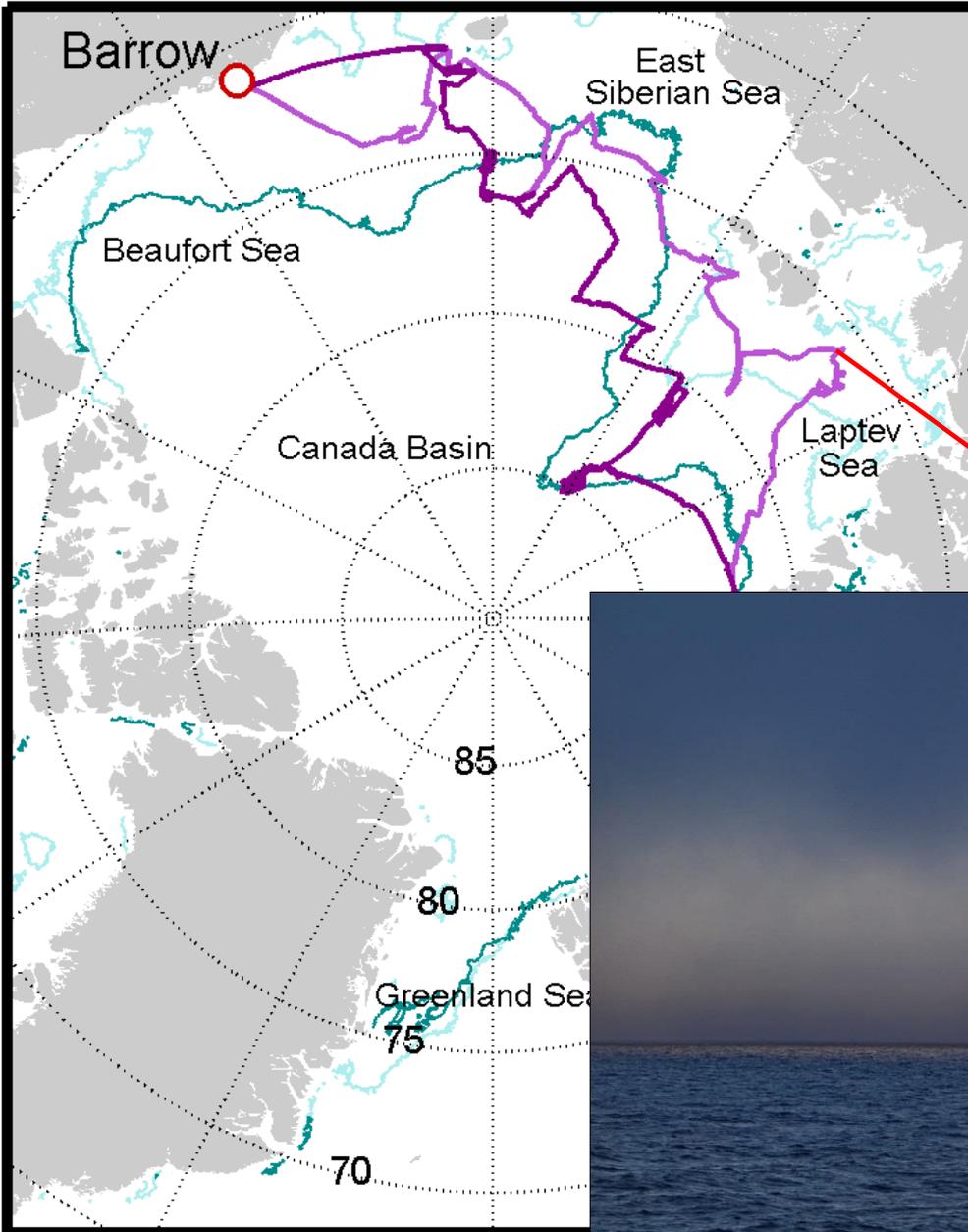
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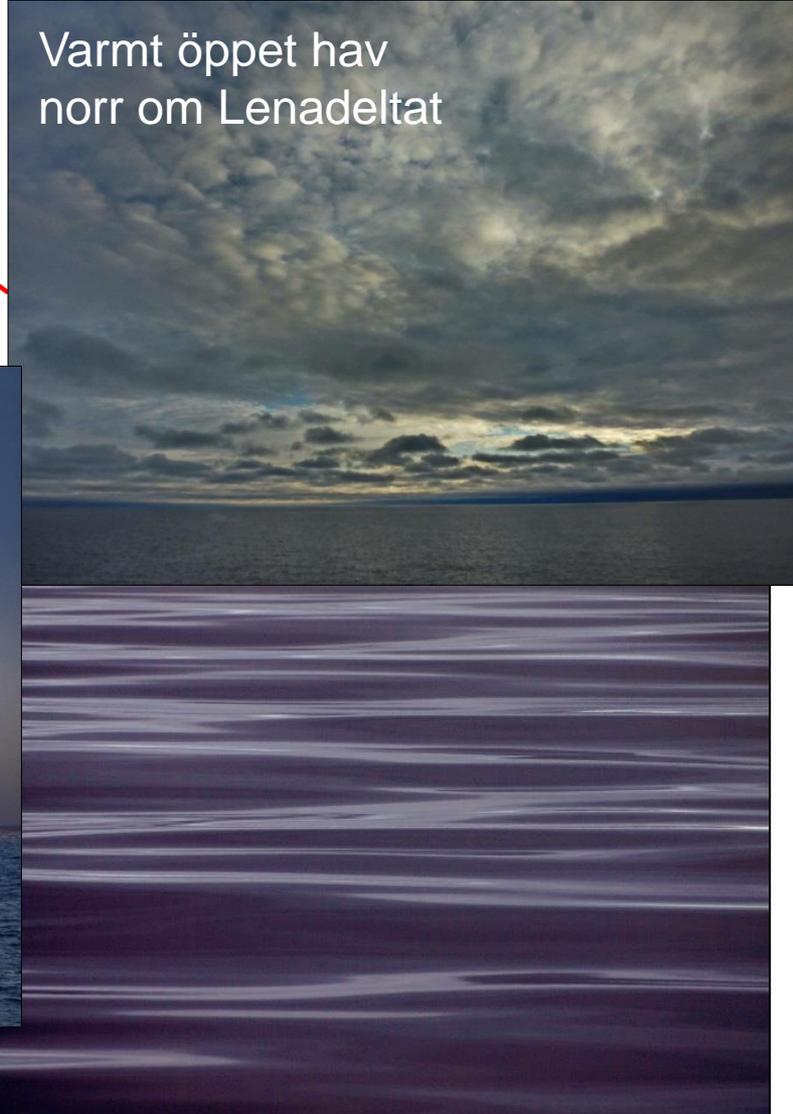
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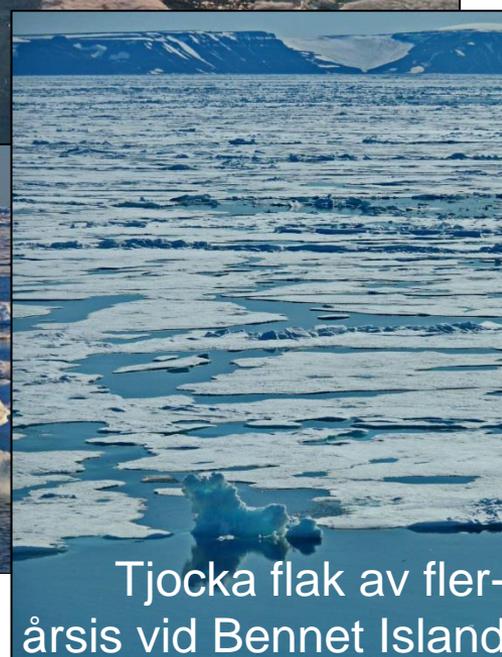
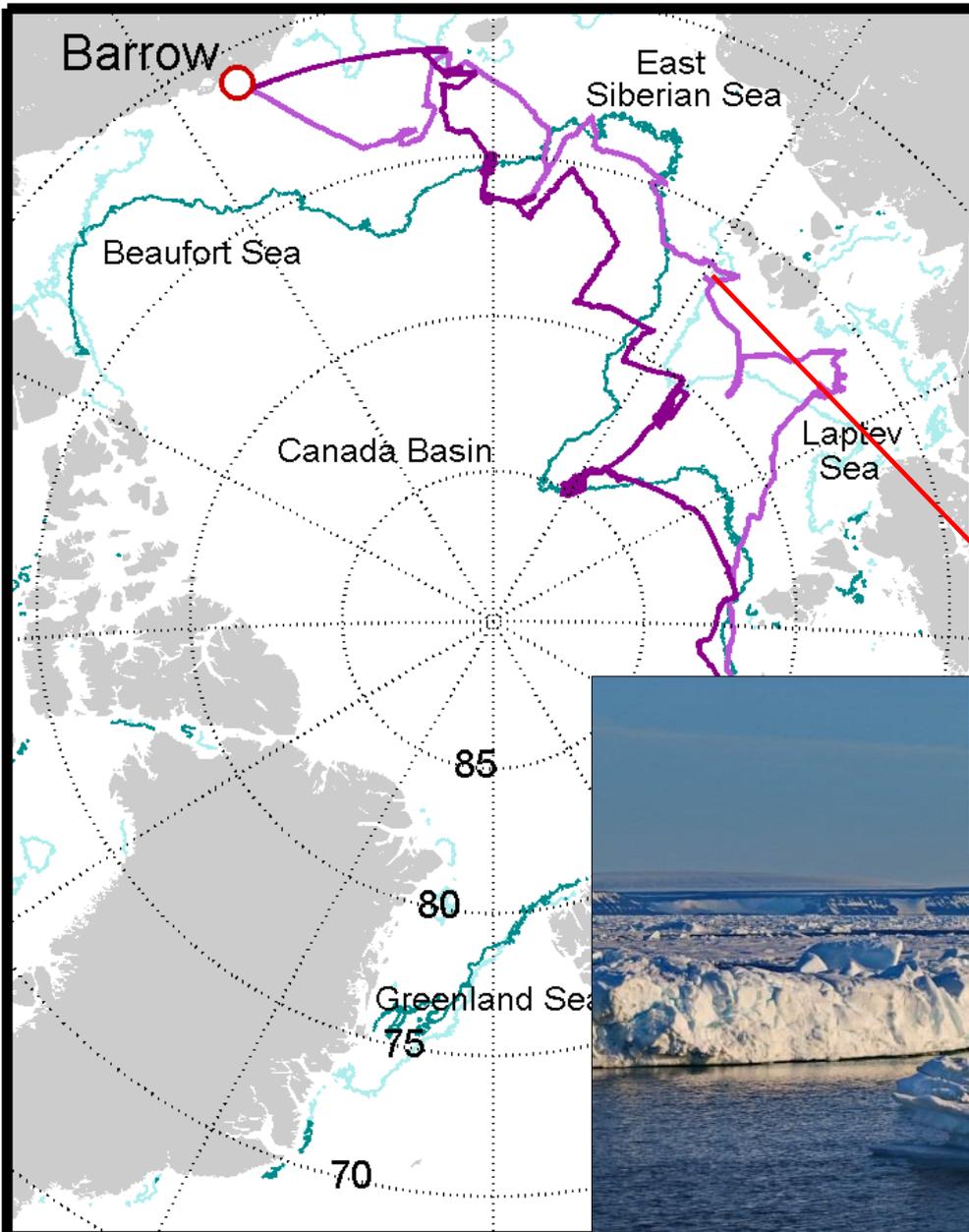


Varmt öppet hav
norr om Lenadeltat





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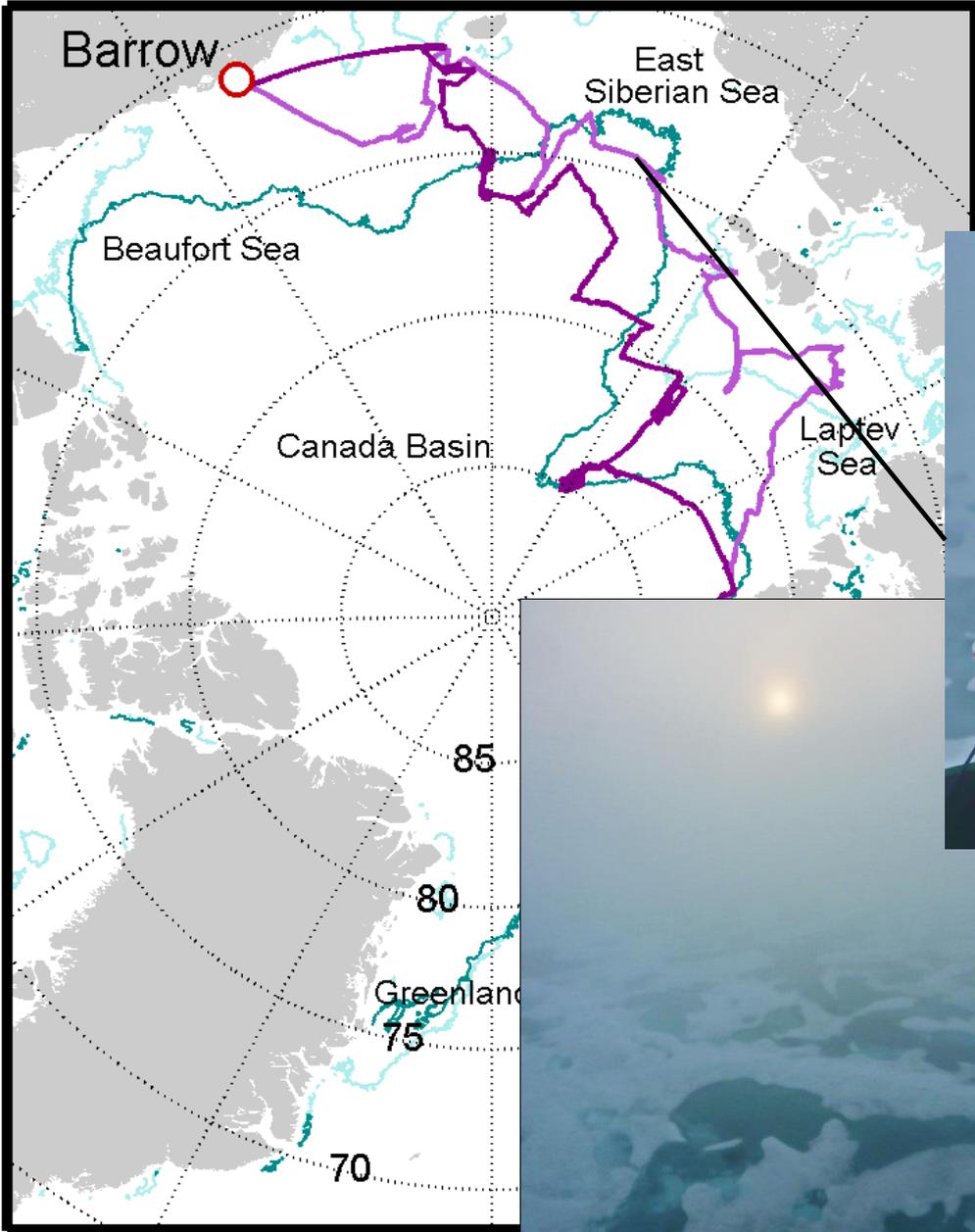
Tjocka flak av flerårsis vid Bennet Island

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Tjock flerårsis i Ost-Sibiriska havet

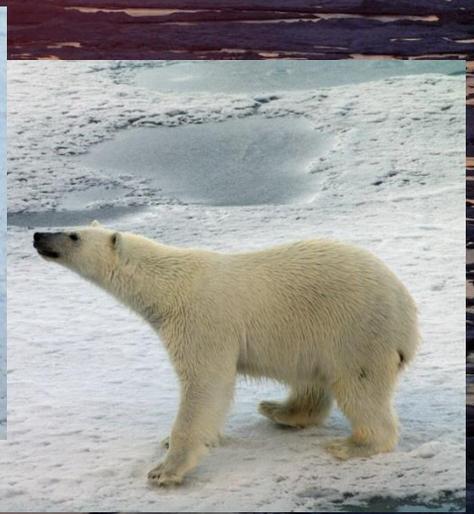
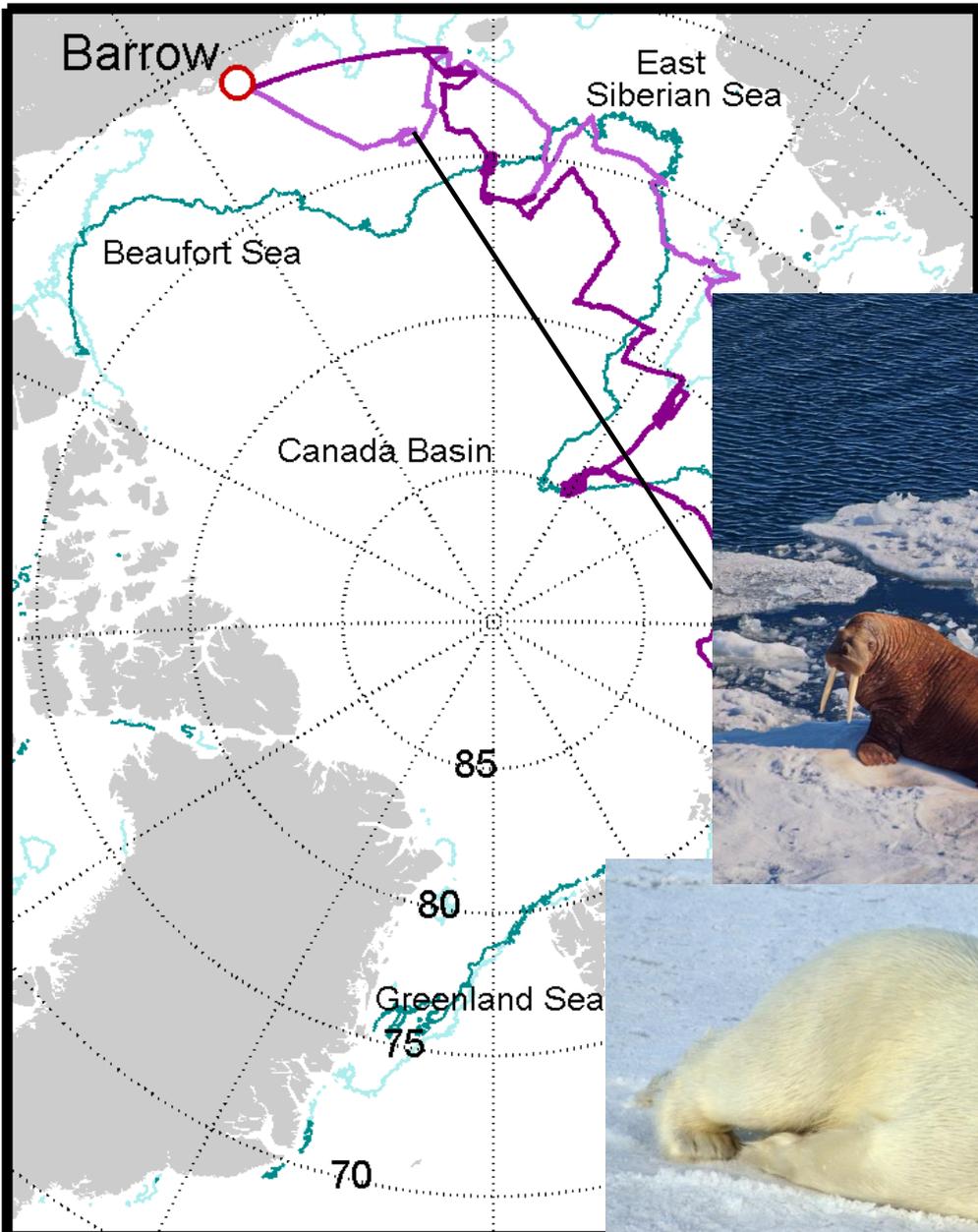


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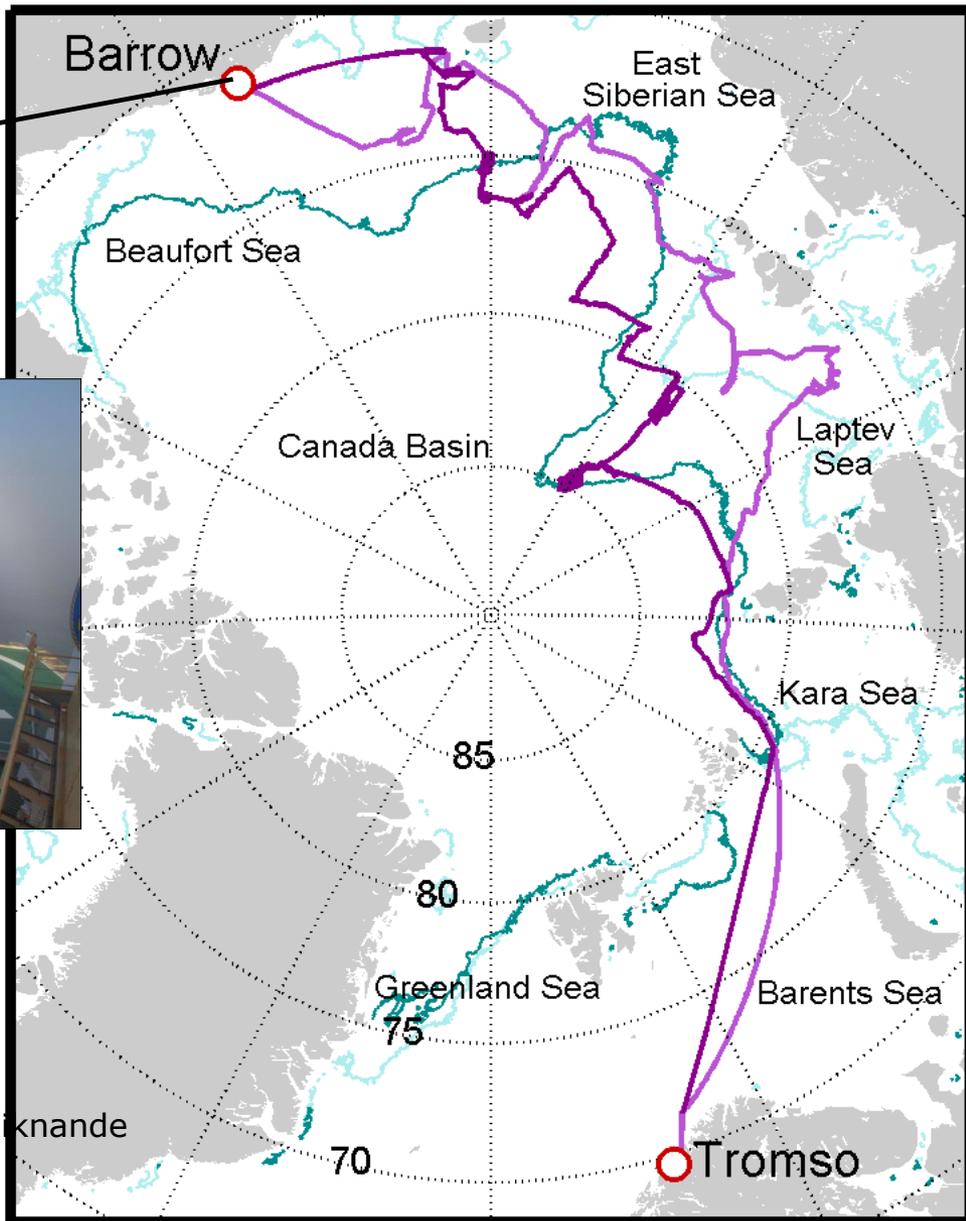


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Smältande is i norra Chukchi Sea

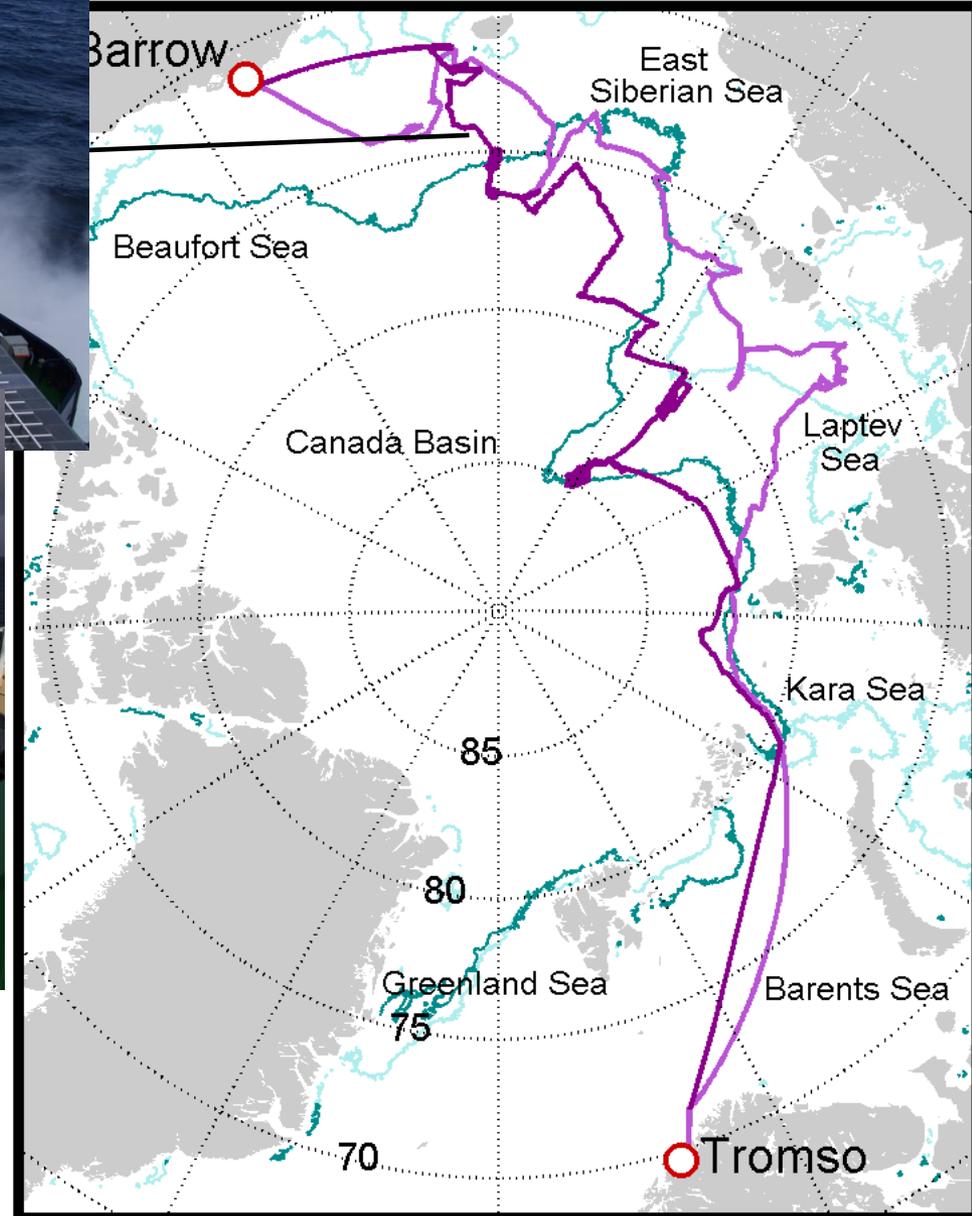
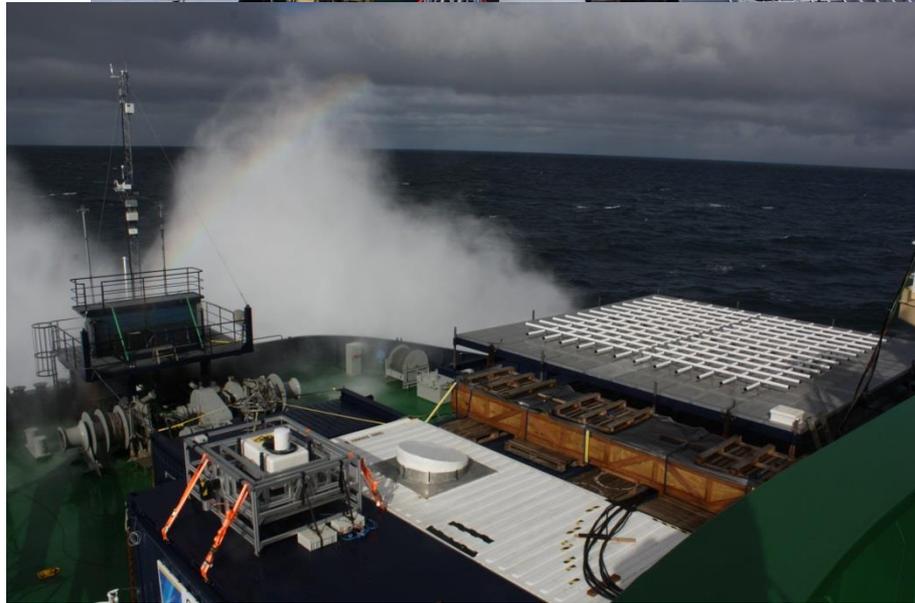
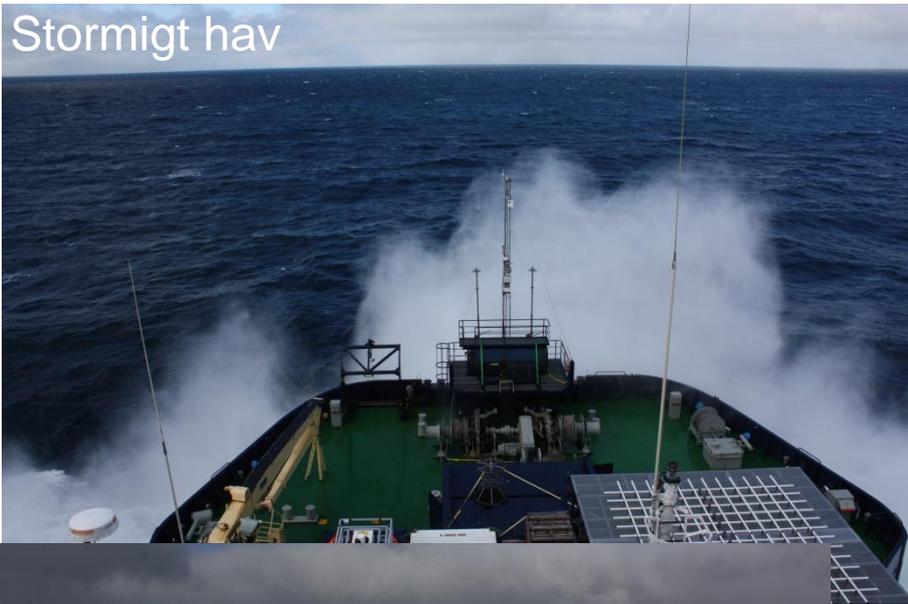


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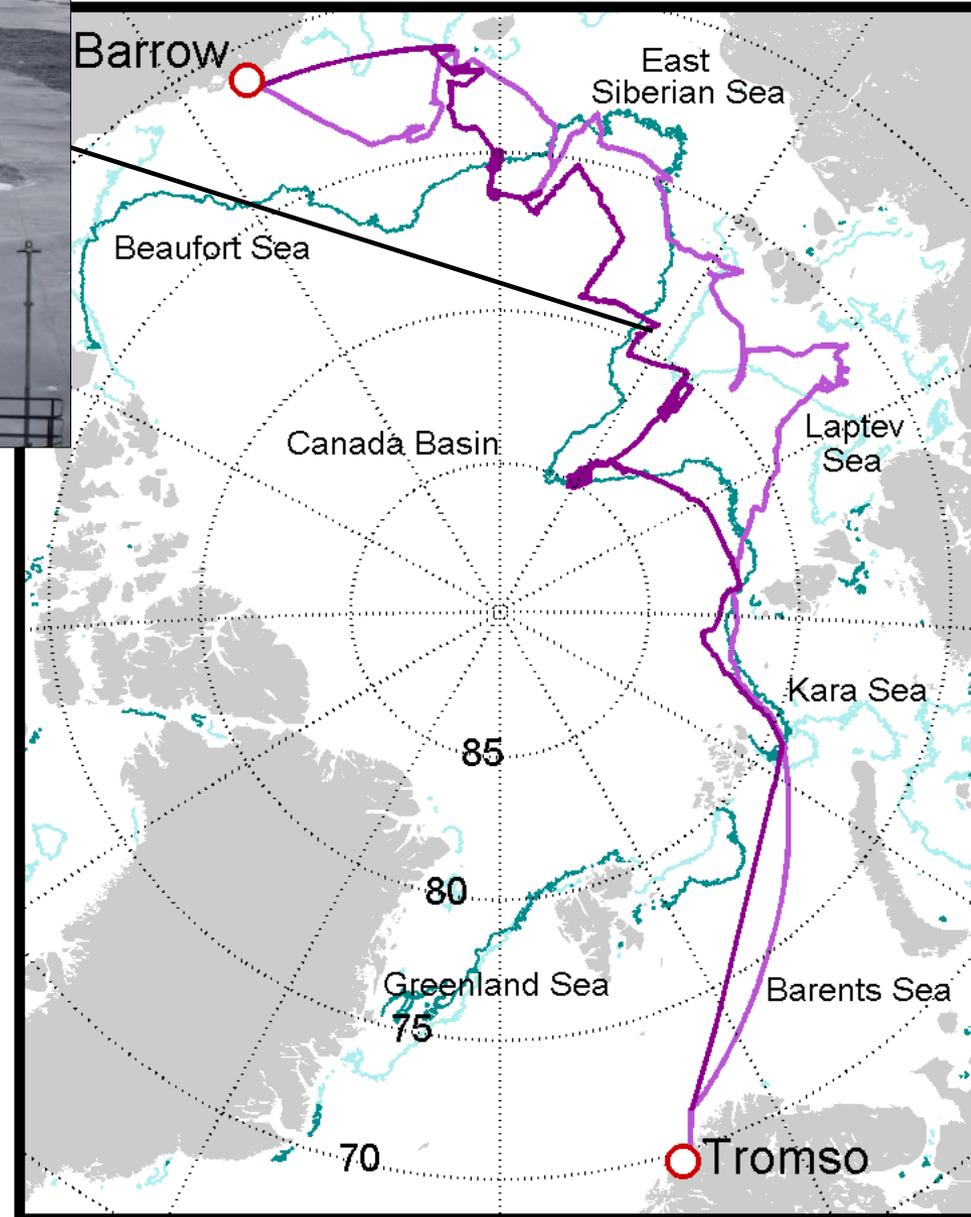
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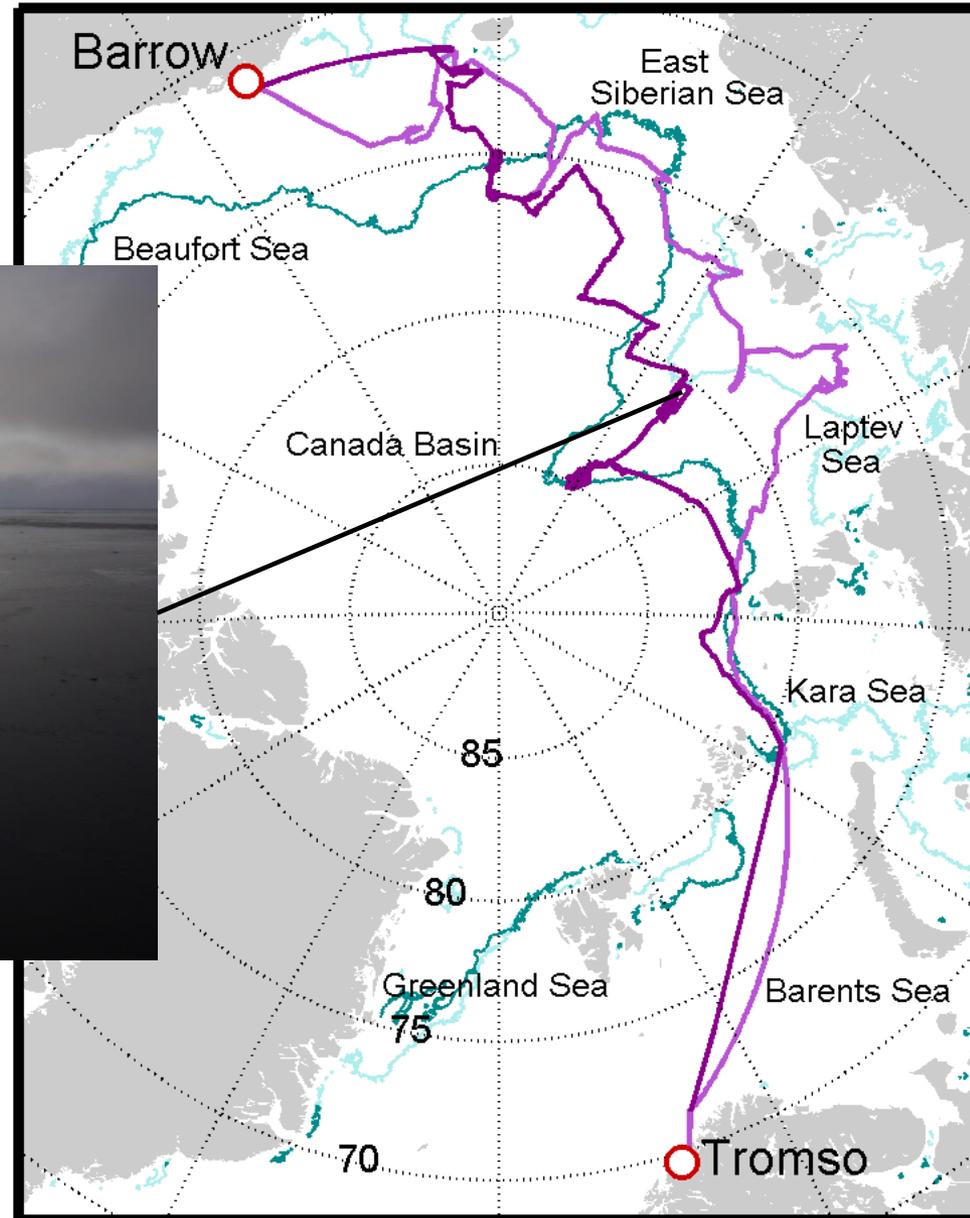
Stormigt hav



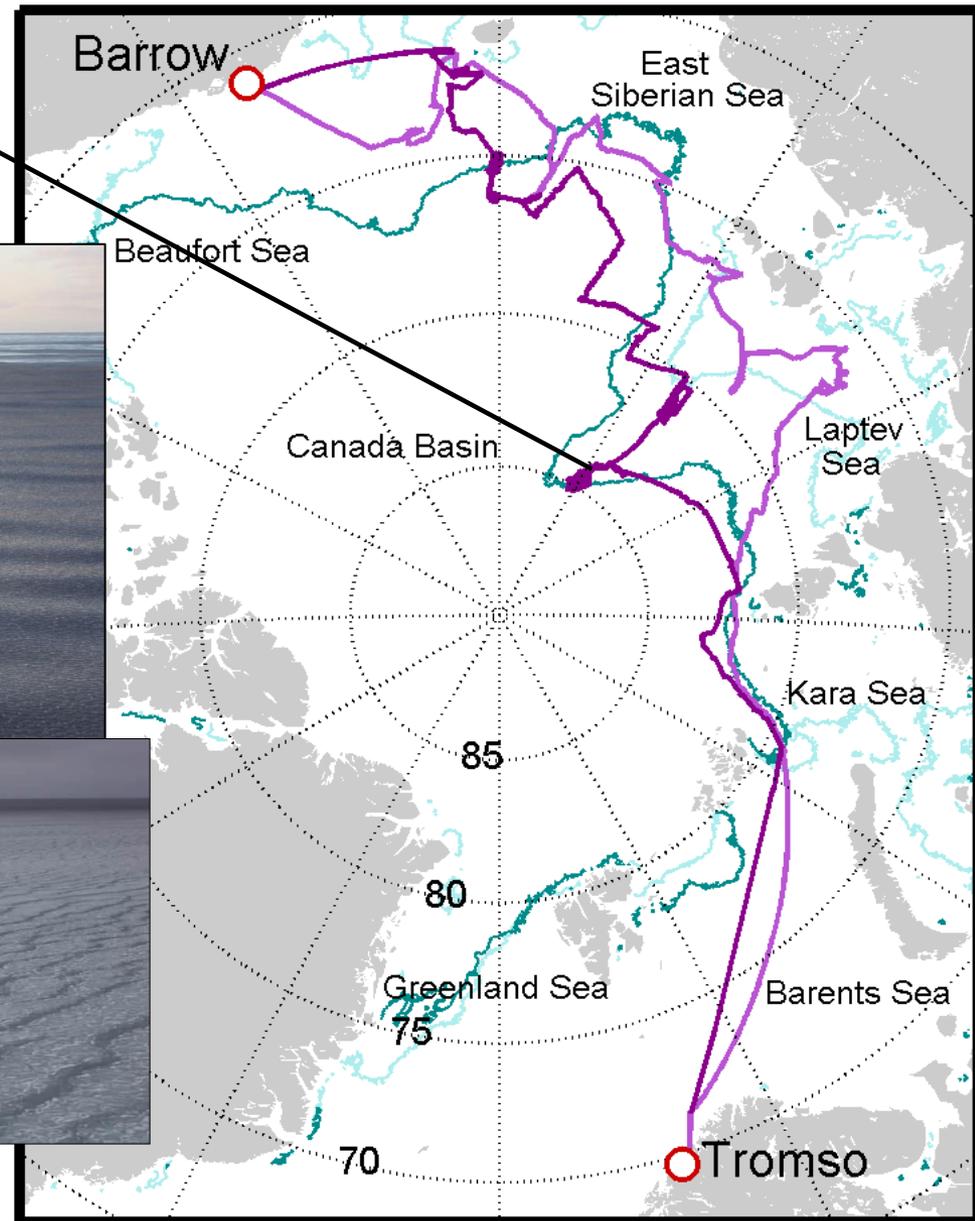
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“Grease ice” och stråk av “frazil ice” blandat med flak av flerårsis



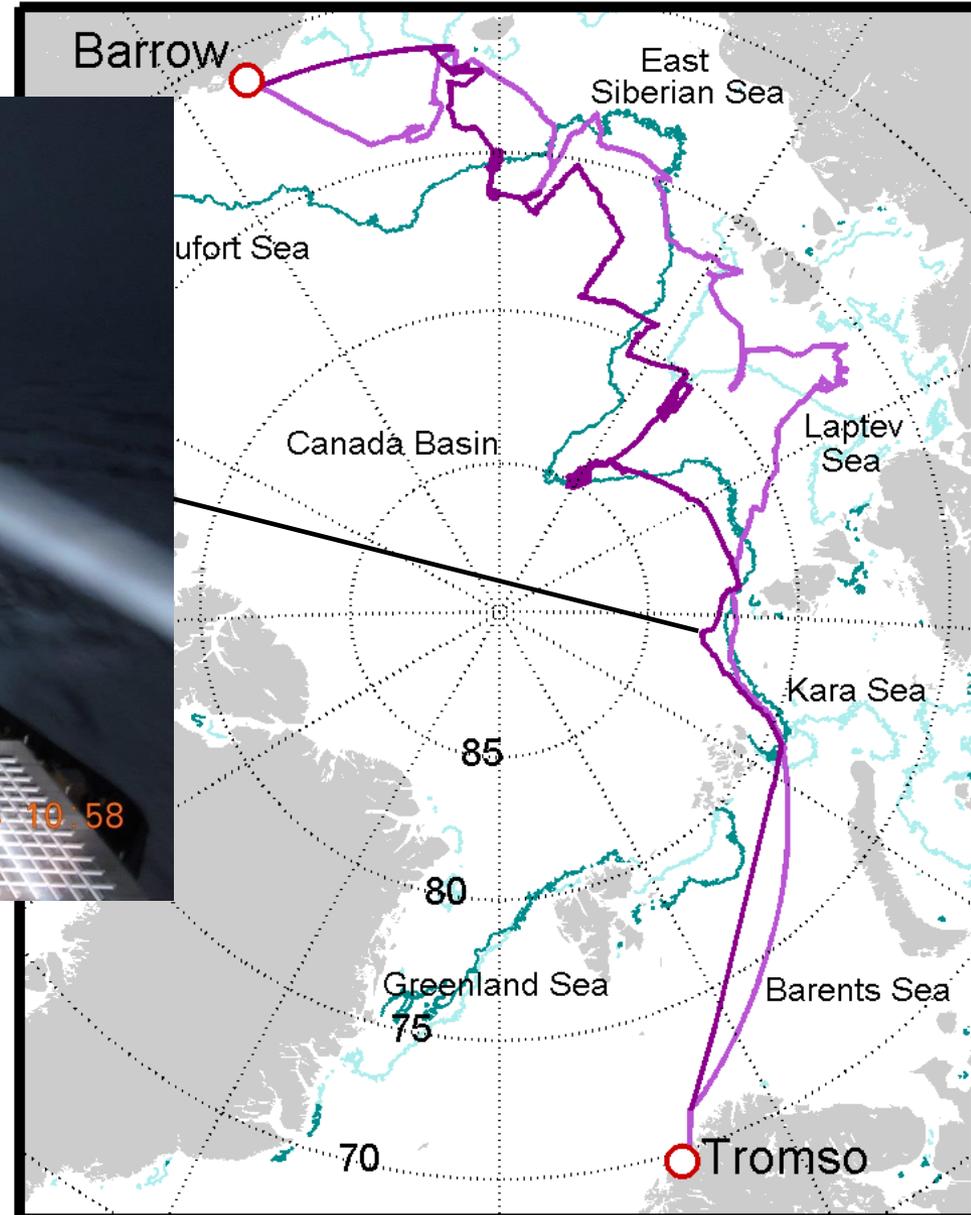


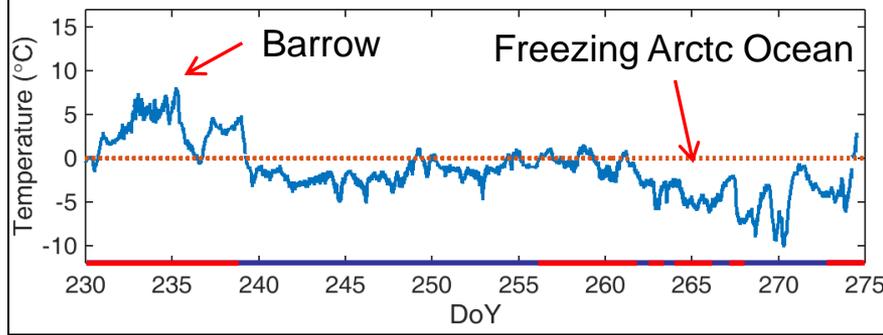
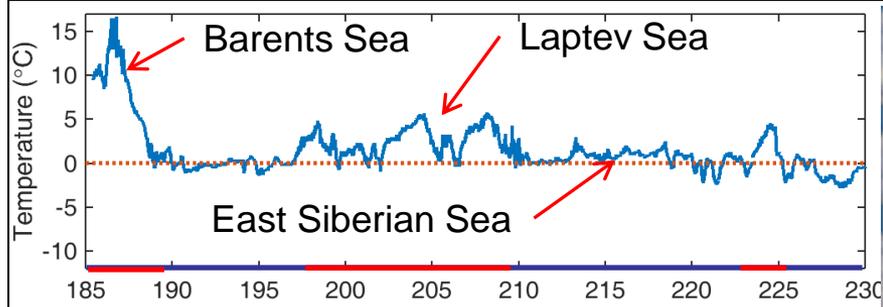
“Pannkaksis” – med eller utan vågor



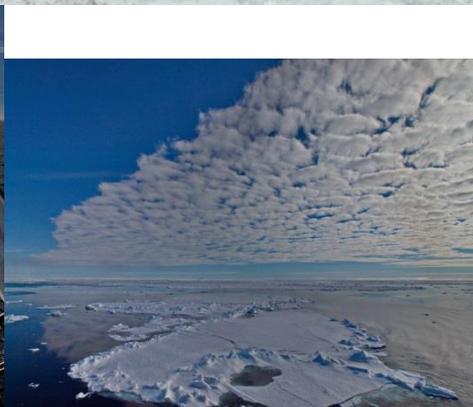
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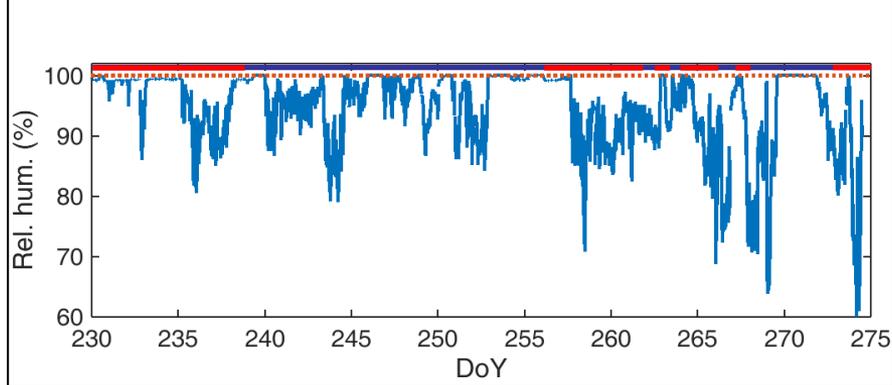
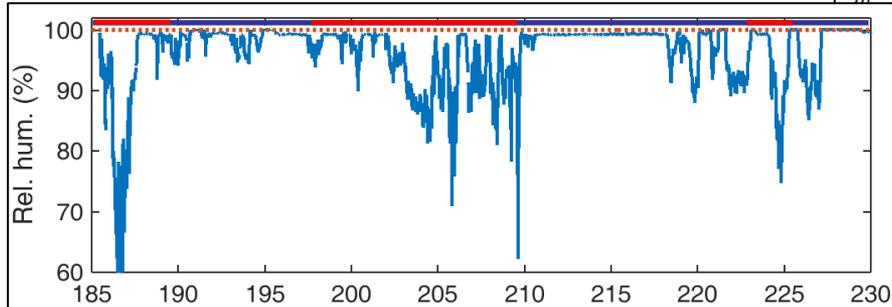
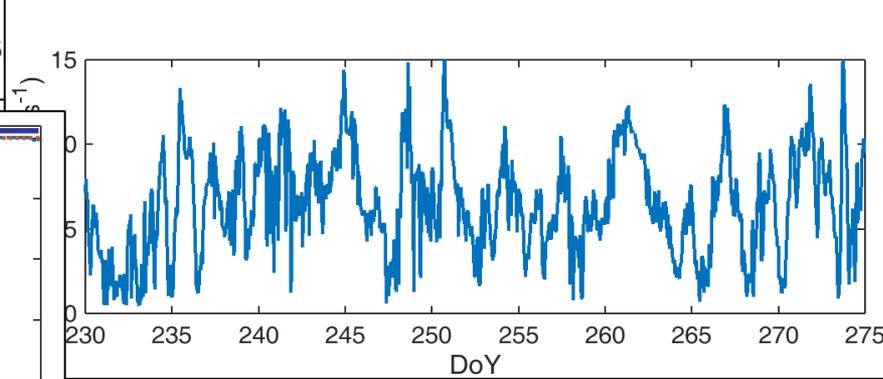
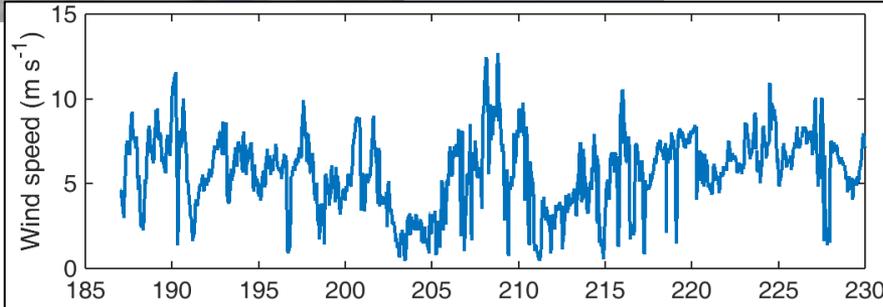
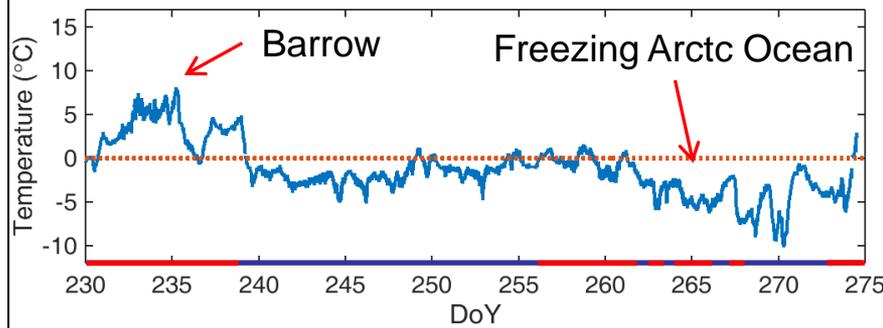
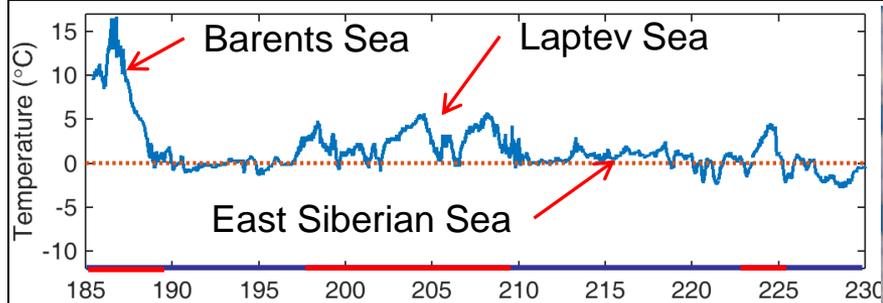
Det blir mörkare och mörkare ...

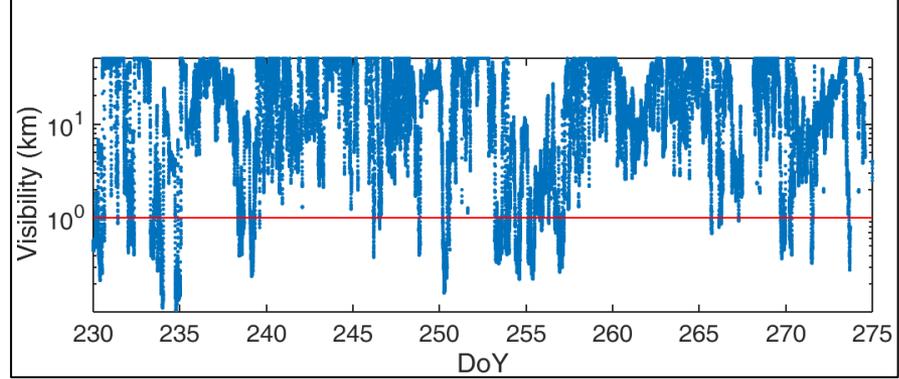
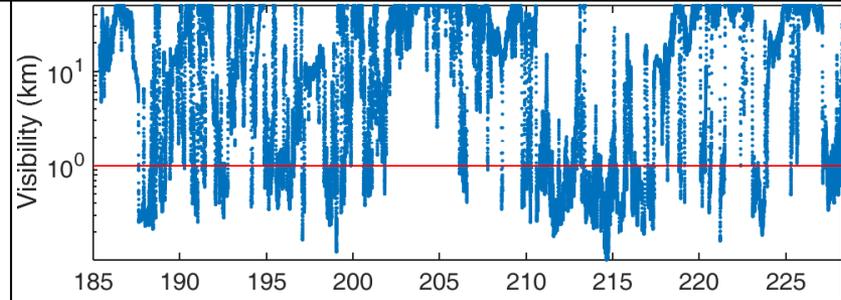
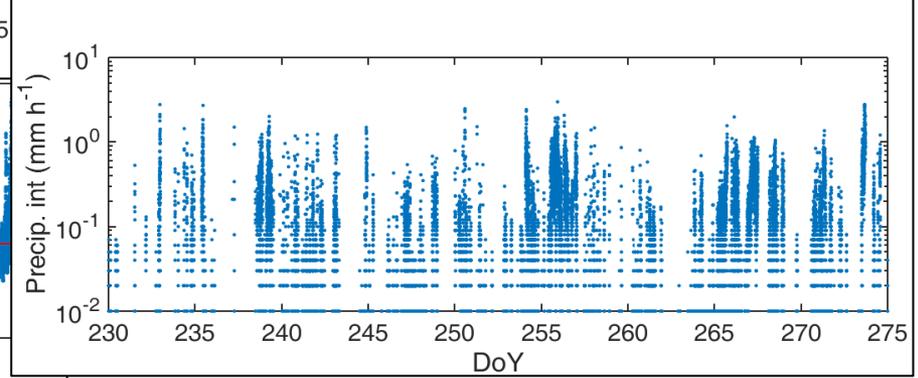
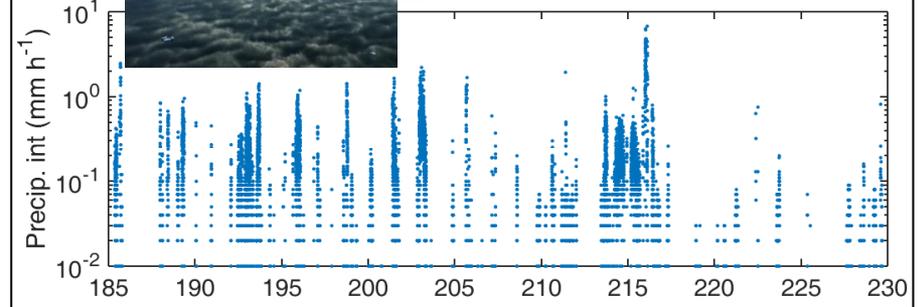
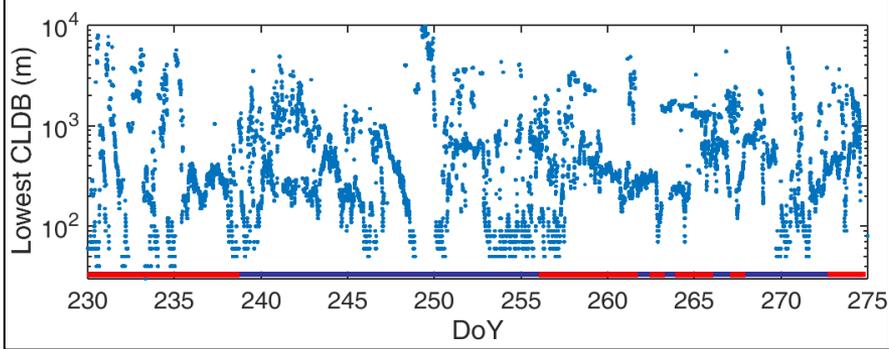
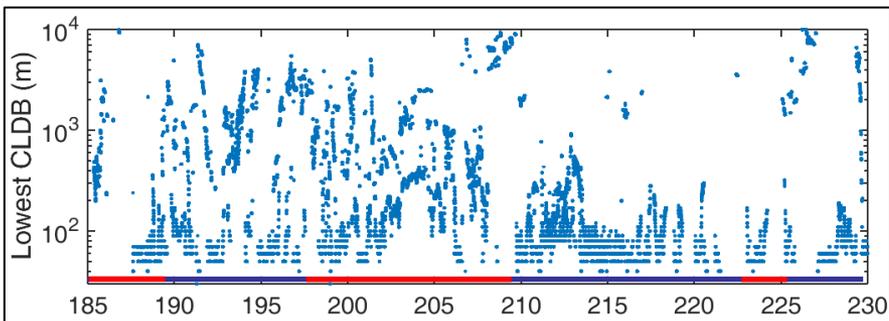


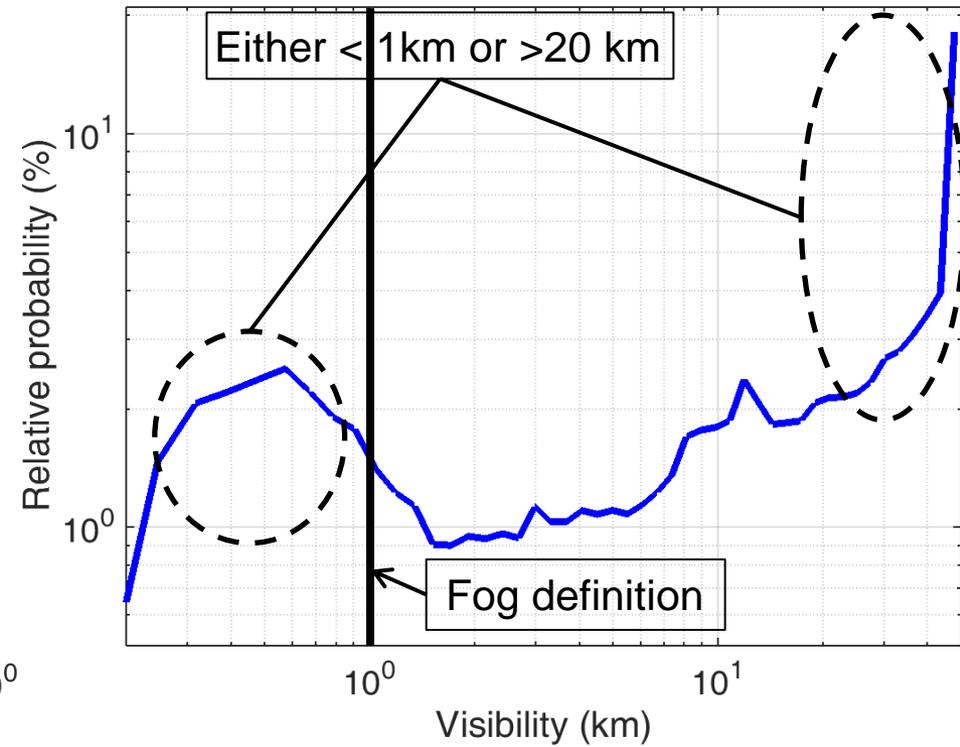
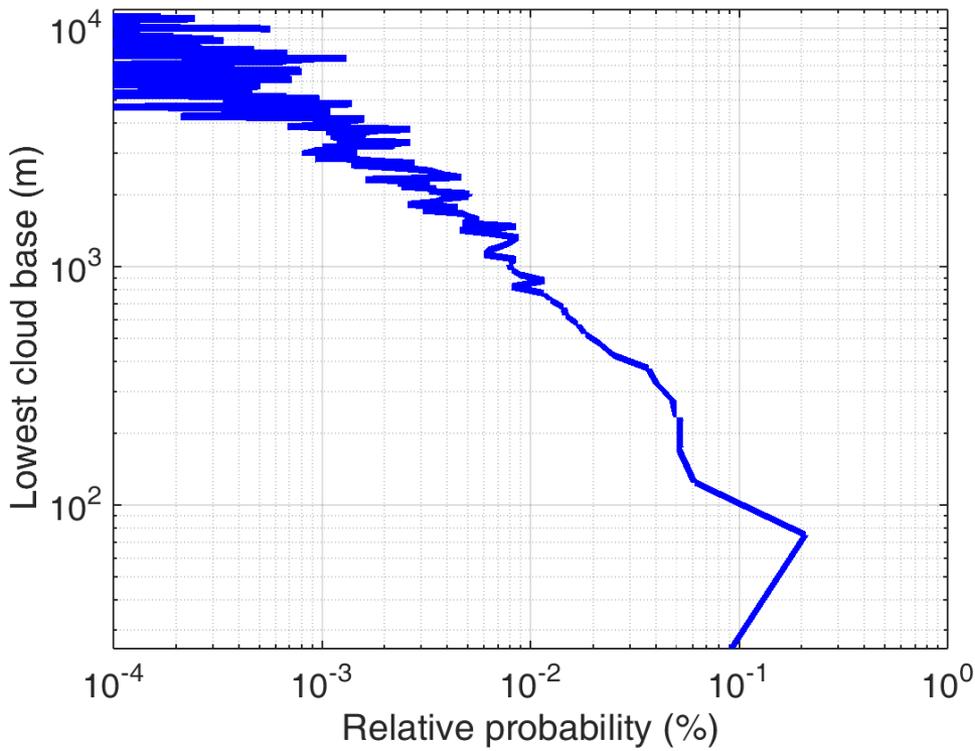


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Icebreaker Oden near the
North Pole (89°N 00°W) ,
2001-08-02



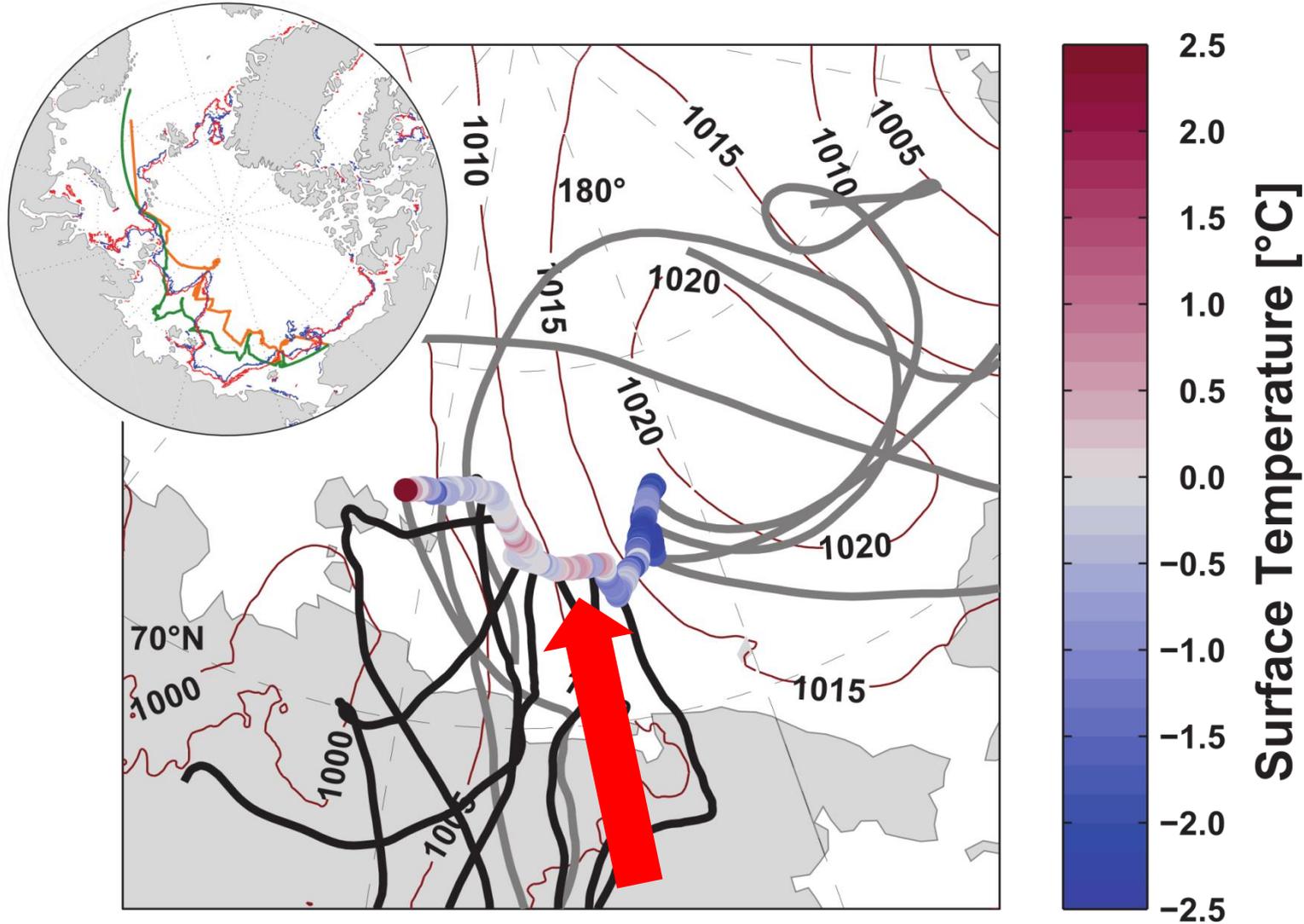
13 years later to the day!
Icebreaker Oden in the East Siberian
Sea (75°N 155°E) , 2014-08-02

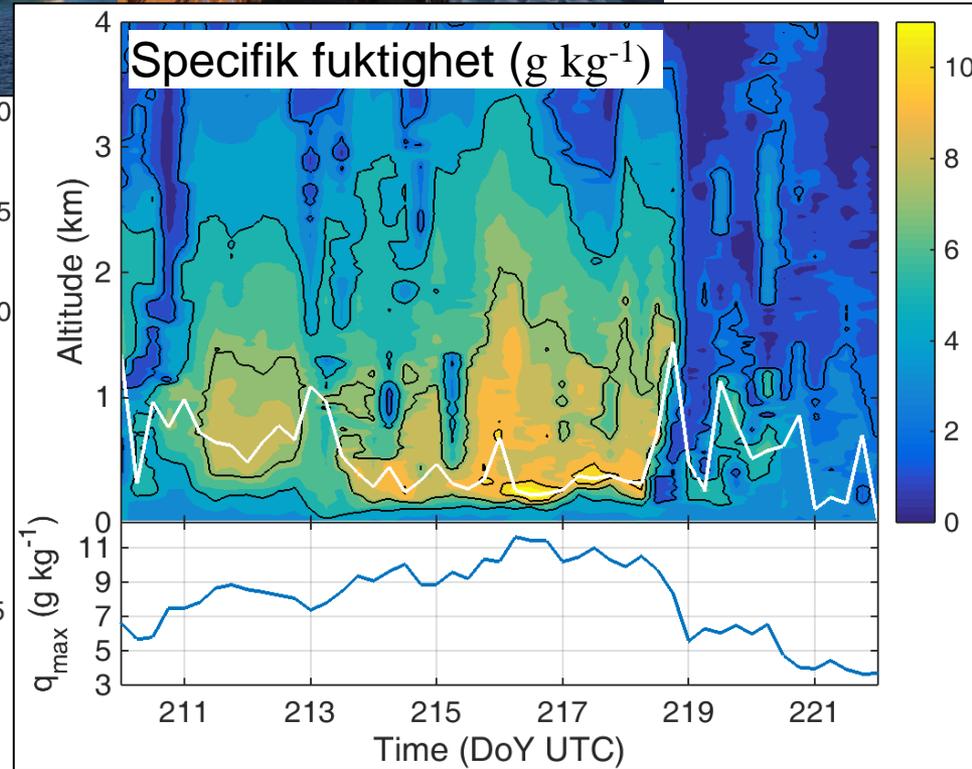
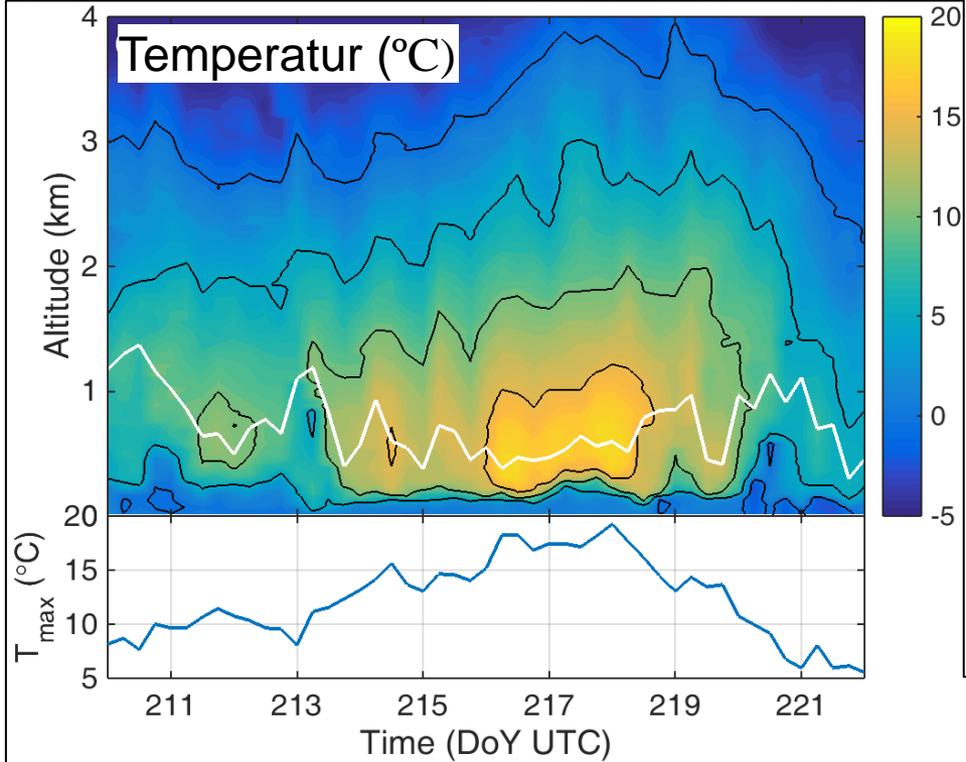


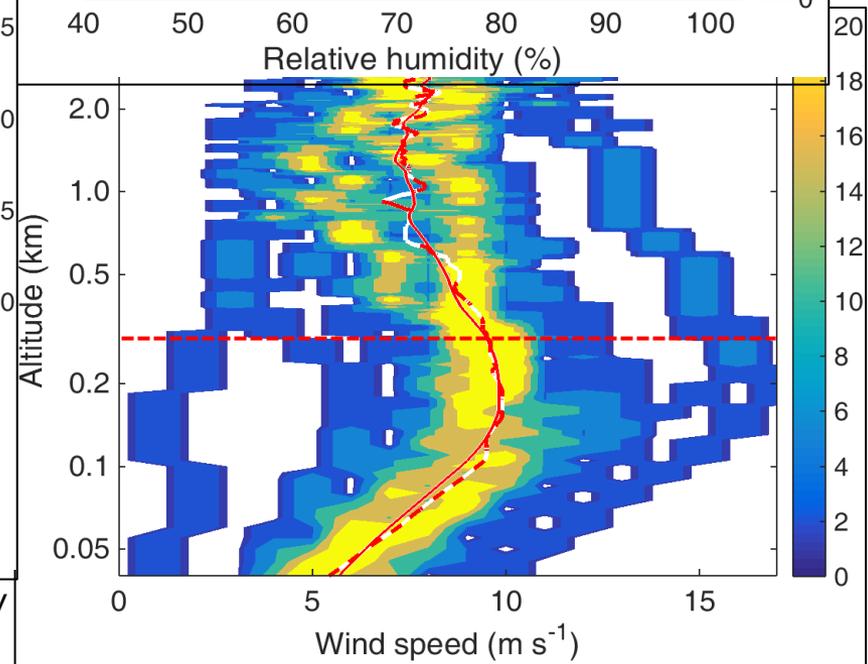
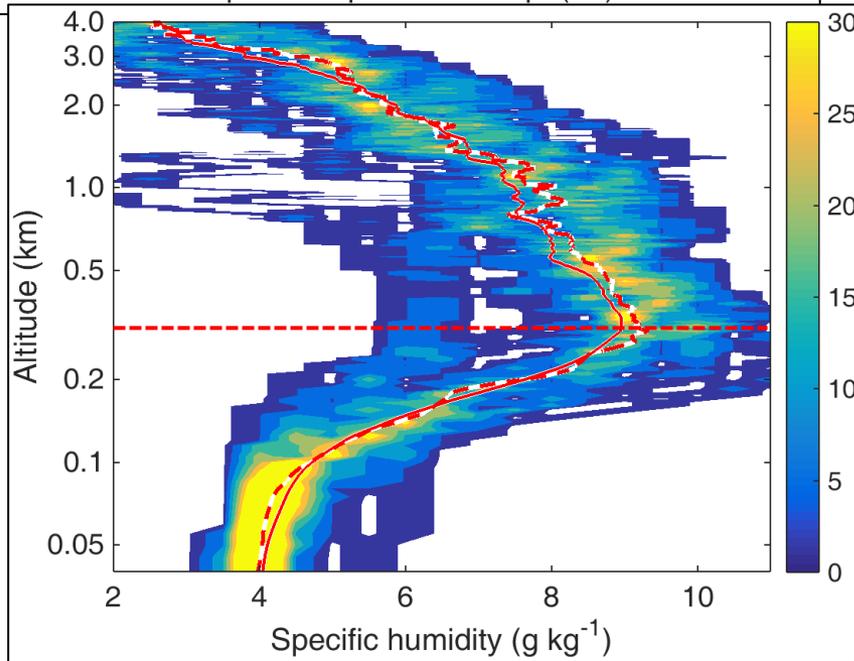
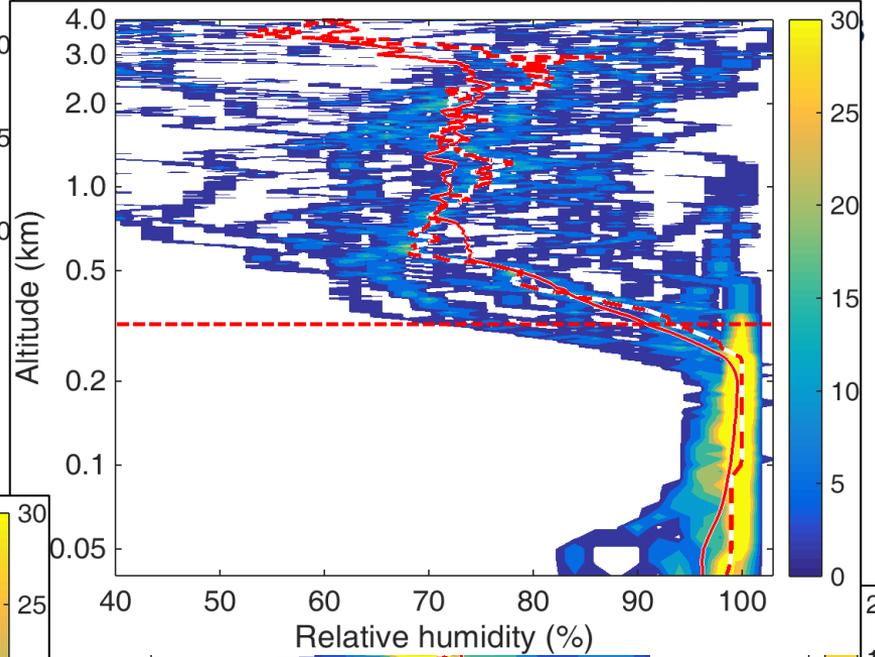
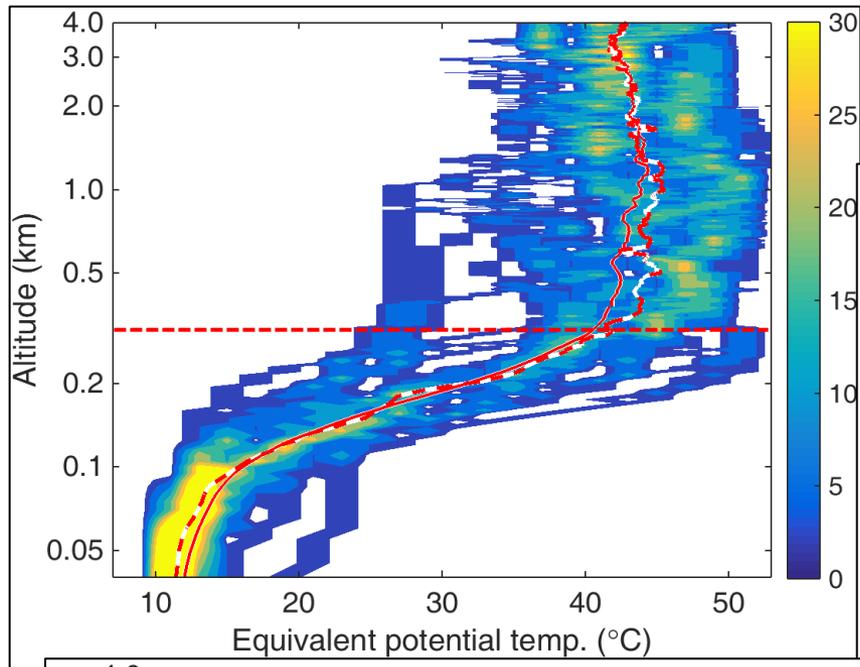
Summer airmass transformation Transport in over sea ice

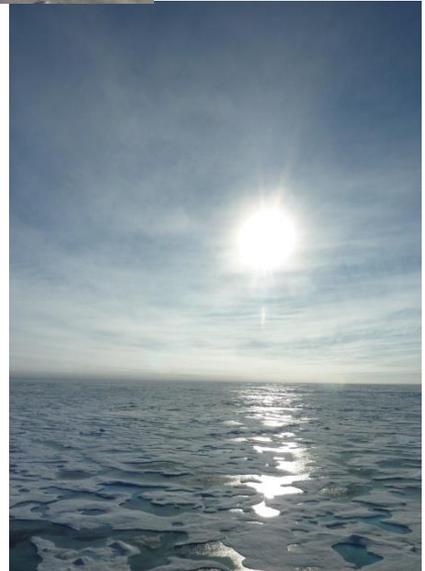
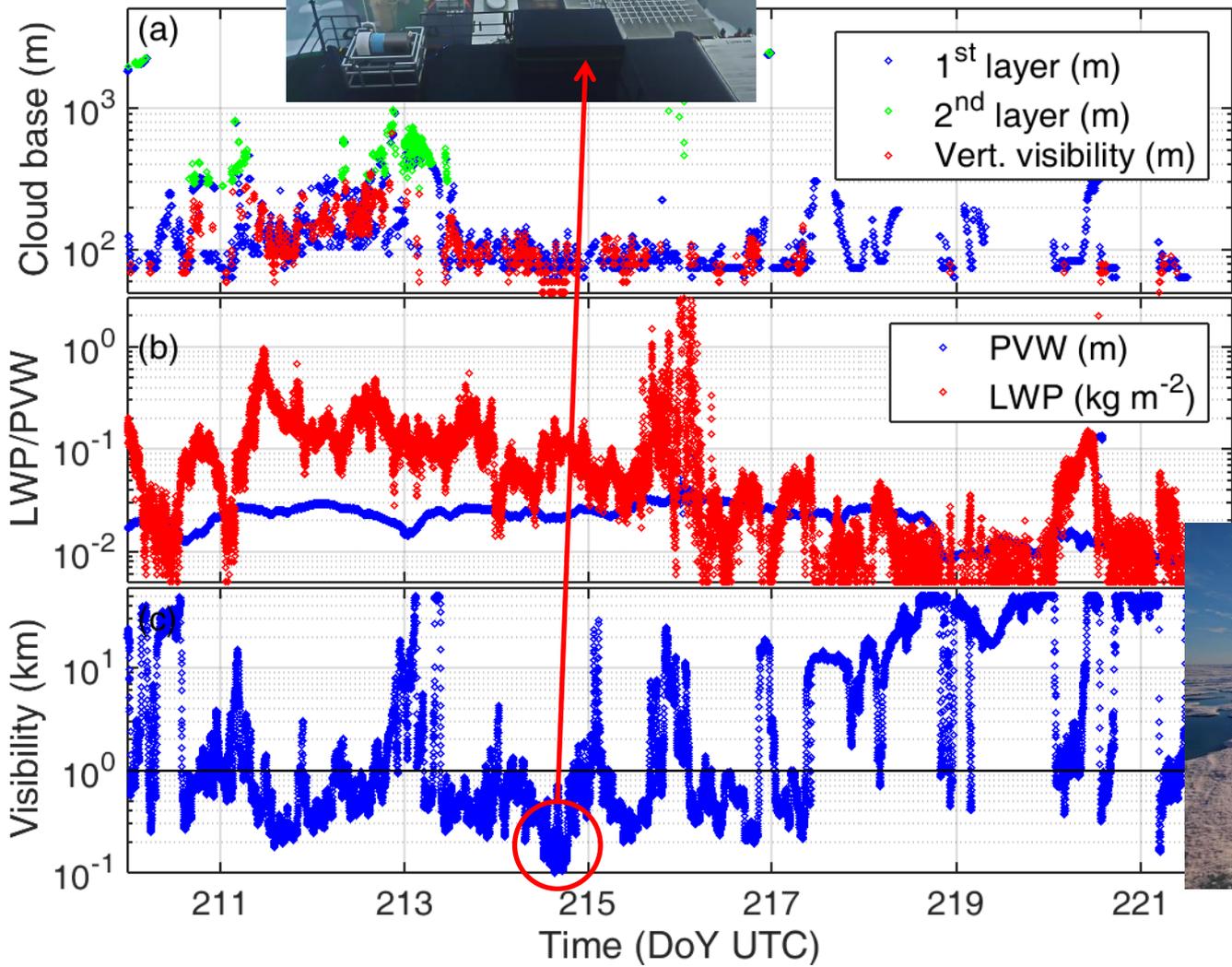


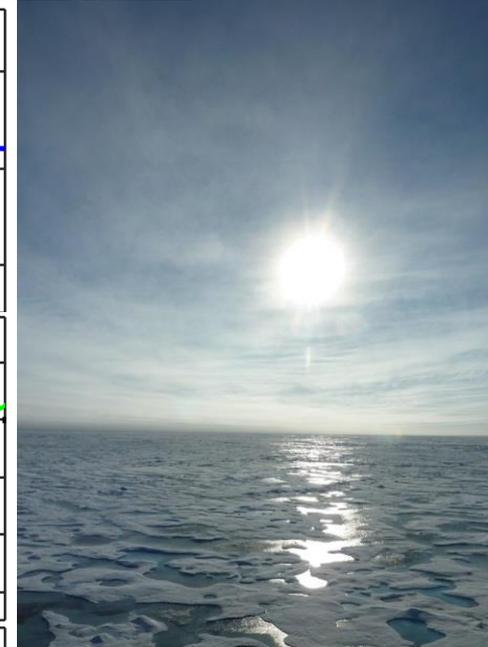
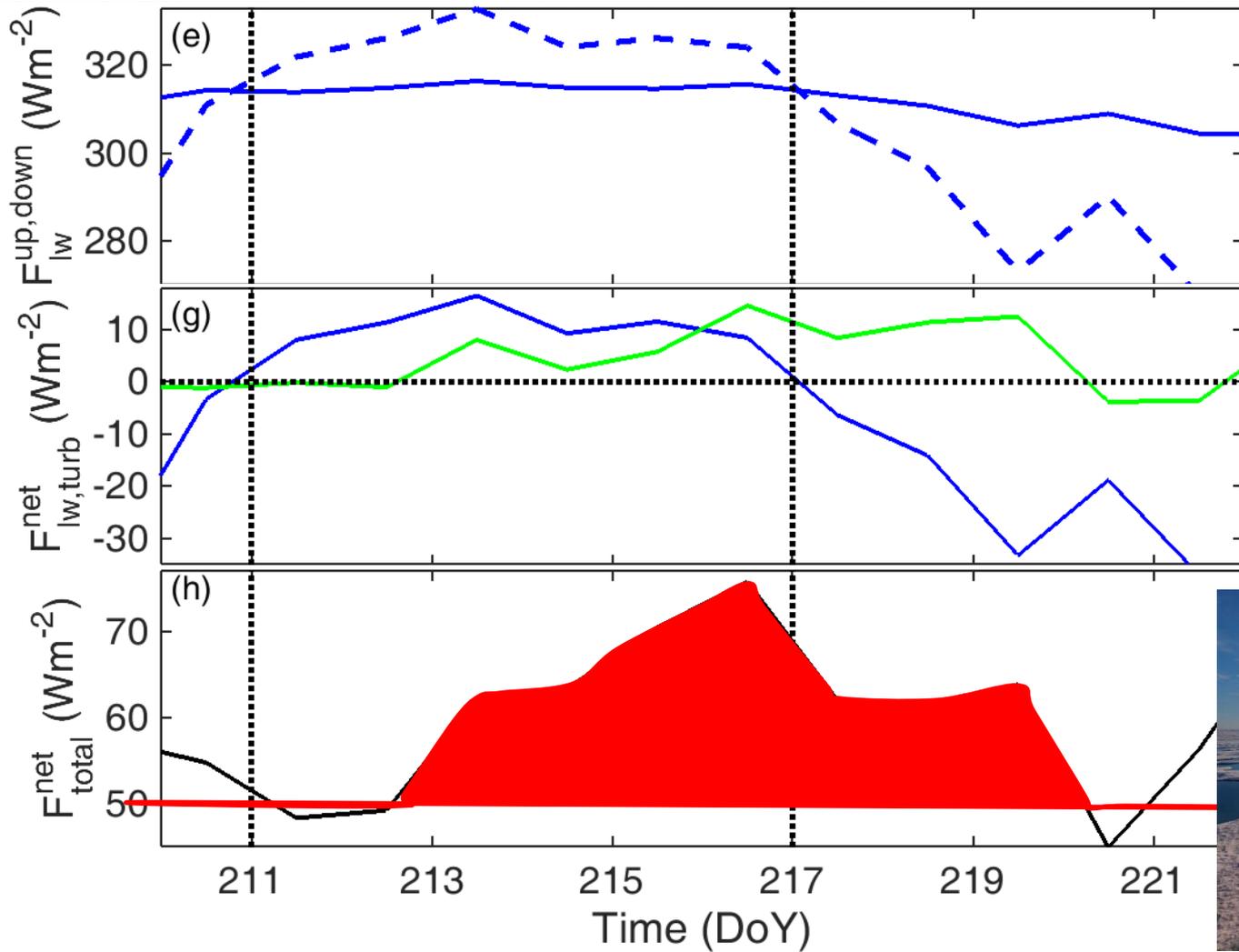
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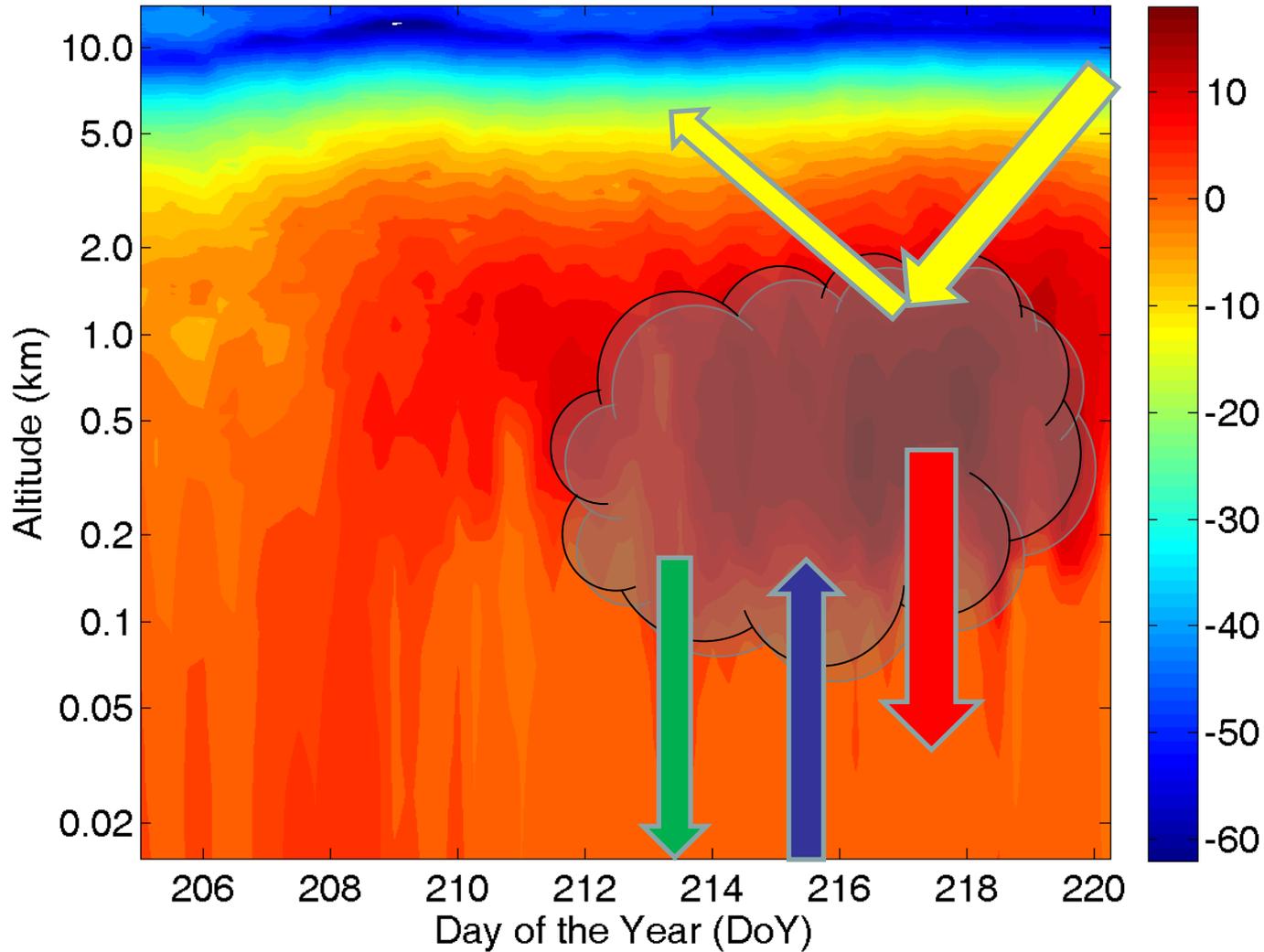








Så vad är det som händer?

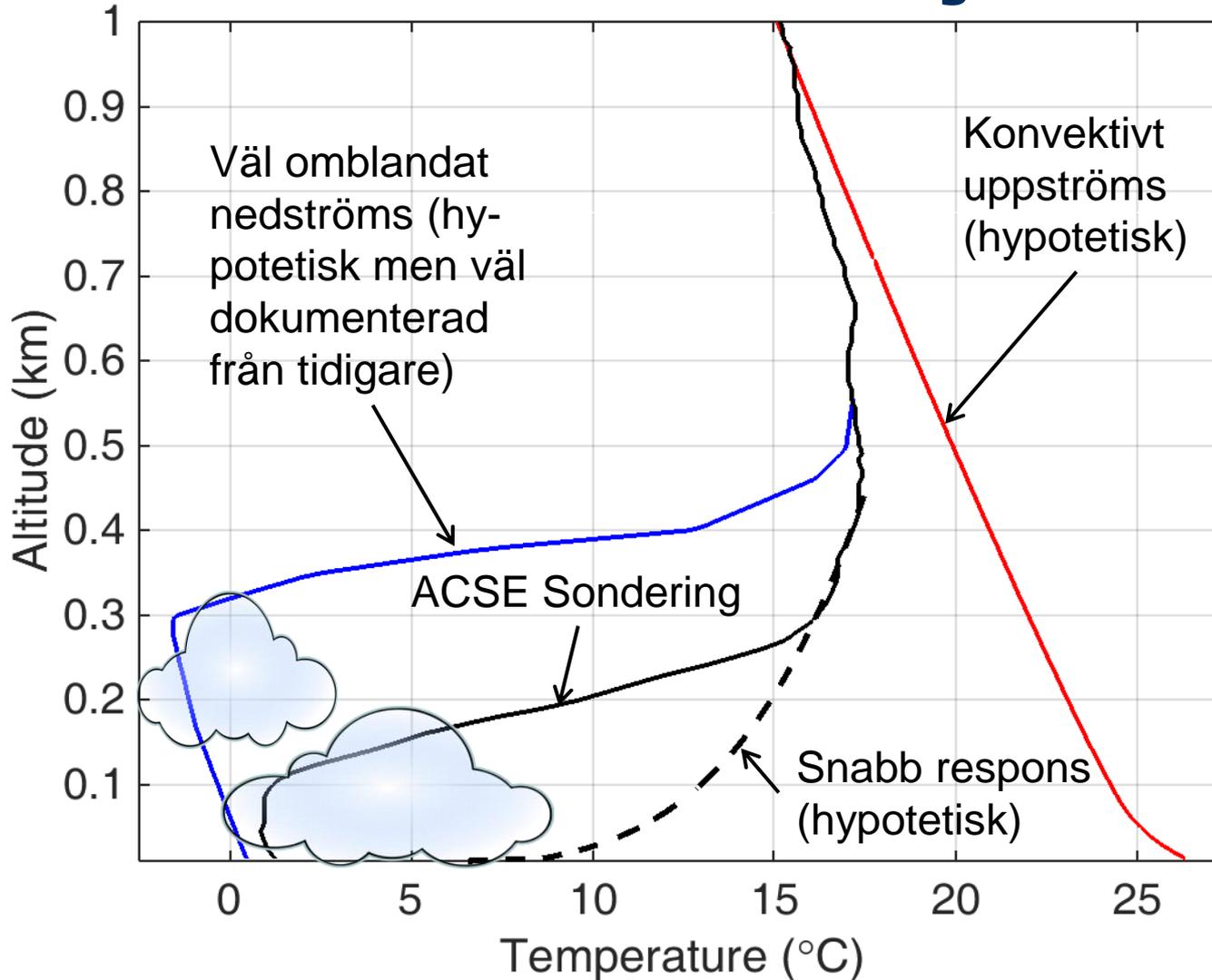


Luftmassestransformation

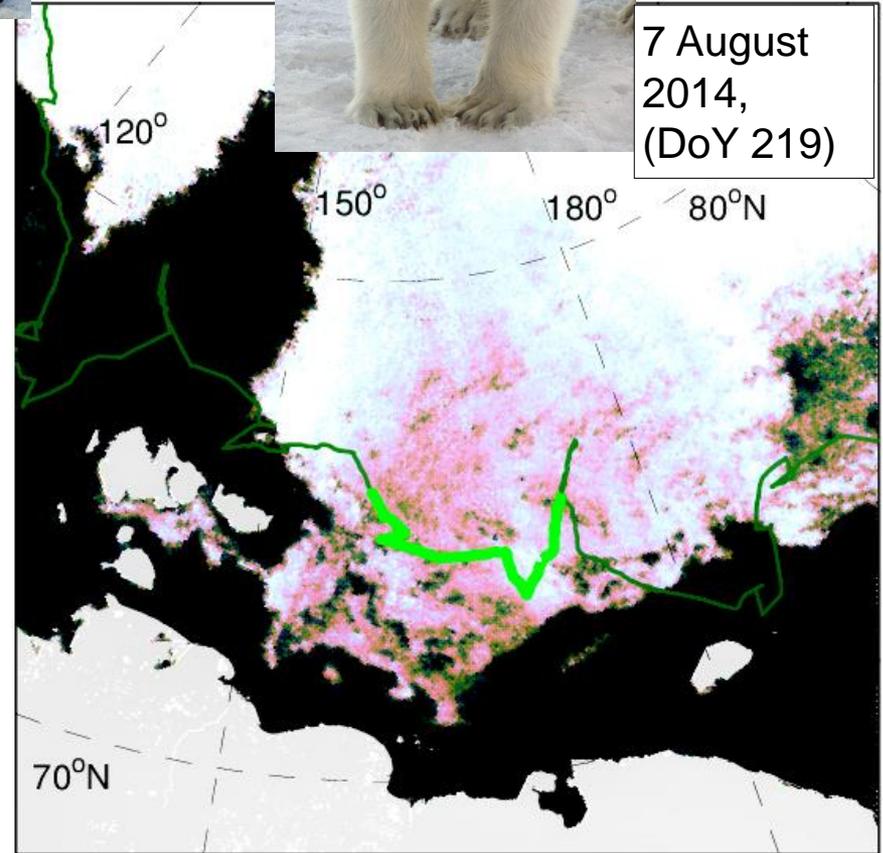
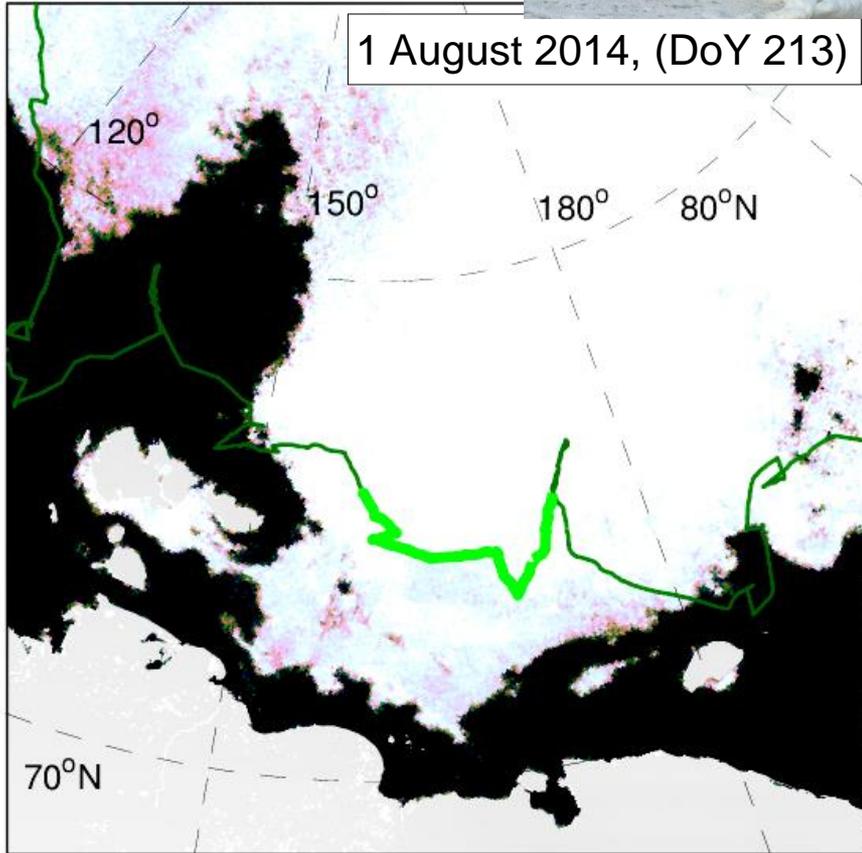
Varm luft över smältande ismelting sea ice



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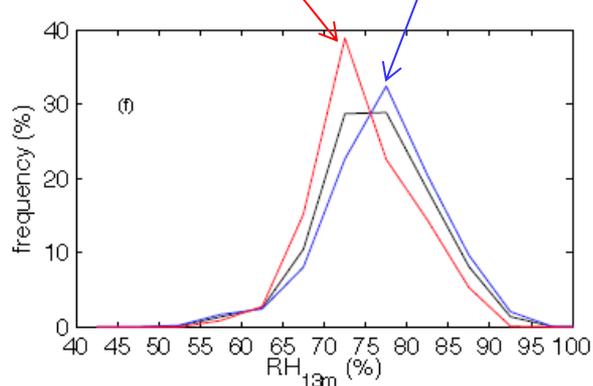
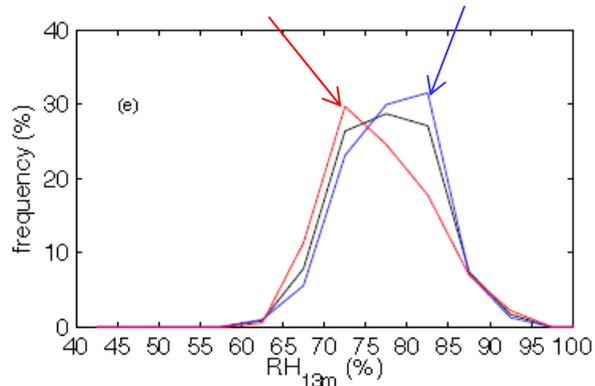
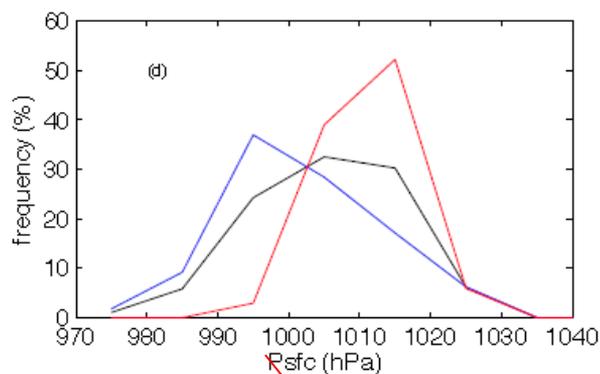
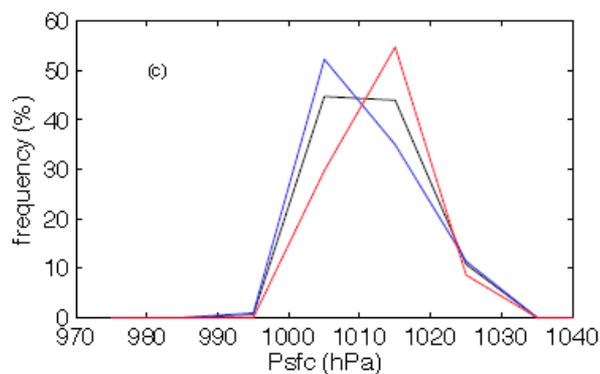
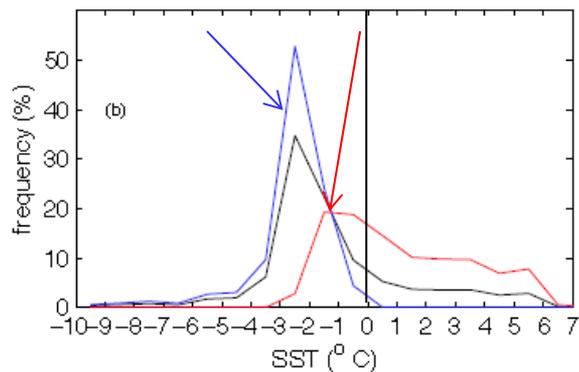
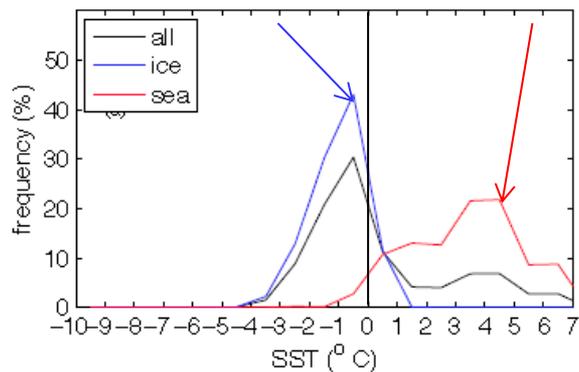
Så – spelar det någon roll för den här krabaten?



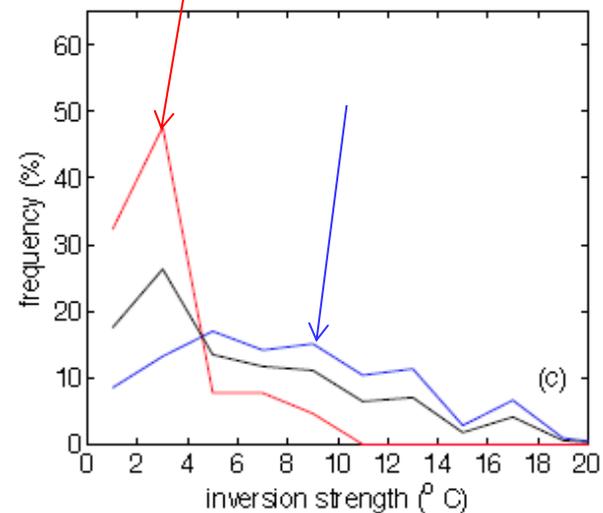
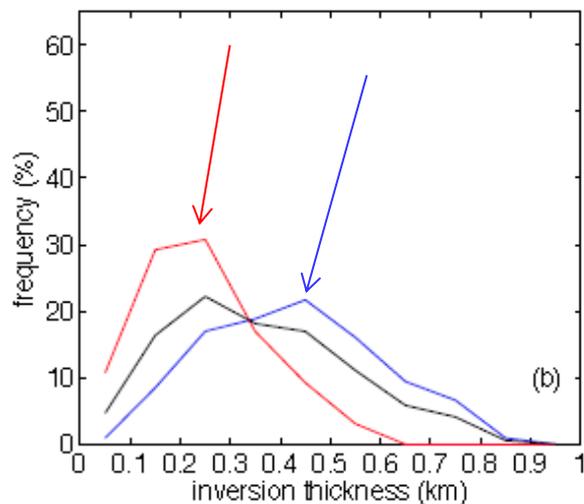
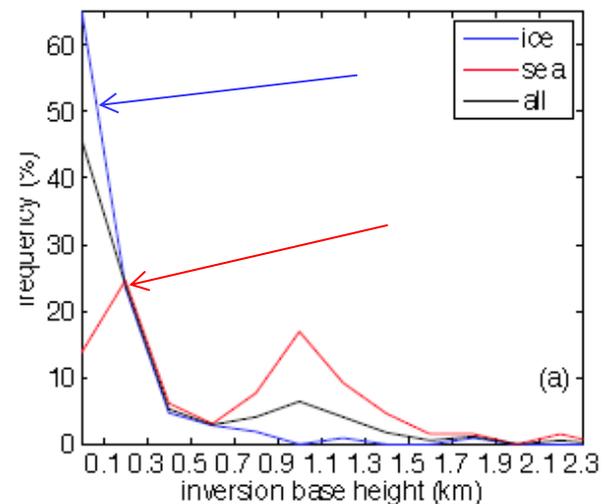


"Summer"

"Autumn"



LEG 1



LEG 2

