Photo by Gunnar Spreen

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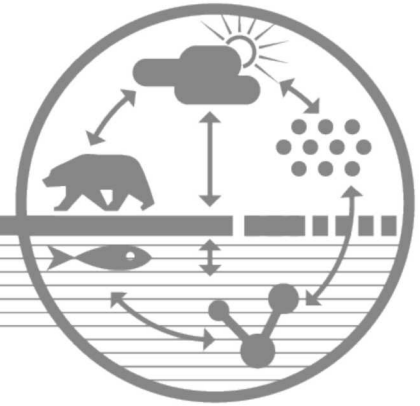
- MOSAiC Team ICE -



First results from the MOSAiC Drifting Observatory

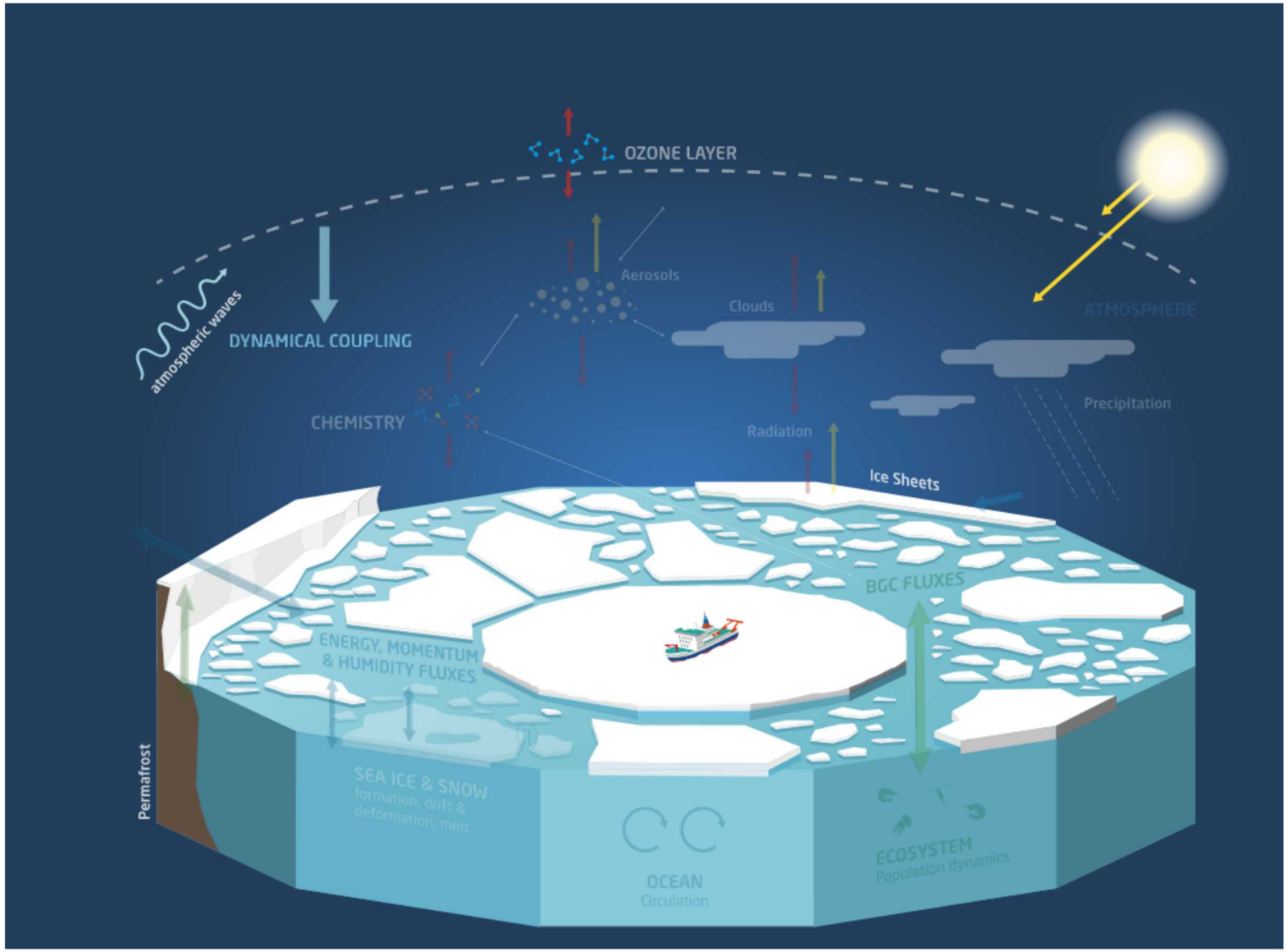
Jari Haapala and the sea ice and snow team
Research professor, Head of Marine Research
Finnish Meteorological Institute

IASC

Research on Arctic climate system

Interactive components

- Atmosphere
- Sea ice and snow
- Ocean
- Biogeochemistry
- Ecosystem



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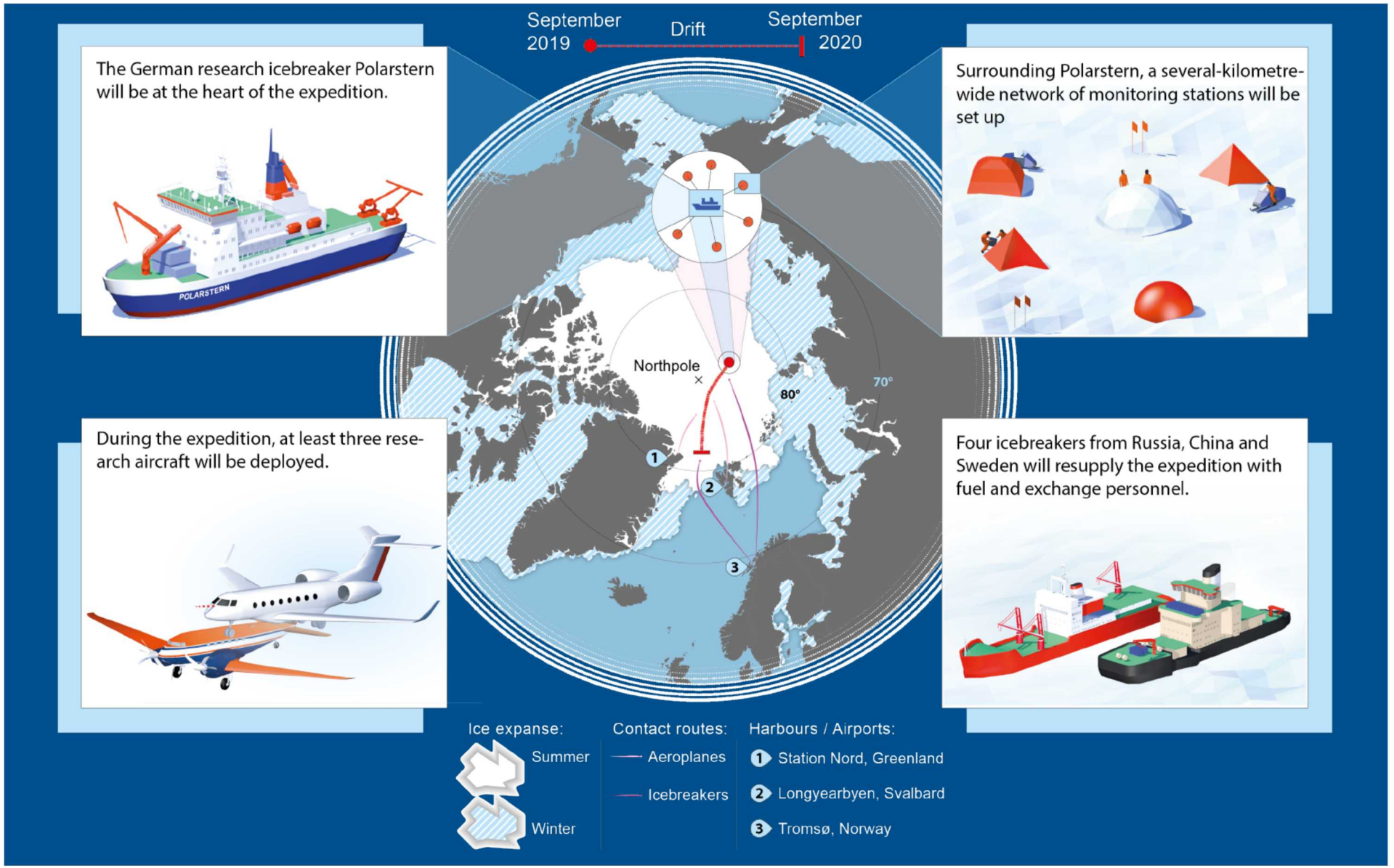
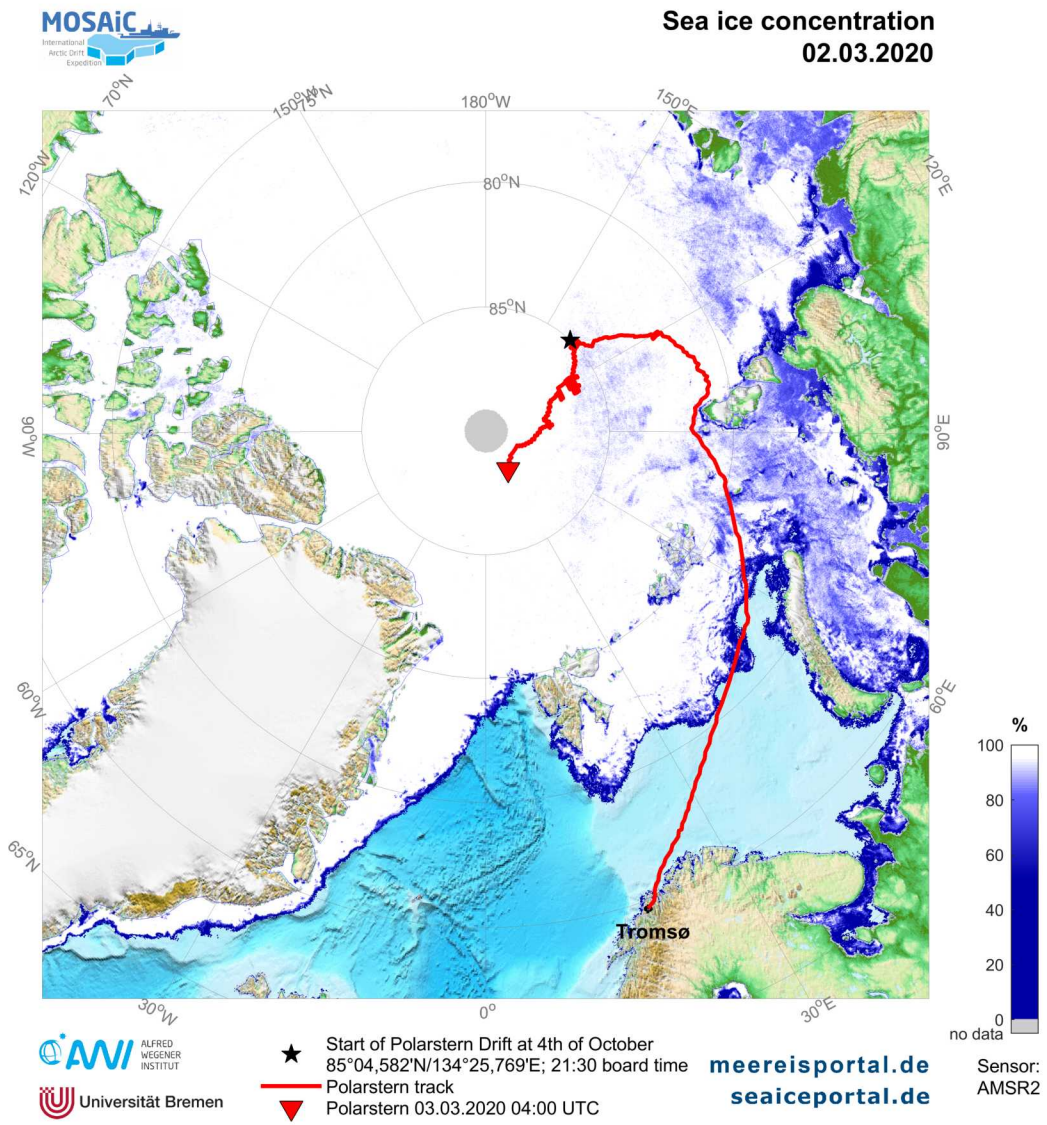
Logistical concept



Present situation



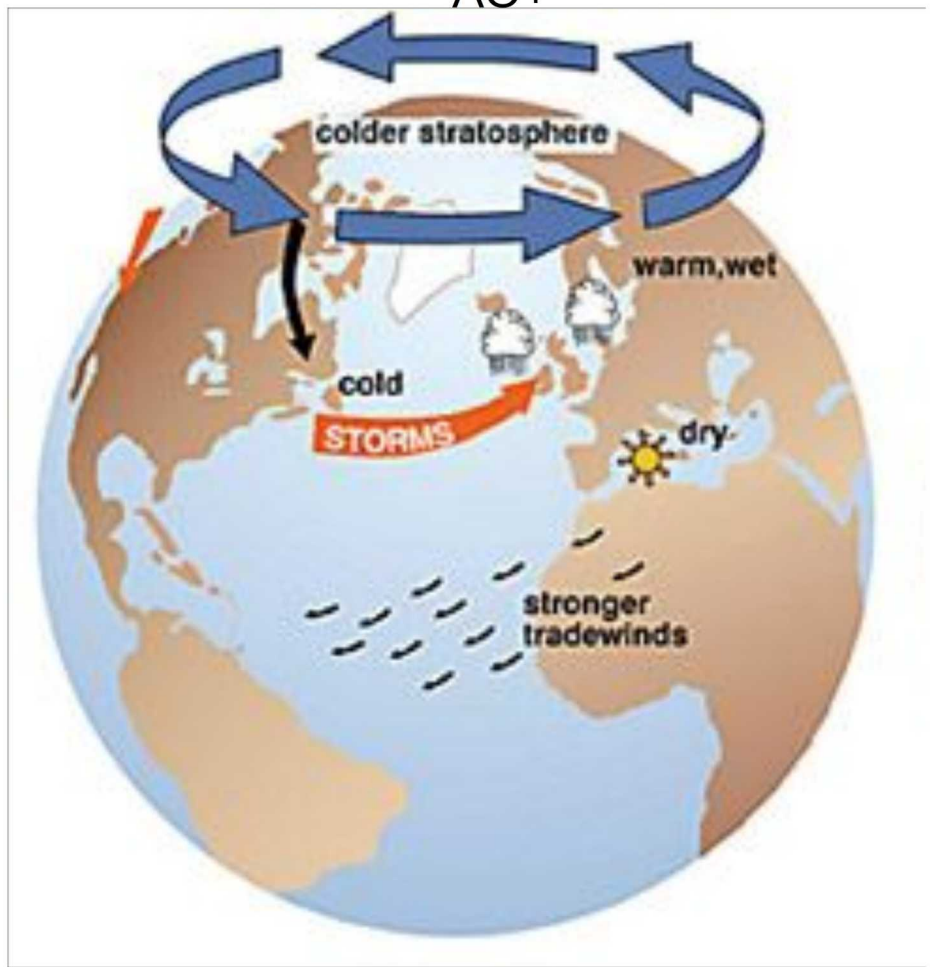
Dranitsyn and Polastern at 88°28’ N

It took four week for Dranitsyn to travel from Tromsso to Polarstern !

Present atmospheric conditions

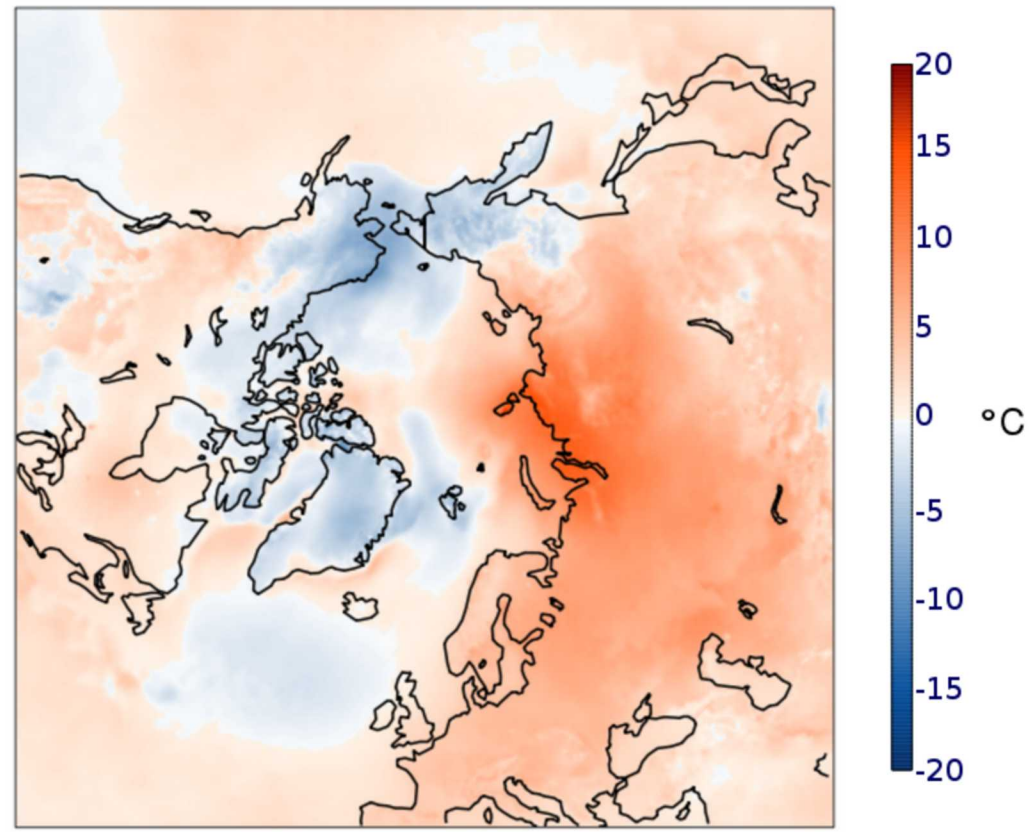
ARCTIC OSCILLATION (AO) DESCRIBES STATE OF THE ARCTIC ATMOSPHERE

AO+

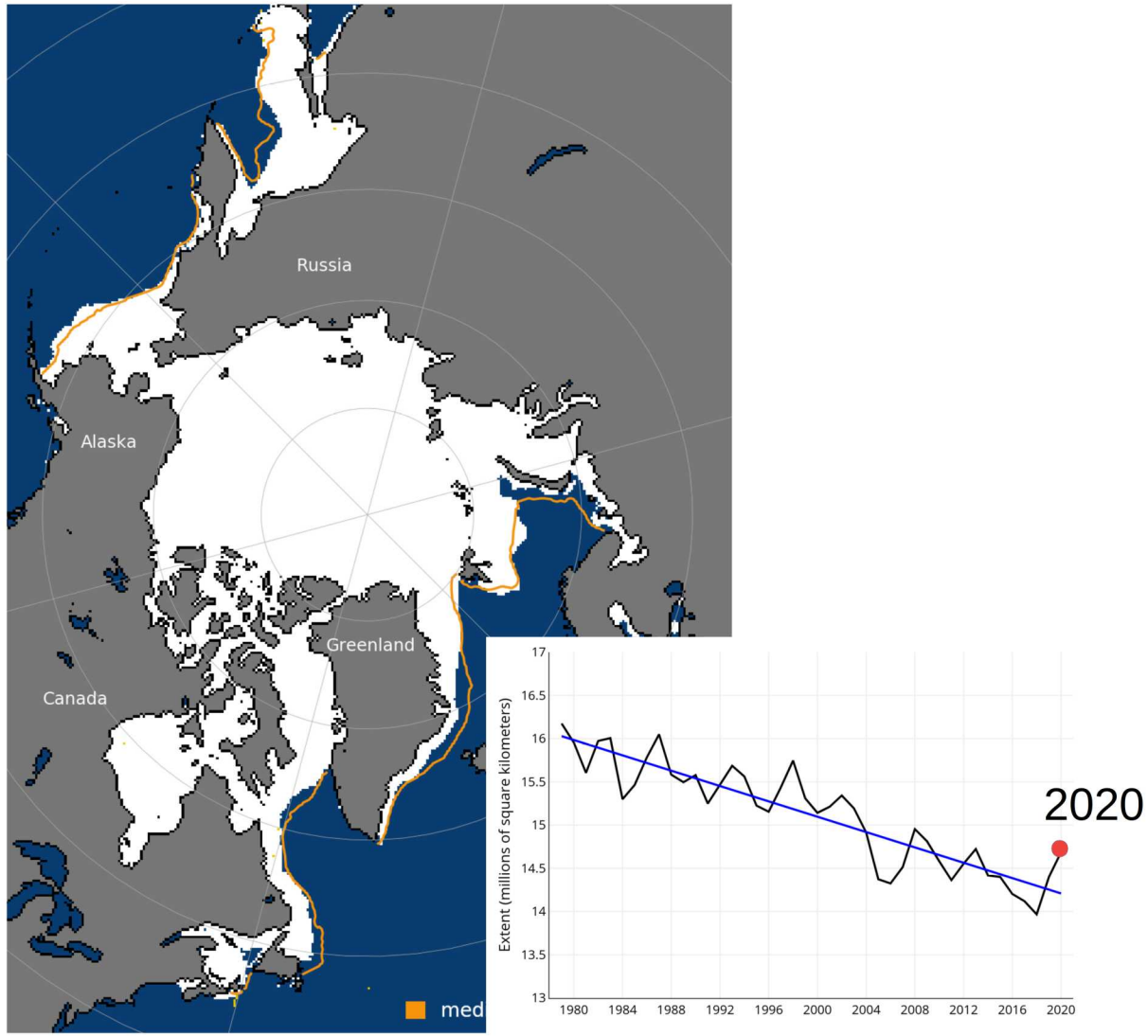


PREVAILING PATTERN IN JANUARY-FEBRUARY 2020

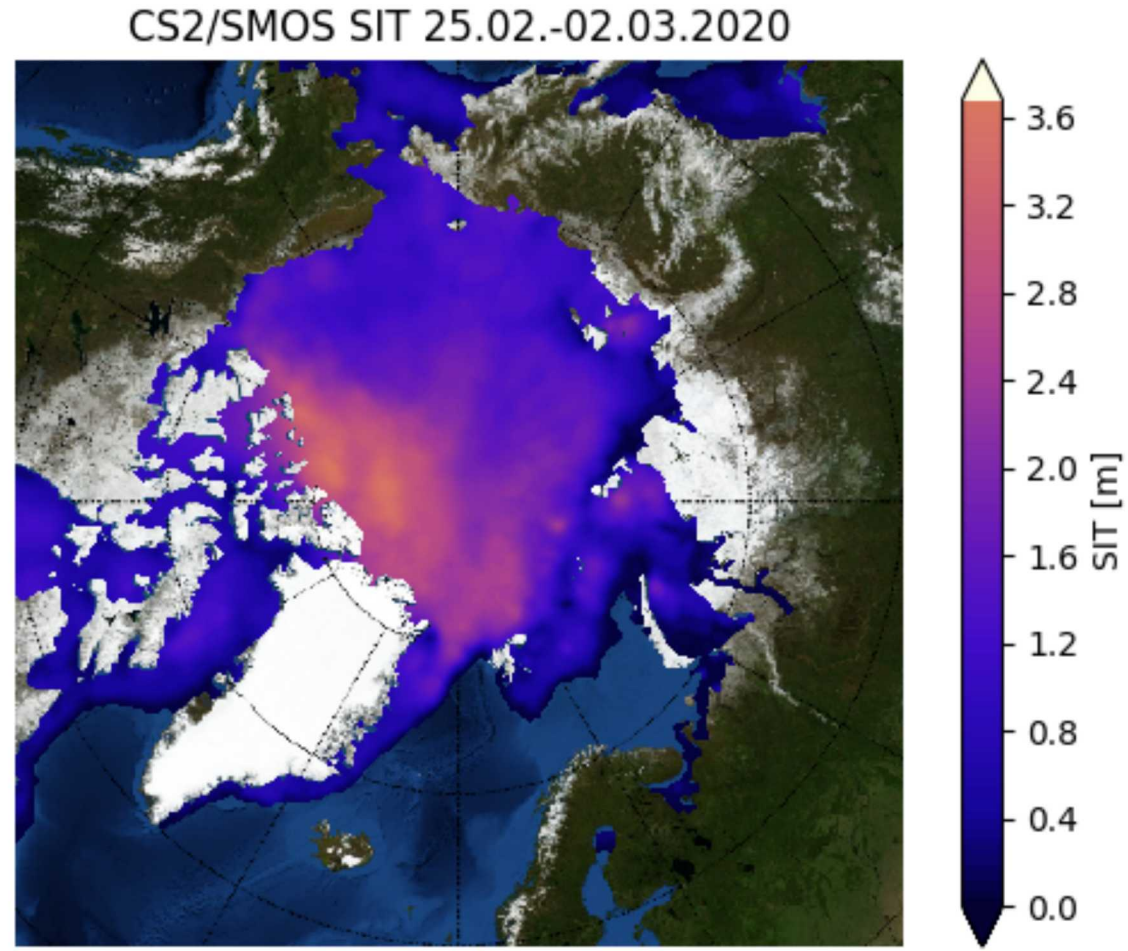
Air temperature anomaly in February 2020



Present sea ice conditions

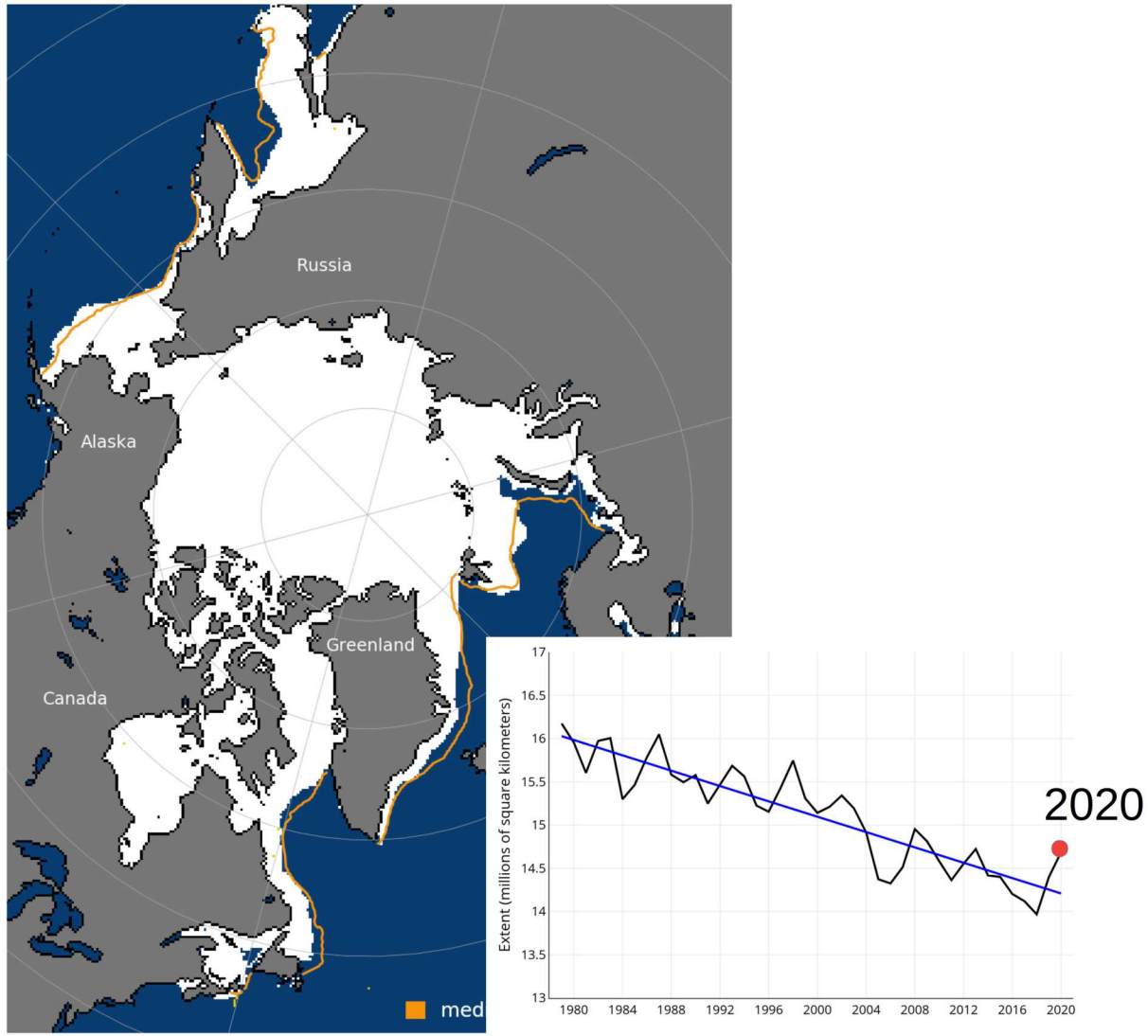


Source : nsidc.org

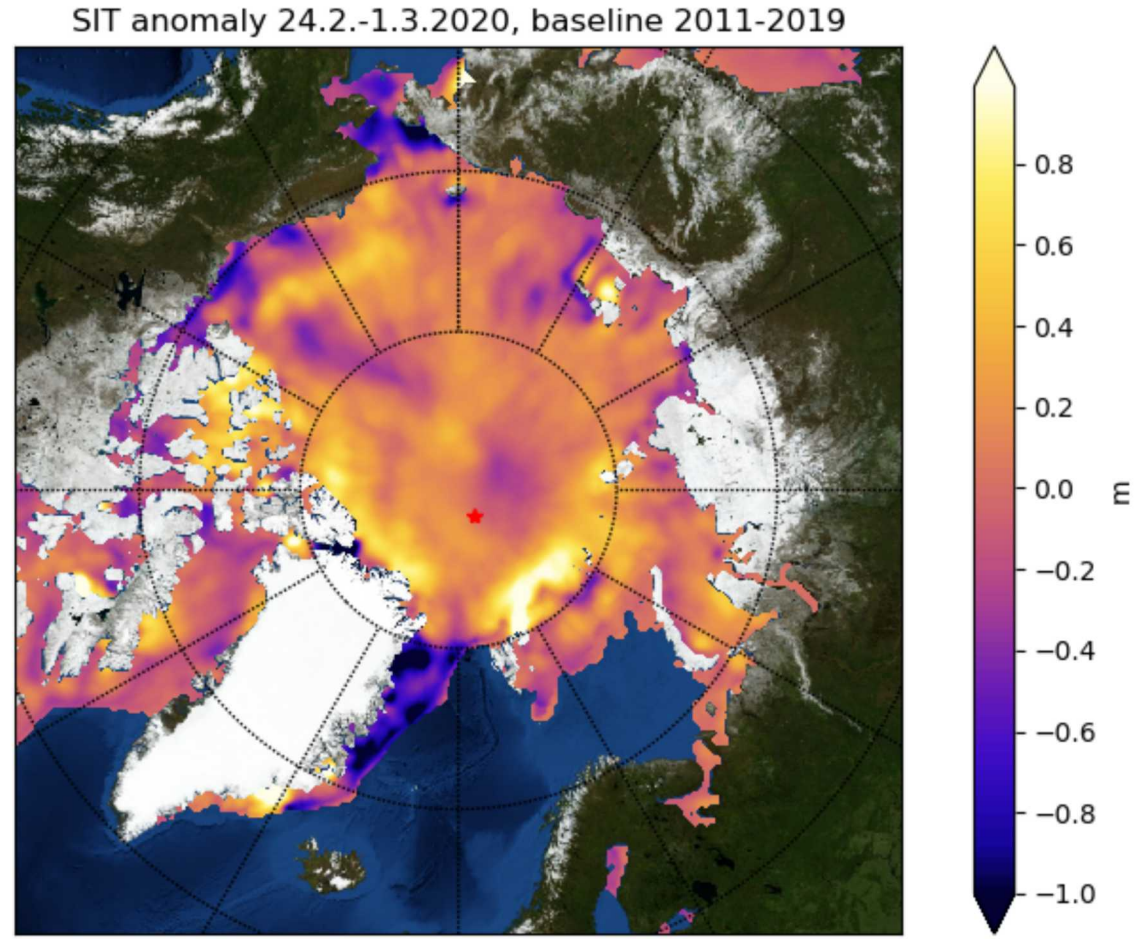


Source : ice.fmi.fi

Present sea ice conditions



Source : nsidc.org



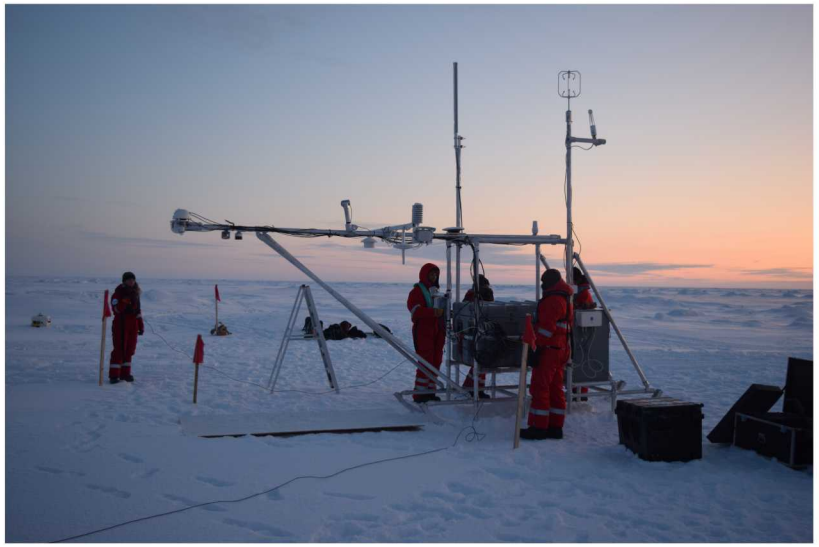
Source : ice.fmi.fi

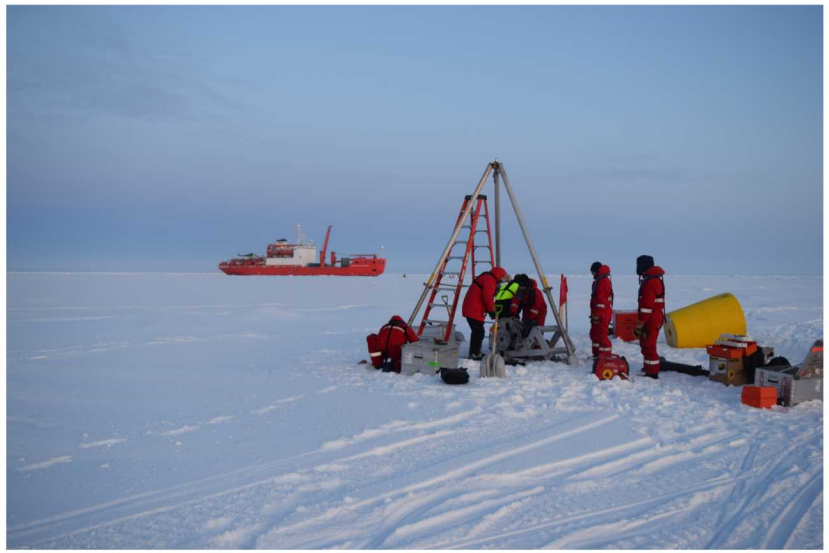
Three activity phases of MOSAiC

1) Set-up the Distributed Network

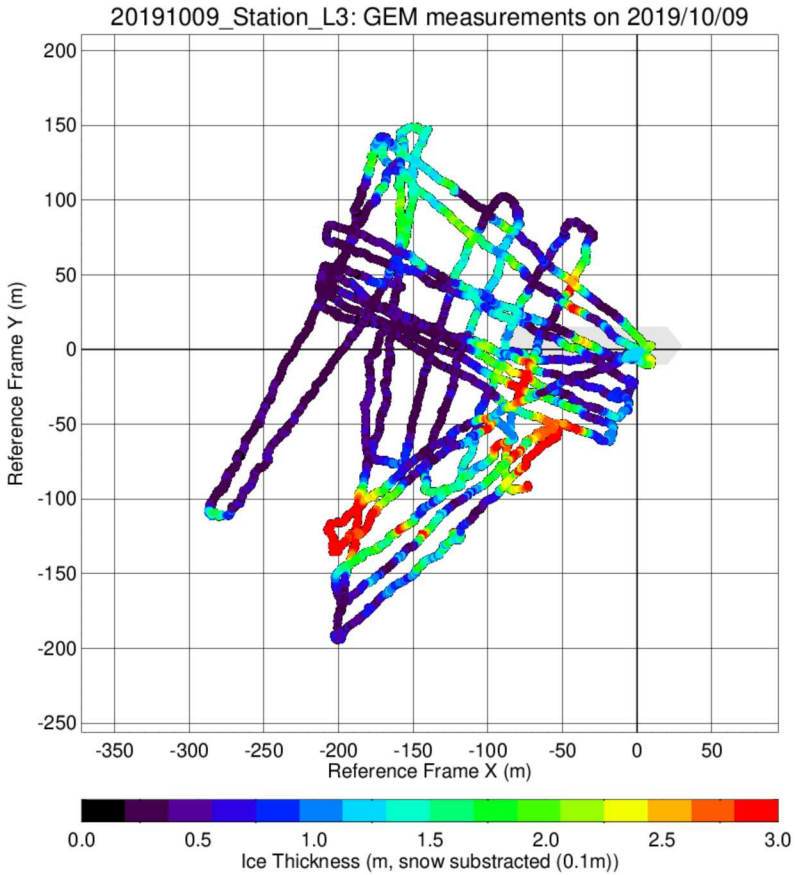
2) Set-up the Central Observatory

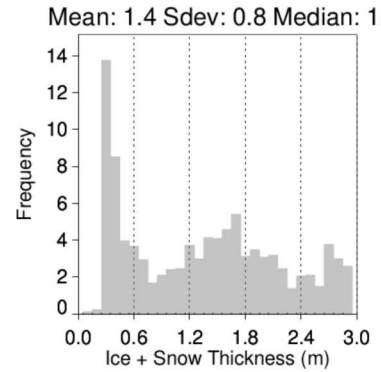
3) Conduct regular monitoring programme

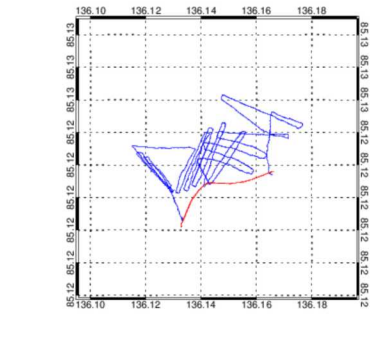




Sea ice and snow mapping







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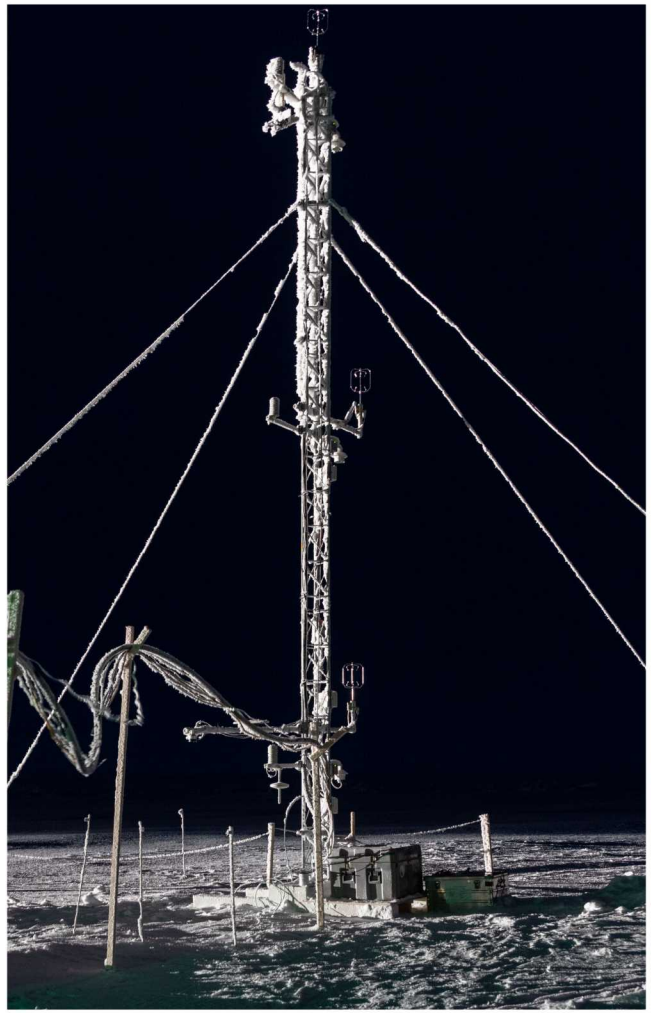
MOSAiC Central Observatory

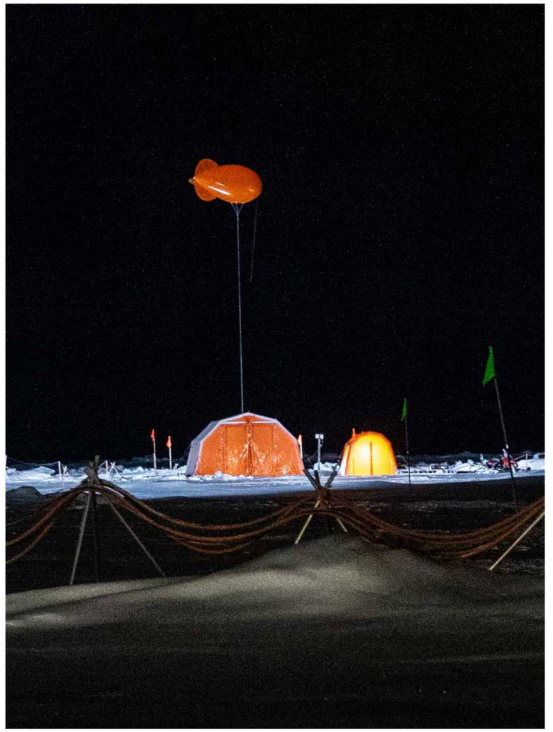
MET CITY



ROV OASIS

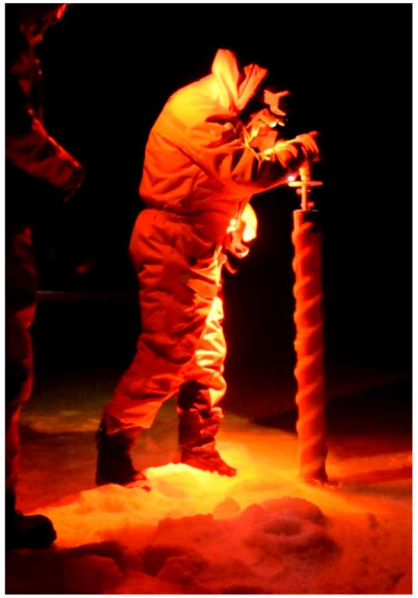
REMOTE SENSING SITE

BALLOON TOWN



OCEAN CITY

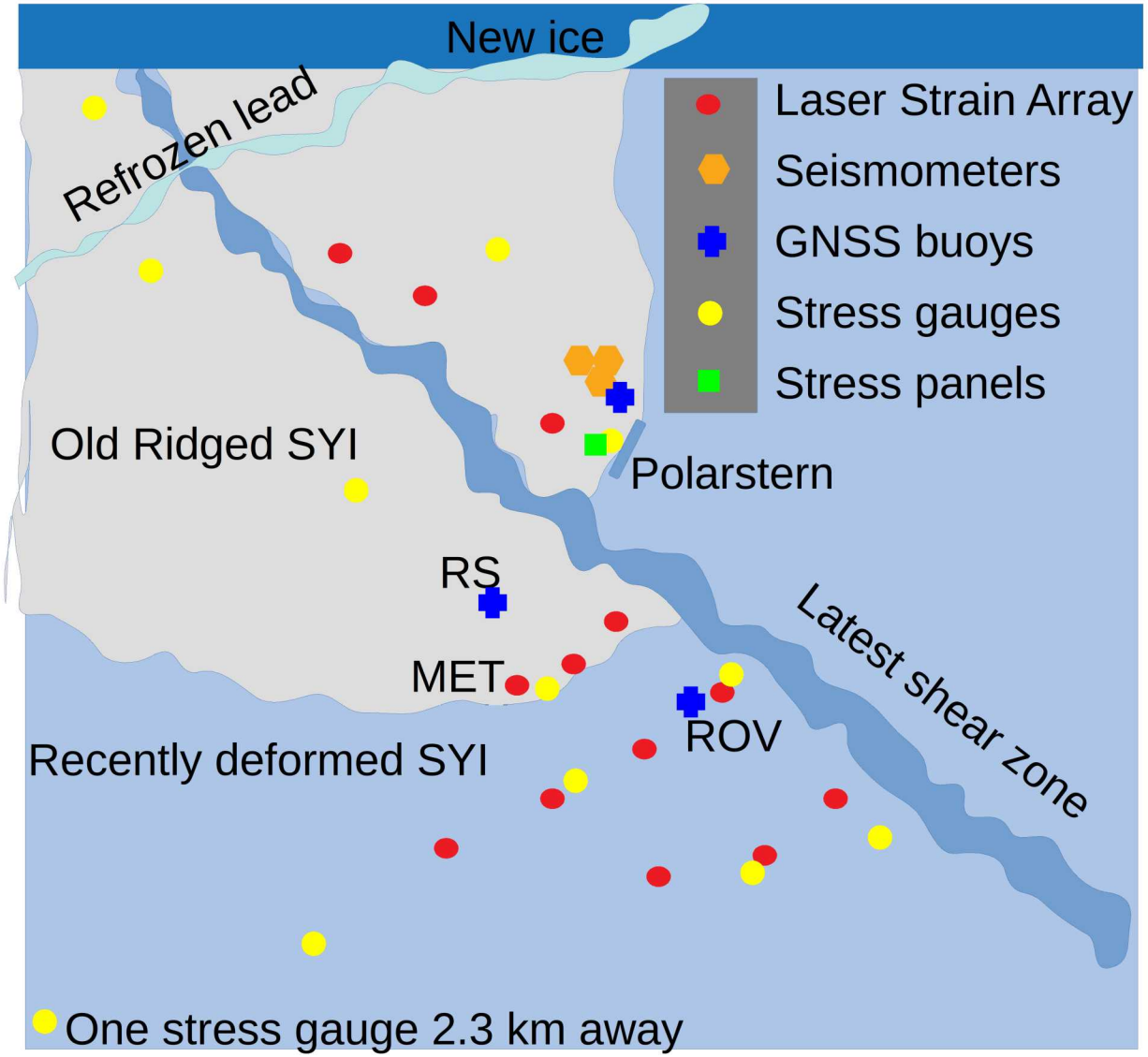
DARK SIDE



Small-scale Ice Dynamics Observing System (SIDOS)

Components

1) Laser strain observatory
   Darthmount/CRREL
2) Three GNSS buoys
   Univ. Huddersfield
3) Five seismic stations
   AARI
4) 17 stress gauges
   Darthmount/CRREL, FMI
5) Stress panels and strain rates at the PS
   HSVA, TUHH
6) Ice radar for differential ice motion
   FMI



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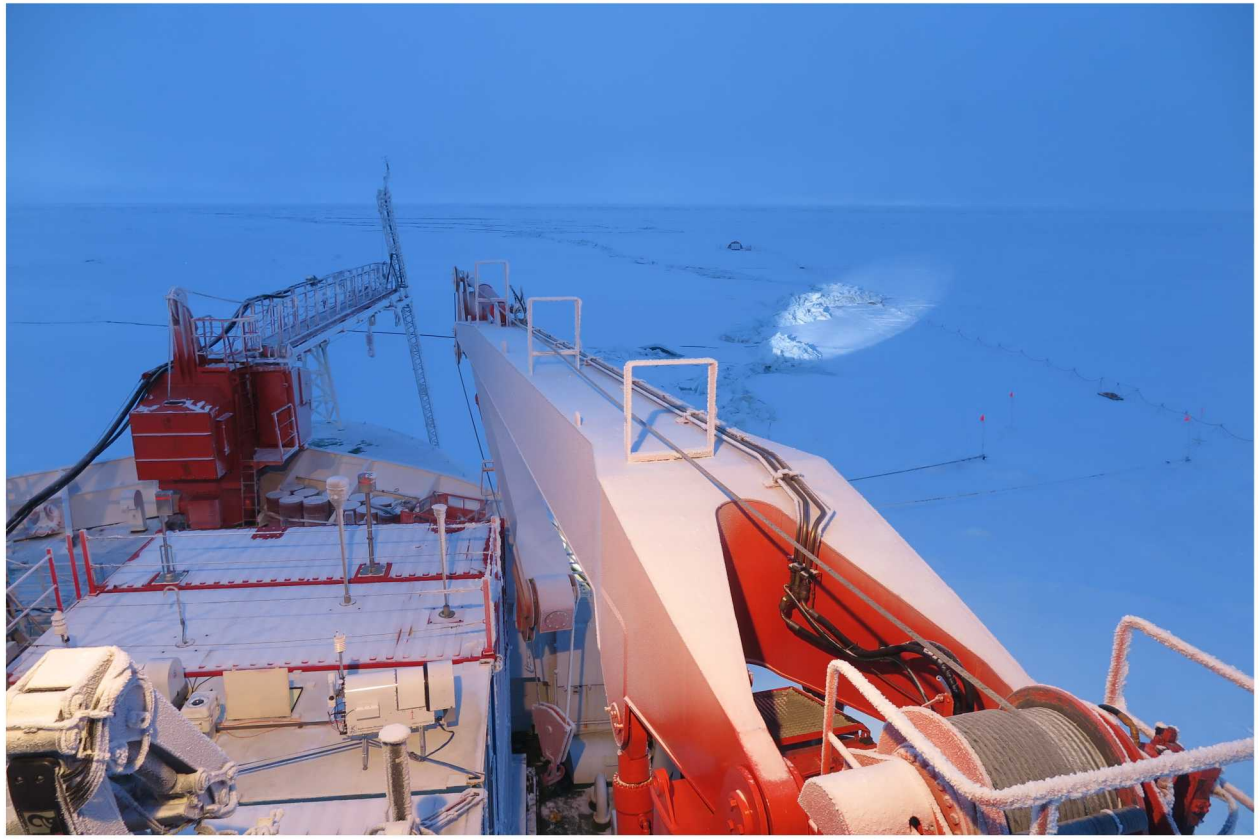
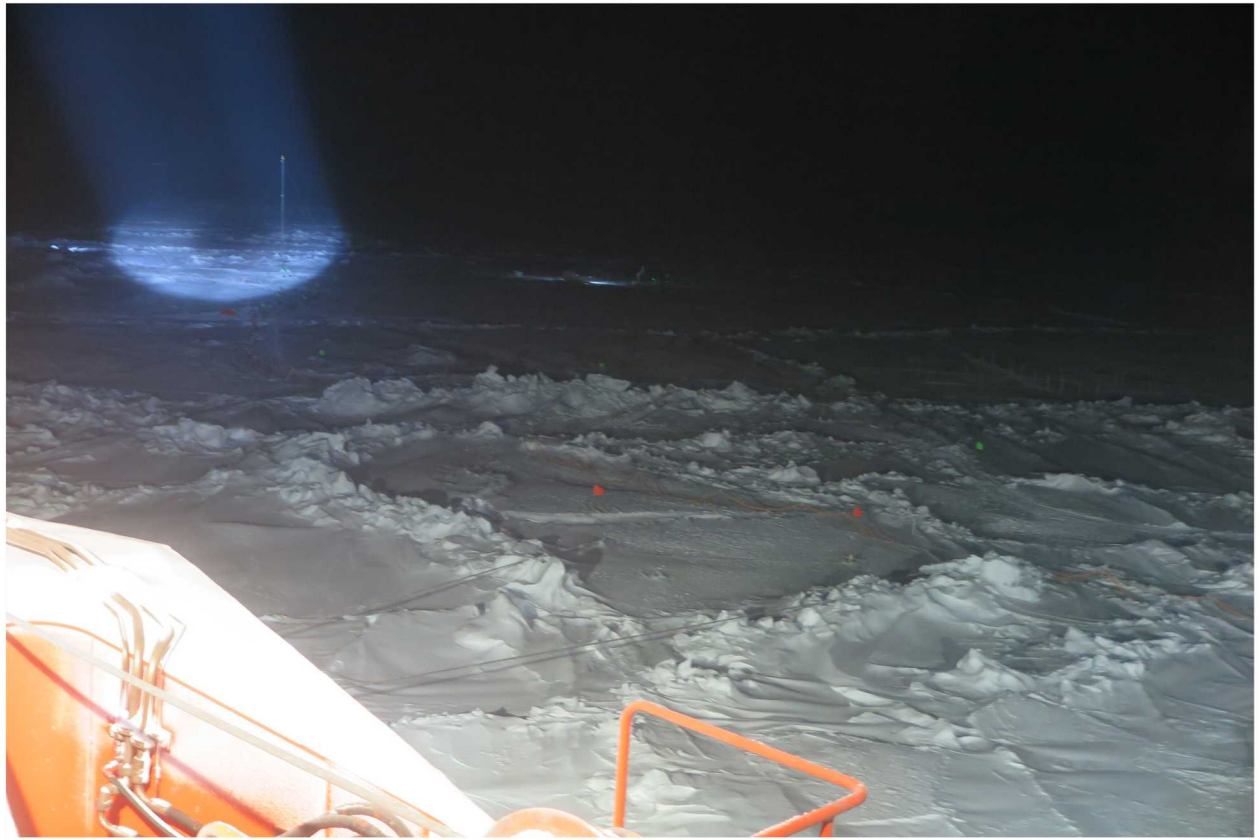
Changing Icescape

October 16th 2019



December 9th 2019



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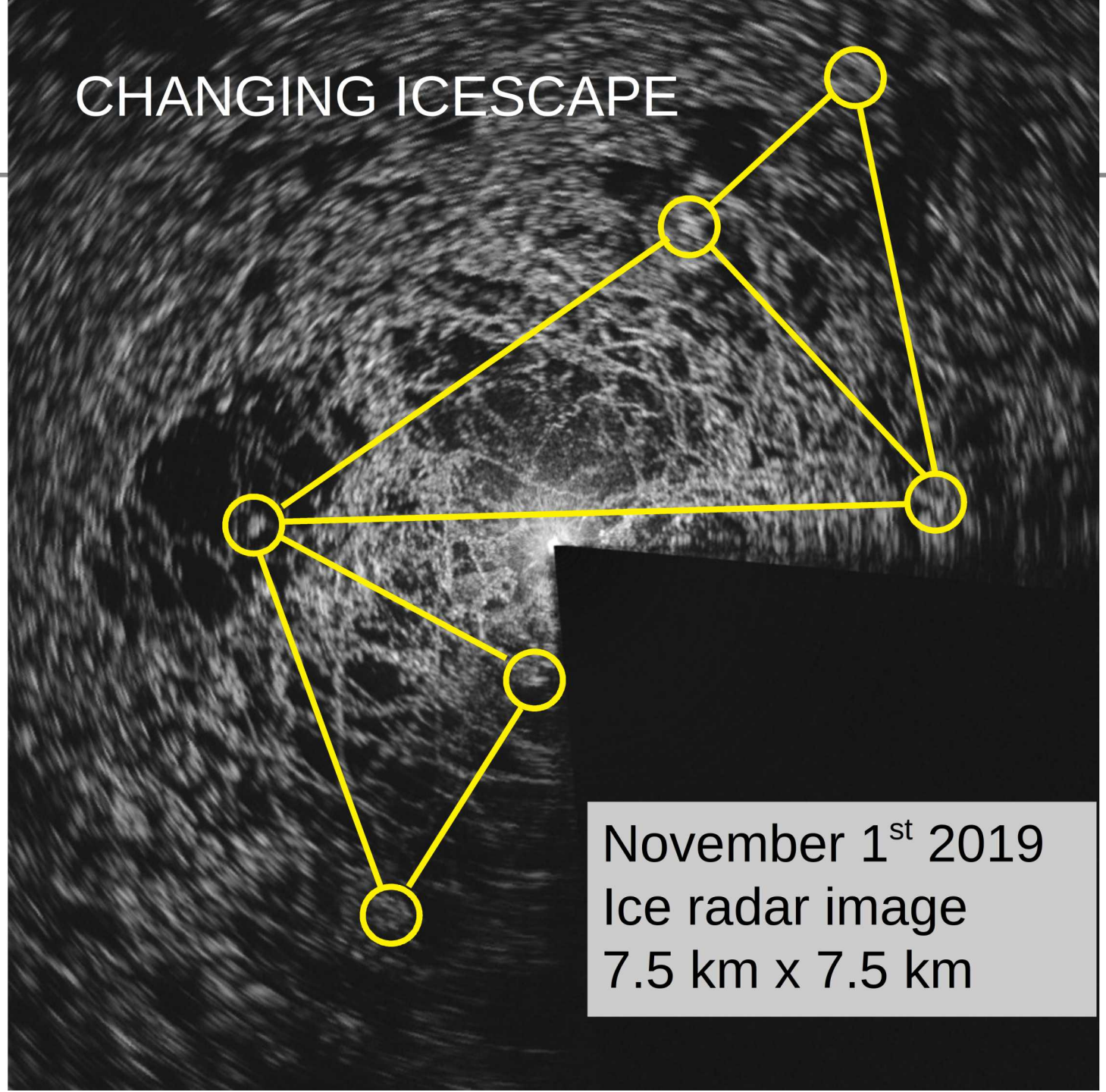
CHANGING ICESCAPE



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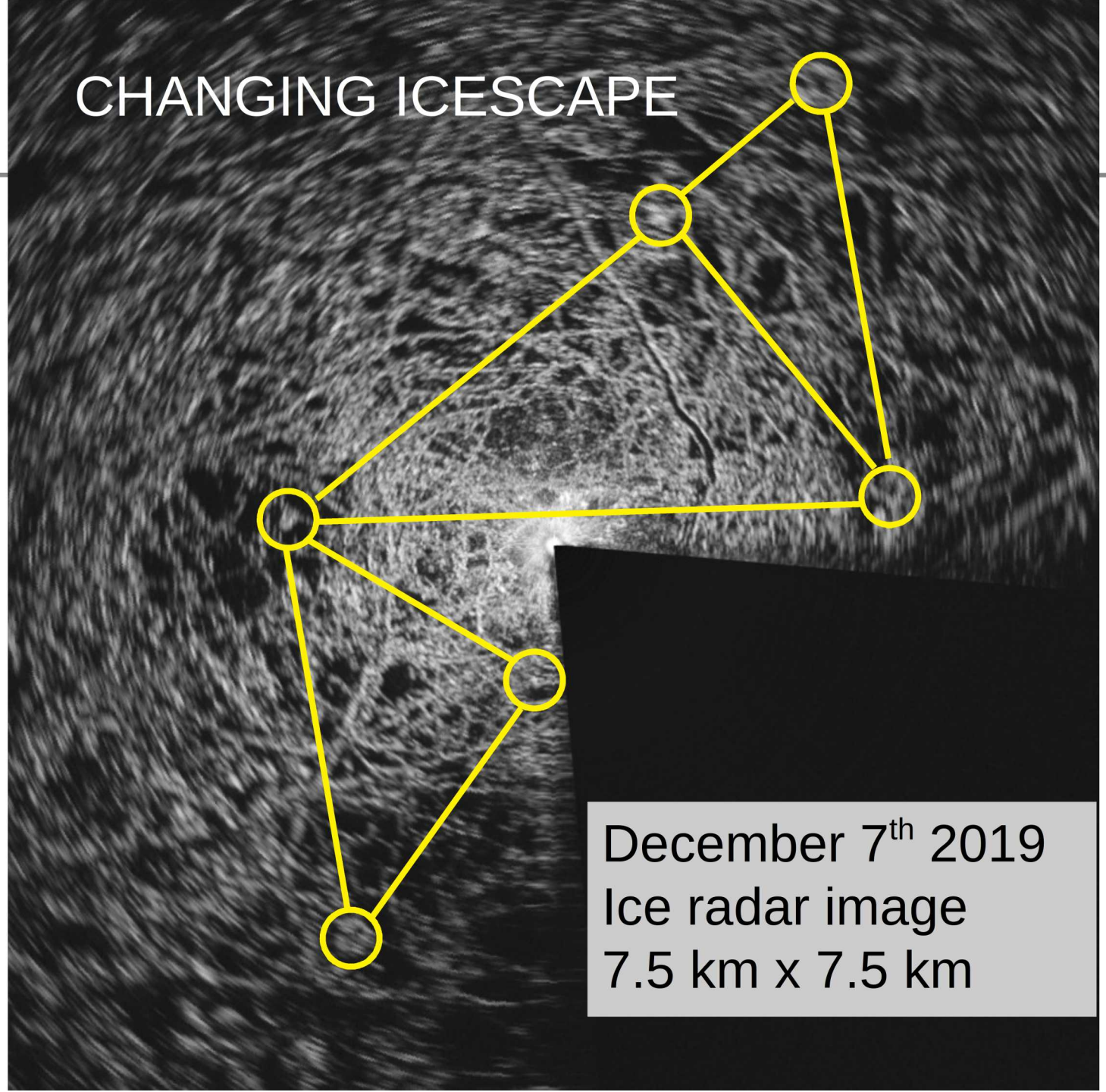
CHANGING ICESCAPE



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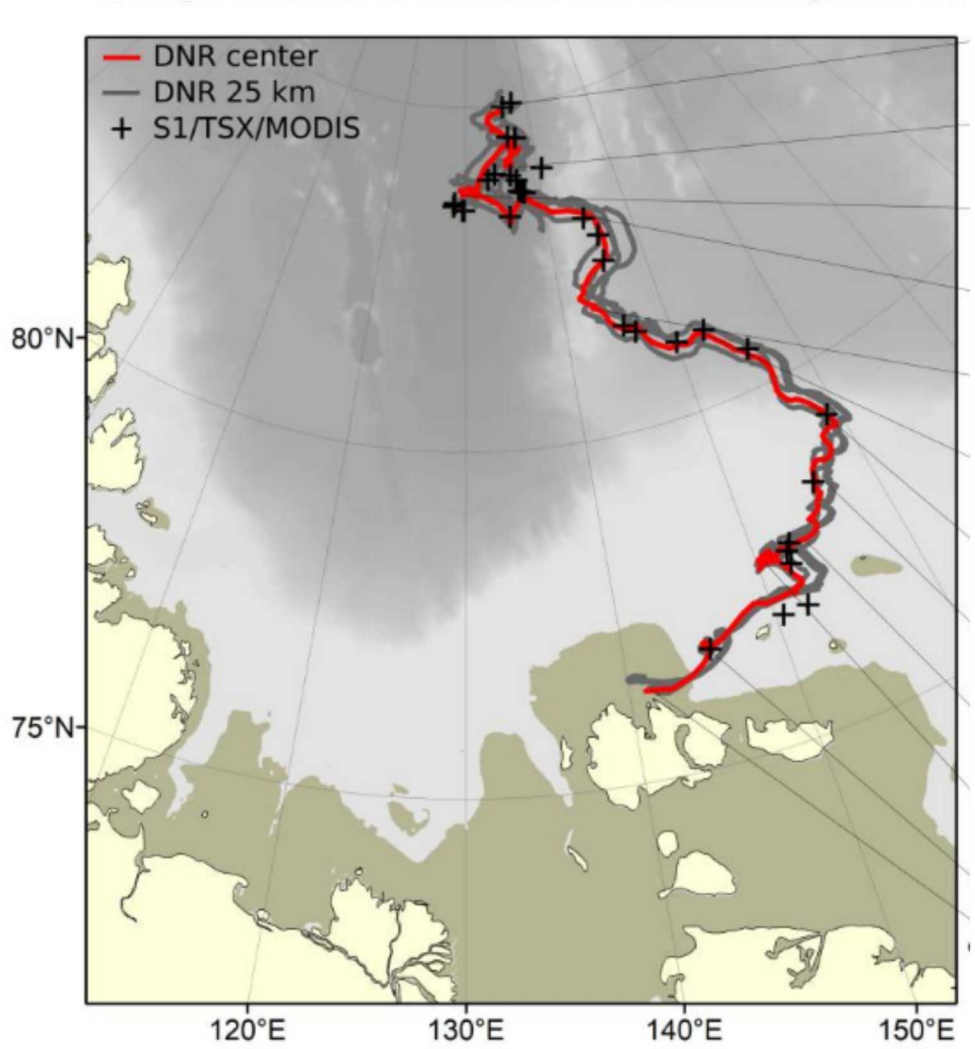
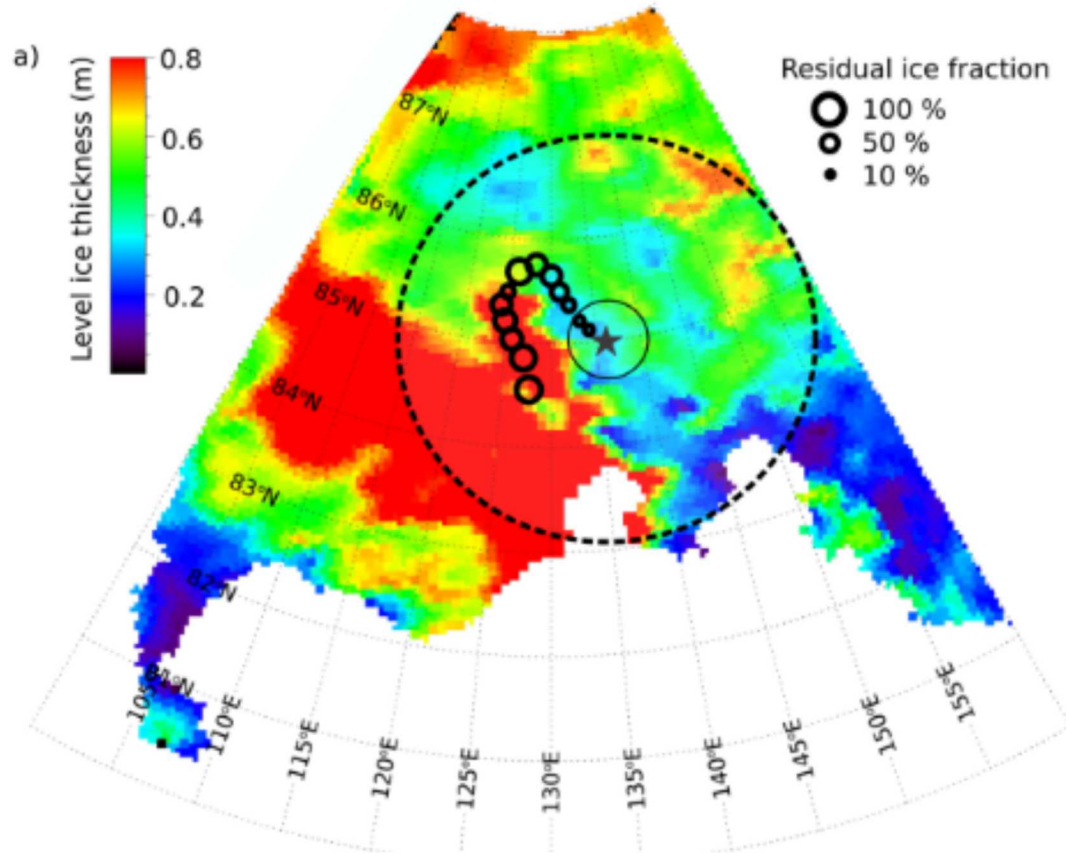
Ice radar movie

Evolution of ice pack
15 Nov – 6 Dec

Origin of the MOSAiC floe





Krumpen et al. 2020 TCD

THANK YOU – QUESTION OR COMMENTS ?