

the Nansen LEGACY



An interdisciplinary research project on the climate and ecosystem of the Barents Sea – a gateway to a changing Arctic



PIs Marit Reigstad (UiT), Tor Eldevik (UiB), Sebastian Gerland (NPI)

Budget: 740 mill NOK, 2018-2023



Norwegian Ministry of Education and Research

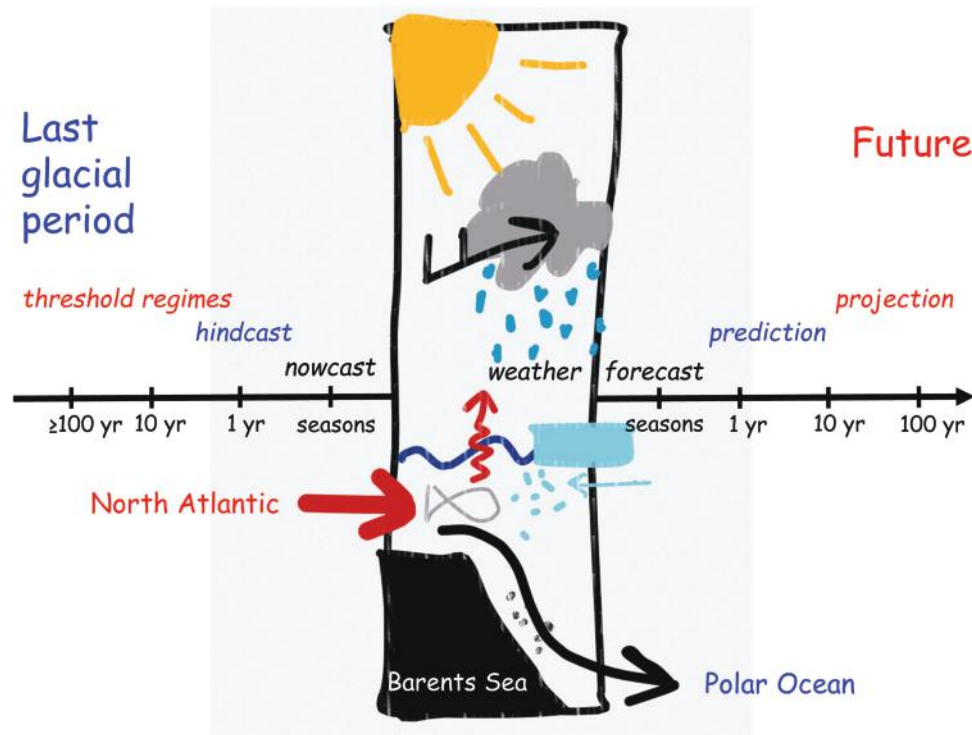


The Research Council of Norway



Nansen Legacy, UK Arctic meeting, January 2019

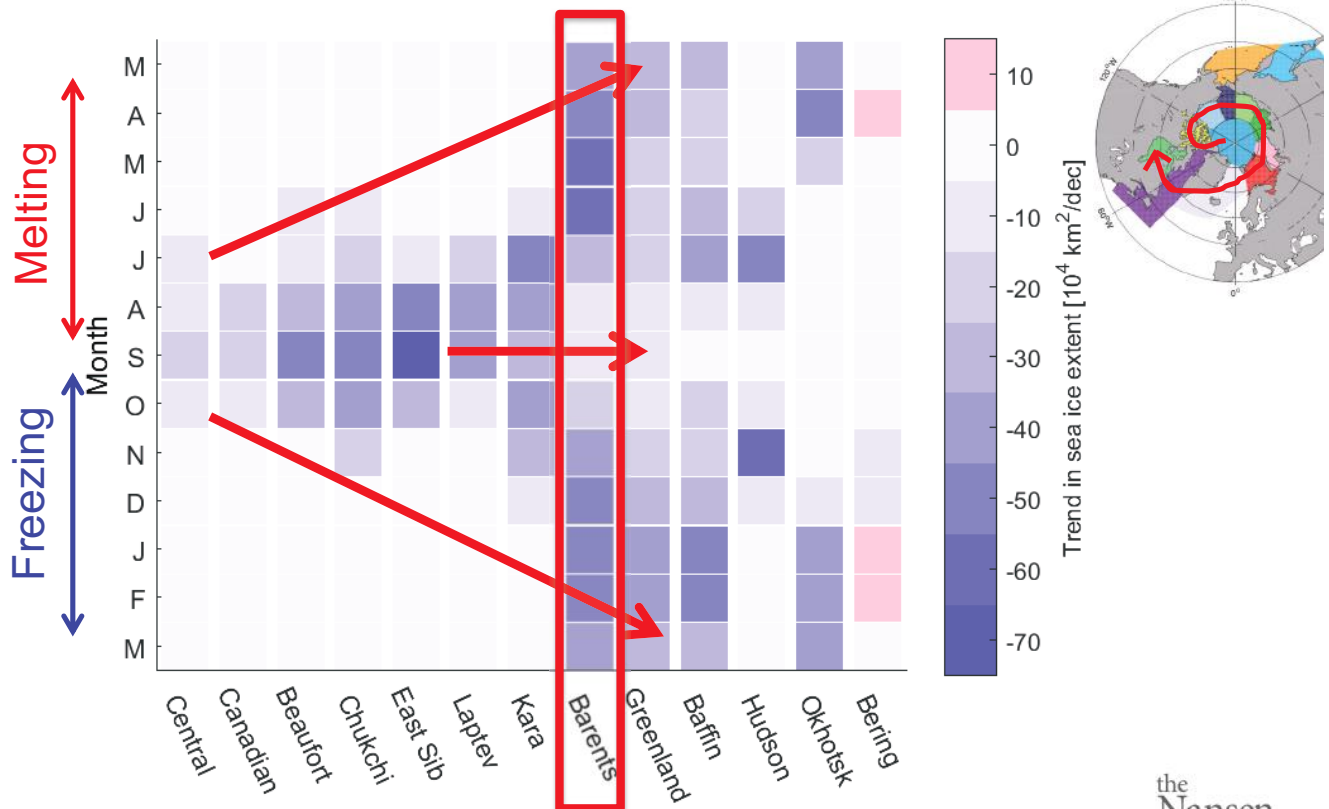
Science plan: Towards a holistic understanding of a changing climate and ecosystem



Eldevik, UiB/ Nansen Legacy

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Regional and seasonal trends in sea ice extent, 1979-2016



Onarheim et al., *J. Clim.*, 2018

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The Nansen Legacy

will use over 360 days at sea 2018-22



Pilot studies
-deploy moorings
-baseline and
processes

Seasonal approach
-processes
August/19
December/19
March/20
May/June/20

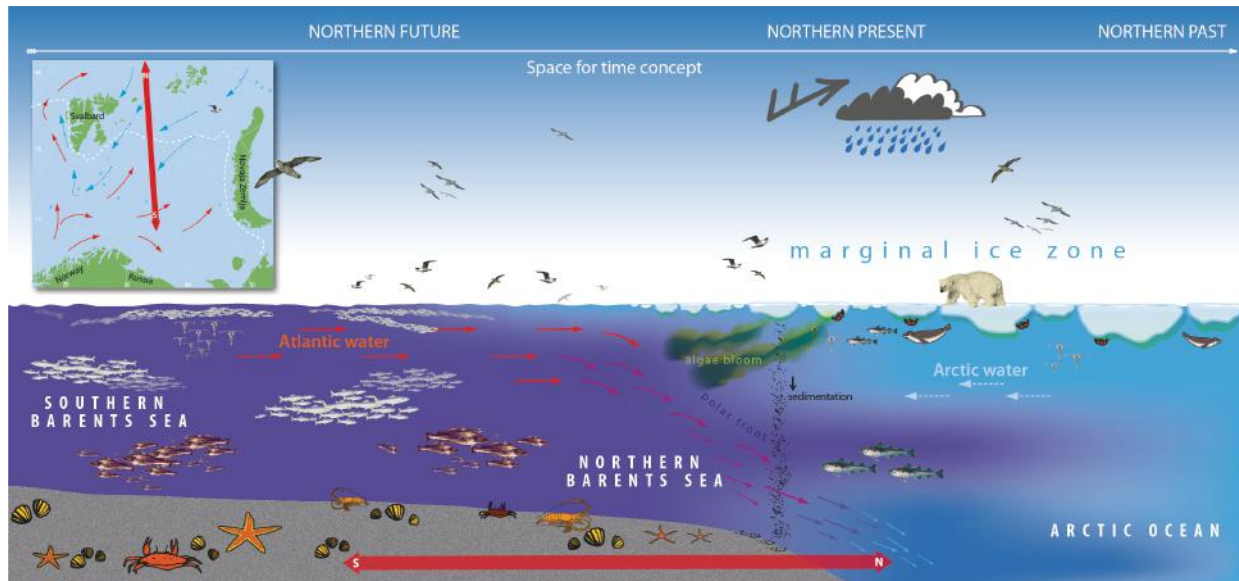
Transect into
Arctic Basin

Closing gaps

Include media & collaborating scientists

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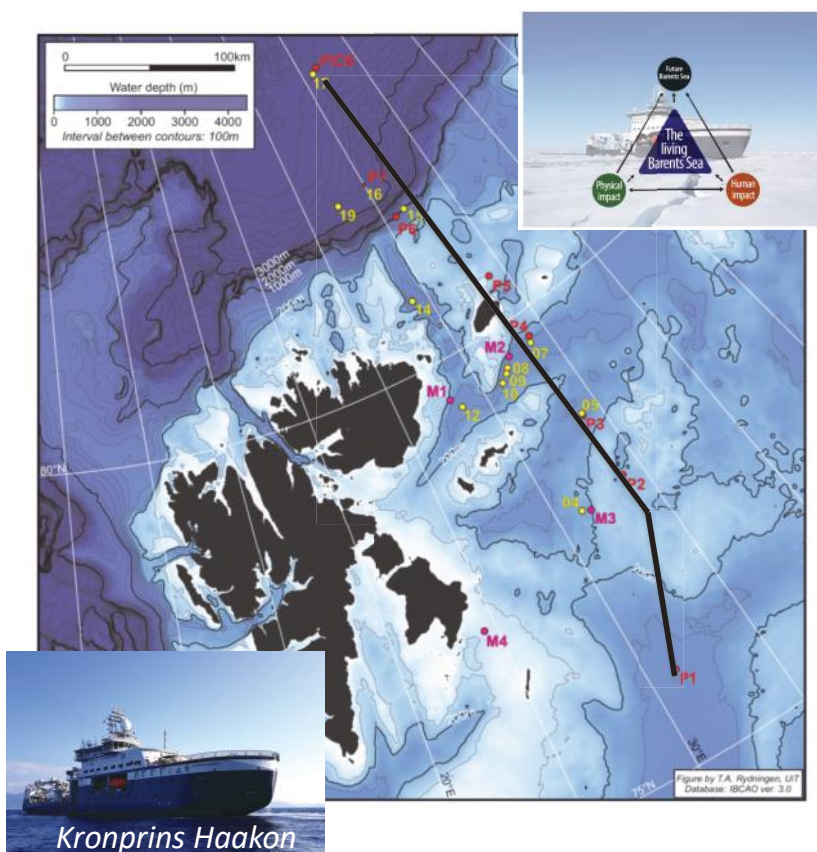
Environmental gradient to be investigated seasonally and interannually



Gerland et al. (in prep.)
Nansen Legacy Synthesis paper

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The Nansen Legacy cruise map 2018

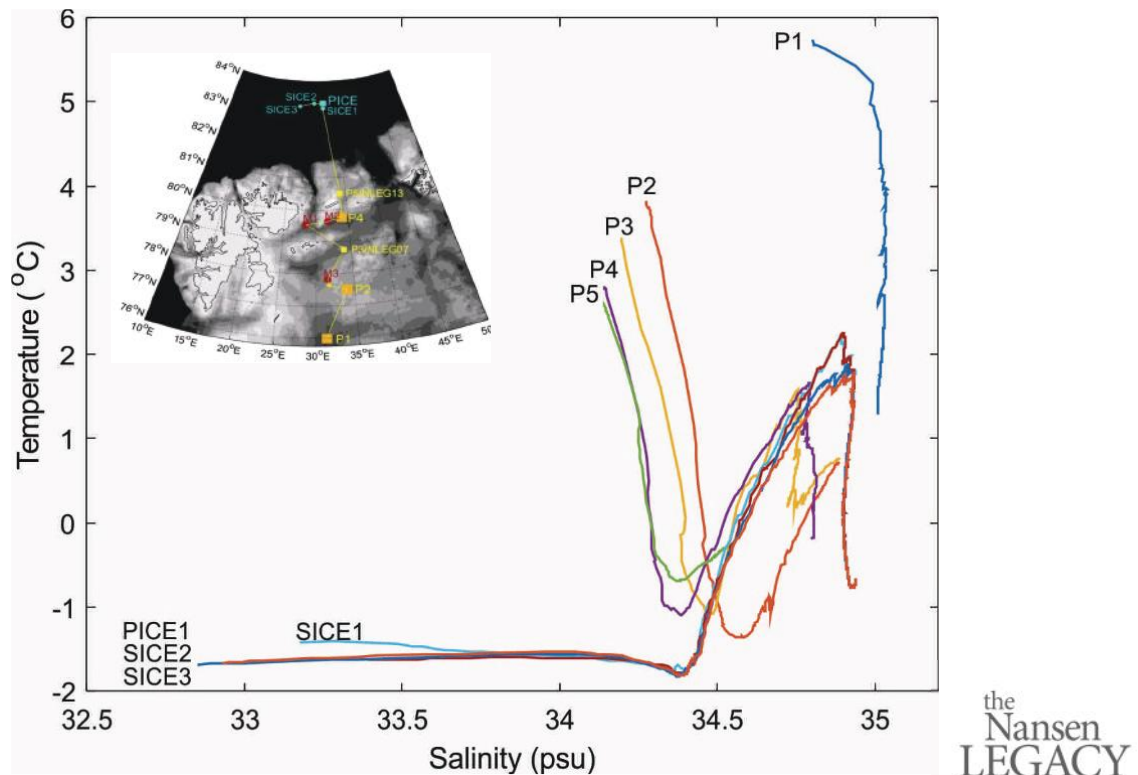


Uses climatic gradients to investigate

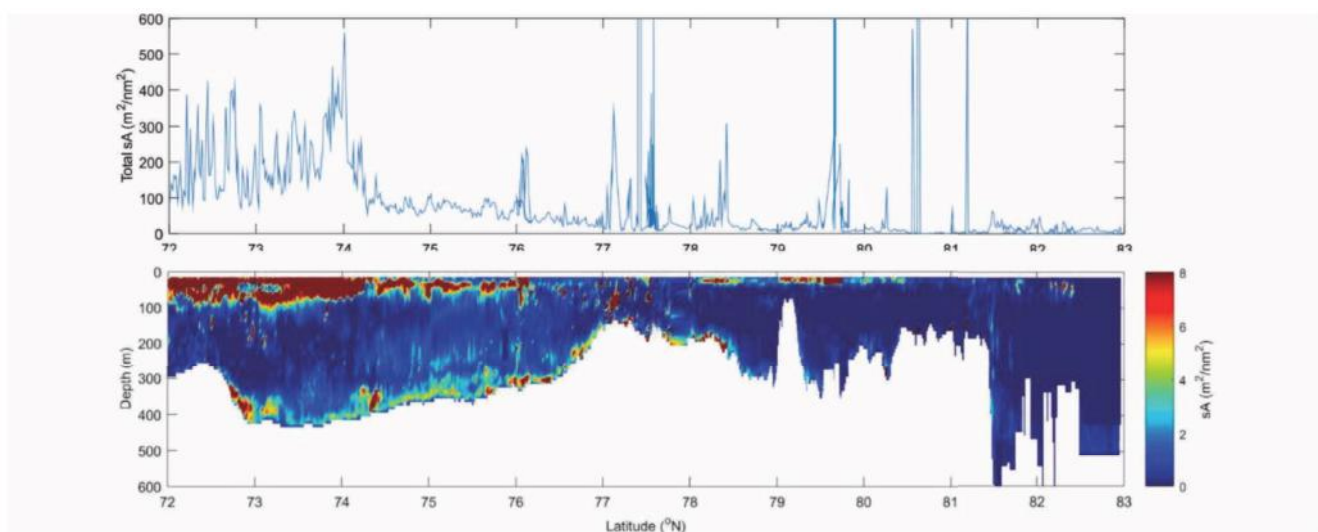
- Physical-biological interactions
- Ecosystem characteristics, timing, productivity, food web
- Contaminants, acidification, effects of fisheries
- Paleoproductivity-variability
- Use and development of new technology
- Weather and climate modelling
- Observations for improved prediction
- Data legacy

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Joint Cruise 1-2, August 2018: T/S



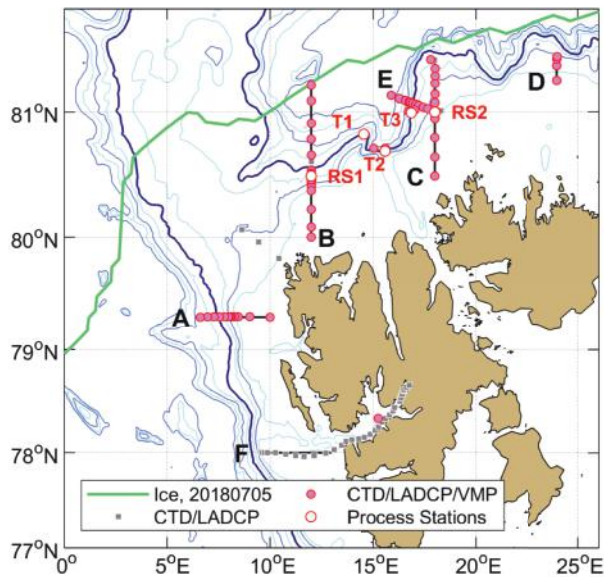
Acoustic measurements of fish and zooplankton EK80, August 2018



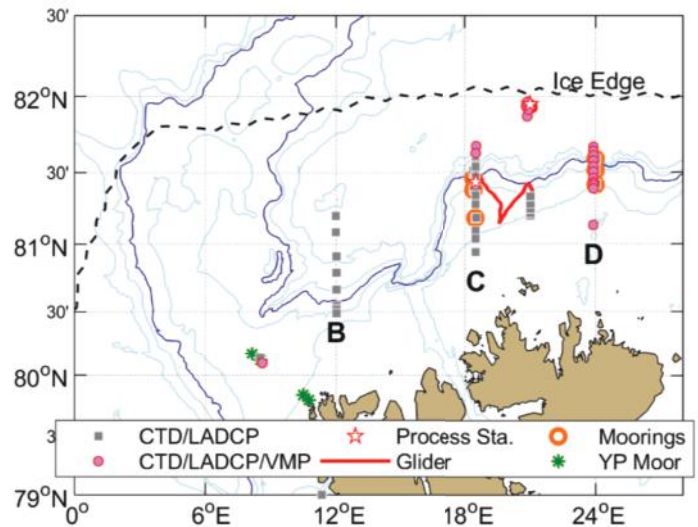
Along-track total vertical integrated backscatter from 38kHz (sA) and vertically resolved total backscatter from 38kHz (sA). Randi Ingvaldsen IMR/Nansen Legacy.

From Nansen Legacy cruise report Joint cruise 1/2

Physical process cruises, June & September 2018



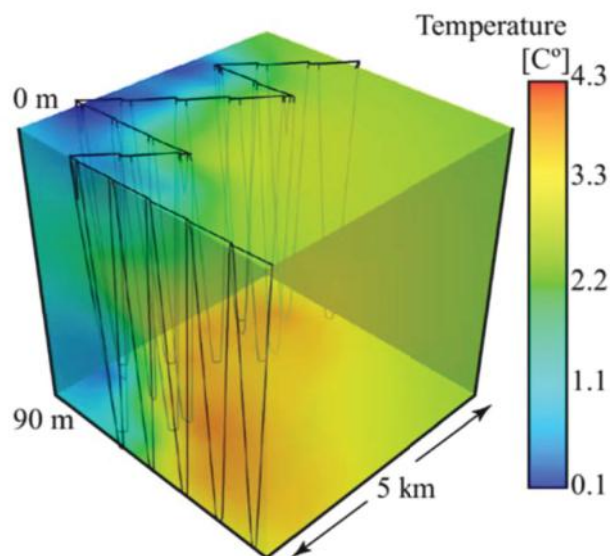
RV Kristine Bonnevie, June 2018



RV Kronprins Haakon,
September 2018

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Investigating fronts- adaptive measurements



LAUV Harald – adaptive measurements of fronts based on temperature.
Photo & graphics: Trygve Fossum NTNU/Nansen Legacy.

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Coordination and registration of samples

- Registration of all samples and traceability to gear and all subsamples
- Metadata and standard format for storage. Available in SIOS portal
- Sampling protocols developed, posted on SIOS and distributed to collaboration partners
- https://sios.metsis.met.no/reports/aen_multi



QR codes for scanning secure samples

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Cruise reports 2018

Cruise report
The Nansen Legacy paleo cruise
RV «Kronprins Haakon»
September 26 – October 19, 2018
(Cruise 2018710)



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CRUISE SUMMARY REPORT
KH 2018709 with R.V. Kronprins Haakon
12 - 24 September 2018

Working Areas:
and north of Svalbard



Version: **Draft**,
Last edit: 10.10.2018
(University of Ulm / ULL the Arctic University of Norway)

Cruise report
AeN Joint Cruise 1-2
R/V Kronprins Haakon, 6-23 August, 2018
(Cruise 2018707)

Working Areas:
West and north of Svalbard

Geophysical Institute, University of Bergen



Left to right: Eva Falck, Ilker Fer, Frank Nilsen,
Anthony Bosse, Zoë Koenig, Algot Peterson

CRUISE SUMMARY REPORT
Cruise KB 2018616 with R.V. Kristine Bonnevie
27 June - 10 July 2018

Working Areas:
West and north of Svalbard

Geophysical Institute, University of Bergen



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Nansen Legacy cruises 2019/ 2020 (2020 dates not confirmed)

- **August-19:** Joint cruise, seasonal Q3 (contact: M. Reigstad, UiT)
- **November-19:** Mooring cruise Nansen Legacy/ A-TWAIN (contact: A. Sundfjord, NPI)
- **December-19:** Joint cruise seasonal Q4 (contact: Melissa Chierici, IMR)
- **March-20:** Joint cruise seasonal Q1 (contact: Sebastian Gerland, NPI)
- **May-20:** Joint cruise seasonal Q2 (Chief scientist: tbd)
- **June-20:** Physical process cruise (contact: Ilker Fer, UiB)
- **August-20:** Mooring service cruise (contact: Arild Sundfjord, NPI)

Kronprins Haakon

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Technological development

and use across disciplines will prepare the future observation strategies



Image: ESA/ATG Medialab

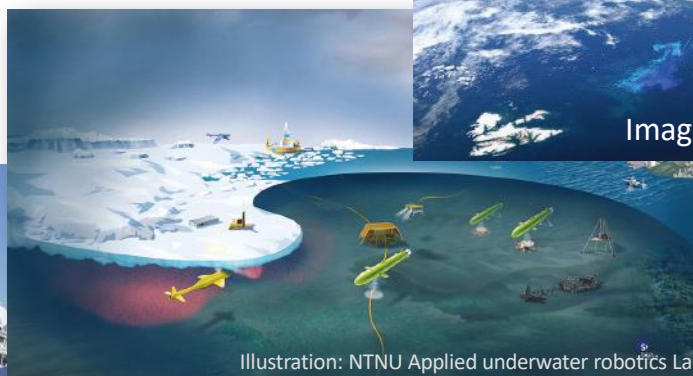
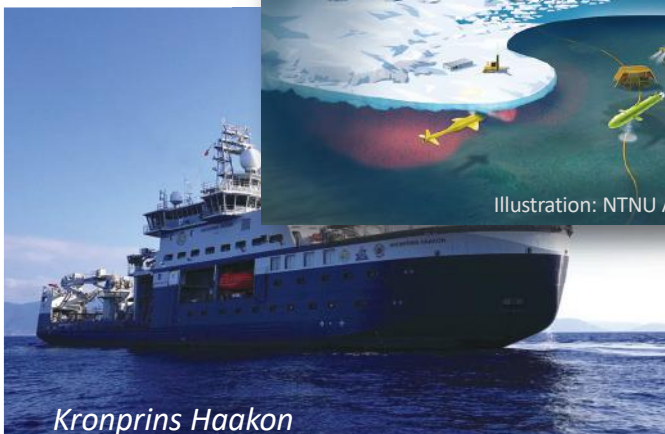


Illustration: NTNU Applied underwater robotics Lab



Kronprins Haakon

Optimize use of emerging
technologies and infrastructure,

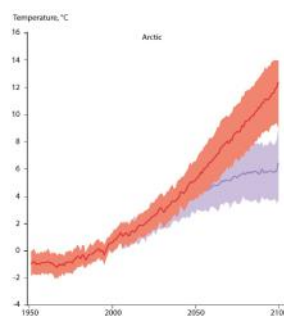
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• the next days?



• the next years?

• 2050?



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UK- Nansen Legacy collaboration



- Cruise participation
 - *Nansen Legacy* participation on Arctic Prize cruises – polar cod
 - ChAOS participants on *Nansen Legacy* paleo cruise – core samples and analysis
 - ChAOS collaboration on benthic process work
- Data and analysis
 - *Nansen Legacy* post doc to ChAOS/ Leeds for sample analysis
 - Arctic Prize and *Nansen Legacy* – sharing oceanography data, collaboration on analysis
 - Collaboration with ARISE on isotopes and food web analysis
 - PEANUTS added sensors on moorings north of Svalbard

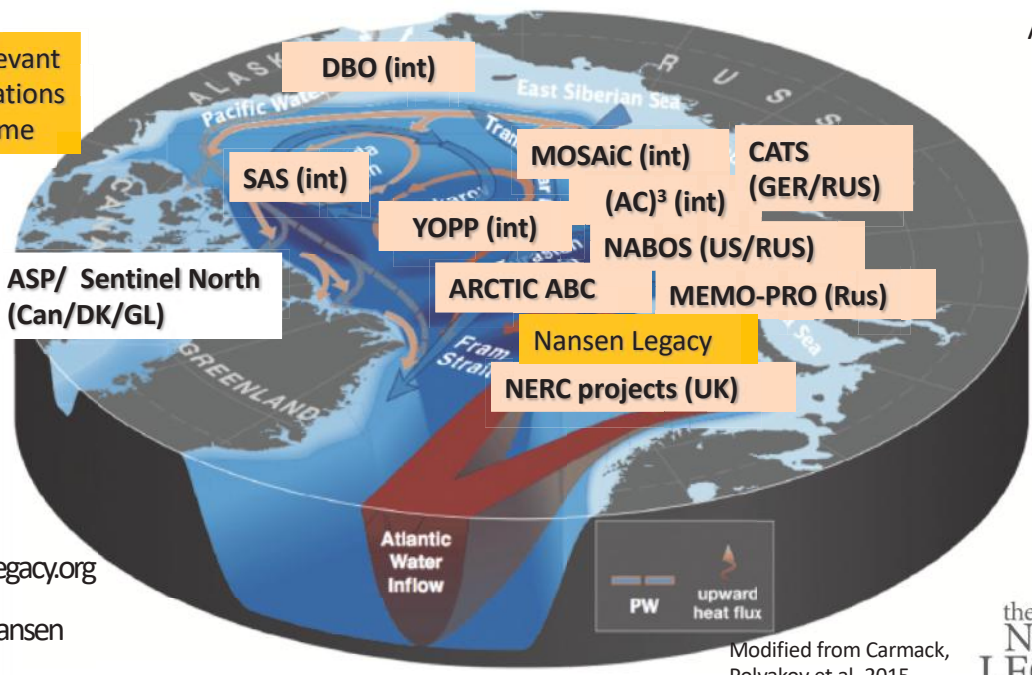
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The Nansen Legacy in an Arctic science landscape

Additional collaborative projects:
 HAVOC (MOSAiC-project)
 MAREANO
 SIOS
 A-TWAIN

Examples of collaborative projects/ initiatives

New relevant collaborations welcome



ASP/ Sentinel North (Can/DK/GL)

www.nansenlegacy.org
 @arvenetternansen
 @nansenlegacy

Modified from Carmack, Polyakov et al. 2015

