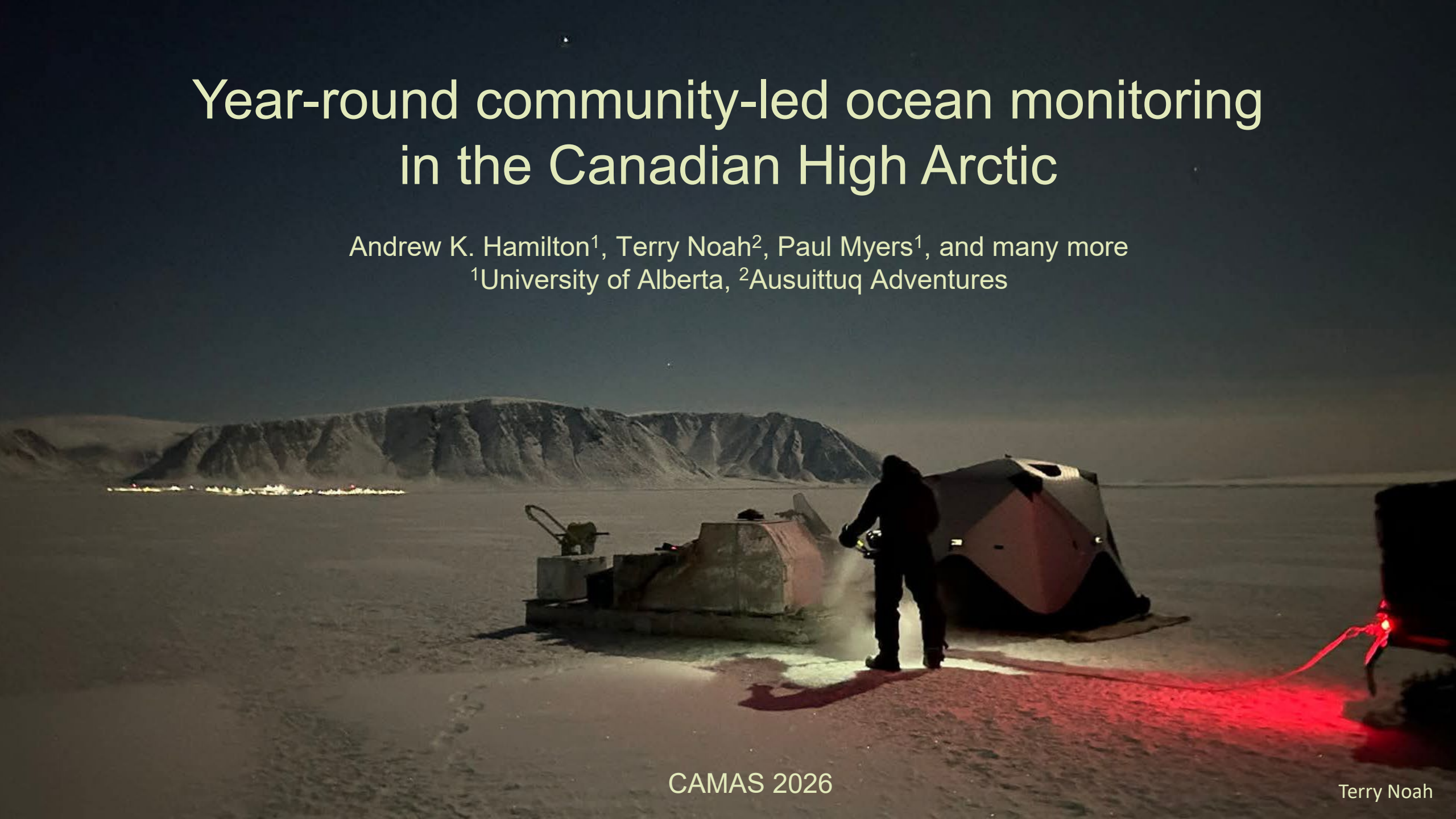
Year-round community-led ocean monitoring in the Canadian High Arctic

Andrew K. Hamilton[1], Terry Noah[2], Paul Myers[1], and many more
[1]University of Alberta, [2]Ausuittuq Adventures



CAMAS 2026

Terry Noah

Acknowledgements

Organizations:
University of Alberta
Ausuittuq Adventures
Hamlet of Grise Fiord
Iviq Hunters and Trappers Organization
Oceans North
Polar Continental Shelf Project (PCSP)
NSERC
W. Garfield Weston Foundation
ACUNS
ArcticNet
Polar Knowledge Canada

Individuals:
- Larry Audlaluk (Grise Fiord, Nunavut, Canada)
- **Laisa Audlaluk-Watsko (Grise Fiord, Nunavut, Canada)**
- Jeremy Baudry (Université du Québec à Rimouski)
- **Erin Bertrand (Dalhousie University**)
- Maya Bhatia (University of Alberta)
- Jérémie Bonneau (University of British Columbia)
- Éric Brossier (SY Vagabond)
- Leonie Brossier (SY Vagabond)
- Aurore Brossier (SY Vagabond)
- Carly Buchwald (Dalhousie University)
- Emile Bujold (Université du Québec à Rimouski)
- David Burgess (Natural Resources Canada)
- Maria Cavaco (University of Alberta)
- Christian Christensen (Grise Fiord, Nunavut, Canada)
- Luke Copland (University of Ottawa)
- Brad Danielson (Natural Resources Canada)
- Christian Dederick Jr. (Grise Fiord, Nunavut, Canada)
- Minoli Dias (University of Toronto)
- **David Didier (Université du Québec à Rimouski)**
- Jordan Eamer (Natural Resources Canada)
- Ben Frank (Grise Fiord, Nunavut, Canada)
- Jochen Halfar (University of Toronto)
- Danielle Hallé (University of Waterloo)
- Andrew Hamilton (University of Alberta)
- Ana Heras Duran (University of Alberta)
- Charles Jourdain Bonneau (Université du Québec à Rimouski)
- Gabriel Joyal (Centre de géomatique du Québec)
- Jarloo Kiguktak (Grise Fiord, Nunavut, Canada)
- Meeka Kiguktak (Grise Fiord, Nunavut, Canada)
- Nolan Kiguktak (Grise Fiord, Nunavut, Canada)
- Tom Kiguktuk (Grise Fiord, Nunavut, Canada)
- **Paul Myers (University of Alberta)**
- **Jesse Ningiuk (Grise Fiord, Nunavut, Canada)**
- **Terry Noah (Ausuittuq Adventures)**
- Frankie Noah (Grise Fiord, Nunavut, Canada)
- Béatrice Noël (Université du Québec à Rimouski)
- Alexandre Normandeau (Natural Resources Canada)
- Claire Parrott (University of British Columbia)
- Jay Pete Peter (Grise Fiord, Nunavut, Canada)
- **Silas Pijimani (Grise Fiord, Nunavut, Canada)**
- France Pinczon du Sel (SY Vagabond)
- Jimmy Qaapik (Grise Fiord, Nunavut, Canada)
- Megan Roberts (Dalhousie University)
- Elaine Runge (University of Alberta)
- Joseph Shoapik (Grise Fiord, Nunavut, Canada)
- Jenifer Spence (University of Alberta)
- Charlotte Stancu (Université du Québec à Rimouski)
- Daniela Walch (Université du Québec à Rimouski)
- Stephanie Waterman (University of British Columbia)
- David Watsko (Grise Fiord, Nunavut, Canada)
- Patrick White (University of Alberta)
- Zack Whitworth (Dalhousie University)
- Patrick Williams (University of Alberta)

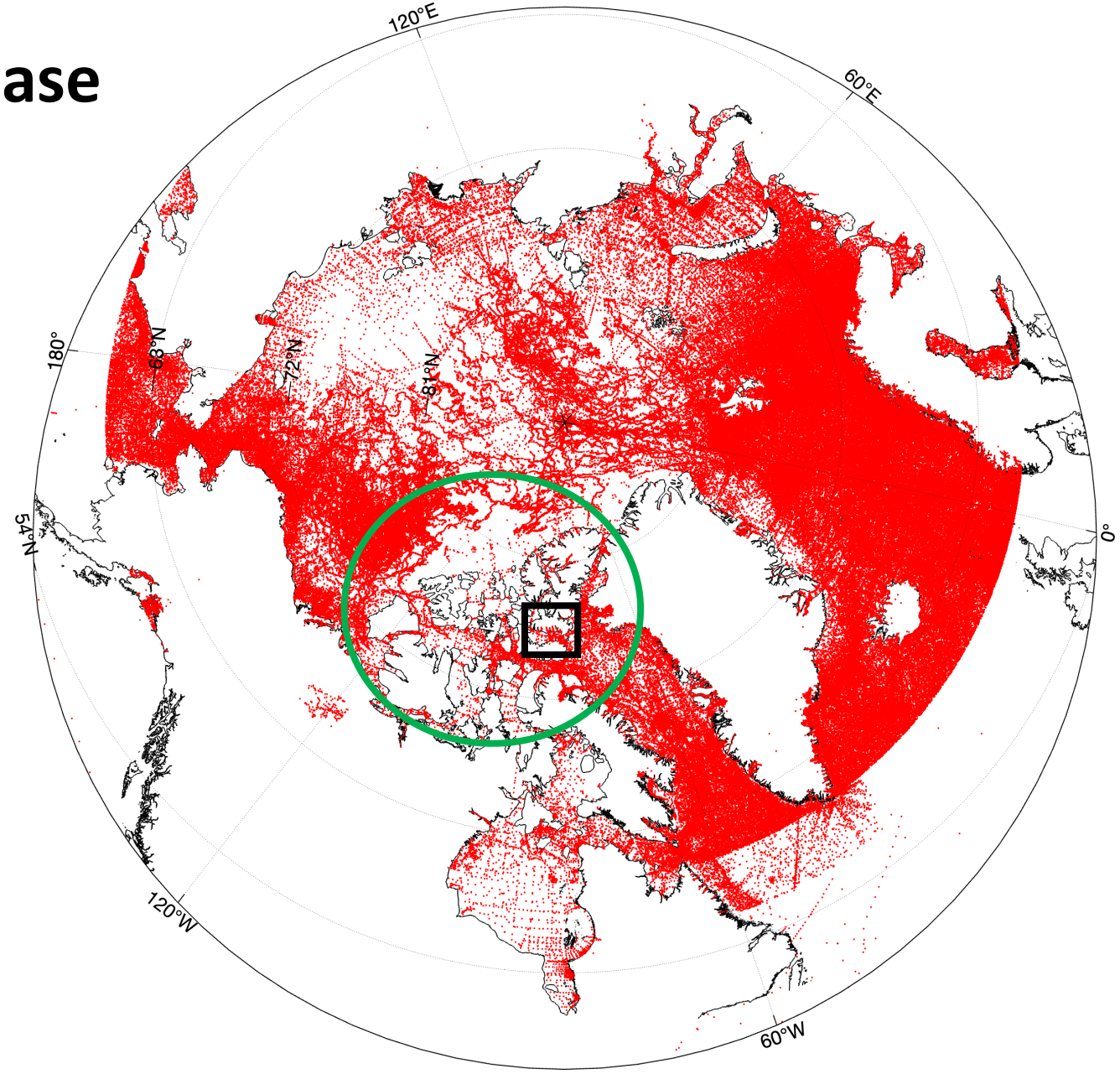
Pan-Arctic Ocean Profile Database

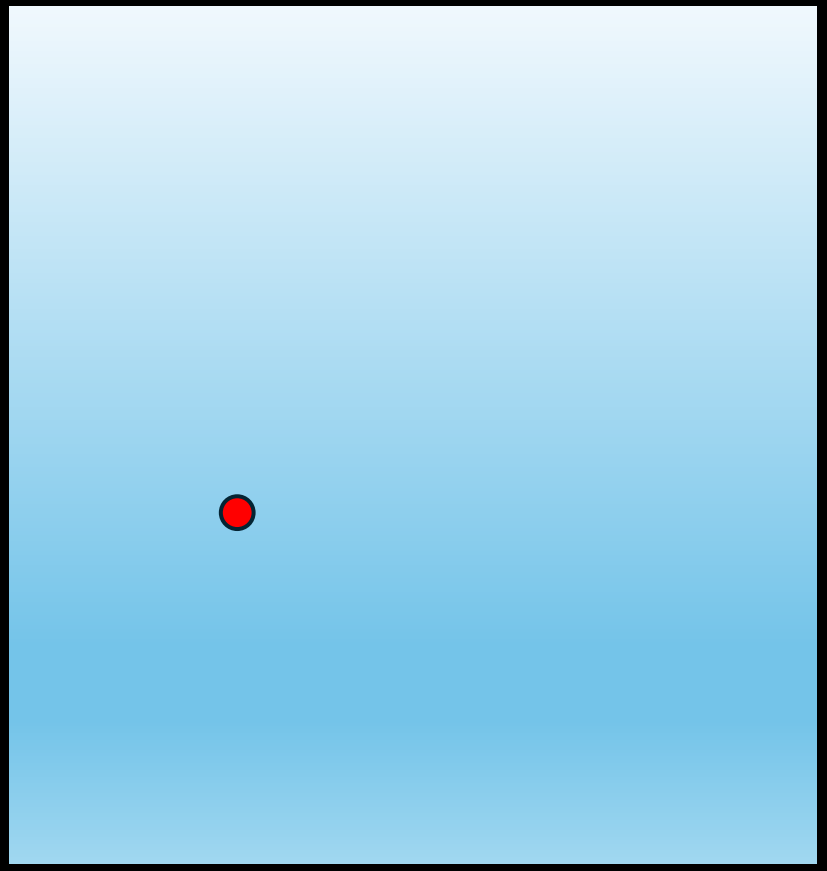
Compilation of existing data:
- 1.3 million T & S profiles
- 1908-2023
- Processing & quality control ongoing

But data gaps remain:
- gaps in geographic coverage
  (e.g. Canadian Arctic Archipelago)
- gaps in temporal coverage
  (e.g. Canadian Arctic Archipelago)

Why the gaps?
- harsh conditions
- sea ice
- remote

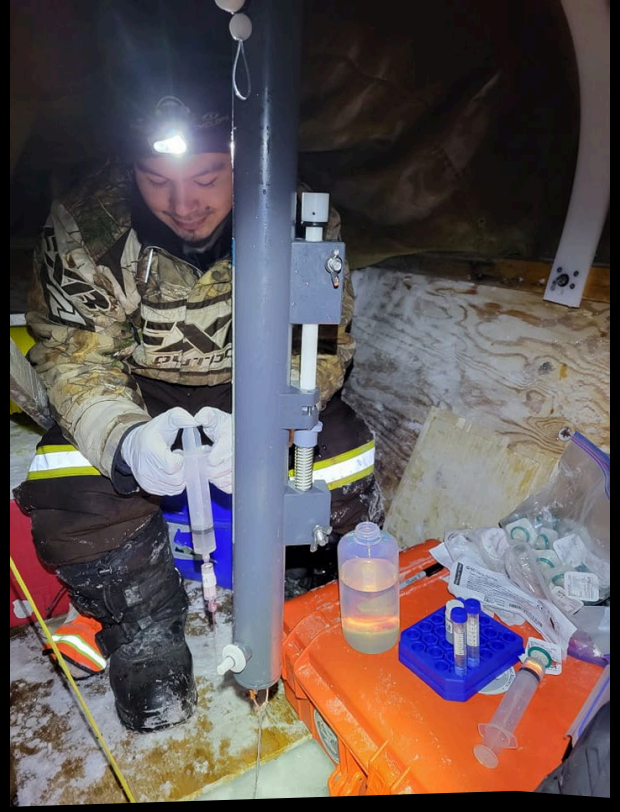
but perhaps these reasons depend on perspective…





Ausuittuq (Grise Fiord)

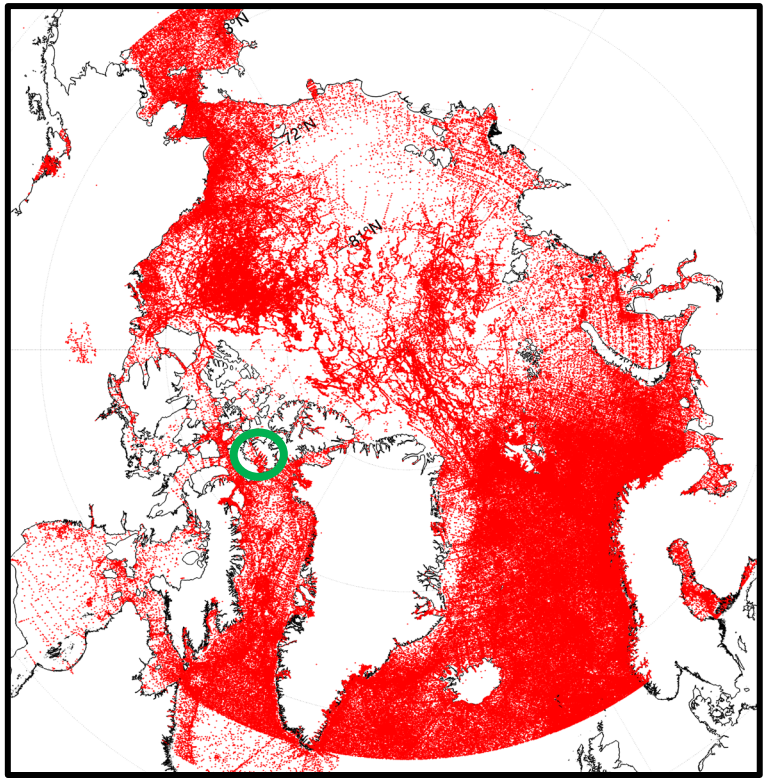
ASIQ: coastal & ocean research consortium

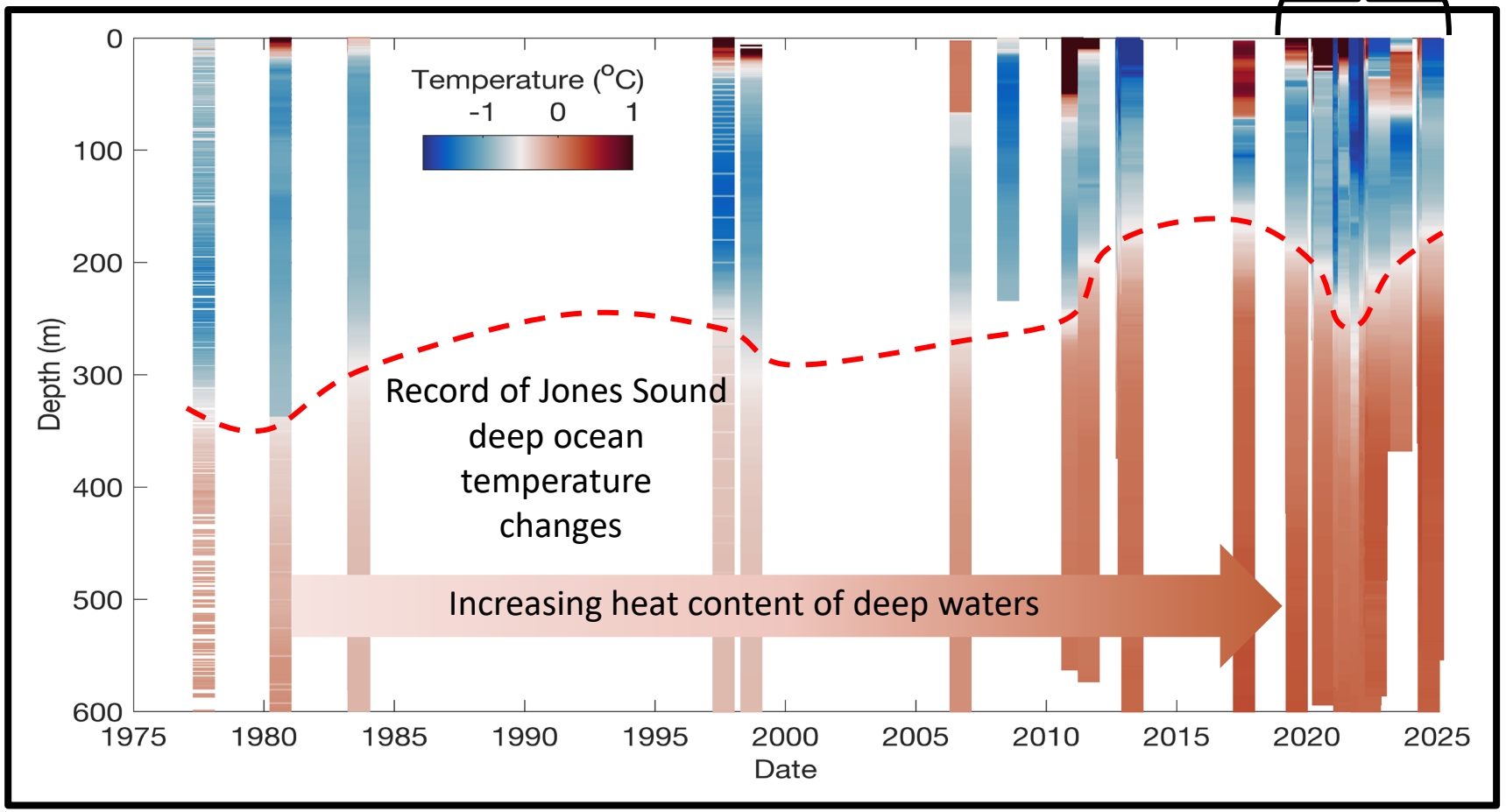


Credit: T Noah / J Ningiuk / S Pijimani

Combine the old and the new!

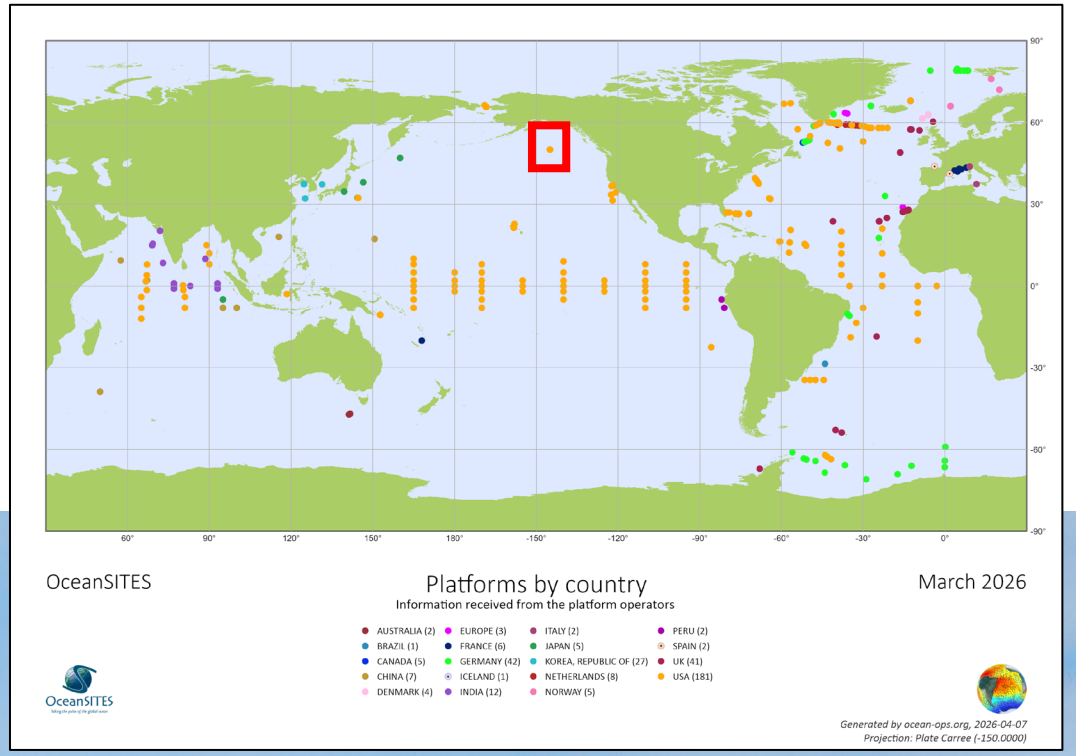
Historical Ocean Database

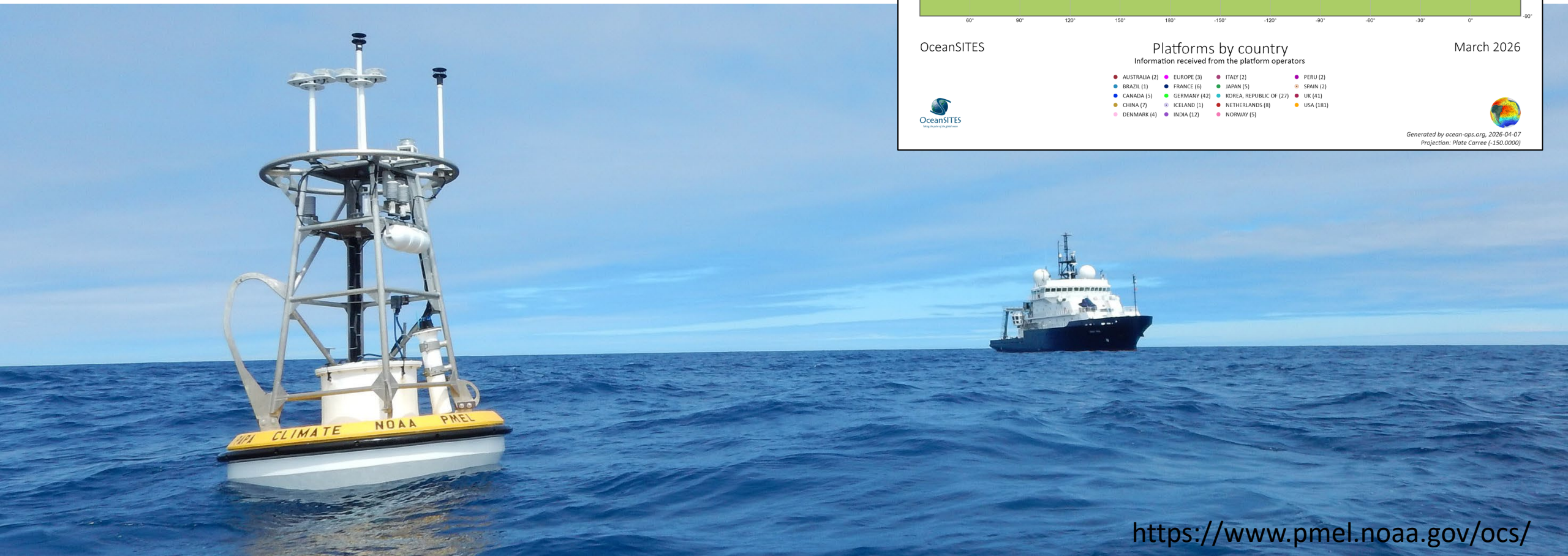




Long-term Ocean Observing Stations

e.g. Ocean Station Papa
1949 – 1981: weather ships
1997-1999; 2007 – present: moorings





https://www.pmel.noaa.gov/ocs/

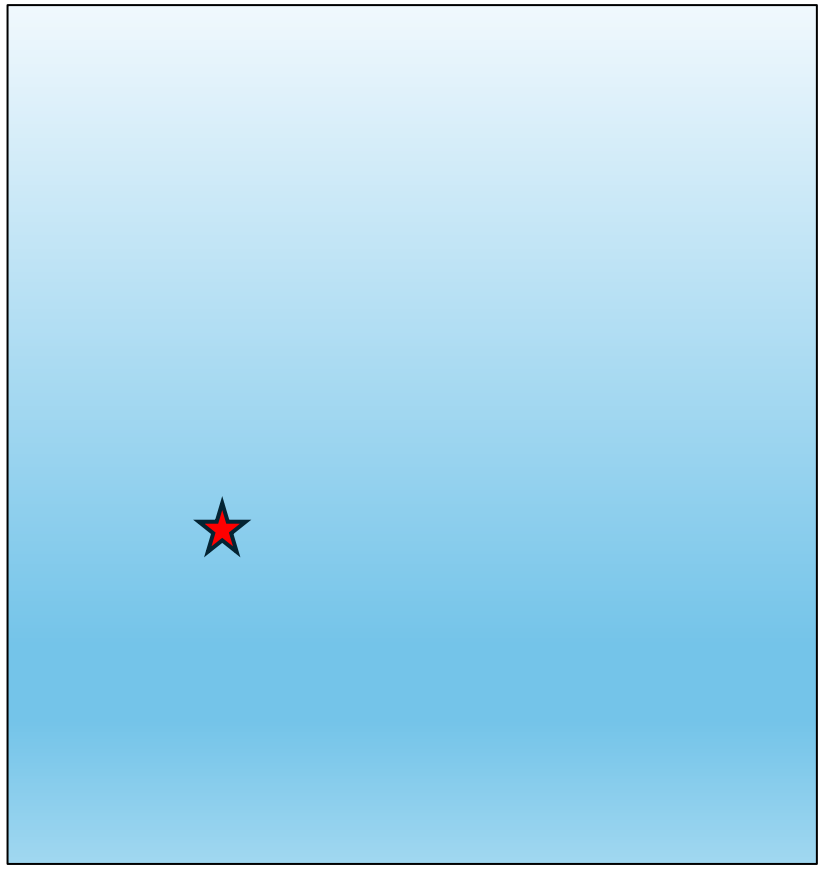
Ocean Station OG

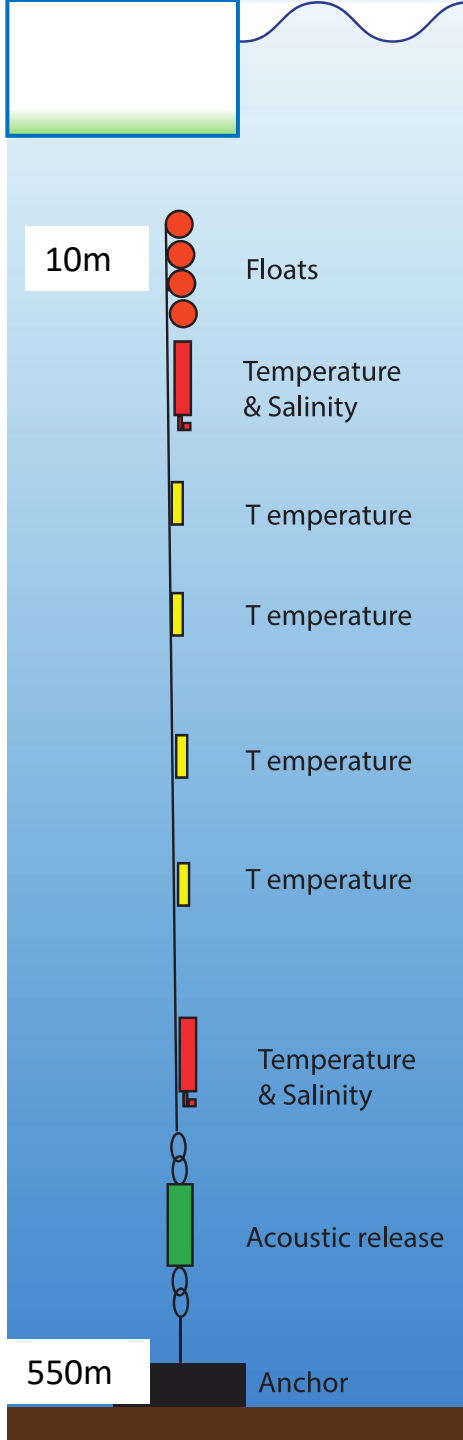
‘OG’ = original gangsta!

- long-term ocean monitoring site
- established 2021
- 550 m deep
- monthly sampling:
  - CTD profiling
  - water sampling (nutrients/microbes)
  - sea ice / snow surveys
  - weather obs (AWS nearby)

Mooring deployment

- May 2026 (through-ice)
- subsurface mooring (10-550 m)
- physical & biogeochemical sensors
- T & S & Chla & DO & pH
- 17 instruments
- serviced annually





Research:

- Impact of storms on stratification & mixing
- Nutrient upwelling & primary production
- Sea ice & seasonality on water column
- Atlantic Water heat content & evolution
- Polar Water freshwater content & evolution
- Ocean model evaluation
- Inform Arctic Marine Protected Areas
- and more…

- Co-developed research with Inuit partners

Contact: akhamilton@ualberta.ca