



GO-SHIP ARC01 Trans-Arctic Section
update to AICC January 2024



What is GO-SHIP?

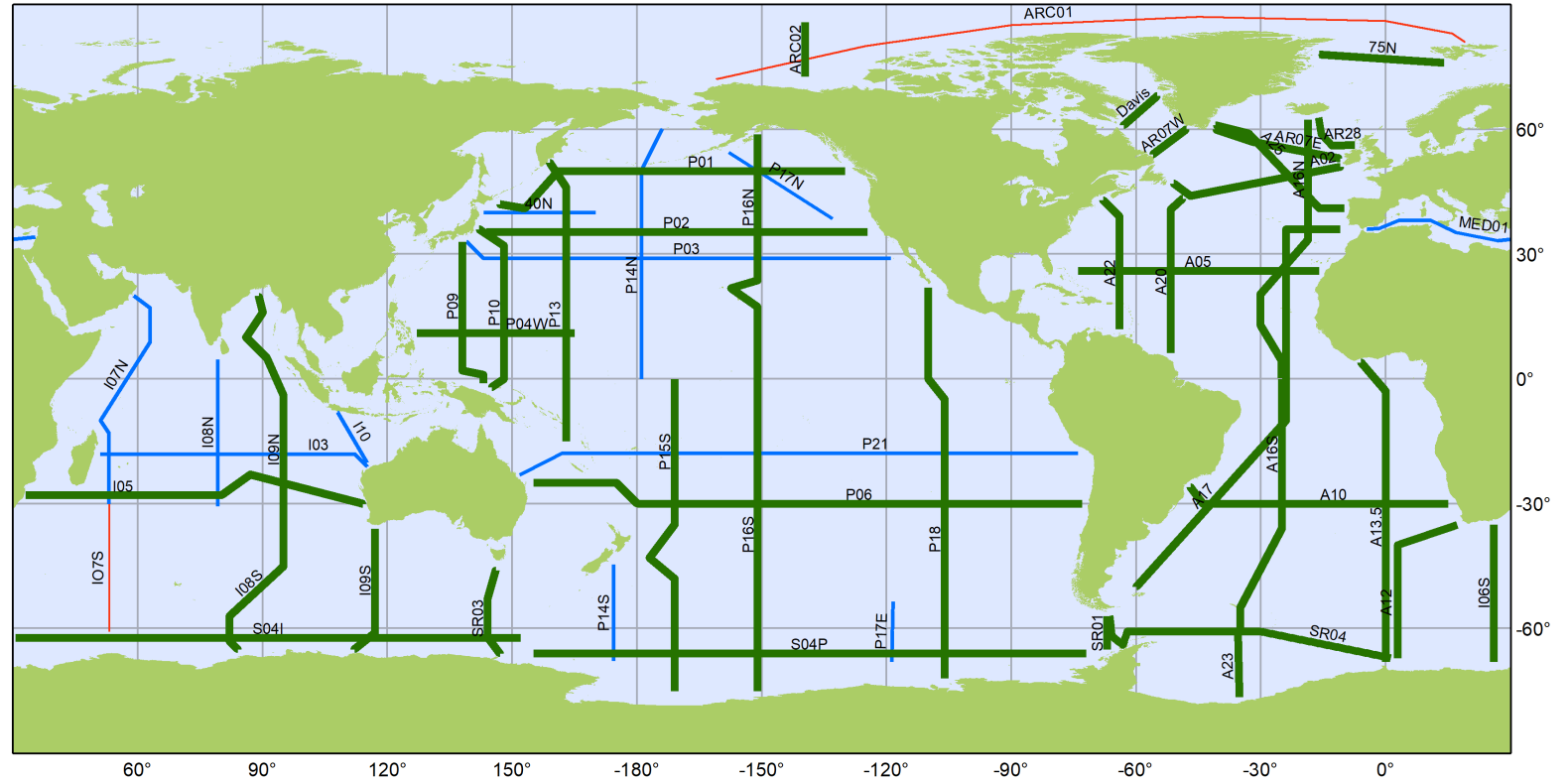
Global

Semi-decadal (1990s-present)

Full ocean depth

Full ocean basin

High spatial resolution



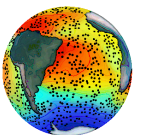
GO-SHIP

Three Decades of GO-SHIP: Time-Series

August 2019



- At least three occupations
- Two occupations
- Recently introduced new lines



Standard Level 1 GO-SHIP measurements

CTD pressure, temperature, salinity, oxygen

Bottle salinity

Dissolved inorganic carbon (DIC)

Total Alkalinity (TAlk)

pH

Nutrients by standard auto analyzer (NO₃/NO₂, PO₄, SiO₃)

Dissolved oxygen

Chlorofluorocarbons (CFC-11, -12) and SF₆

Dissolved organic carbon (DOC)

Dissolved organic nitrogen (TDN)

Surface underway system (T, S, pCO₂)

ADCP shipboard

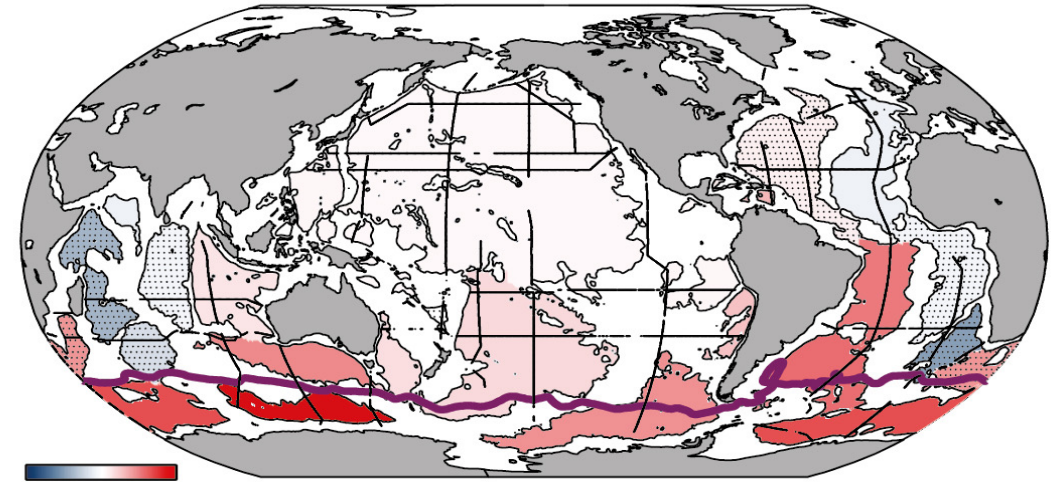
ADCP lowered

Underway navigation and bathymetry

Meteorological

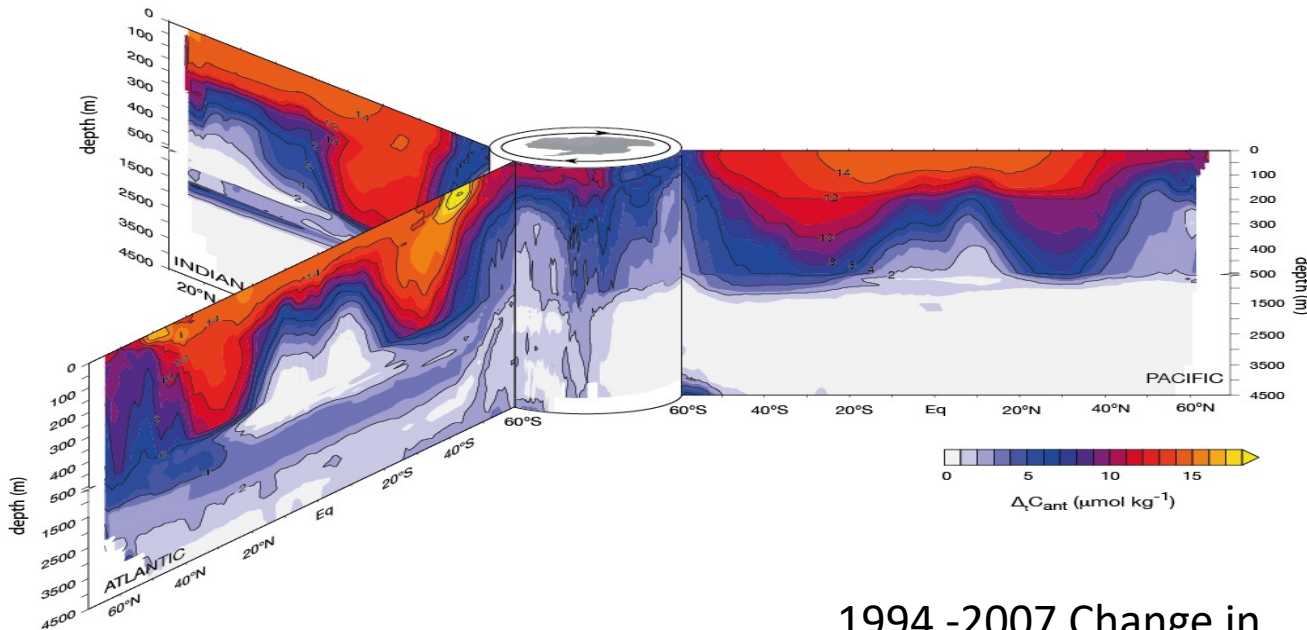


Observations allow detection of important changes over time



-0.05 0 0.05
(°C per decade)

Bottom water Temperature change



1994 -2007 Change in anthropogenic CO₂

From <http://usgoship.ucsd.edu/about>

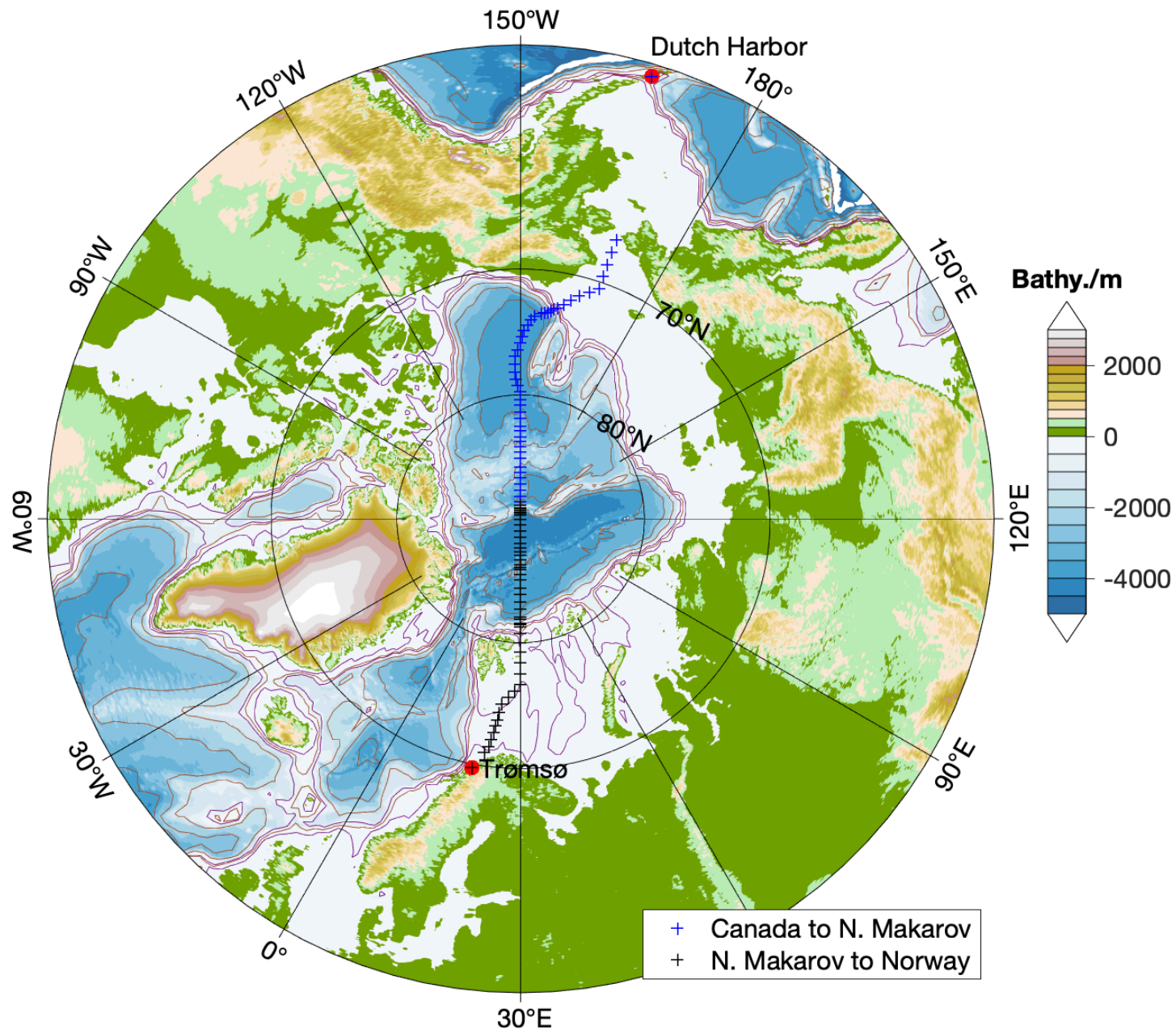
2024 ARC01 Transect on USCGC Healy

Late summer, timed for sea ice minimum

Tromsø to Juneau

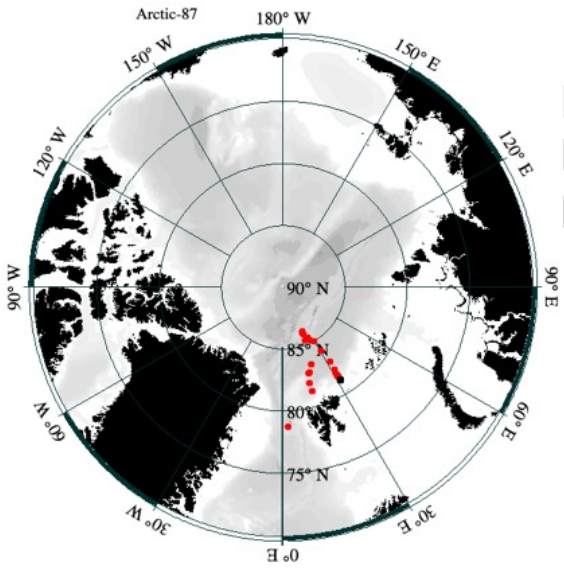
Repeats sections of previous partial
transects including GEOTRACES (2015) and
SAS (2022)

Target of 30 nm station spacing, full ocean
depth (total of 92 to 108 stations
depending on ice/weather)



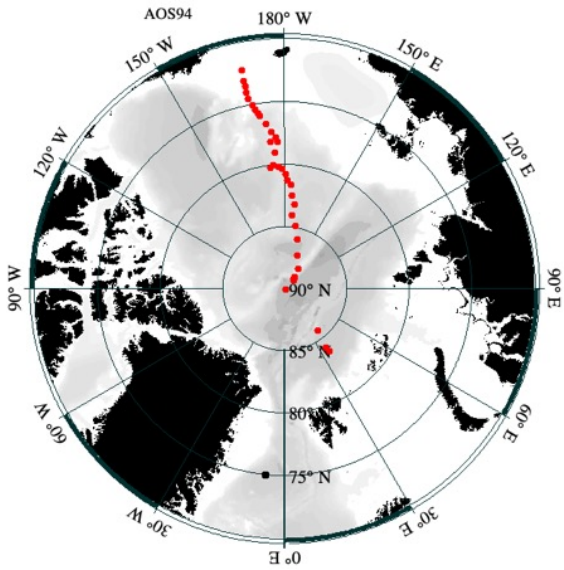
Context of prior surveys

1987



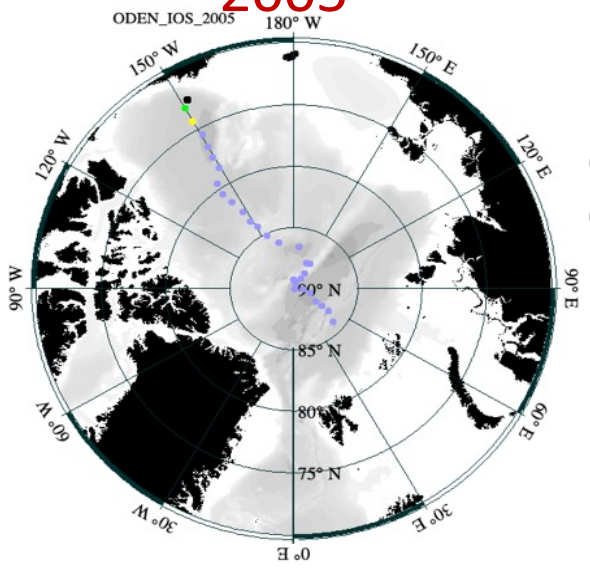
**Polarstern
Nansen
Basin**

1994



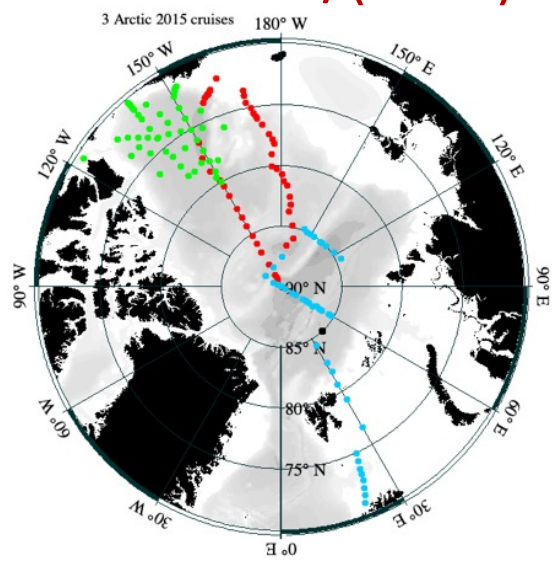
**Louis S. St-
Laurent + Polar
Sea, Makarov
Basin and both
sides of
Lomonosov**

2005



**Oden + Healy
Canada Basin,
northern Makarov
Basin, Lomonosov
Ridge, and Amundsen
Basin.**

2015/(2022)



**Healy (red), Louis
S St-. Laurent
(green), and
Polarstern (blue)
combined form
trans-Arctic data
set.**

Points of Contact

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