

Other Ocean Observing Assets: Line P & Argo in the NEP

Summarized by Tetjana Ross

Fisheries and Oceans Canada (DFO) @ Institute of Ocean Sciences



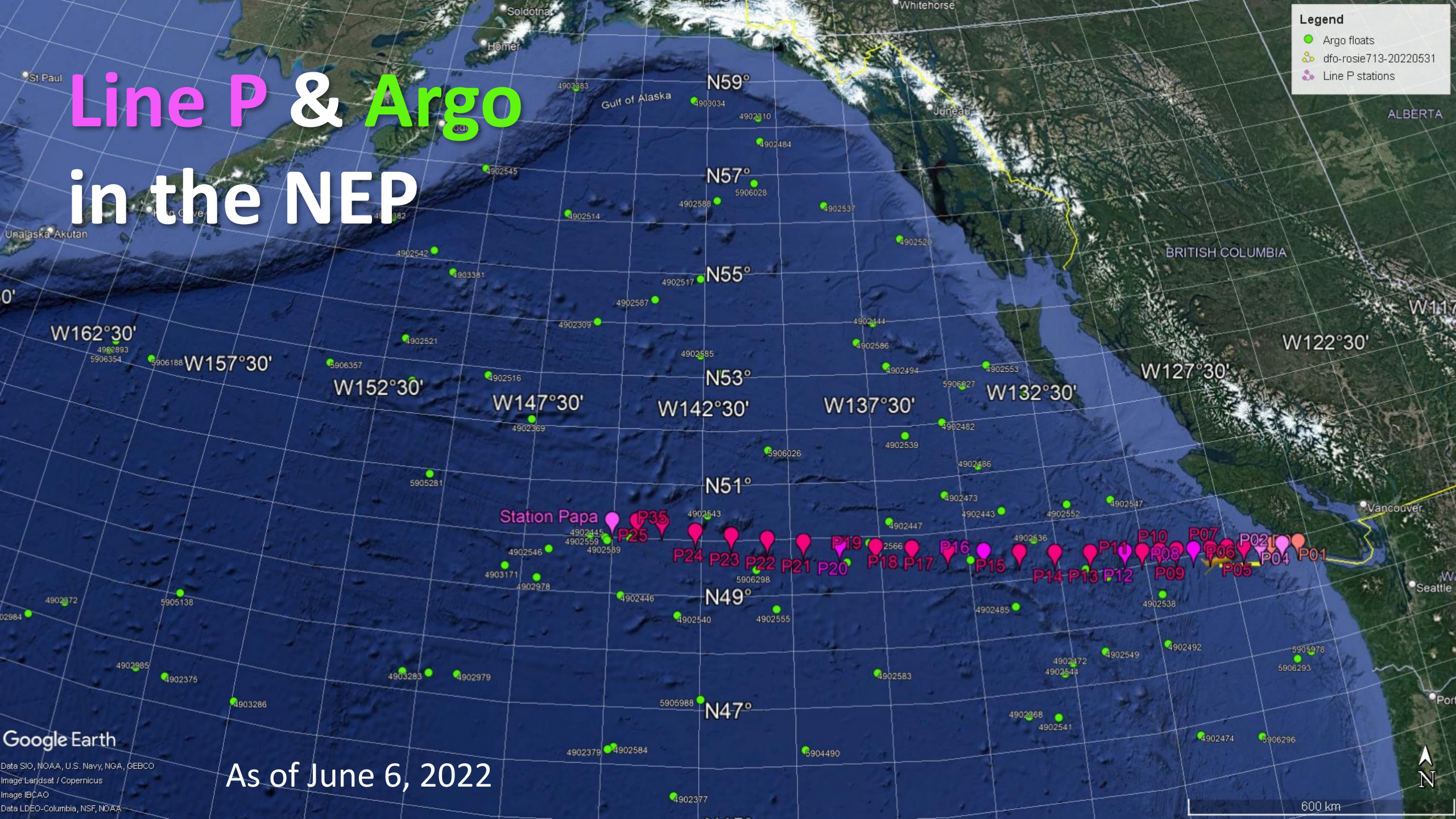
Fisheries and Oceans
Canada

Line P & Argo

in the NEP

Legend

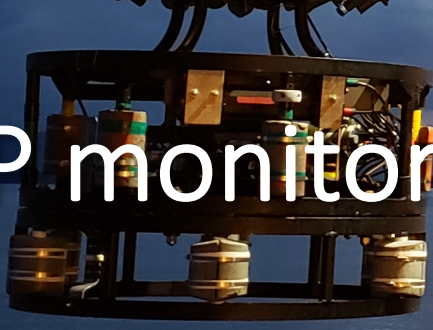
- Argo floats
- dfo-rosie713-20220531
- Line P stations



Google Earth
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Image IBCAO
Data LDEO-Columbia, NSF, NOAA

As of June 6, 2022

Line P monitoring program (what it is)



CCGS John P Tully (69 m; 16 science berths) currently supports the Line P program

Program activities:

February, June and August ship surveys of 27 stations from Victoria, BC to Station P. Many collaborators use Line P as a springboard for other projects (see list on website).

Data available via: www.waterproperties.ca/linep/

Present sampling:



CTD-only Stations (20 stations to 2000 dbar)
Temperature, Conductivity, Transmissivity, Fluorescence, Irradiance (PAR) & Dissolved Oxygen
Water sample at 5 dbar for Nutr, Sal, Chl & HPLC



Rosette/Bongo Stations (7 stations)
CTD observations + 250m Bongo + water samples for:

Dissolved Oxygen
Diss. Inorganic Carbon
Alkalinity
pH
Nutrients
Salinity
(to 10 m from bottom)

DMS
DMSP-d
DMSP-t
Nutrients
Chlorophyll
HPLC
(to 300 dbar)



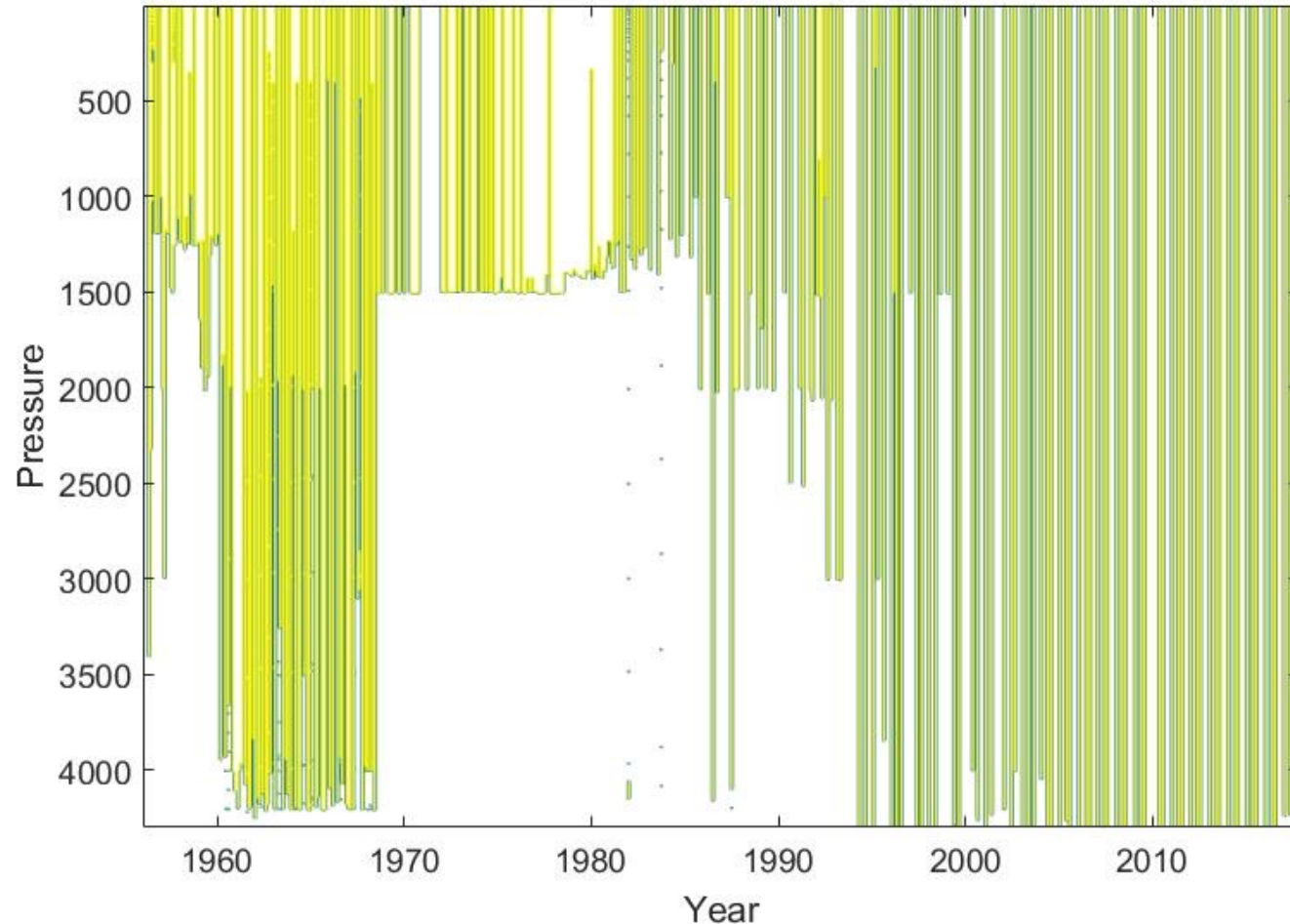
Line P monitoring program (+ major science Qs)

Given this springboard nature, hundreds of papers/reports use Line P data, many of which relate to the OOI major science questions, e.g. recently

- **The Northeast Pacific: Current status and recent trends. PICES Press**
 - Update on Marine Heat Wave Status: Summer 2021
 - Summer 2021 low oxygen event on the west coast of North America: Winter 2022.
- Kwong, et al 2022. Spatial, seasonal, and climatic variability in mesozooplankton size spectra along a coastal-to-open ocean transect in the subarctic Northeast Pacific. *Prog. Oceanogr.*, 201, 102728. *Multi-decadal analysis of energy flow through zooplankton ecosystem across Line P*
- Traving et al. 2021. Prokaryotic responses to a warm temperature anomaly in northeast subarctic Pacific waters. *Commun. Biol.*, 4(1), 1-12. *The impact of the Blob on the planktonic ecosystem at Station P*
- Franco et al. 2021. Anthropogenic and climatic contributions to observed carbon system trends in the Northeast Pacific. *Global Biogeochemical Cycles*, 35(7), e2020GB006829. *Synthesis of 30 years of Line P carbon and oxygen data*

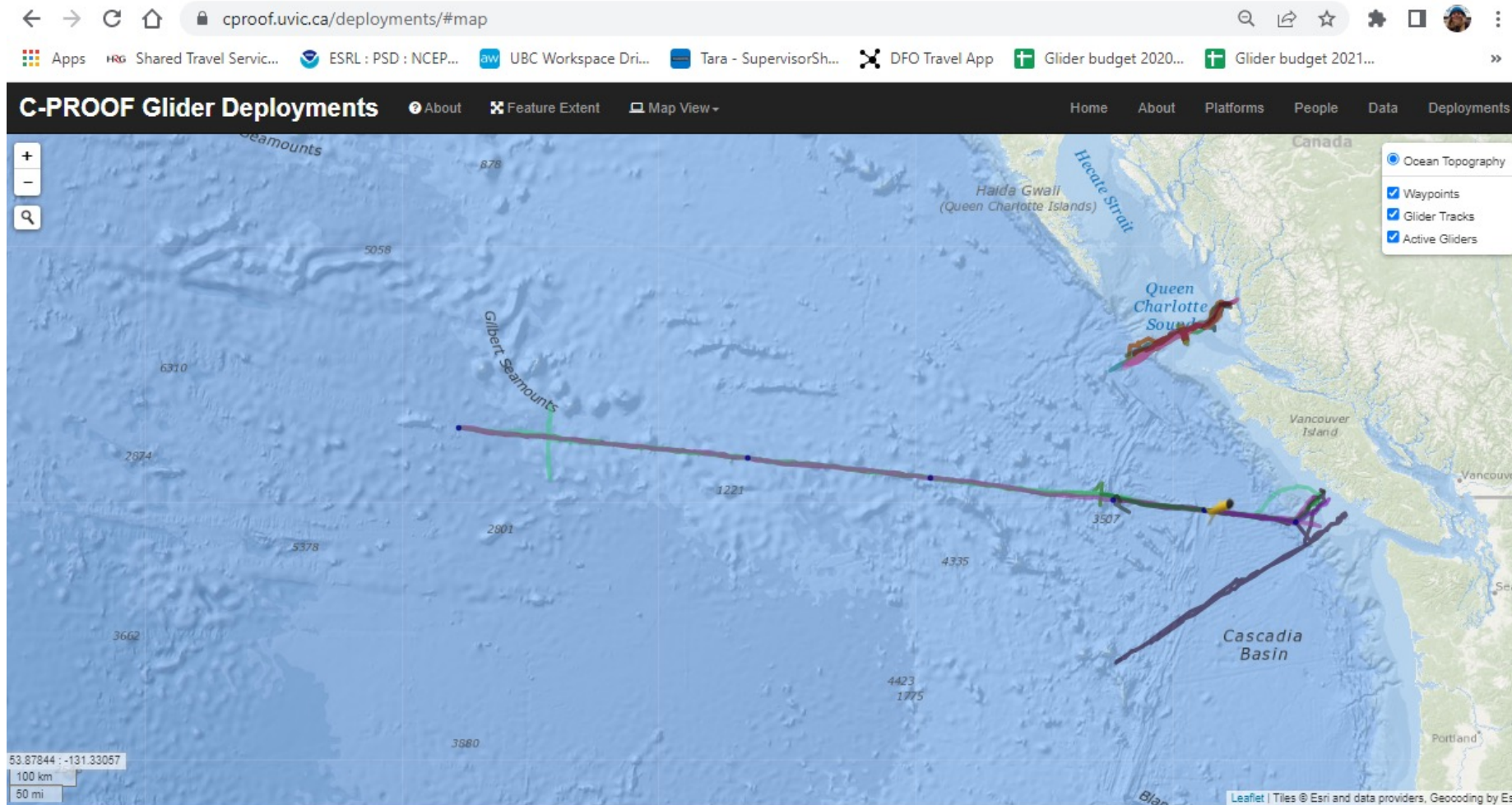
Line P monitoring program (since 1956)

Station P - TS data coverage



- Sampling started in 1956 using weatherships deployed at Station Papa.
- During the weathership era (1956-1981) few stations were sampled but with very high temporal resolution.
- In the 1980's sampling switched to 3 cruises/year but more biogeochemical variables added

Line P monitoring program (gliders)



- Glider monitoring was added in 2019, motivated by the value of the high time resolution of pre-1980's dataset with as well as desire to better resolve boundary currents

Line P monitoring program (gliders)

C-PROOF

Canadian-Pacific Robotic Ocean Observing Facility

- Glider missions made possible through partnerships



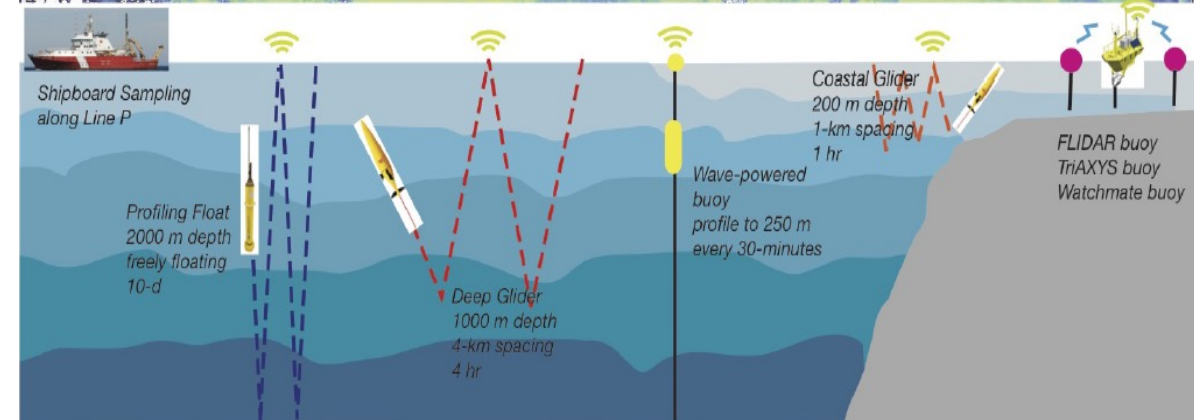
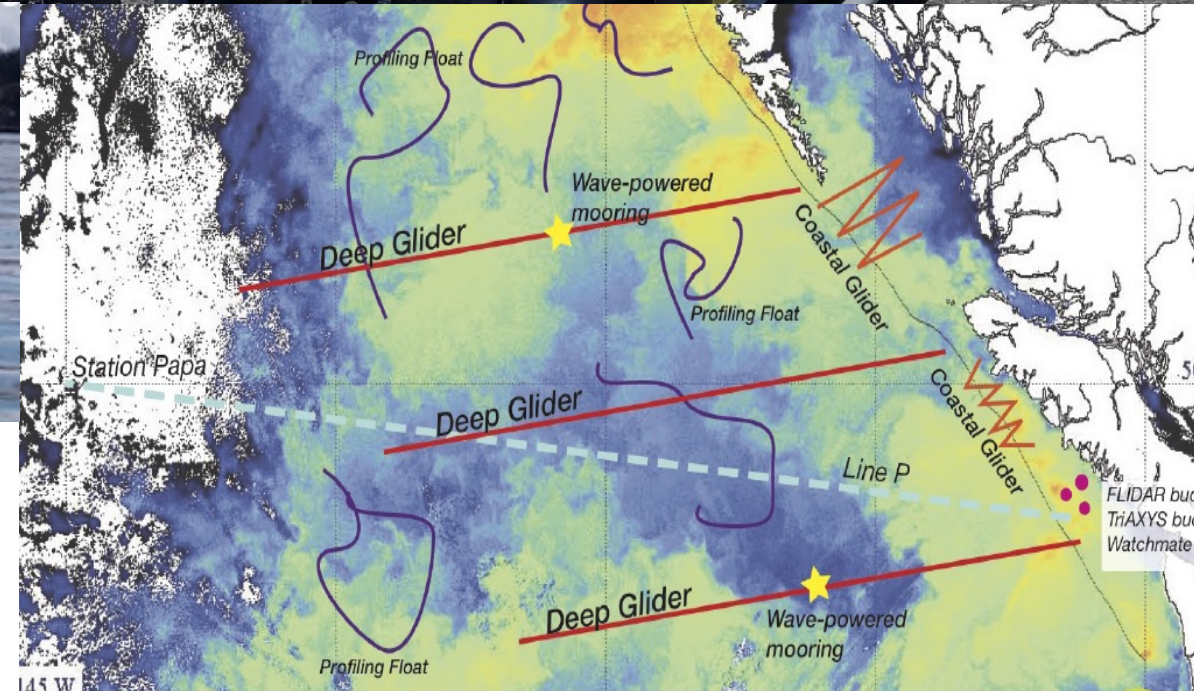
Hakai
Science on the Coastal Margin



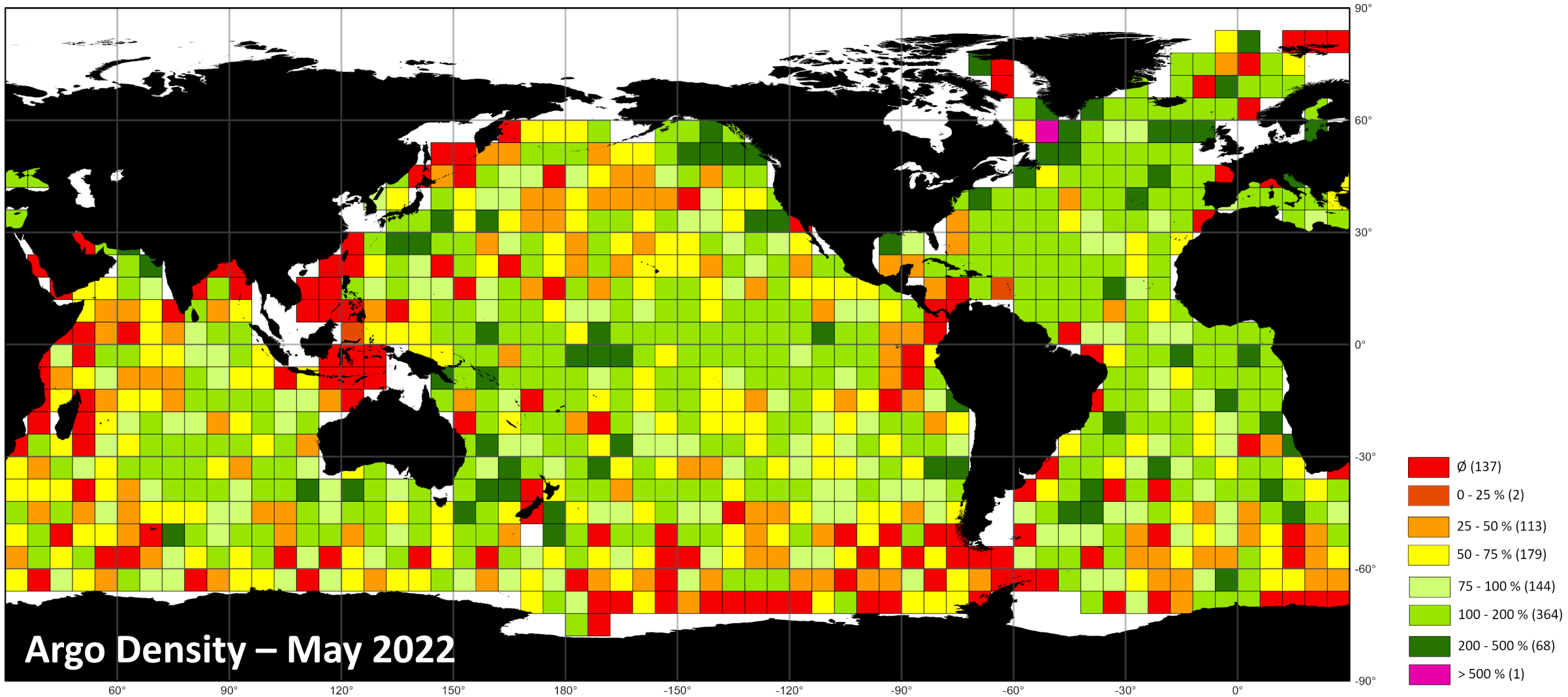
Fisheries and Oceans
Canada



To learn more and access data from all the gliders: <http://cproof.uvic.ca/>

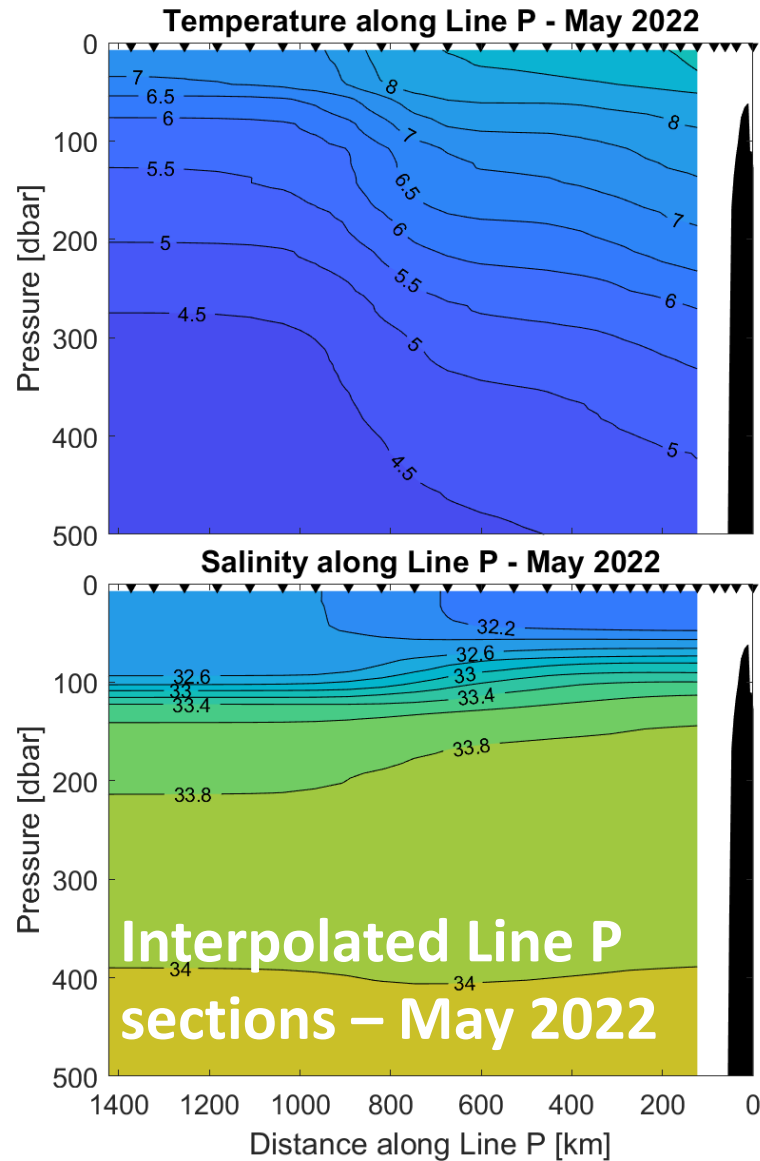


Argo program (rich near OSP)

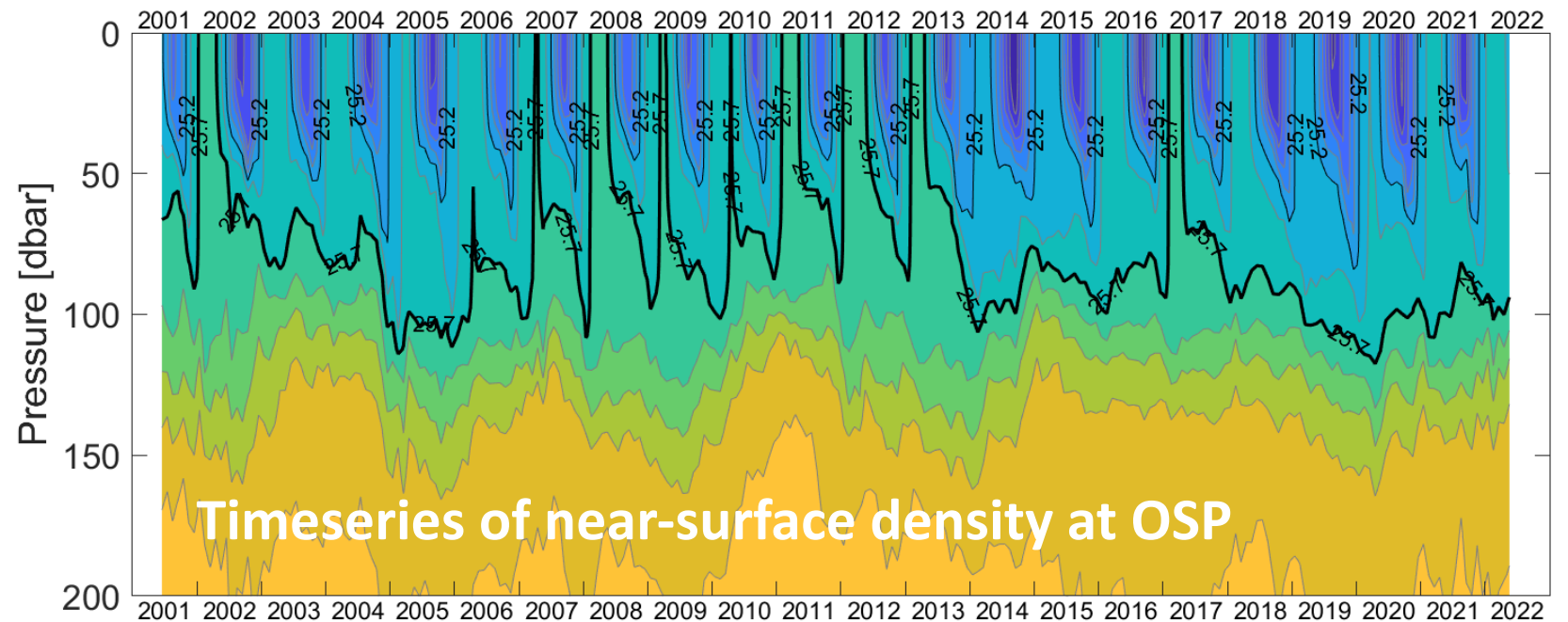


Profiling floats density, 6° x 6°, normalized on Argo Global design (grey-listed excluded)

Argo program (DFO NEP data products)

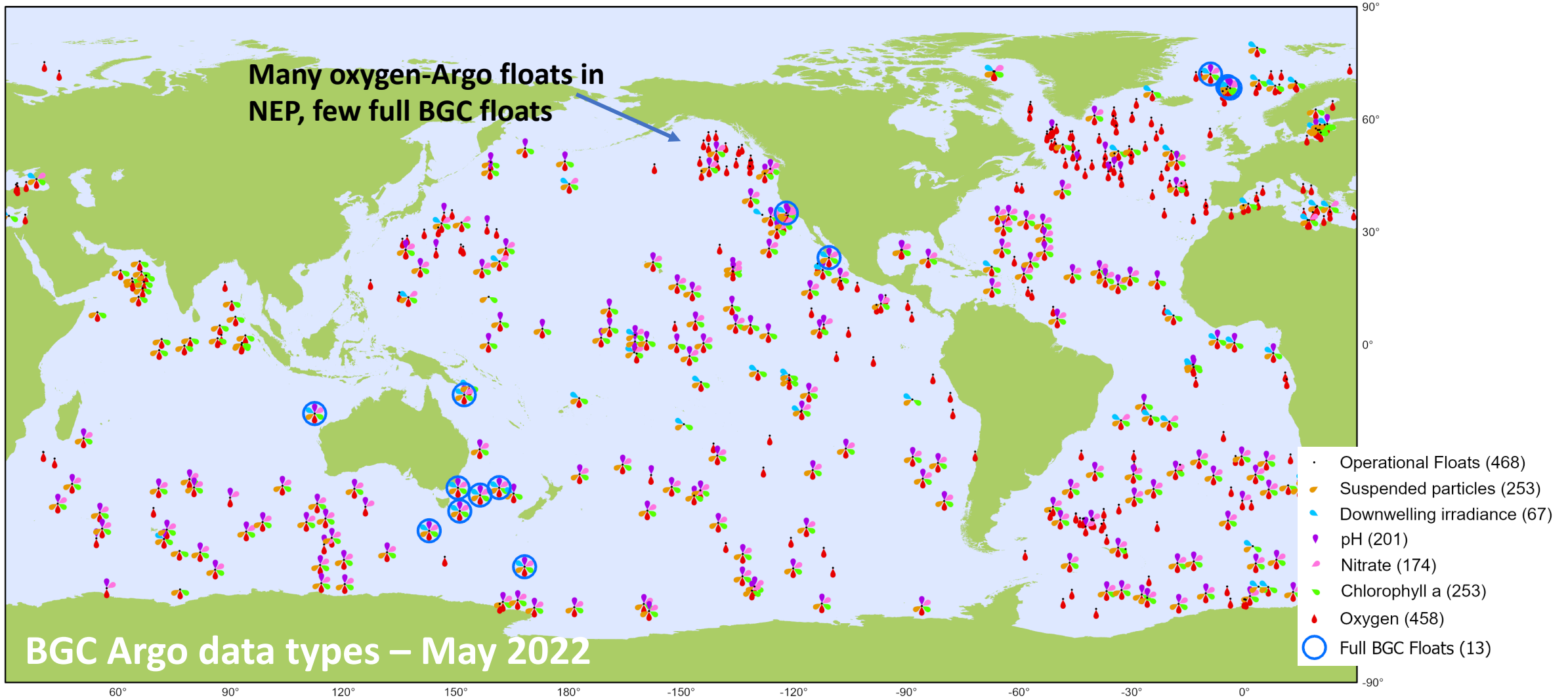


- Additional Line P/OSP related Argo-data derived products available through DFO



Available at www.meds-sdmm.dfo-mpo.gc.ca/isdm-gdsi/argo/canadian-products/index-eng.html

Argo program (BGC)



Thanks!



Questions?

tetjana.ross@dfo-mpo.gc.ca