# Ocean networks Canada

## Some New Ocean Observing Initiatives

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A UNIVERSITY OF VICTORIA INITIATIVE

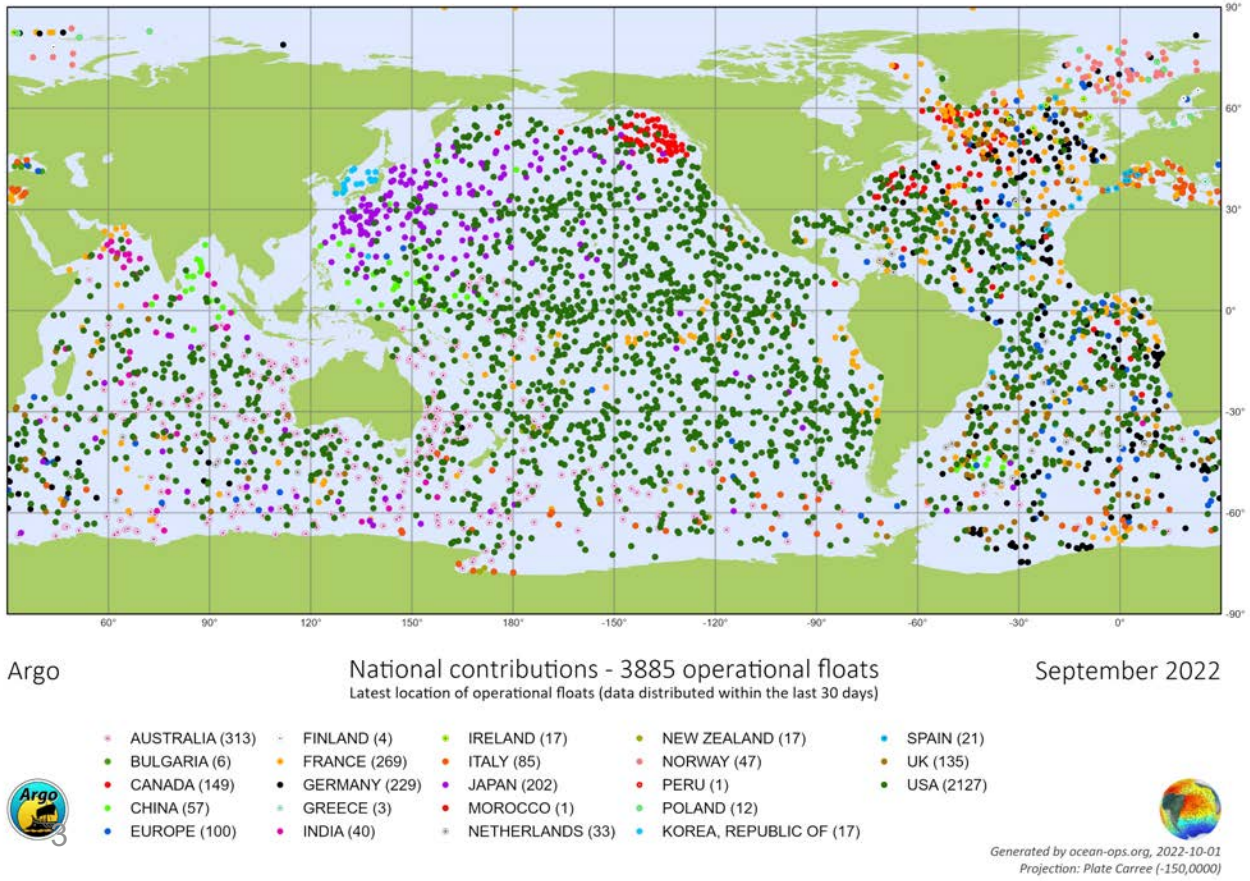
# Some New ONC Ocean Observing Initiatives

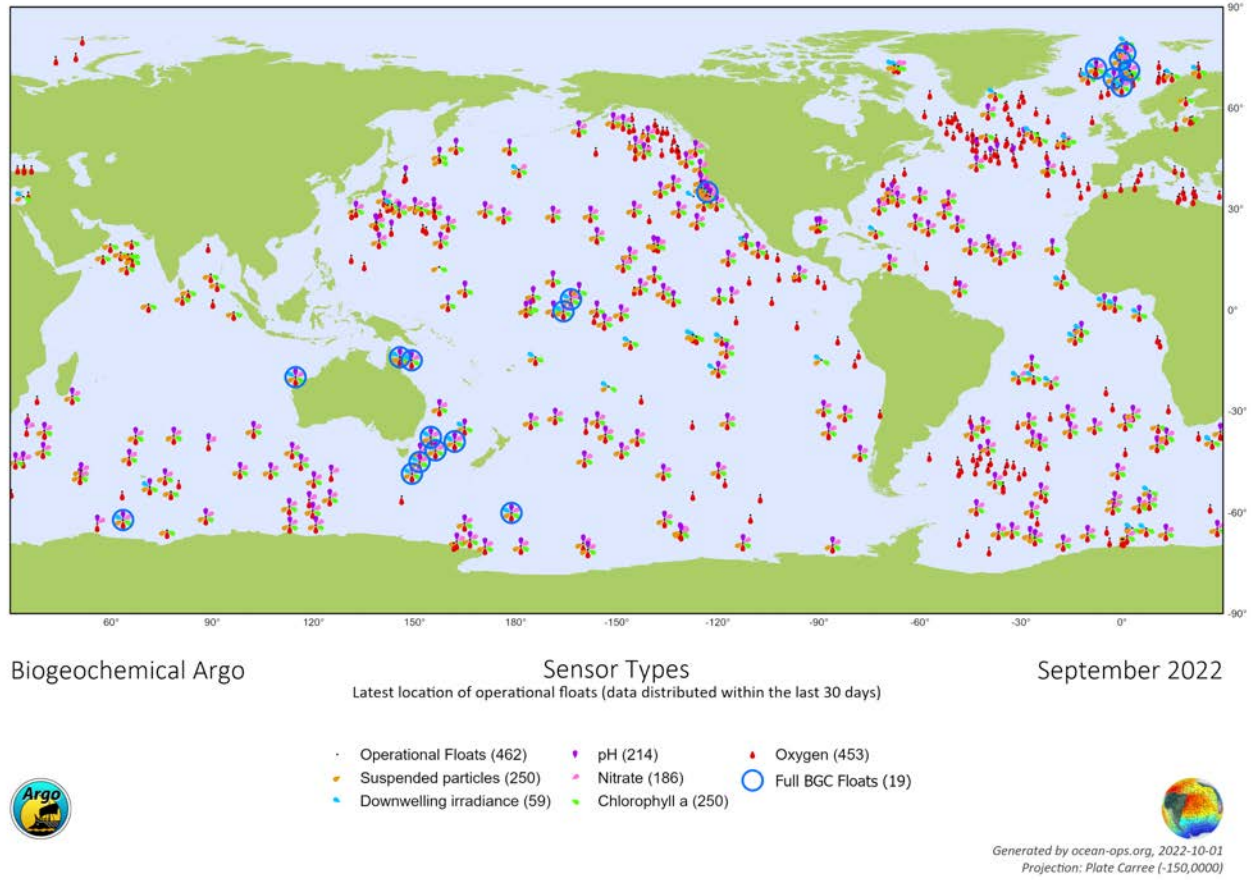
- **BGC Argo Floats (on order, deployments in 2023)**
  - Microstructure BGC Argo Floats
  - Deep BGC Argo Floats
- **Geodesy/Deformation and Wave Glider Surveys (completed install)**
  - North Cascadian Subduction Zone Observatory
  - Underwater GPS
- **Ocean-Based Climate Solutions (active and planning)**
  - Marine Carbon Dioxide Removal (mCDR) and Monitoring, Reporting, and Verification (MRV)

# New ONC Programs – BGC Argo Floats

ONC has ordered a starting fleet of 20 BGC Argo floats

- DFO is the official Canadian Argo Program Operator, and has the authorization to maintain a fleet of standard Argo and BGC Argo floats.
- After consulting with DFO (Blaire Greenan and Tetjana Ross), ONC decided to focus on non-standard (DFO approved) BGC Argo floats.



# New ONC Programs – BGC Argo Floats

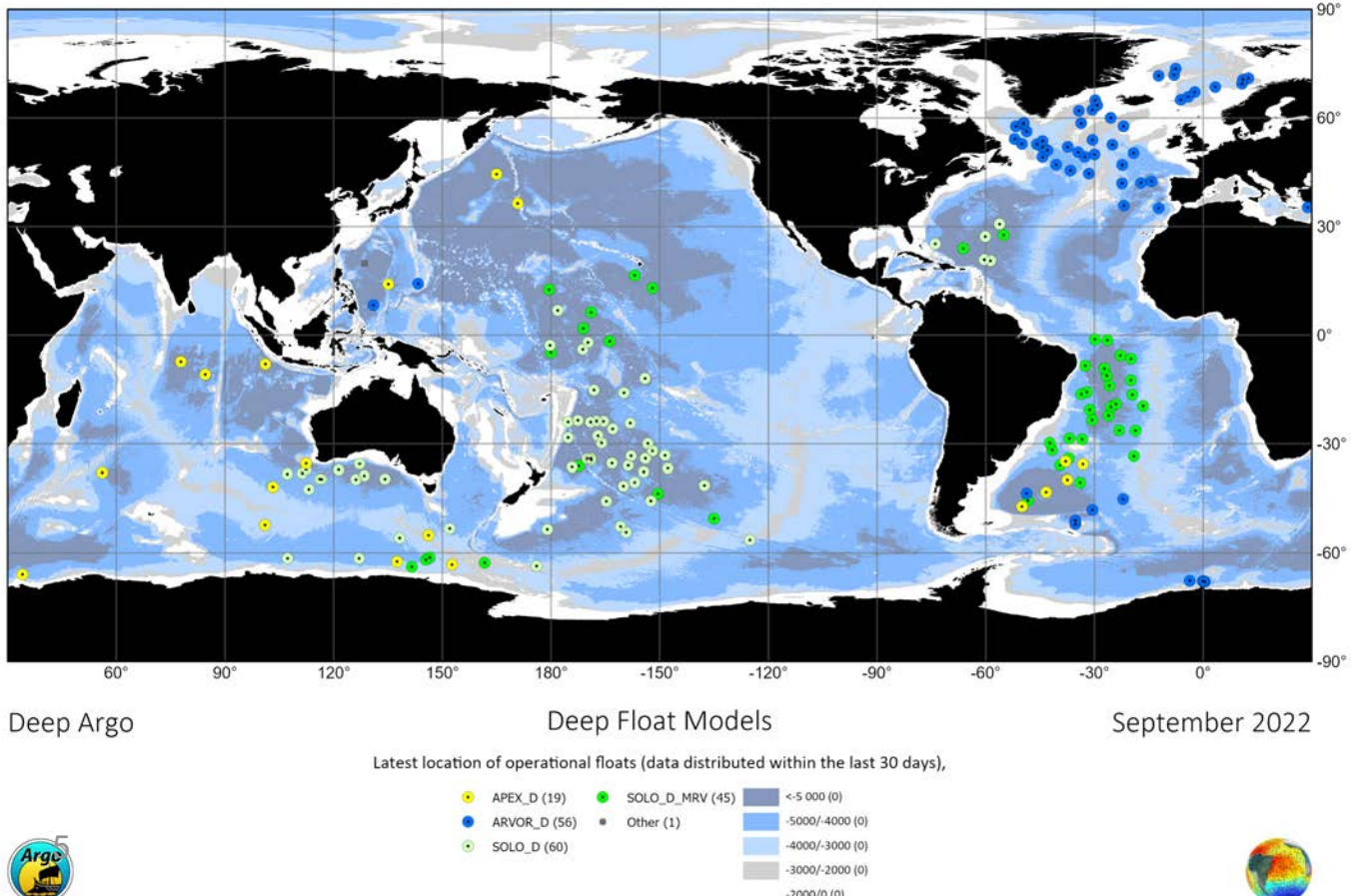
MRV Microstructure BGC Argo Floats (2, plus Rockland DataHub)

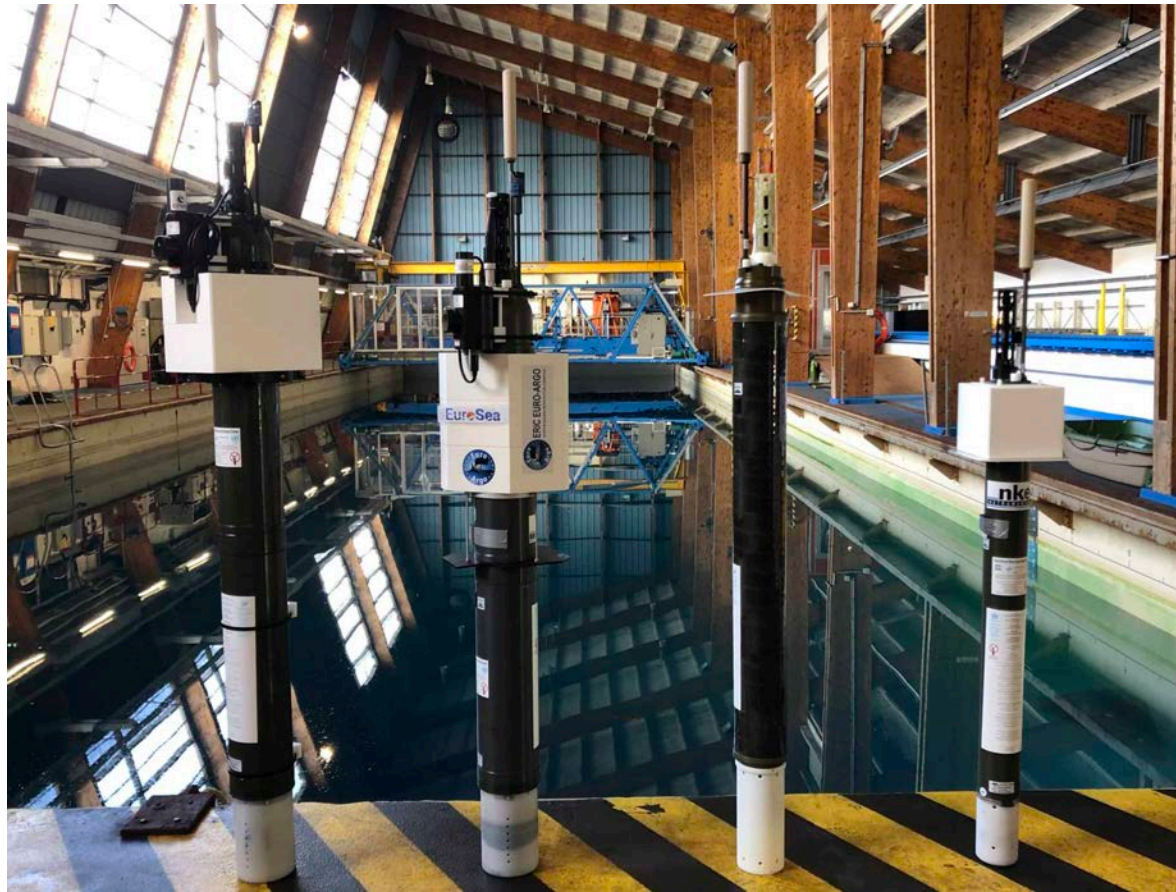
- With $O_2$ and Rockland Scientific Microstructure (μT and μShear) sensors
- Two ordered for delivery in FY22/23 (before April 1, 2023)
- Process studies & sub-thermocline mixing assessment in NEP


# New ONC Programs – BGC Argo Floats

NKE Arvor Deep BGC Argo Floats (up to 18)

- 0 - 4000m operating range (top-to-bottom in NEP)
- $O_2$ sensor, with surface (atmosphere) calibration check
- Up to 6 ordered for delivery in FY22/23
- Primary NEP deployment over next few years

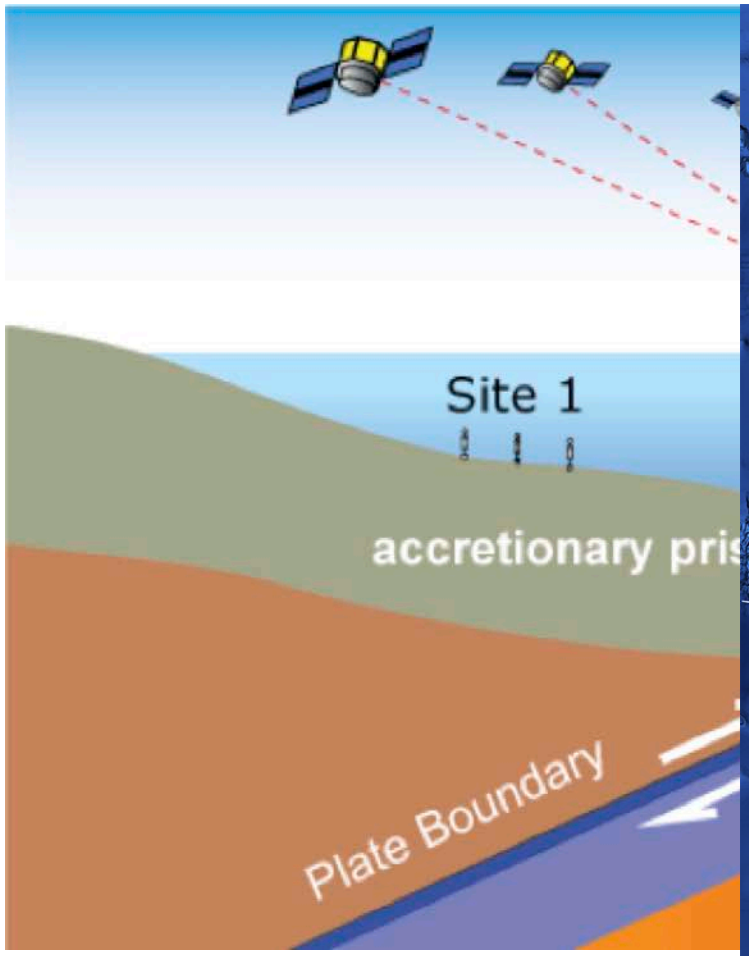


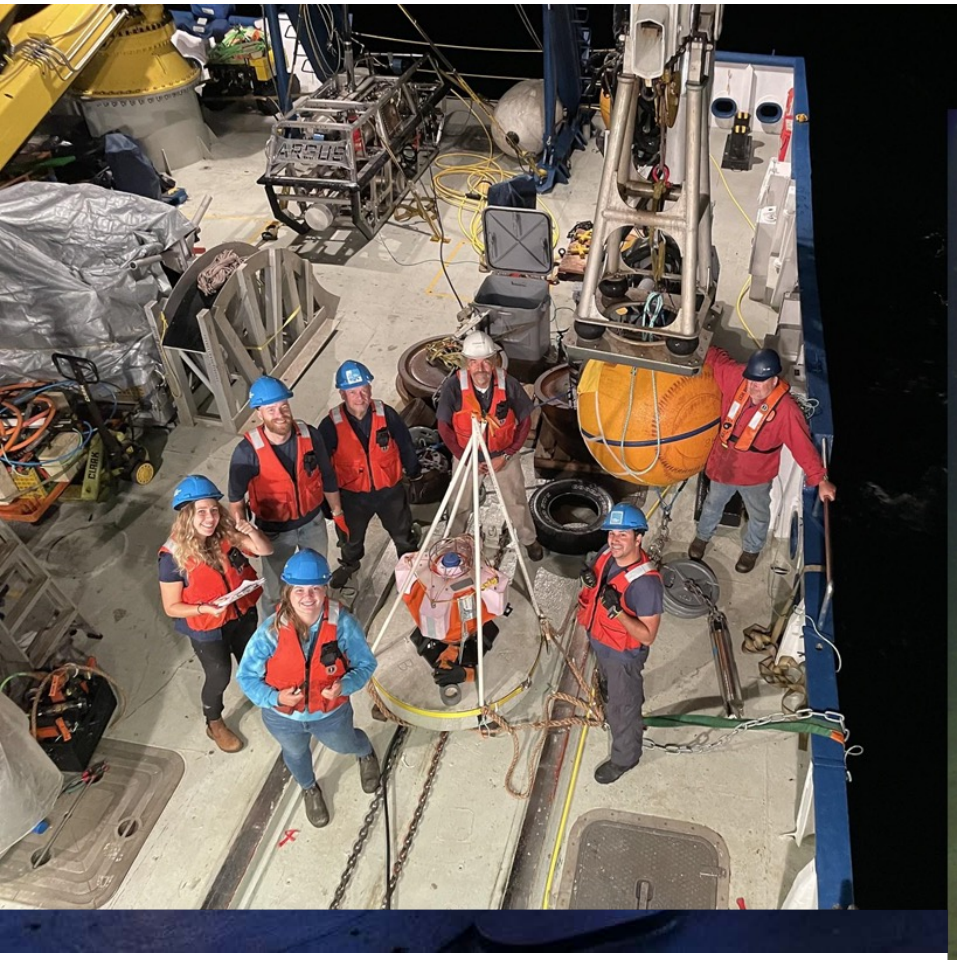
# New ONC Programs – Geodesy (NCSZO)

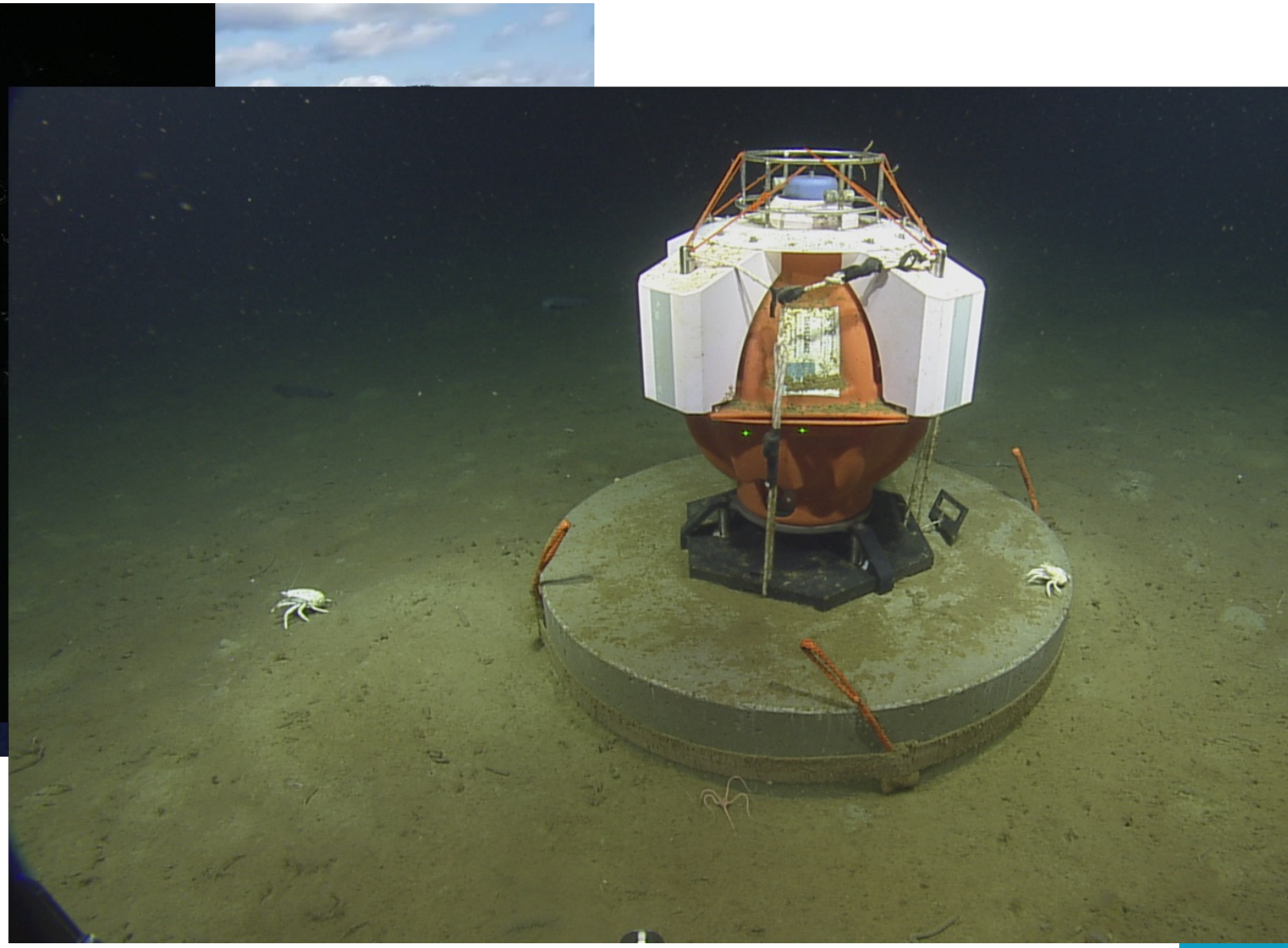
The North Cascadia Subduction Zone Observatory (CFI)

- Establish a network of fixed transponders, and using under-water GPS, measure deformation across the NCZS, coordinate with Axial system

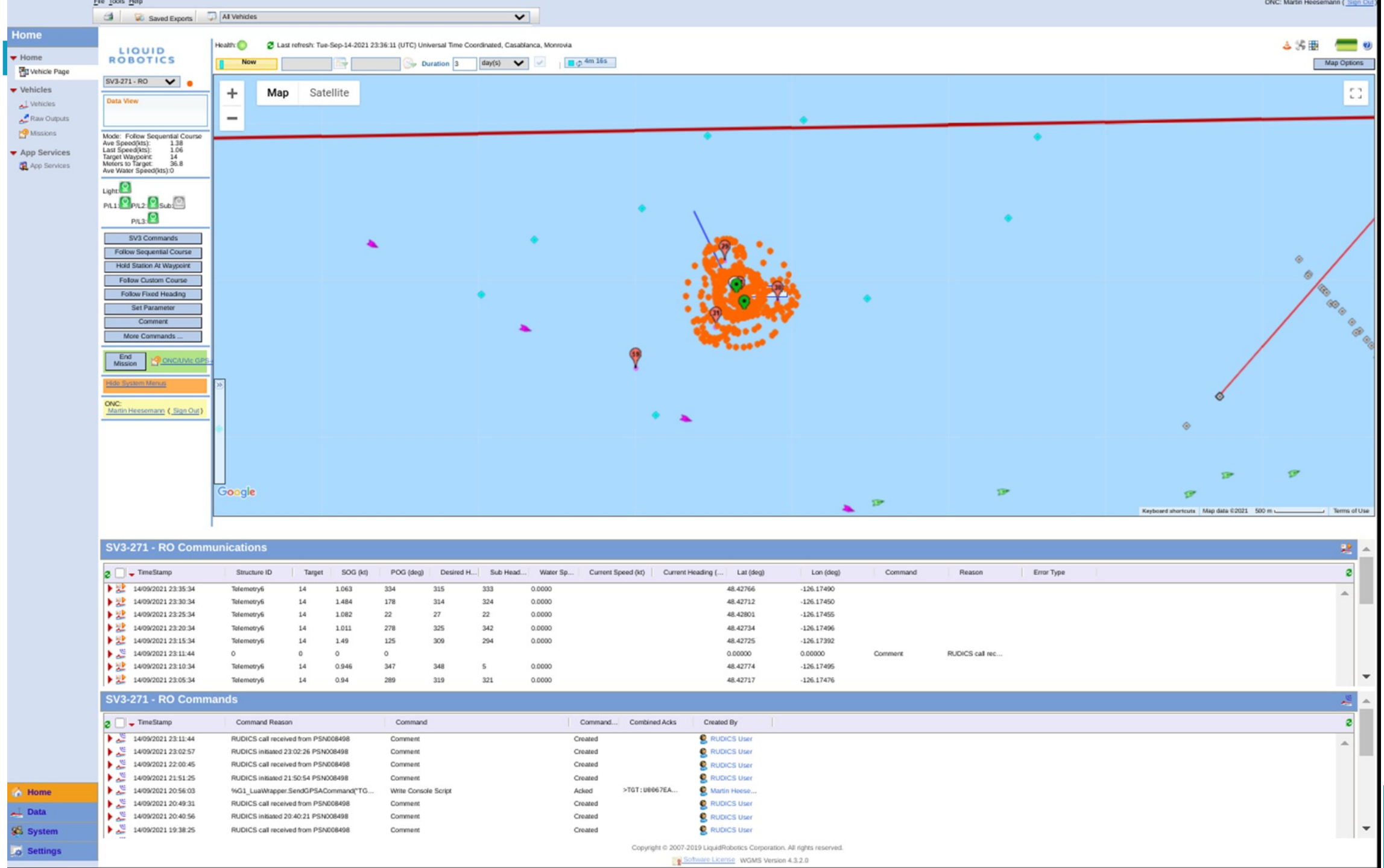



# New ONC Programs - NCSZO





# New ONC Programs - NCSZO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Missions
App Services
LIQUID ROBOTICS
SV3-271 - RO
Data View
Mode: Follow Sequential Course
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Last Speed(kts): 1.06
Target Waypoint: 14
Meters to Target: 36.8
Ave Water Speed(kts):0
SV3 Commands
Follow Sequential Course
Hold Station At Waypoint
Follow Custom Course
Follow Fixed Heading
Set Parameter
Comment
More Commands ...
End Mission
Hide System Menus
Map
Satellite
Google
SV3-271 - RO Communications
SV3-271 - RO Commands
Home
Data
System
Settings

# A 2030 ONC Strategic Goal: Ocean-Based Climate Solutions

- **Solid Carbon**: Assessment and feasibility of sequestering carbon deep into ocean basalt (geological storage)
- **BC Ocean Acidification and Hypoxia Action Plan** (in press)
- Marine Carbon Dioxide Removal (**mCDR**) and the associate Measureing, Monitoring, Reporting, and Verification (**$M^2RV$**)
  - Various technologies, from MacroAlgae to Alkaliniy Enhancement, lots of issues to sort out, field trials, and assessing impacts and efficiency will be key
  - MMRVV (Measurement, Monitoring, Reporting, Validate, and Verify)
    - Need to assess baselines and natural conditions/variations/ecosystem function
    - Need to assess impacts associated with mCDR field trial/activities
    - Need to assess “additive” contribution to long-term carbon sinks (small signal amongst large noise/natural variability)

      → $M^2RV$ Workshop (in 2023?)