Argo Canada – Report of Activities for 2024

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26th meeting of the Argo Steering Team (AST-26)

Location: Hybrid (La Jolla, CA & Virtual)

14-18 April 2025

1. The status of implementation of the new global, full-depth, multidisciplinary Argo array (major achievements and problems in 2024)
    a. floats deployed and their performance
        i. For Jan-Dec 2024, Argo Canada deployed a total of 38 floats.
        ii. Float Types:

            - 14 ARVOR-SBE (DFO/DND)
            - 1 ARVOR-RBR (DFO)
            - 2 ARVOR+DO (DFO/UVic)
            - 8 Deep ARVOR+DO (ONC)
            - 10 PROVOR CTS4 (DFO/UVic)
            - 3 PROVOR CTS5 (Dalhousie)

        iii. Deployment Regions:

            - 5 - Ross Sea
            - 2 - Drake Passage
            - 6 - Indian Ocean
            - 12 – North Atlantic Ocean
            - 11 – North Pacific Ocean
            - 2 – Beaufort Sea

        iv. Multiple floats (4902531, 4902669) in the Ross Sea, Beaufort Sea, Baffin Bay emerged from under ice to report profiles.
        v. More details are available at: Argo Canada Development Blog: 2024

b. technical problems encountered and solved

Overall this has been a relatively smooth year technically. Argo Canada has been deploying NKE floats in the recent past which have been a very reliable platform. This year, we received our first order of Teledyne APEX floats. Ahead of their deployment we have been relying on the expertise of Teledyne and the Argo technical community to ensure successful deployment and operation of the floats.

i. One deployed float (4902565 ARVOR-SBE) in the Beaufort Sea never properly activated and/or returned any technical or profile data. Unfortunately this float should not have been deployed, and although a technical issue may contributed to the loss of this float, we attribute the loss to user error rather than a problem with the float.
ii. One ARVOR-SBE float experienced vacuum pressure issues and was not deployed, returned to NKE, and repaired. Currently this float is being shipped back to the Institute of Ocean Sciences (IOS).
iii. NKE & RBR recalled 2 ARVOR-RBR floats for investigation as a number of this model across the Argo network were experiencing a rapid power drawdown resulting in premature end of float life. No systematic problem was discovered and these floats are being returned to IOS, ready to deploy.
iv. One ARVOR-SBE float (4902653) deployed off South Africa failed after 4 profiles, reason still to be determined.
v. Any other ARVOR floats that have failed to report as expected this year are in marginal ice zones, and we expect/hope to hear from them in their respective summer seasons.

c. status of contributions to Argo data management including:
   i. the status of your DAC, if applicable

MEDS currently acquires data from 196 active floats. The data processing system runs every 3 hours. The profile, technical, trajectory and meta file of core Argo floats are transmitted to the GDAC in NetCDF format. For BGC and Deep Argo floats, all NetCDF files are available at the GDAC, except for the trajectory NetCDF files.

From January 2024 to January 2025, on average, 530 messages were issued monthly on the Global Telecommunication System (GTS) in BUFR format, of which 87% of the data were within 12 hours of the floats reporting. All temperature, salinity, and adjusted chlorophyll-A data are issued to the GTS in BUFR format.

MEDS completed the development of encoding BGC variables in BUFR format for GTS transmission. The program has been tested and implemented at the US Argo DAC, AOML. The program is written in Java and is available at https://github.com/trana99/ArgoBufrEncoder/tree/master

ii. status of high salinity drift floats

In the 17 DMQCed floats of last year, high salinity drifts were detected for floats 4902445, 4901824, 4901823, and 4901822. Float 4902445 failed the min/max test and was flagged in the Ifremer monthly anomaly report. This float is still active but has been grey listed due to the high salinity drift. Another 6 floats (4902555, 4902444, 4902447, 4902595, 4902653, 4902657), flagged by the monthly anomaly report, are actively being worked on and should be resolved shortly.

iii. decoding difficulties

All of the decoders for the current active floats were developed. We have a new Teledyne Apex Webb float type which we'll need to develop the module to handle this float type. At the moment of preparing this report, we have no difficulties in decoding data transmitted by floats. However, we are still having some difficulties to create the trajectory NetCDF file version 3.2 that will completely pass the GDAC file format checker without any warnings.

iv. real time BGC implementation

MEDS processes data transmitted by 20 BGC floats in real-time. All variables (oxygen, chlorophyll-A, pH, BBP and irradiances) with exception of nitrate, which currently has QC flags of 0, are quality controlled in real-time. Only one float with a Nitrate (SUNA) sensor is operational at this time, and the QC process for it will be completed and tested shortly. Chlorophyll-A is also adjusted in real-time. A test version of the regionally defined chlorophyll adjustment (Suazède) has also been implemented and will be able to be deployed quickly following AST/ADMT approval for that adjustment.

v. real time Deep implementation:

MEDS processes data transmitted by Deep Arvor floats in real-time. Data are quality control as described in the Argo quality control manual for CTD and Trajectory Data version 3.6.1. Pressure, temperature and salinity from Deep Argo floats are adjusted in real-time using the new Cpcor_new= –13.5e–8 $dbar^{-1}$

d. status of delayed mode quality control process

In early 2024, the core DMQC process was interrupted due to a shortage of staff. Starting from August 2024, a new core DMQC operator filled the position, to resume the regular DMQC process at MEDS, address the backlog, and maintain and document the internal DMQC code and tools. As of February 10th 2025, about 2528 profiles from 17 core Argo floats have been DMQCed since last year. Approximately 64% of eligible

profiles have been DMQC'd at least once, 68% of eligible floats have been DMQC'd at least once for salinity, while 50% of floats have been DMQC'd at least once with both salinity and pressure. The backlog of core DMQC is persistent and will still be the priority of this year.

As for the internal MATLAB package, the majority of the scripts were developed between 2017 and 2019, and the first stable release was published in the private DFO-MEDS repository on GitHub in 2023. The following changes have been made since last year to improve the functionality of the DMQC package:

• Implemented the thermal mass correction

• Aligned the major scripts with evolving NetCDF formats, including variable name updates and profile number modifications

• Addressed existing bugs

• Updated the OWC method with the most recent climatology and reference database

The monthly anomaly reports issued by Ifremer (French GDAC) were carefully reviewed and the anomalies were flagged and updated to GDAC NETCDF files.

DOXY is the only BGC variable currently being DMQCed. As our floats with additional sensors (FLBB, pH) have begun to age, there will be a priority to DMQC those variables in the coming year. This will likely be handled by the same operator performing DOXY DMQC.

At the time of writing this report, 2034 of 10656 (19.3%) eligible DOXY profiles are in D-mode. An additional 1374 (13.0%) are in A-mode.

2. Present level of, and prospects for, national funding for Argo including a summary of the level of human resources devoted to Argo, and funding for sustaining the OneArgo mission: Core, BGC, Deep, Polar, Spatial (equator, WBCs)

Financial resources

Argo Canada has ongoing funding for the O&M expenditures related to the International Argo program. The majority of these expenditures are related to Iridium telecommunications costs which are managed by Shared Services Canada (SSC) and paid for by DFO. The Iridium SBD and RUDICS services are provided by MetOcean Telematics, which has a contract to supply Iridium services to the whole of the Government of Canada. A request for proposals for a new contract to provide Iridium services is posted and closes March 3, 2025.

Capital for float purchases by the Government of Canada is requested annually and the amount allocated is typically confirmed early in the fiscal year which starts on April 1st. The Government of Canada (DFO and Department of National Defence – DND) committed $416k CAD for

purchases of core TWR APEX floats in the Fiscal Year 1 April 2024 to 31 March 2025. The funding resulted in the acquisition of 14 core Argo floats (7 SBE CTD, 7 RBR CTD). This represents a slight reduction in DFO/DND procurements relative to the preceding year.

The project “A BGC Argo Program for the NW North Atlantic Ocean” led by Dalhousie University and the Memorial University of Newfoundland, has been funded by the Canadian Foundation for Innovation (CFI), Research Nova Scotia (RNS), and the province of Newfoundland for a total cost of $8.8M. Five NKE PROVOR CTS5 floats have been deployed and an additional 27 floats were ordered from NKE in September 2024. All PROVOR floats will be equipped with an SBE CTD, OCR (4 wavelengths), pH, Aanderaa DO, RBR tridente (2 chl, 1 bbp), and extra battery (Jumbo CTS5). 16 of the floats will also be equipped with an Opus nitrate sensor. Delivery schedule: 10 in June 2025, 8 in October 2025 and 9 in January 2026. Furthermore, 2 NKE floats from Takuvik that were previously deployed in Baffin Bay and have been recovered, will be refurbished by NKE. They are equipped with an SBE CTD, SBE OCR, SBE Eco-puck, Aanderaa DO, and a SUNA nitrate sensor.

CFI funding held jointly by the Universities of Victoria and British Columbia (C-PROOF) has been providing BGC sensors for floats deployed in the Northeast Pacific. This funding had ended with final purchases in 2023, and the team is working on a new CFI proposal that -if funded- would provide more BGC floats for the northeast Pacific. In March 2023, five DFO PROVOR CTS4 floats were delivered with SUNA (nitrate) sensors plus the jumbo option (purchased by UVic) – two of these were deployed in 2024. In addition, two PROVOR floats (oxygen, nitrate, irradiance, chlorophyll, and backscatter sensors) were purchased by UVic and delivered in October 2023. However, the radiometers were delivered with wavelengths that did not meet the requirements, and new radiometers to replace them were received from NKE in Feb 2025. The remaining five C-PROOF BGC floats are planned for deployment in the northeast Pacific in 2025 and 2026.

In 2023, Ocean Networks Canada (ONC) received 18 NKE Deep ARVOR floats, which can profile to 4000 m and carry Aanderaa 4330 dissolved oxygen sensors. 13 of these floats have been successfully deployed to date, 11 in the NE Pacific (6 in 2024) and 2 floats in the Southern Ocean (both in Feb 2024). The remaining 5 floats will be used to maintain the array established in the Northeast Pacific.

Since 2016, Takuvik has deployed 24 BGC Argo floats (funding being provided by French and Canadian projects, each up to 50%), which have acquired more than 2,500 profiles (temperature, salinity, backscattering coefficient at 700 nm, radiometric data along 4 channels, as well as concentrations of a) dissolved oxygen, b) chlorophyll-a, c) colored dissolved organic matter, d) nitrate.

The development of close links between the Argo Canada program and both the operational meteorology and operational oceanography R&D activities at the Canadian Meteorological Centre (Dorval, Québec) has been beneficial. An inter-departmental (Environment and Climate Change Canada, Department of National Defence, Fisheries and Oceans) Memorandum of Understanding entitled CONCEPTS (Canadian Operation Network of Coupled Environmental PredicTion Systems) has provided strong advocacy for the Argo program and has facilitated the financial support from DND.

Human resources

The following people contribute to the logistics and data management for Argo Canada:

- Anh Tran (DFO, MEDS, Ottawa) – DAC lead, RTQC Operator
- Qi Wang (DFO, MEDS, Ottawa) – DMQC Operator (core Argo)
- Andrew Stewart (DFO, OSB, Ottawa) – National Manager, Ocean Monitoring and Observing
- Tyler Emmott (DFO, OSB, Ottawa) – Float procurement, contracting
- Blair Greenan (DFO, BIO, Halifax) – AST member, Argo Canada lead
- Chris Gordon (DFO, BIO, Halifax) – DMQC Operator (BGC), deployment planning, logistics, performance monitoring
- Clark Richards (DFO, BIO, Halifax) – Research scientist, Argo Polar Task Team member, RBRArgo data task team member, argoFloats R package developer/maintainer
- Adam Hartling (DFO, BIO, Halifax) – Field support
- Tetjana Ross (DFO, IOS, Sidney) – Research scientist, Pacific deployment planning, Canadian member of the International Deep Argo Mission Team
- Lindsay Mazzei (DFO, IOS, Sidney) – Field support
- Katja Fennel (Dalhousie University, Halifax) – Canadian member of the International BGC-Argo Steering Committee
- Adam Stoer (Dalhousie University, Halifax) – PhD student
- Dan Kelley (Dalhousie University, Halifax) – argoFloats R package developer/maintainer
- Kohen Bauer (Ocean Networks Canada) – Principal Investigator and DMQC operator, Deep Argo
- Roberta Hamme (University of Victoria, Victoria) – Professor, UVic Argo lead
- Herminio Folio Neto and Jeannette Bedard (Ocean Networks Canada) – DMQC Operators, Deep Argo

In addition to the above people, we benefit from the technical support of many sea-going staff that follow pre-deployment protocols and perform the float deployments.

National Coordination

With increasing participation in the Argo program within Canada, both in core Argo, BGC-Argo and Deep Argo, it was decided to establish a new governance structure in 2018. The Canadian Argo Steering Team (CAST) provides scientific leadership and oversees the development and implementation of the Canadian contribution to the International Argo Program. The CAST is chaired by Blair Greenan and meets annually prior to the Argo Steering Team meeting.

The Canadian Biogeochemical-Argo Committee facilitates the implementation of the Canadian contribution to the Biogeochemical-Argo program by coordinating and advising national efforts and acting as liaison to the International Biogeochemical-Argo Steering Committee. The Committee is chaired by Katja Fennel.

3. Summary of deployment plans: as was done last year, please fill out this spreadsheet to help us understand the progress towards implementation of OneArgo. There is one new column this year for floats being deployed with experimental sensors such as UVP, C-sensor, etc. This spreadsheet is to be **returned separately by 17 March** to help prepare for the meeting. It can be sent to Megan or dropped in this folder link.

   In 2025, Argo Canada plans to deploy approximately 25 floats in the Northeast Pacific, North/South Atlantic, and in polar regions:

   - 16 Core
   - 1 BGC (2-3 sensors)
   - 5 BGC (4-6 sensors)
   - 3 Deep + O

4. Summary of any research and development efforts over the past year to try new sensors or improve float technology. This could include new collaborations with vendors or other partners.

   Dalhousie University has ordered floats from NKE with new sensors such as the RBR Tridente and the Opus nitrate sensor. These floats will be deployed in the next few years with an intent to evaluate the performance of these sensors.

5. Summary of national research and operational uses of Argo data as well as contributions to Argo Regional Centers. Please also include any links to national program Argo web pages to update links on Argo websites.

   The Canadian Centre for Meteorological and Environmental Prediction (CCMEP) uses observations from the Argo array for a variety of operational and research applications. These include direct assimilation into operational weather and environmental prediction systems, monitoring of forecast quality (verification), and well as detailed research to improve model physics (e.g. further development and optimization of model parameterizations) and data assimilation (e.g. Observing System Experiments). The CCMEP Global and Regional Ice Ocean Prediction Systems (GIOPS and RIOPS) provide daily estimates (analyses) of ocean and sea ice properties using a multi-variate data assimilation system assimilating Argo observations together with other sources of in situ temperature and salinity, satellite altimetry, and sea surface temperature data. GIOPS analyses are used to initialize the ice-ocean components of the coupled Global Deterministic Prediction System (GDPS), responsible for providing operational medium-range weather forecasts for Canadians. GIOPS analyses are also used to initialize the operational forecasts from the Canadian Seasonal-Interannual Prediction System (CanSIPS). Temperature and salinity from GIOPS analyses are also used to represent the baroclinic effects in the Global Deterministic storm Surge Prediction System (GDSPS). RIOPS analyses are produced in a model that includes tides and provides daily three-dimensional state of the ocean estimates for Canada's three coastlines on a domain covering the North Pacific, Arctic, and North Atlantic Oceans. Coastal forecasts are produced for the east and west coast of Canada at 2km resolution using spectral nudging to RIOPS analyses. More Argo data is needed in the Arctic

to improve the performance of the CCMEP data assimilation systems, and to provide a reliable dataset for verifications, e.g., the new CAPS (Canadian Arctic Prediction System) which will be implemented in March 2025.

Argo data is used in the verification of ocean prediction systems in support of the OceanPredict Inter-comparison and Validation Task Team. Comparisons of Argo and model profiles are available on https://navigator.oceansdata.ca. The Department of National Defence (DND) scientists, operational oceanographers and sonar operators routinely use real time Argo vertical profiles to assess model performance and, in some instances, use as data to compute acoustic range predictions, both at sea and in the Meteorology and Oceanography Centres (Esquimalt and Halifax). DND uses the web-based Ocean Navigator tool to assist with these activities.

The Argo Canada web site is maintained by Fisheries and Oceans Canada at http://www.isdm.gc.ca/isdm-gdsi/argo/index-eng.html. A deployment planning and history website is available at Argo Canada Development Blog: Deployment Planning. A repository of Argo-related code under development through DFO has been made available on Github at https://github.com/argoCanada. Repositories include the under-development python BGC DMQC tools, the argoFloats and argodata R packages, a python package for finding and working with Argo data (argopandas), and an informal blog used to highlight interesting floats and issues encountered when working on Argo DMQC.

Dalhousie University and the University of Newfoundland are leading an infrastructure project for implementation of a regional BGC Argo array in the northwest North Atlantic with funding from the Canada Foundation for Innovation, Research Nova Scotia, and the province of Newfoundland. Research questions to be addressed include the sensitivity of carbon sequestration and ocean ventilation in the Labrador Sea to changing atmospheric and oceanic conditions, new approaches to biological rate measurements using Argo measurements (e.g., NCP, vertical carbon flux), assessment of the skill of climate models in the region, and implementation of a data-assimilative physical-biogeochemical ocean model for the region. As part of the project, a Canadian adopt-a-float program was launched (https://adopt-a-float.ocean.dal.ca/). The Canadian BGC Argo website is maintained by Katja Fennel's research group at http://bgc-argo.ocean.dal.ca/

Research efforts at the University of Victoria currently focus on improving oxygen optode calibration protocols using in-air measurements and on estimating biological carbon export in the NE Pacific from two methods 1) oxygen utilization rates from subsurface changes in oxygen and 2) surface ocean oxygen mass balance. Argo Canada floats carrying oxygen sensors in the NE Pacific are a primary emphasis.

6. Issues that your country wishes to be considered and resolved by the Argo Steering Team regarding the international operation of Argo. These might include tasks performed by OceanOPS, the coordination of activities at an international level and the performance of the Argo data system. If you have specific comments, please include them in your national report. Also, during the AST-26 plenary**, each national program will be asked to mention a single highlight or issue via a very brief oral report**.

Argo Canada encourages the AST to continue support for the Basin Planning Working Groups. This has improved information-sharing among the groups deploying floats and is helping to identify deployment opportunities.

7. Outreach and communication: please describe, in brief, outreach efforts within your national program over the past year. Also, if you've issued any communications, press releases, participated in articles, etc, please send the links. We are considering our social media strategy, so please let us know which social media you engage with and the corresponding handles.

   The Canadian adopt-a-float program (https://adopt-a-float.ocean.dal.ca/) is led by Dalhousie University with support from DFO and the University of Victoria. Activities in 2024 included several school visits to the Bedford Institute of Oceanography, where students learned about Argo and the ocean monitoring work done by DFO, and got to name and sign an adopted float. Most classes have been at the high school level, owing to a specific ocean-based course in the Nova Scotia curriculum ("Oceans 11"). In October 2024, we had our first adopt-a-float with an elementary class (Grade 6, as a school visit rather than a visit/tour at BIO), which was a great success. Based on completed visits from 2024 and ones already-booked for 2025, we expect to reach approximately 6-8 classes across the province (i.e., not just in Halifax) this year. A major boost to the uptake of the program in 2024 followed attendance at the Association of Science Teachers conference in Nova Scotia.

   Roberta Hamme (UVic) leads a variety of Argo outreach activities. In 2024, she led 6 hour-long workshops for Grades 4-6 through the summer Science Venture program on Robots in the Ocean. Participants brainstorm essential requirements for robots, explore how Argo floats fulfill those requirements, and do a hands-on activity exploring changing the density of an object by changing its volume so it floats or sinks in water (usually ending in a water fight in good weather). She also led an activity for grade 5 at a local school to make Cartesian divers, exploring the importance of change pressure on engineering Argo floats.

8. To continue improving the quality and quantity of CTD cruise data being added to the reference database by Argo PIs, it is requested that you include any CTD station data that was taken at the time of float deployments this year. Additionally, please list CTD data (calibrated with bottle data) taken by your country in the past year that may be added to the reference database. These cruises could be ones designated for Argo calibration purposes only or could be cruises that are open to the public. To help CCHDO track down this data, please list the dates of the cruise and the PI to contact about the data.

   CCHDO currently acquires Line-P data directly from the https://waterproperties.ca/linep website. MEDS will send CTD data collected by other DFO institutions to NOAA NCEI and then the data will be available to CCHDO.

9. Keeping the Argo bibliography (Bibliography | Argo (ucsd.edu)) up to date and accurate is an important part of the Argo website. This document helps demonstrate the value of Argo and can possibly help countries when applying for continued Argo funding. To help me with this effort, please include a list of all papers published by scientists within your country in the past year using Argo data, including non-English publications.
   There is also the thesis citation list (Thesis Citations | Argo (ucsd.edu)). If you know of any doctorate theses published in your country that are missing from the list, please let me know.

Finally, if you haven't already sent me a list of Argo PIs in your country, please do so to help improve the statistics on how many papers are published including an Argo PI vs no Argo PIs.

Journal Publications

Carranza, M. M., M. C. Long, A. Di Luca, A. J. Fassbender, K. S. Johnson, Y. Takeshita, P. Mongwe, and K. E. Turner (2024), Extratropical storms induce carbon outgassing over the Southern Ocean, npj Climate and Atmospheric Science, 7(1), 106, doi: https://doi.org/10.1038/s41612-024-00657-7

Cervania, A. A., and R. C. Hamme (2024), Isopycnal Shoaling Causes Interannual Variability in Oxygen on Isopycnals in the Subarctic Northeast Pacific, Journal of Geophysical Research: Oceans, 129(7), e2023JC020414, doi: https://doi.org/10.1029/2023JC020414

Chen, Y., H. Zhao, and G. Han (2024), Vertical and horizontal variations in phytoplankton chlorophyll in response to a looping super typhoon, Limnol. Oceanogr., 69(9), 2085-2094, doi: https://doi.org/10.1002/lno.12651

Duan, Y., H. Zhang, X. Chen, and M. Zhou (2024), A Gaussian Function Model of Mesoscale Eddy Temperature Anomalies and Research of Spatial Distribution Characteristics, Remote Sensing, 16(10), doi: https://doi.org/10.3390/rs16101716

Duan, Y., H. Zhang, and C. Ma (2024), Intelligent inversion of mesoscale eddy temperature anomaly profiles based on multi-source remote sensing data, International Journal of Applied Earth Observation and Geoinformation, 132, 104025, doi: https://doi.org/10.1016/j.jag.2024.104025

Fujii , Y., E. Remy, M. A. Balmaseda, S. Kido, J. Waters, K. A. Peterson, G. C. Smith, I. Ishikawa, and K. Chikhar (2024), The international multi-system OSEs/OSSEs by the UN Ocean Decade Project SynObs and its early results, Front. Mar. Sci., Volume 11, https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2024.1476131/full

Izett, R. W., K. Fennel, A. C. Stoer, and D. P. Nicholson (2024), Reviews and syntheses: expanding the global coverage of gross primary production and net community production measurements using Biogeochemical-Argo floats, Biogeosciences, 21(1), 13-47, doi: https://bg.copernicus.org/articles/21/13/2024/

Li, J., D. Antoine, and Y. Huot (2024), Bio-optical variability of particulate matter in the Southern Ocean, Frontiers in Marine Science, 11, doi: https://doi.org/10.3389/fmars.2024.1466037

Liu, G., G. C. Smith, A.-A. Gauthier, C. Hébert-Pinard, W. Perrie, and M. R. A. Shehhi (2024), Assimilation of synthetic and real SWOT observations for the North Atlantic Ocean and Canadian east coast using the regional ice ocean prediction system, Frontiers in Marine Science, 11, doi: https://doi.org/10.3389/fmars.2024.1456205

Miller, U. K., et al. (2024), Oxygen optodes on oceanographic moorings: recommendations for deployment and in situ calibration, Frontiers in Marine Science, 11, doi: https://doi.org/10.3389/fmars.2024.1441976

Schulzki, T., L.-A. Henry, J. M. Roberts, M. Rakka, S. W. Ross, and A. Biastoch (2024), Mesoscale ocean eddies determine dispersal and connectivity of corals at the RMS Titanic wreck site, Deep Sea Research Part I: Oceanographic Research Papers, 213, 104404, doi: https://doi.org/10.1016/j.dsr.2024.104404

Stoer, A., and K. Fennel (2024), Carbon-centric dynamics of Earth's marine phytoplankton, PNAS, 121 (45) e2405354121, https://doi.org/10.1073/pnas.2405354121

Ph.D./M.Sc. Thesis

Duke, Patrick J (2024) Investigating the Northeast Pacific Ocean Carbon Sink using a Machine Learning Approach. PhD dissertation. School of Earth and Ocean Sciences, University of Victoria. https://hdl.handle.net/1828/16570

Mehlmann, Melina (2024) An Evaluation of Global Ocean Models in the North Atlantic using BGC-Argo Observations, MSc thesis, Dalhousie University. https://dalspace.library.dal.ca/items/644c902a-8be8-4b50-923b-24471e392760

Books

Nothing to report

10. Does your National Program have any deployment plans for RBR floats in the next couple years? If so, please indicate how many floats will you be buying in 2025 and 2026 (if known) and where they might be deployed.

    Argo Canada is committed to deploying additional floats equipped with RBR CTDs. The DFO procurement plan for 2025 is not known at this time, but we expect to procure about 50% of our core Argo floats (TWR APEX) with RBR CTDs.

    Dalhousie University and the Memorial University of Newfoundland are procuring 27 BGC Argo floats (NKE PROVOR CTS5) with the RBR Tridente sensor over the period of 2025-26.