OCEAN FRONTIER INSTITUTE | Led by DALHOUSIE UNIVERSITY

CENTRE OF EXCELLENCE
IN OBSERVATIONAL OCEANOGRAPHY

PHASE IV - YEAR I

FINAL REPORT

NF-POGO CENTRE OF EXCELLENCE IN OBSERVATIONAL OCEANOGRAPHY IN CANADA

2024-25

Supported by THE NIPPON FOUNDATION

pogo Partnership for Observation of the Global Ocean

MARINE INSTITUTE

MEMORIAL UNIVERSITY

Hakai

IOI International Ocean Institute

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Executive Summary

The Ocean Frontier Institute at Dalhousie University, in partnership with the Fisheries and Marine Institute of Memorial University of Newfoundland and the Hakai Institute, proudly hosted the first Canadian delivery of the Nippon Foundation–Partnership for Observation of the Global Ocean Centre of Excellence in Observational Oceanography (NF-POGO COE). Year One of Phase Four is now successfully completed.

The ten-month intensive program trained ten international scholars from Bangladesh, Brazil, Egypt, Ghana, India, Indonesia, Kenya, Mexico, the Philippines, and Senegal, providing them with a comprehensive foundation in ocean observation. The curriculum included coursework in oceanography, field training, data management, coding and modeling, science communication, and professional development.

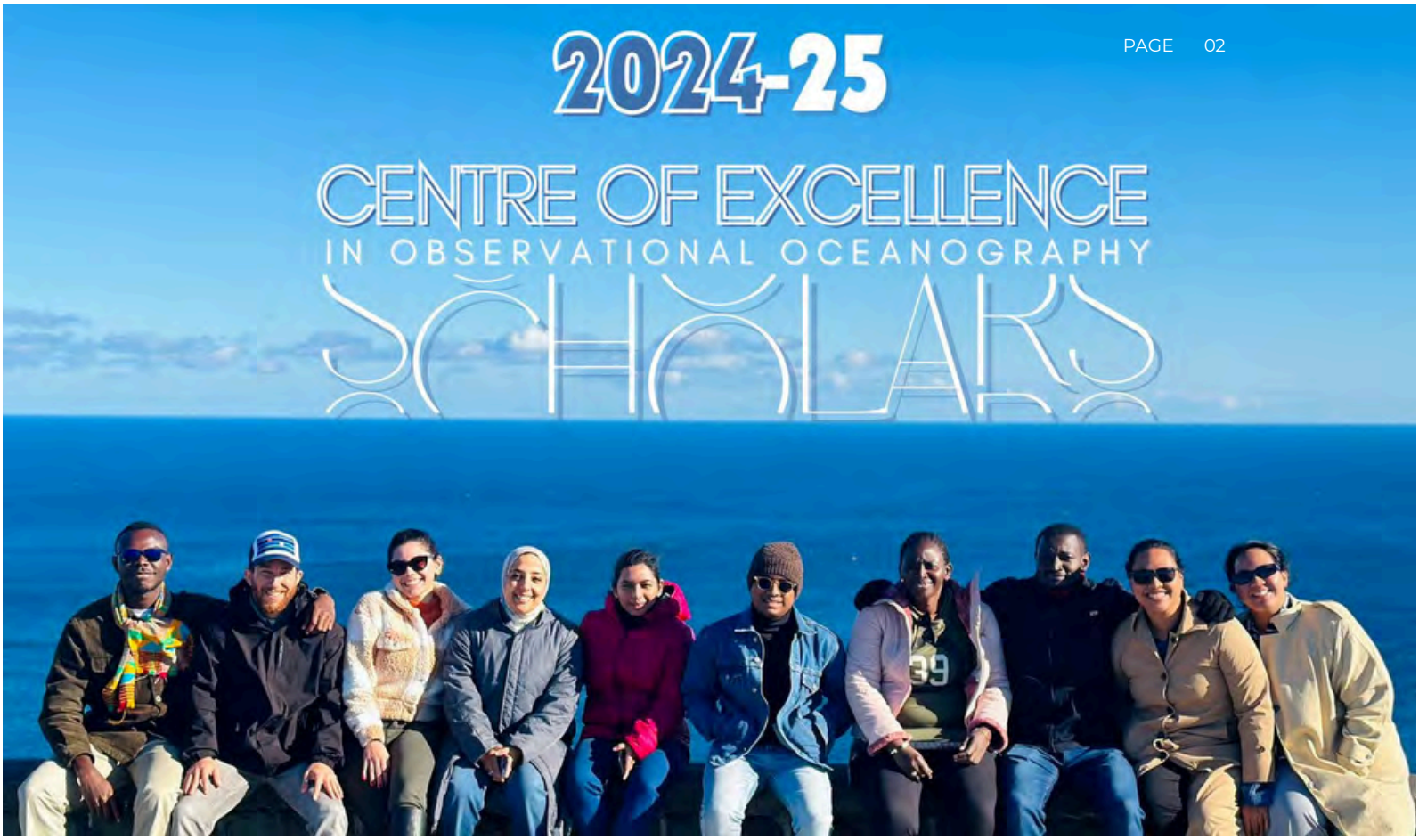
Program Phases

- **Phase I: Marine Institute (October–April)** – Seven months of foundational training in oceanography, marine technology, coding, data analysis, and field sampling.
- **Phase II: Hakai Institute (May) –** Three-and-a-half weeks of fieldwork on Quadra and Calvert Islands, British Columbia, applying skills in diverse marine environments.
- **Phase III: Halifax Phase (June–August)** – Completion of independent and collaborative research projects, ocean governance training with the International Ocean Institute - Canada (IOI-Canada), and formal presentations to academic, industry, and government audiences.

Throughout the year, scholars completed a wide range of learning and research activities—both individually and as a group—including a publication in the Journal of Ocean Technology. They also developed data products, presented their work to academic and industry leaders, and engaged in cross-cultural exchange that deepened both professional and personal connections.

This inaugural Canadian-hosted cohort has set a strong precedent for the years to come, demonstrating how an international, multi-institutional partnership can deliver a world-class training experience that advances both individual capacity and global ocean observation goals.

Preparations are now underway for the 2025–26 cohort, as Phase Four continues with a renewed focus on impact, collaboration, and developing the next generation of ocean leaders.



1. Introduction

The NF-POGO Centre of Excellence (COE) in Observational Oceanography was established in 2008 through a partnership between the Nippon Foundation (NF) and the Partnership for Observation of the Global Ocean (POGO). Its mission is to strengthen global capacity in ocean science by training early-career researchers from around the world, with particular emphasis on developing countries and regions that are most vulnerable to the impacts of climate change. The COE has since become a flagship initiative in the global ocean community, creating a network of highly skilled alumni contributing to international ocean observation and management efforts.

In 2023, Canada was selected as the newest host for the COE program, marking the first time the initiative was delivered in North America. The NF-POGO COE Canada Program has been designed to offer scholars an immersive training experience that integrates advanced scientific instruction, applied fieldwork, research skill development, and leadership training.

1.1 The NF-POGO Centre of Excellence *in Canada*

The ocean plays a vital role in the environmental, economic, and social health of our planet. As the impacts of climate change and other human pressures intensify, there is an urgent need for greater global capacity and collaboration to protect this critical resource.

This coast-to-coast partnership has provided the first cohort of scholars with an unparalleled opportunity to experience Canada's diverse marine environments, research facilities, and coastal communities—spanning the icy waters of the North Atlantic, the rich ecosystems of the Pacific, and the dynamic governance and policy hub in Halifax.

By living, studying, and conducting fieldwork in multiple provinces, scholars have not only gained a comprehensive technical education but have also experienced the cultural, geographic, and scientific diversity that defines Canada's ocean expertise. This integrated, national approach is a defining feature of the Canadian-hosted NF-POGO COE, ensuring that graduates leave with both the skills and the networks to engage with ocean science at a truly global scale.

1.2 Vision and Objectives

The NF-POGO Centre of Excellence in Observational Oceanography aims to advance global ocean science capacity through an intensive, collaborative training program focused on ocean observation. Hosted in Canada by the Ocean Frontier Institute (OFI) at Dalhousie University, in partnership with the Marine Institute and the Hakai Institute, the program reflects a shared commitment to ocean sustainability, equitable access to knowledge, and international cooperation.

Vision

To foster a global network of ocean professionals who are equipped to observe, understand, and sustainably manage the ocean for the benefit of science, society, and future generations.

Objectives

- **Strengthen Global Ocean Observation Capacity:** Equip early-career scientists, particularly from the Global South, with advanced training in ocean observing systems, tools, and methods.
- **Enhance International Collaboration:** Promote knowledge exchange and cooperation between institutions, countries, and disciplines to address global ocean challenges.
- **Deliver Interdisciplinary and Applied Training:** Provide comprehensive learning across physical, biological, chemical, and geological oceanography, with emphasis on real-world application through fieldwork and projects.
- **Support Equitable Participation in Ocean Science:** Prioritize inclusion, diversity, and accessibility by engaging scholars from underrepresented regions and promoting leadership development.
- **Promote Science for Sustainable Development:** Align training with the priorities of the UN Decade of Ocean Science for Sustainable Development, GOOS, and related global initiatives.
- **Bridge Science, Policy, and Society:** Foster understanding of the legal, institutional, and governance frameworks that connect ocean science to decision-making.

These objectives align with the missions of both POGO and the Nippon Foundation, and reinforce OFI's goal to lead the way in understanding the changing ocean and its impact on ecosystems, coastal communities, and the global climate system.

1.3 Program Goals

The goals of the NF-POGO COE Canada are guided by POGO's vision for worldwide cooperation in a sustainable, state-of-the-art global ocean observing system by 2030—serving the needs of both science and society.

The primary objective of the program is to train a cohesive cohort of high-calibre scholars from the Global South in observational oceanography through an interdisciplinary and international lens. Graduates are equipped with technical knowledge, professional skills, and global networks that empower them to become future leaders in marine science and sustainability within academia, government, NGOs, and industry.

The NF-POGO COE Canada delivers this through **three core pillars:**

1. Student Experience: A positive, supportive student experience is central to the program's success. Beyond coursework, scholars engage in community outreach, fieldwork, site visits, and interactions with industry and government leaders.

The three program locations—Newfoundland, British Columbia, and Nova Scotia—offer scholars a diverse educational and cultural immersion, enhancing both learning and personal growth.

2. Network Development: Graduating scholars join an expansive global network of ocean professionals. Through POGO and IOI-Canada, they gain access to alumni, mentors, and collaborators in over 100 countries. This network opens doors to future research, employment, and advocacy opportunities.

3. Capacity Building: Scholars develop the skills to share knowledge effectively and act as champions for ocean observation in their home countries. The curriculum is designed to include tools and practices that can be directly applied beyond the program, enabling scholars to continue their work and build capacity within their own institutions and communities.

The first year of the NF-POGO Centre of Excellence in Observational Oceanography in Canada has laid a strong foundation for the future. By combining world-class academic instruction, immersive field experiences, and global collaboration, the program delivered an exceptional learning environment for the 2024–25 cohort. As these scholars return to their home countries, they carry not only technical skills and knowledge, but also lifelong connections and a renewed commitment to advancing ocean sustainability. With preparations underway for the next cohort, the NF-POGO COE Canada continues to strengthen global capacity in ocean observation—one scholar, one network, and one ocean at a time.

1.4 Institutional Hosts and Partners

The NF-POGO Centre of Excellence in Canada Program is hosted by the **Ocean Frontier Institute** at Dalhousie University in Halifax, Nova Scotia, in partnership with two leading Canadian institutions: the **Fisheries and Marine Institute of Memorial University** in St. John's, Newfoundland and Labrador, and the **Hakai Institute**, supported by the Tula Foundation, on Quadra Island, British Columbia.

Together, these institutions form a unique, pan-Canadian training network that spans both the Atlantic and Pacific coasts, providing scholars with a diverse and immersive learning environment.

Ocean Frontier Institute (OFI)
Location: Halifax, NS

Founded in 2016, the **Ocean Frontier Institute (OFI)** is a transnational hub for cutting-edge ocean research and innovation based at Dalhousie University. Bringing together expertise from Dalhousie, Université du Québec à Rimouski, Université Laval, Memorial University, and the University of Prince Edward Island, OFI fosters interdisciplinary collaboration across marine science, policy, and technology. The institute leads large-scale projects addressing some of the world's most pressing ocean challenges, from climate-driven ecosystem changes to sustainable resource use. Through OFI's training and research programs, scholars are connected with leading scientists, policymakers, and industry partners, positioning them at the forefront of global collaborations aimed at ensuring a sustainable future for the ocean.

Additionally, the program collaborates with the **International Ocean Institute - Canada (IOI-Canada)**, based at Dalhousie University. Since 1981, IOI-Canada has trained over 700 early- and mid-career professionals from more than 100 countries through its interdisciplinary ocean governance program. This partnership ensures that scholars also gain a critical understanding of the legal, institutional, and ethical frameworks underpinning ocean observation.

Marine Institute (MI)
Location: St. John's, NL

The Fisheries and Marine Institute of Memorial University (MI) is recognized as one of the world's leading institutes in applied ocean education. MI provides unparalleled opportunities for hands-on training directly connected to the marine environment. Its programs are strongly industry-aligned, ensuring that graduates are prepared for real-world challenges across fisheries, marine transportation, ocean technology, and sustainable resource management. With access to specialized facilities, vessels, and **The Launch** in Holyrood, MI offers scholars immersive, field-based learning that bridges academic knowledge with applied ocean observation practices.

Hakai Institute
Location: Quadra Island, BC

The **Hakai Institute**, supported by the **Tula Foundation**, is a research institution dedicated to advancing ecosystem-based coastal science in British Columbia. Operating state-of-the-art field stations on Quadra and Calvert Islands, Hakai provides scholars with access to remote, pristine environments ideal for studying the interplay of ocean, land, and climate systems. Its advanced real-time environmental monitoring networks and long-term data collection programs contribute significantly to understanding coastal ecosystem change. By engaging with Hakai's interdisciplinary teams, scholars gain unique exposure to field-intensive research approaches that complement national and global ocean observation priorities.

2. Year I in Review:

Structure, Training & Impact

The inaugural year of the NF-POGO Centre of Excellence in Canada offered a structured blend of academic instruction, field research, and professional development across three provinces and two coasts. This section outlines the program's design, key training experiences, and the impact achieved in its first Canadian-hosted year.

Highlights

- **Cross-country training experience**, with scholars living and learning in three distinct coastal regions of Canada: Newfoundland, British Columbia, and Nova Scotia
- **Core training** in oceanography, coding, data analysis, and science communication
- **Immersive fieldwork** in coastal and remote environments
- **Independent and group research projects**, including a journal publication
- **Workshops and networking** with experts from academia, government, and industry
- **Cultural and international experience** gained by living and working in three diverse Canadian regions, expanding scholars' global awareness and adaptability
- **Cohort-building** through shared learning, cultural exchange, and community engagement

2.1 Program Setup + Orientation

Pre-Departure

The inaugural year of the **NF-POGO Centre of Excellence (COE) in Canada Program** began before the scholars left their home countries, with a virtual pre-departure session via Zoom. Organized by geographic region, these sessions were attended by incoming scholars, program coordinators, and key institutional contacts from each partner location. While they provided a high-level overview of available resources and program expectations, their primary purpose was to introduce scholars to the individuals who would support them throughout their training. These early interactions provided scholars with the opportunity to ask questions, clarify details, and establish connections that facilitated the transition to Canada.

Additionally, scholars were sent the electronic NF-POGO COE **Scholar Guidebook** before departure. This comprehensive document outlined resources at all three institutions, as well as information on surrounding communities. The guidebook covered topics ranging from academic expectations and campus services to cultural tips and local amenities, giving scholars a clear picture of what to expect in Canada.

Orientation

The formal orientation took place from October 21 to 25, 2024, at the Fisheries and Marine Institute of Memorial University in St. John's, NL. The week-long orientation introduced scholars to the academic, cultural, and community resources available in Canada while also serving as a key milestone in officially launching Phase IV of the NF-POGO COE in Canada initiative.

The orientation combined academic preparation, institutional tours, cultural integration activities, and networking opportunities. Scholars were welcomed by program coordinators, faculty, and staff. They participated in a wide range of sessions designed to build community, foster cross-cultural understanding, and ensure readiness for the year ahead. The orientation week also included a formal kick-off event at The Launch in Holyrood, attended by scholars, faculty, and members of the media, which marked the official start of the Canadian phase of the NF-POGO COE program.

*The scholar guidebook, pre-departure content, media references to the kick-off event, and orientation materials are included in the **Appendices** of this report for reference.*

2.2 Program Structure: Delivery, Curriculum, and Experience

Scholars began with intensive studies at the *Marine Institute* in Newfoundland, advanced to field-based research at the *Hakai Institute* in British Columbia, and concluded with project completion and governance training at *Dalhousie (OFI)* in Nova Scotia.

Below is an overview of the key instructional components by phase/location, including schedule structure, course descriptions, delivery formats, and intended learning outcomes.

Fisheries & Marine Institute of Memorial University

- *Location:* St. John's, NL
- *Duration:* 6 months—October 2024 to April 2025
- *Delivery Method:* In-person lectures, labs, computer-based exercises, and fieldwork.

Fall Semester: Oceanography Bootcamp & Foundational Training
October - December, 2024

The program began with an intensive nine-week Oceanography Bootcamp, designed to establish a strong foundation in marine science and applied ocean observation techniques.

SCIENTIFIC INSTRUCTION	TECHNOLOGY AND APPLIED METHODS	PROJECTS AND ASSESSMENTS	FIELDWORK AND APPLICATION
• Physical, chemical, biological, and geological oceanography • Atmospheric science, wave dynamics, and sea state analysis • Marine geology, sediment transport, and carbon cycling • Oceanographic data analysis using Python and other tools	• Ocean robotics and vehicles: ASVs, AUVs, ROVs, and operation simulators • Survey and navigation systems: ADCP, SSS, SBES, MBES, INS, GNSS • Sampling instruments: Plankton nets, Niskin bottles, sondes, CTD, SVP	• Project A—an independent research project on a specific ocean science topic. • Project B—an evaluation of their home country's ocean observation system in relation to the Global Ocean Observing System (GOOS). • Tests, assessments, progress reports, and professional development workshops	• Sensor deployments—hands-on use of oceanographic instruments • Environmental sampling—collection of physical, chemical, and biological data • Coastal ocean excursions—applying classroom learning on the Atlantic ocean • Practical skills—building confidence with field methods and instruments

*A detailed outline, schedule, instruction modules, and activities list from the Oceanography Bootcamp (Applied Oceanography) is provided in the **Appendices** of this report.*

Winter Semester: Electives and Independent Learning
January - April, 2025

The second semester offered a more flexible structure, allowing scholars to tailor their learning to their individual research interests and career goals. Advanced postgraduate-level electives (OTEC 6008 or FISH 6003) enabled some scholars to deepen their expertise in areas such as programming (Python or R), data analysis, or ocean survey methods, complementing their ongoing project work and preparing them for the advanced phases of the program.

In the Winter 2025 Memorial University semester, all scholars completed a mandatory course:

- **OTEC 6013**: Ocean Observation

In addition, each scholar selected one elective from the following:

- **GEOG 2202**: Ocean Remote Sensing
- **OTEC 6008**: Geostatistics and Seabed Characterization
- **FISH 6003**: Statistics and Study Design for Fisheries Science

Scholars completed their courses alongside Marine Institute graduate and undergraduate students in ocean-related STEM fields, creating opportunities for interdisciplinary learning and academic integration. The diversity of the student body also allowed scholars to build connections not only with Canadian peers but also with international students from around the world.

The mix of customized electives and independent study enabled scholars to take ownership of their learning, refine their research focus, and prepare for the applied field training and final project phases of the program. However, while scholars noted this experience was highly valuable, they admitted they missed the collaborative environment of being together as a whole cohort, as they had been in the first semester. To address this, the program aims to keep all scholars together during the second semester for the 2025-26 cohort.

*The term schedule and course descriptions for the winter semester are provided in the **Appendices** of this report.*

Hakai Institute

- *Location: Quadra* Island and Calvert Island, British Columbia
- *Duration*: 3.5 weeks—April to May, 2025
- *Delivery Method:* Immersive, field-based coastal research

The program's focus then shifted to Canada's Pacific coast, where scholars began a 3.5-week field school at the Hakai Institute, starting with their arrival on Quadra Island on April 23, 2025.

The first days were intentionally light to allow for recovery from travel and jet lag. They included a site orientation, a hike at Rebecca Spit Marine Provincial Park, and a virtual "Hakai Town Hall" to meet the staff. Each scholar also delivered a short presentation on their research background, which helped Hakai instructors tailor connections and follow-ups during the stay.

Training Approach

The Hakai field school was designed to provide scholars with a comprehensive overview of the institute's interdisciplinary science programs. Activities blended field excursions, lab-based modules, and direct engagement with Hakai researchers. Dedicated time was also built in for independent study and continued work on individual projects. Scholars were introduced to multiple axes of Hakai research, including biodiversity, genomics, watershed science, oceanography, citizen science, and geospatial technology.

Key Highlights

Biodiversity & Genomics

Scholars participated in the MARINe intertidal biodiversity surveys, gaining hands-on experience in long-term ecological monitoring techniques. A follow-up "bio-blitz" in Hakai's labs introduced DNA-based biodiversity surveys, environmental DNA (eDNA), and ancient DNA workflows, with data uploaded to the Barcode of Life Data systems (BOLD).

Calvert Island Ecological Observatory

A one-week module at Hakai's remote observatory offered immersion in watershed and oceanographic monitoring. Scholars hiked to weather stations and watersheds, observed salmon-critical ecosystems, and directly engaged with scientists conducting climate and carbon storage studies. They also witnessed rare deployments of a mooring buoy for ocean acidification monitoring and an autonomous glider for biogeochemical measurements.

Citizen Science & Low-Cost Technology

Scholars were introduced to GEM-in-a-box, Integrated Coastal Observatory initiatives, and "Sentinels of Change" light trap sampling, highlighting community-based approaches to monitoring marine biodiversity and fisheries.

Geospatial Technology

A capstone module combined classroom lectures and boat-based fieldwork, using multibeam sonar, ROVs, drones, and geodetic tools to map and analyze coastal features. Scholars also engaged with lectures on cryosphere science and the physiography of British Columbia.

Scholar Experience

Beyond formal programming, the field school emphasized community and immersion in the coastal environment. Scholars explored island life through kayaking, hiking, whale watching, and cultural activities, while daily meals with Hakai staff created opportunities for informal learning and mentorship. Though shorter in duration compared to their time in Atlantic Canada, the west coast stay provided scholars with a rich appreciation for the unique ecology of the North Pacific Ocean and exposure to world-class interdisciplinary research.

*All learning resources and schedules are included in the **Appendices** of this report.*

OFI at Dalhousie University

- *Location:* Halifax, Nova Scotia
- *Duration*: 3 months (May - August, 2025)
- *Delivery Method:* Classroom-based instruction, data analysis, and professional development workshops

The final phase of the program took place in Halifax, Nova Scotia, where scholars reconvened on Canada's East Coast at Dalhousie University to finalize their independent research projects, participate in professional skills development and ocean governance training, and prepare for their final presentations.

This stage focused on synthesizing and applying the skills and knowledge developed throughout the program. Scholars were supported through one-on-one mentorship, access to university resources, and targeted workshops to help them finalize and communicate their research.

Core Learning Competencies

- **Independent Research**: Finalization of Project A and Project B, integrating both technical training and policy relevance.
- **Professional Skills Workshops:** Training in science communication, data management, intellectual property, and career development.
- **Networking**: Engagement with ocean industry organizations and professional associations in Halifax.
- **Presentations and Knowledge Sharing**: Scholars delivered progress and final presentations to diverse stakeholders, strengthening their ability to communicate scientific research to different audiences.
- **Governance Training:** Participation in the International Ocean Institute - Canada Ocean Governance Program, covering frameworks such as UNCLOS, integrated coastal zone management, and international agreements on sustainable ocean development.

*The Halifax schedule and workshop descriptions are provided in the **Appendices** of this report.*

Program Conclusion and Reflection

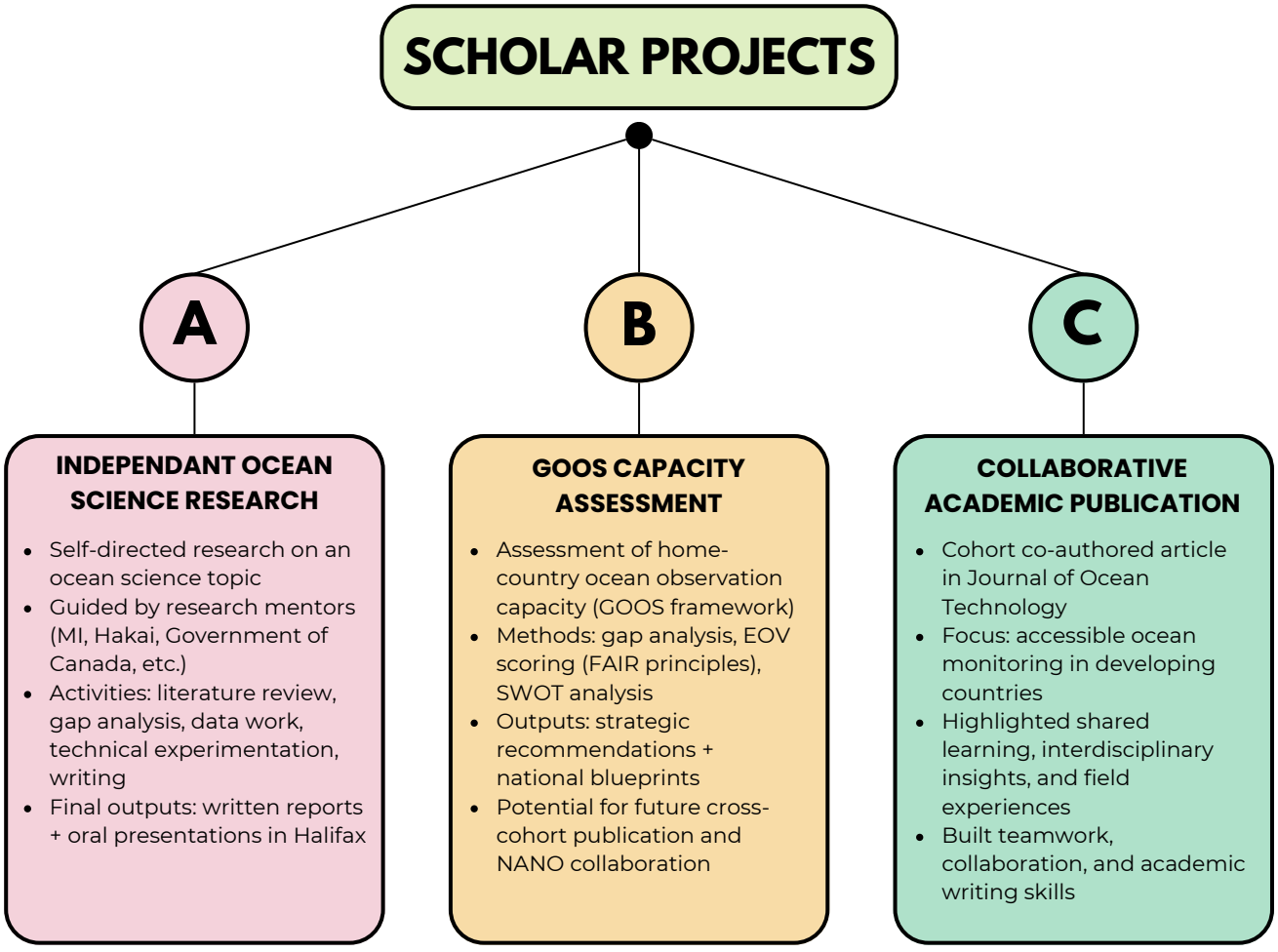
The Halifax phase emphasized cultural engagement, team reflection, and celebration of achievements. Scholars participated in community activities, shared personal and professional reflections, and connected with Canadian partners who supported their journey.

The program concluded with a graduation ceremony at Dalhousie University, where scholars presented their research outcomes and experiences to mentors, institutional partners, and invited guests.

By the end of this final phase, scholars had refined their research, expanded their professional networks, and strengthened their ability to make meaningful contributions to global ocean observation initiatives and governance frameworks.

2.3 Scholar Projects A, B, and C

Throughout the NF-POGO COE Canada program, scholars engaged in three structured projects designed to develop research skills, apply technical knowledge, and deepen their understanding of observational oceanography, as well as their country's participation in the Global Ocean Observation System (GOOS). Each project comprised cumulative components and milestones building toward the final written products. This format replicated an authentic scientific research environment, resulting in a comprehensive and well-rounded scholarly experience.



Project A: Independent Learning Project

Project A was designed to support self-directed research, enabling each scholar to explore a topic of personal or professional interest in the ocean sciences. Guided by mentors from the Marine Institute, the Hakai Institute, the Government of Canada, and others, scholars developed research questions and designed project plans. They carried out literature reviews, data analysis, experimentation, and writing. Their findings were presented in both written and oral formats during the final phase in Halifax.

Project B: GOOS Country Evaluation

Project B centred on each scholar's assessment of their home country's ocean observation capacity within the Global Ocean Observing System (GOOS) framework. Scholars conducted gap analyses, reviewed national initiatives, and proposed strategic recommendations, producing evaluations that served as both academic exercises and potential blueprints for strengthening observation systems. Many converged on a shared methodology, combining EOV scoring (based on FAIR data principles) with strengths, weaknesses, opportunities, and threats (SWOT) analysis to inform national planning. Looking ahead, scholars have expressed interest in refining this approach into a cross-cohort publication, which would offer an opportunity to strengthen the NF-POGO Alumni Network for the Ocean (NANO) through continued collaboration.

Project C: Group Journal Publication

Project C united the cohort in co-authoring an article for the Journal of Ocean Technology (Summer 2025, "Ocean Monitoring: Keeping Watch"), titled "**Accessible Ocean Monitoring Technologies in Developing Countries: NF-POGO Global Scholar Perspectives on Low-Cost Solutions**." The process highlighted shared learning, interdisciplinary insights, and field experiences, while emphasizing teamwork, co-creation of knowledge, and collaborative academic writing.

Together, these three projects supported the program's goals of capacity development, scientific literacy, and global engagement, equipping scholars with the tools and experience needed to lead and contribute to ocean observation efforts worldwide.

Final Reports and Presentations

Scholars submitted detailed written reports for both Project A (Independent Research) and Project B (GOOS Evaluation), summarizing their objectives, methodology, results, and reflections. These reports served as the capstone of their academic work and were reviewed by program faculty and expert mentors.

During the final phase in Halifax, each scholar also delivered a formal presentation of their Project A and B findings to an audience of faculty, program partners, and invited guests from government, academia, and industry.

Mentors

Mentors from the Marine Institute, Hakai Institute, Ocean Frontier Institute, and partner organizations—including the Government of Canada—supported scholars throughout the year, particularly in the development of their Projects A and B. They provided technical guidance, feedback, and professional advice, helping scholars refine their research and build valuable connections within the ocean science community.

*Final reports and project presentation, recordings of projects A & B, along with a copy of the Journal of Ocean Technology, are provided in the **Appendices**.*

2.4 Cross-Cutting Competencies

Throughout the program, scholars developed transferable skills, including critical thinking, leadership, interdisciplinary collaboration, problem-solving, and intercultural communication. These competencies were embedded across all activities and reinforced through group work, workshops, and real-world application.

English Language Progression

As part of their professional development, scholars received ongoing support in English for academic and scientific purposes. Language progression was tracked through participation, presentations, written reports, and informal communication. Many scholars showed significant improvement in fluency, confidence, and clarity in both spoken and written English.

Conversation Café was a weekly session designed to help scholars practice and improve their English communication skills in an informal, supportive setting.

- At the Marine Institute (NL) – The Café ran once a week, each session featuring a guest from the MI community. Discussions centred on a different topic each week, encouraging scholars to share perspectives, ask questions, and build confidence in speaking English while also learning about Canadian culture and regional issues.
- In Halifax (NS) – Weekly sessions continued with a stronger emphasis on conversational fluency and public speaking skills. Activities included guided discussions, storytelling, and presentation practice, providing a space to refine language skills in preparation for final project presentations and professional networking.

Indigenous Cultural Awareness

As part of their time in Canada, scholars participated in cultural awareness activities that introduced them to Indigenous knowledge systems, community-led stewardship, and place-based perspectives on coastal and ocean management. This element of the program encouraged scholars to reflect on local context, traditional knowledge, and the importance of inclusive approaches to ocean science.

In Halifax, the scholars visited the Millbrook First Nation Cultural Centre, where they learned about the history of the Mi'kmaq people. They also heard from a local Indigenous elder and other community members and participated in a smudging ceremony.

Science Communication

Through dedicated workshops, practice sessions, and ongoing mentorship, scholars enhanced their ability to communicate complex scientific ideas to both specialist and non-specialist audiences. Scholars produced written content, created visual summaries, and practiced oral storytelling techniques as part of their science communication training. During field trips to museums and science centres, scholars were able to see science communication in action. Many scholars are actively using their science communication skills on professional social media platforms, such as LinkedIn.

Health and Wellness

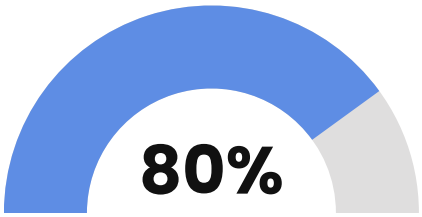
Supporting the physical, mental, and emotional well-being of scholars was a priority throughout the NF-POGO COE Canada program. Adjusting to a new country, climate, and culture, while managing the demands of an intensive academic schedule, required proactive support systems and accessible resources.

Wellness Supports

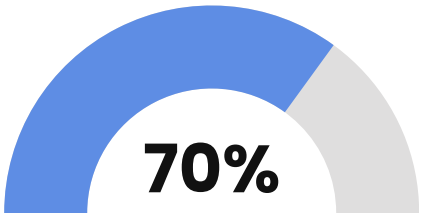
- **Health Insurance Coverage** – All scholars were enrolled in comprehensive health coverage through Dalhousie to ensure access to medical services during their stay in Canada.
- **Health Services** – Scholars had access to medical clinics, counselling services, and wellness programming at both the Marine Institute and in Halifax.
- **Emergency Preparedness** – Orientation included detailed health and safety briefings, local medical contact information, and emergency response protocols.

Well-Being Initiatives

- **Mental Health Resources** – Information sessions and referrals to counselling and peer-support networks were provided to help scholars manage stress and maintain emotional well-being.
- **Community Support** – Cohort-based living and regular check-ins with program coordinators fostered a sense of belonging and provided early opportunities to address concerns.
- **Active Living** – Scholars were encouraged to participate in various physical activities, including yoga, group fitness classes, campus gym facilities, team sports, ice skating, hiking, and other outdoor pursuits.



of scholars utilized wellness supports



of scholars used on-campus fitness facilities

By integrating health and wellness into the program structure, NF-POGO COE Canada ensured scholars could focus on their studies while feeling supported and cared for in all aspects of their experience. This approach not only safeguarded their well-being during the program but also provided them with tools to maintain resilience in their future academic and professional journeys.

Social and Cultural Engagement

Social and cultural engagement played a key role in the NF-POGO COE Canada experience, supporting community building, cultural exchange, and scholar well-being. These activities complemented the academic program, providing opportunities for scholars to experience Canadian culture, share their own traditions, and strengthen connections within the cohort and with the broader community.

Throughout the year, scholars participated in a variety of organized events and informal gatherings, including:

- Welcome and Farewell Receptions
- Halloween Festivities
- Christmas Getaway at a country cabin
- Ramadan Celebration
- Outdoor Adventures: Ice skating, group hikes, a beach day, nature excursions
- Cultural Exchange Nights, where scholars prepared dishes, shared music, and told stories from their home countries.
- Global Culinary Showcase – Scholars prepared and served dishes from each of their home countries for the Marine Institute/Memorial University community.
- Community Engagement – Visits to local markets, museums, and heritage sites provided insights into regional history, culture, and the connection between coastal communities and the ocean.

These experiences enhanced the scholars' cultural awareness and adaptability, built trust and camaraderie among the group, and created lasting memories that extend beyond the academic program. Over time, they developed their own inside jokes, shared countless fits of laughter, and built an unshakable camaraderie. One tradition stood out: fiercely competitive UNO card games that became a beloved staple of their downtime, complete with playful banter, strategic rivalries, and dramatic victories. By the end of the year, the cohort had developed not only professional skills and networks, but also deep personal connections rooted in shared experiences across Canada's Atlantic and Pacific coasts.

2.5 Program Wrap-Up

The conclusion of the NF-POGO COE Canada program marked both a celebration of achievements and a moment of reflection for scholars, instructors, and partners. Over the course of ten months, the cohort had navigated an intensive academic schedule, engaged in immersive field experiences, and built an enduring global network. The wrap-up phase provided an opportunity to consolidate learning, showcase accomplishments, and prepare scholars for the next steps in their careers.

Graduation Week

Graduation Week in Halifax served as the grand finale of the NF-POGO COE Canada program: a week filled with presentations, reflection, celebration, and farewells. It brought together scholars, faculty, institutional partners, and invited guests to honour the achievements of the 2024–25 cohort.

Final Presentations - Scholars delivered their Project A and B results to a public audience, showcasing their technical expertise, research findings, and science communication skills.

Graduation Ceremony – Hosted at the Dalhousie Student Union Building, the ceremony featured remarks from representatives of the Nippon Foundation, POGO, the Marine Institute, the Hakai Institute, and OFI. Scholars were presented with certificates and recognized individually for their contributions to the program.

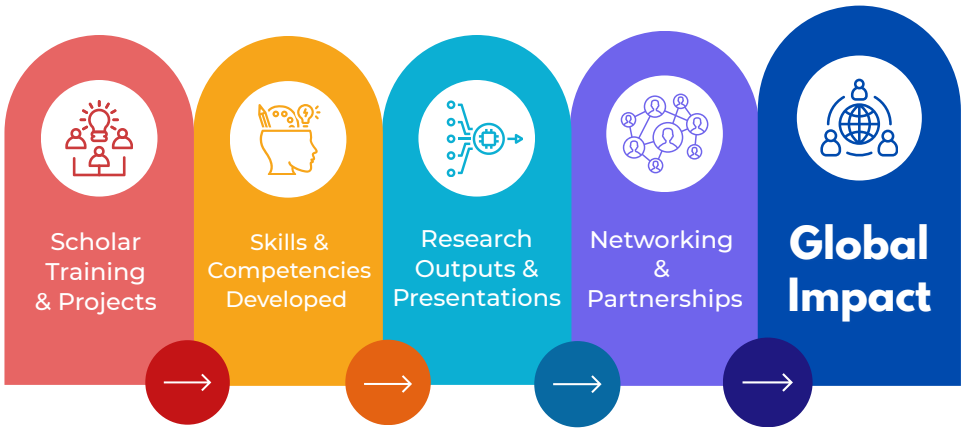
Focus Group Discussions – As a final opportunity to hear directly from the scholars as a cohort, a focus group was held with all scholars, program coordinators from MI and OFI, and a POGO representative, following a prior meeting between the scholars and the Nippon Foundation. This session provided a space for scholars to share key highlights and to discuss challenges encountered, as well as opportunities for improvement.

2.6 A Cohort Transformed

By the program's end, the 2024–25 scholars had grown from a group of individuals from ten different countries into a tight-knit community. They left Canada not only with advanced knowledge in ocean observation but also with the confidence, cultural understanding, and professional networks needed to drive impact in their home countries. The program wrap-up was both an ending and a beginning—closing one chapter while opening many more in the pursuit of sustainable ocean stewardship.

3. Outcomes and Impact

The first year of the NF-POGO COE Canada program delivered tangible results that extend beyond the ten months spent in Canada. Scholars left with advanced technical knowledge, strengthened professional networks, and cultural experiences that will inform their work for years to come. The program's impact can be measured both in the immediate achievements of the 2024–25 cohort and in the long-term contributions they are now positioned to make in global ocean observation and sustainability.



3.1 Key Outcomes

- **Enhanced Technical Capacity** – Intensive training in physical, chemical, biological, and geological oceanography, paired with hands-on experience with marine instruments, field methods, coding, data analysis, and modelling.

- **Research and Publications –** Independent and collaborative projects yielded tangible outputs, including a group article in **The Journal of Ocean Technology**, conference presentations, and datasets for continued use in their home institutions. Several scholars aimed to publish their research in peer-reviewed journals under the guidance of their principal mentors.

- **Expanded Global Networks** – Connection to the NF-POGO and IOI-Canada alumni communities, linking scholars with 700+ peers across 100+ countries.

- **Cultural Competency and Leadership** – Living and learning in a multicultural cohort equipped scholars to navigate diverse professional settings and foster international collaboration.

- **Direct Application of Skills** – Graduates return home ready to contribute to national and regional ocean observation, GOOS initiatives, capacity-building programs, and policy advisory roles.

3.2 Long-Term Impact

The NF-POGO COE Canada is designed to create ripple effects. By training emerging ocean leaders from the Global South, the program addresses critical global capacity gaps and helps ensure that knowledge, tools, and best practices are widely shared. Graduates will carry forward:

- **Applied Expertise** – Alumni adapt and implement modern ocean observation technologies in diverse local contexts.
- **Science–Policy Links** – Scholars strengthen connections between scientific evidence and sustainable governance frameworks.
- **Global Collaboration** – Continued engagement through NF-POGO NANO and international research networks.
- **Leadership for Sustainable Oceans** – Alumni positioned as future leaders in science-policy dialogues and capacity-building efforts.
- **Advocacy and Influence** – Ongoing contributions to GOOS and the UN Decade of Ocean Science for Sustainable Development.

The 2024–25 cohort represents not just the success of Year One in Canada, but a lasting investment in a more connected, informed, and capable global ocean community.

3.3 Global Ocean Observation Contributions

A central aim of the NF-POGO Centre of Excellence is to strengthen the capacity of early-career scientists to contribute to the Global Ocean Observing System (GOOS) and other international initiatives that advance sustainable ocean management. The inaugural Canadian cohort applied their training to projects and activities with direct global relevance, advancing both national priorities in their home countries and international ocean observation efforts.

Key Contributions

- **GOOS Country Evaluations** – Scholars assessed their home country's observation and data management capacity, producing rare insights and recommendations that position them for leadership roles.
- **Data Products and Tools –** Training in analysis, visualization, and ocean mapping equipped scholars with adaptable methods to support monitoring and reporting at home institutions.

- **Collective Knowledge Generation** – A group article in the Journal of Ocean Technology synthesized their shared experiences, adding to global knowledge on low-cost ocean monitoring technology solutions.

- **Capacity Building in the Global South** – Alumni are applying their expertise across academia, government, NGOs, and industry, strengthening networks and promoting science-based decision-making.

- **Support for Global Initiatives** – Training in ocean mapping complements the Nippon Foundation-GEBCO Seabed 2030 Project, aligning scholars' skills with international efforts in seabed characterization and hydrography.

Through these efforts, the 2024–25 NF-POGO COE Canada cohort directly advanced GOOS objectives, contributed to the UN Decade of Ocean Science for Sustainable Development, and strengthened the global community working toward a more comprehensive and equitable ocean observing system.

3.4 Scholar Career Pathways

The NF-POGO COE Canada Program prepares scholars to take on leadership roles in ocean observation, research, policy, and capacity building at both national and international levels. By combining technical training, fieldwork, cross-cultural collaboration, and professional networking, the program equips graduates to pursue impactful careers in marine science and sustainability.

Graduates of the 2024–25 cohort are already advancing into diverse roles:

- **Academia & Research** – Pursuing graduate studies and contributing to research teams.
- **Government & Intergovernmental Agencies** – Supporting national ocean strategies, GOOS initiatives, and evidence-based policy.
- **NGOs & Advocacy** – Promoting conservation, outreach, and climate resilience.
- **Industry & Technology** – Applying expertise in marine instruments, data analysis, and monitoring.
- **International Collaborations** – Continuing joint projects and publications through global networks.

*A **Scholar Career Pathway Table can** be found in the **Appendices**, and outlines each scholar's next steps, providing a snapshot of how this first Canadian cohort is already shaping the global ocean science community.*

3.4 Scholar Acheivements

Two scholars participated in DeepSense's 11th Ocean of Data Challenge: Telling Ocean Stories, where their work earned them a **third place finish**. One of these scholars went on to participate in DeepSense's 12th Ocean of Data Challenge: AI in Action and **placed first**.

4. Program Feedback and Evaluation

Feedback from scholars and host institutions has been central to evaluating the first year of the NF-POGO Centre of Excellence in Observational Oceanography in Canada. Structured surveys, informal reflections, and debrief sessions captured participant experiences, challenges, and suggestions throughout the program.

This process highlighted program strengths—such as the interdisciplinary curriculum, immersive fieldwork, and supportive community environment—while also identifying areas for growth in future cohorts. Scholars consistently valued the hands-on training, exposure to diverse perspectives, and opportunities to build lasting professional networks.

The evaluation also underscored the importance of cultural, social, and wellness activities in complementing academic and field-based learning.

*To ensure transparency and continuous improvement, detailed feedback reports are included in the **Appendices**, where they will inform planning for future cohorts and help the program evolve in line with its vision and global best practices.*

"From the first day we arrived, everything was ready for us, to the Christmas gifts and the care we received, I'm truly grateful for everything I got to experience here."

"Throughout the program, I felt a strong sense of support and didn't experience the helplessness that is common in a completely new environment."

"I woke up every day eager to learn new things and excited for what I would experience"

"ALL THE SIMULATORS, FIELDWORK AND TECHNOLOGY THAT WE PROBABLY WOULDN'T HAVE ACCESS TO IN OUR HOME COUNTRIES WERE LIFE-CHANGING"

"I always felt the
The Launch was where
the world of science came alive for me.
Being hands-on with world-class technology and tools I once only read about,
made everything feel
real, possible and within reach"

"Everyone is so supportive and open to sharing knowledge, which has been so helpful for in enhancing global perspective of ocean observation"

5. Lessons Learned and Future Direction

The first year of the NF-POGO Centre of Excellence in Canada offered both significant successes and essential insights into delivering an international, multi-institutional training program. Feedback gathered from scholars, coordinators, and partner institutions highlighted the program's strengths, including its interdisciplinary curriculum, immersive fieldwork, and strong cohort community, while also identifying areas for improvement. Key lessons centred on balancing academic rigour with personal development, fostering more structured collaboration, enhancing cultural and language support, and improving logistical planning across sites. These reflections have directly informed a set of future actions and planned enhancements designed to strengthen the scholar experience, expand applied training opportunities, and ensure the program continues to evolve as a world-class model for ocean observation capacity building.

5.1 Highlights from Year One Feedback

- The Oceanography Bootcamp provided a strong academic foundation.
- Peer-to-peer support was one of the most valued aspects of the program.
- Fieldwork at MI and Hakai was described as transformative and highly memorable.
- Orientation and cultural activities supported inclusivity and community building.
- Scholars appreciated the IOI Ocean Governance training and the networking opportunities in Halifax.
- The need to balance workload with project time and cultural engagement was emphasized.
- Requests included more structured collaboration sessions, earlier communication of schedules, and additional vessel/field time.
- Scholars suggested more formal introductions at the start to better understand peers' backgrounds and interests.
- Language barriers highlighted the need for greater lecture awareness (pace, jargon, written notes).

The table below summarizes the key lessons learned during the first year, the challenges identified, and the concrete steps planned to strengthen the program for future cohorts.

Category	Lessons Learned / Challenges Identified	Future Plans & Enhancements	Specific/Notable Changes for Year II
Curriculum & Workload	· Heavy workload during some phases · Limited time for personal development, cultural exchange, and project focus.	· Refine curriculum by streamlining overlapping content · Expand introductory modules	· Remove weekly online discussion posts; replace with in-person collaborative sessions (NL)
Collaboration & Community	· Scholars valued peer-to-peer learning but wanted more structured collaboration. · Semester 2 electives reduced cohort cohesion and limited idea exchange. · Scholars wanted more formal introductions at the start to understand peers' backgrounds, experience, and research interests.	· Introduce **Project Synergy Sessions:** structured check-ins built in to the program calendar · Expand informal and group activities to strengthen connections.	· Include orientation "About Me" presentations · Keep scholars together for term two courses to maintain sense of community
Cultural & Language Support	Language barriers and cultural adjustments required more dedicated resources.	Enhance English language resources, cultural workshops, and expanded community-based programming.	· Conversation Café (via OFI) integrated from the start of the program. · Share language resources early in the program. · Build language awareness into lectures: slower pace, less jargon, regular check-ins, written notes, and recordings where possible.
Program Logistics	Uncertainty sometimes arose from late communication of schedules and logistics across sites due to changing weather conditions, human resources, or resource avalibility	· Provide earlier, clearer schedules · Strengthen classroom and fieldwork planning · Increase program coordinator collaboration	· Pre-scehduled and booked field days · Bi-weekly pan-institution coordinator meetings · Established contigency plan for last-minute changes
Program Timing	Late October start limited field and vessel training due to weather.	Begin orientation earlier (**October 6, 2025**) to leverage milder fall weather for more fieldwork, vessel time, and outdoor activities.	Scholars will start to arrive to NL late September
Fieldwork & Applied Learning	Scholars highly valued field modules but wanted more vessel time and stronger integration with classroom learning.	· Increase hands-on training at sea and in the field · Explore adding a west coast (NL) component at **Bonne Bay Marine Station** · Refine Hakai module to better align with prior training and projects.	· Early booking of field resources, field trips, etc · Hakai coordinators increasing involvement early in the program with dedicated orientation sessions, more frequent communication, project awareness
Academic & Professional Engagement	Scholars appreciated guest lectures and Halifax networking, but wanted more variety and preparation for presentations.	· Broaden guest lecture series across three institutions with diverse experts · Provide more rehearsal and coaching for final presentations.	· Early planning for guest lecturers · Monthly guest lectures/workshops built into schedule (NL)
Global Impact & Alumni Links	Long-term program outcomes and career trajectories are not yet fully tracked.	Develop ongoing alumni tracking to measure outcomes and strengthen NF-POGO CoE Canada's global reputation.	· Maintain Year I What's App Community group to stay in consistant contact

6. The Scholars

6.1 The 2024-25 Cohort

The inaugural cohort of the NF-POGO Centre of Excellence in Canada brought together ten outstanding early-career ocean professionals from India, Ghana, Brazil, Mexico, Bangladesh, Indonesia, Senegal, the Philippines, Egypt, and Kenya. Selected through a competitive international process, they represent the next generation of ocean leaders from the Global South.

With diverse academic backgrounds and cultural perspectives, the scholars demonstrated excellence, resilience, and collaboration throughout the year. They faced academic, personal, and cultural challenges, but consistently supported one another and enriched the collective learning environment through their unique perspectives and contributions.

“What made this year special wasn’t just the science, but the people.”

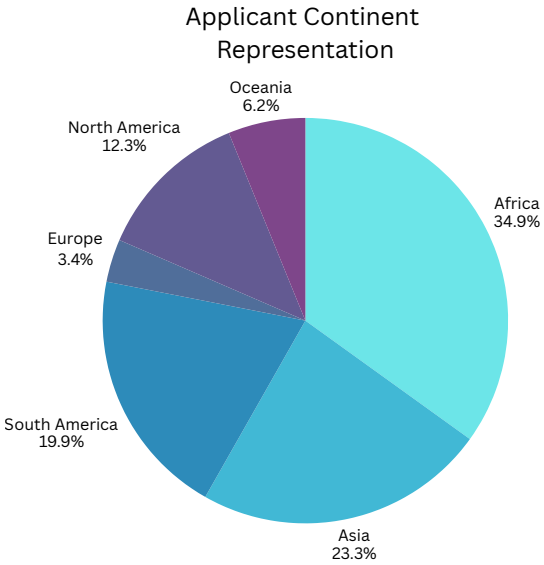
Beyond the classroom and fieldwork, the scholars built a community of trust and belonging—sharing meals, celebrating traditions, and enjoying time together. This spirit strengthened their learning and created bonds that will support their careers and personal journeys for years to come.

*The scholars’ individual biographies, academic profiles, and professional aspirations are included in the **Appendices** of this report.*

6.1 Application, Review, and Selection

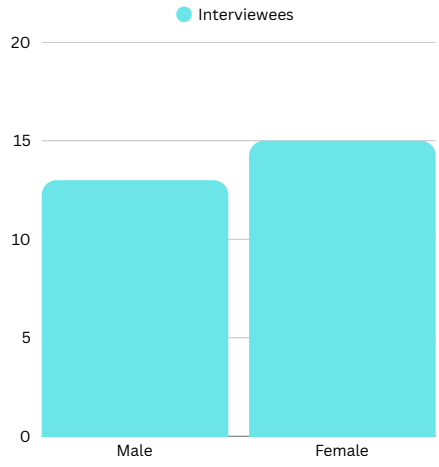
The NF-POGO Centre of Excellence in Canada follows a rigorous and competitive application process to ensure a diverse and high-calibre cohort. Applicants undergo multiple stages of assessment, including international review, online interviews, and English proficiency evaluation, with final selections approved by POGO and the Nippon Foundation.

For the 2024–25 cohort, 148 applications were received, with representation from six continents.



Over 45 countries represented in the applicant pool

Twenty-eight applicants were shortlisted for interviews, with interviewees representing a diverse range of countries, including Bangladesh, Ecuador, Argentina, Brazil, India, Tunisia, Senegal, Ghana, Kenya, Pakistan, Nigeria, Liberia, Madagascar, Tanzania, Indonesia, Mexico, the Philippines, Egypt, and Iran.



Average interview score: 9/12

A full overview of the application, review, and selection process can be found in the ***Appendices.***

7. Conclusion

The launch of the Nippon Foundation-POGO Centre of Excellence in Canada in 2024 marked a new chapter in a program that has, since 2008, trained and connected emerging ocean leaders worldwide. This first Canadian year showcased the strength of collaboration across institutions and across the country, the value of immersive fieldwork on both coasts, and the unique cultural and academic environment Canada offers.

The inaugural cohort graduates with advanced technical expertise, global networks, and a shared sense of purpose—outcomes that reflect both the program's worldwide legacy and the distinctive opportunities Canada contributes to its success.

Looking ahead, the partner institutions remain deeply committed to advancing and growing this already exceptional program. With lessons learned, stronger integration across sites, and new opportunities for applied and cross-cultural learning, the NF-POGO COE in Canada is well-positioned to expand its impact. The program's future lies in expanding its reach, deepening its contributions to global ocean observation, and securing long-term investment to ensure that future generations of scholars can benefit from this unique international initiative.

The 2024–25 cohort of scholars has set a remarkable standard, and their legacy marks only the beginning of what NF-POGO COE Canada will achieve in the years ahead.

Summary of Feedback Session with NF-POGO CofE-Canada Year 1 Scholars and Coordinating Team

Introduction

For this Phase of the NF-POGO Centre of Excellence (CofE), it was agreed between the POGO Secretariat and the Coordinating Team that the Secretariat would gather feedback from the scholars via a "focus group" discussion, rather than individual "interviews". To provide opportunities for the scholars to give confidential feedback and/or raise concerns, they were also invited to contact the Secretariat directly, if they felt the need to. They were given the e-mail address of the Administrative Coordinator, as well as being able to contact the Scientific Coordinator or CEO.

During the CEO's visit to Halifax, Canada, for Graduation Week, she also invited the scholars to talk to her if they wanted to speak in confidence about anything they might feel they could not raise with the Coordinating Team.

None of the scholars contacted the Secretariat to raise any issues.

Outcomes of focus group/ feedback session

Format:

The scholars took it in turns to provide feedback, starting with a round of "positive" comments, followed by "negative" comments, and ending on a positive/very brief final statement. The Coordinating Team (Sean Mullan, Scientific Coordinator; Krista Sweetland, and Tracey Woodhouse) were also invited to provide comments if they wished to.

Feedback:

All comments were overwhelmingly positive. They have been grouped into themes and summarised below.

Academic experience:

Most of them had applied for the programme, because this type of opportunity (multi-disciplinary, skills-focussed) is not available in their home countries. There were positive comments on the elective courses, and on the geostatistics/spatial mapping course, which taught them very transferrable skills. Sean Mullan was praised for his Oceanography bootcamp, which covers about 3 years' worth of undergraduate-level teaching in 3 weeks!

This course is designed to bring all scholars up to the same level of general oceanography, since they all come from different disciplines, and some of them may be very specialised in a particular subject, but not have a good general understanding of oceanography. All scholars, even the more advanced ones, agreed that this course was pitched at the right level.

Personal growth:

Several of the scholars commented that they felt that they had discovered themselves through this programme; they had pushed themselves to achieve results under sometimes challenging conditions, having to meet multiple deadlines and balance coursework, two individual projects, and in some cases still finishing Master's or PhD theses. One scholar commented the programme had improved their critical thinking. They also appreciated how they had felt valued and had a voice in the Canadian system, which was not always the case in their home countries. Some of them felt trepidatious about returning home and struggling with the strong hierarchy in their home institutions, but also felt that they could make a difference by becoming the mentors who would nurture and value the next generation of young scientists.

Logistical and pastoral support:

Many of the scholars commented on how well looked-after they had been, from the moment they landed in St John's. Several very personal touches were mentioned, like being met at the airport, having a "survival kit" of groceries and essential items waiting for them in their apartments, and being given Christmas presents and having a Christmas celebration organised for them in a log cabin.

Group dynamics:

The scholars seemed to have bonded very well, and no particular conflicts were reported. Despite not having lived together as a single group for most of the programme (they were mostly living in pairs), they seemed to have bonded well. Some of them commented that the human aspects of the programme had exceeded their expectations, and that they had not expected to feel like a family by the end of the programme. There was a comment that the programme helped scholars to understand how other people work and think.

Suggestions for improvement:

- More hands-on/practical elements and English lessons would have been beneficial for some at the start of the programme.
- Greater continuity between the teaching carried out at the Marine Institute and the Hakai Institute.

- Projects: some found it challenging to find a supervisor for their Project A; more Hakai-based projects on offer would have been good; they would have appreciated more help with contacting the relevant organisations in their home countries for their Project B.
- More sharing among the group on their individual projects would have been useful.

Final comments:

The final (positive) words from the scholars were:

- Science communication
- POGO knew me when I didn't know myself!
- Field experience
- Research methodology
- Self-actualisation
- Challenging, fun, family
- New place, new people, great experience
- Challenging
- Amazing professional and personal experience
- Most productive 10 months of my life!

And from the Coordinators:

- International knowledge network
- Friends on every continent
- You should be very proud of yourselves!

8. Appendices

Appendix A:

Program Setup + Orientation

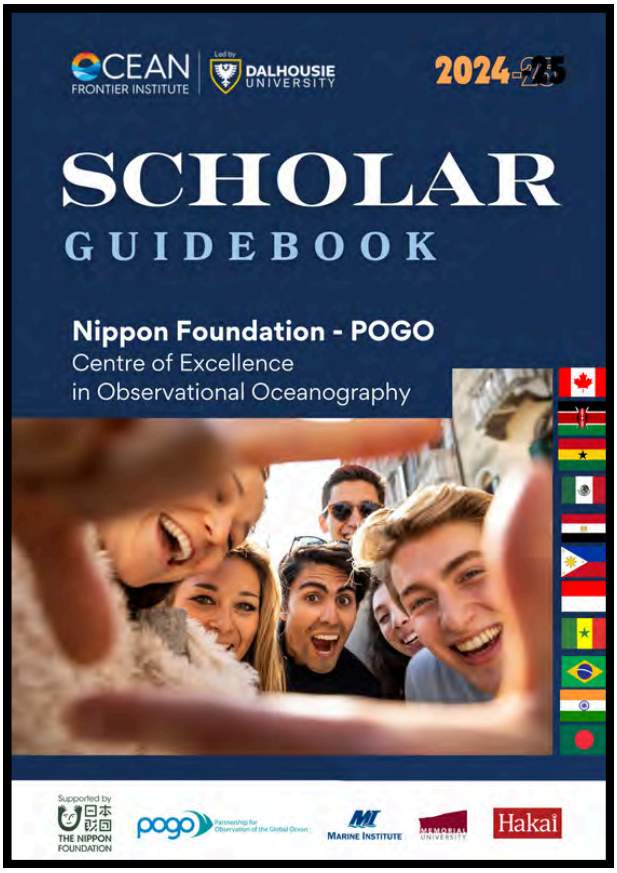
This appendix provides key documents and references that supported the inaugural NF-POGO COE in Canada cohort during their preparation and arrival period. These resources ensured scholars were well-informed before departure, welcomed at the program's official launch, and supported through their orientation in Canada.

Included: Scholar guidebook, pre-departure session materials, media references, and orientation week materials.

Scholar Guidebook

The guidebook included practical resources such as:

- **Program Overview** – Objectives, structure, and expectations.
- **Host Institutions** – Background on MI, Hakai, and OFI/Dalhousie.
- **Living in Canada** – Climate, clothing, health care, banking, and transport.
- **Support Services** – Key contacts for coordinators, student services, wellness, and emergencies.
- **Cultural Resources** – Canadian culture, customs, and holidays.
- **Local Guides** – Maps and highlights of St. John's, Halifax, and Quadra Island.



The guidebook provided a centralized reference tool that scholars could consult throughout the year. It complemented the virtual pre-departure sessions and ensured that scholars arrived with the knowledge and confidence to adapt quickly to their new environment.

A **PDF copy** of the Scholar Guidebook can be found here:

SCHOLAR GUIDEBOOK

Pre-Departure

Ahead of their arrival in Canada, scholars participated in virtual pre-departure sessions held via Zoom. These sessions were organized by geographic region to facilitate manageable group sizes and address region-specific questions. Each session was attended by incoming scholars, program coordinators, and key institutional contacts.

Session Overview

- Session dates: October 8-9, 2024
- Format: Virtual (Zoom), grouped by geographic region.
- Participants: Incoming scholars, program coordinators, and institutional contacts.

Purpose / Objectives

- Provide logistical information (travel, housing, academic expectations).
- Introduce scholars to key program staff and resources.
- Build early connections among the cohort before travel.

Session Content

- Program overview and expectations.
- Practical information: arrival, housing, finances, and health insurance.
- Academic preparation: bootcamp overview, research expectations, projects.
- Q&A session with coordinators and faculty.

Additional Resources

- **Email** sent to scholars before their pre-departure sessions.
- **Packing list** was shared with scholars before departure.
- An onboarding survey was distributed to scholars before departure to gather information about their backgrounds, expectations, and needs.
  - The gathered information from this survey can be found **here.**
- **Academic and Student Affairs Orientation Presentation**

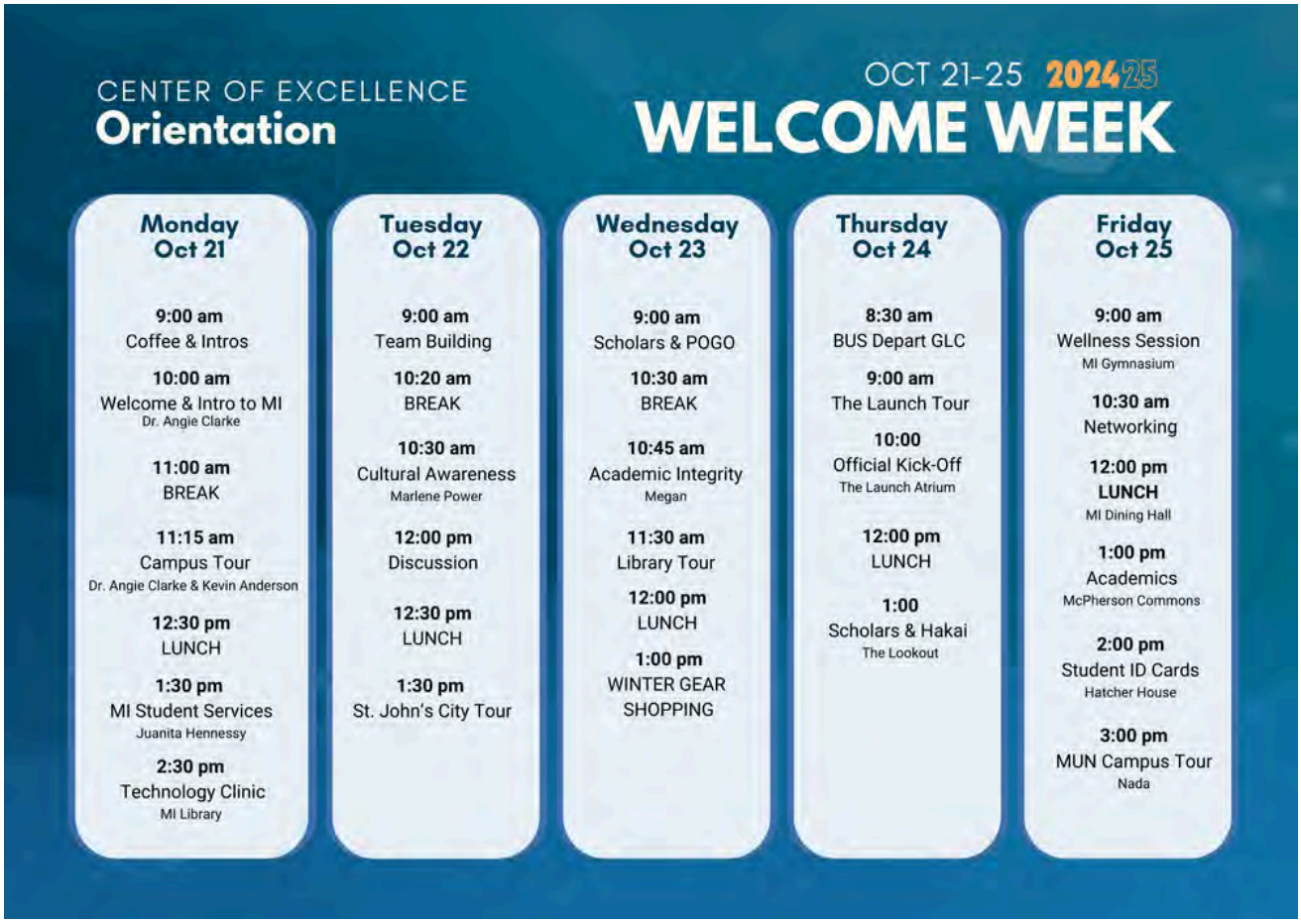
Orientation Materials

As part of Orientation Week (October 21–25, 2024), scholars were provided with a comprehensive schedule of activities (shown below) and reference materials that covered academic expectations, student services, cultural integration, and wellness support. These resources complemented in-person sessions, ensuring that scholars had clear guidance for their first weeks in Canada.

The orientation also featured an official kick-off event at The Launch, Holyrood, on October 24, 2024, attended by scholars, faculty, partners, and members of the media. Coverage of the event highlighted the significance of hosting the NF-POGO Centre of Excellence in Canada, as well as the collaborative efforts of institutions across the country.

Copies of the orientation materials and media references from the launch event are included in this appendix for reference.

- **October - December calendar**
- **Coordinator Calendar**



Media References

Media coverage played a crucial role in sharing the story of NF-POGO COE Canada's inaugural year. Highlights include coverage of the official kick-off event at The Launch, Holyrood (October 2024). Additional press releases, news articles, and institutional features throughout the year highlighted scholar activities, fieldwork on both coasts, cultural engagement, and the broader significance of hosting the NF-POGO COE in Canada. Together, these references demonstrate both the public interest and the institutional pride surrounding the program's launch and implementation.

News and Radio

- *CBC Listen - The Broadcast* (October 24, 2024)
- *CBC News NL - News Clip* (October 24, 2024)

Press Releases:

- *MI Website News* - "*OFI Hosts Global Ocean Observation Partnership*" (January, 2024)
- *OFI Website News Post* – "*Developing the Next Generation of Ocean Scientists: The First Cohort of the Centre of Excellence in Observational Oceanography Program in Canada Set to Graduate This Summer*" (July 30, 2025)
- *Tula Foundation Website News Post* – "Lighting a Fire for Ocean Science" (August 11, 2025)

Podcasts

- *Marine Institute Wavecast Podcast* - *Global Perspective: International Ocean Scholars at the Marine Institute* (January 24, 2025)

Social Media

- MI - LinkedIn - Welcome Scholars (October, 2024)
- OFI - LinkedIn - Welcome 2024-2025 Cohort (November 2024)
- MI - LinkedIn - Celebrate 2024-25 Cohort (April, 2025)

Appendix B:

MI: Oceanography Bootcamp

(October - December, 2024)

The Oceanography Bootcamp (Applied Oceanography) served as the academic foundation for the NF-POGO COE Canada program, running for nine weeks at the Fisheries and Marine Institute of Memorial University in St. John's, Newfoundland and Labrador. This intensive phase combined classroom instruction, laboratory exercises, and applied field training to ensure all scholars entered subsequent stages of the program with shared core knowledge and practical skills.

Scientific Instruction covered the fundamentals of physical, chemical, biological, and geological oceanography, as well as atmospheric science, wave dynamics, sea state analysis, sediment transport, carbon cycling, and oceanographic data analysis using Python and related tools.

Technology & Applied Methods introduced scholars to a range of modern ocean observation systems, including autonomous vehicles (ASVs, AUVs, ROVs, and simulators), survey and navigation instruments (ADCP, SSS, SBES, MBES, INS, and GNSS), and core sampling methods (plankton nets, Niskin bottles, sondes, CTDs, and SVPs).

Fieldwork and Application at The Launch and other coastal sites allowed scholars to apply classroom learning in real-world settings. Activities included instrument deployments, environmental sampling, supervised coastal excursions, and practical skill-building with field methods.

Assessment & Projects formed an integral part of the Bootcamp, preparing scholars for program-long research efforts. This included Project A (independent research on a chosen ocean science topic), Project B (evaluation of home-country ocean observation systems in relation to the GOOS framework), as well as written assessments, presentations, and professional development workshops.

Weekly Overview

The following provides a week-by-week overview of the Oceanography Bootcamp, highlighting key lectures, labs, field activities, and assessments between October and December 2024:

Week 1 (Oct 28–Nov 1) – Introductory lectures on ocean observation and core oceanography (physical, chemical, and biological), concluding with Waves & Sea State.

Week 2 (Nov 4–8) – Intensive Python & Data Analytics Bootcamp (4 days, full-day labs) + lecture on Weather & Climate I.

Week 3 (Nov 11–15) – Weather & Climate II, Tides & Water Levels I–II, plus field training in Holyrood (safety, ASV sonar, and ADCP).

Week 4 (Nov 18–22) – Water Levels & Currents + four-part Acoustics module (classroom & field-based SSS training at Holyrood).

Week 5 (Nov 25–29) – Test 1 (pass/fail), lectures on Plate Tectonics, Lithosphere & Hydrothermal Circulation (with ROV simulator), Continental Margins, and a special seminar on Marine Conservation Areas.

Week 6 (Dec 2–6) – Lectures on Sediment Dynamics and Oceanic Sediment & Carbon, followed by an activity day, rest day, and group work on Project B frameworks.

Week 7 (Dec 9–13) – Biogeochemical Cycles, Test 1 review, Johnson GeoCentre trip (Geological Carbon Storage, Seabed Minerals & Mining), and fieldwork at Holyrood (MBES, Environmental Sampling, ROV Ops). Project A & B presentations due Dec 14.

Weeks 8–9 (Dec 16–20) – Workshops on Project A (Ocean Science) and Project B (GOOS Evaluation, with Dr. Anya Waite). Optional lectures on Nautical Charts & Information. Concludes with Test 2 (pass/fail) and a review session.

The calendar version of the Oceanography Bootcamp can be found **here**.

Module Descriptions

- **Oceanography I–III** – Introduction to the fundamental principles of physical, chemical, and biological oceanography.
- **Waves & Sea State** – Analysis of wave dynamics and surface interactions, with demonstrations.
- **Python & Data Analytics** – Computer labs on data processing, visualization, and analysis using Python.
- **Weather & Climate I–II** – Exploration of atmospheric processes and their influence on ocean conditions.
- **Tides & Water Levels** – Predicting and interpreting tidal behaviour and sea-level variations through lectures and exercises.
- **Safety & ASV Single-Beam Sonar** – Field training at The Launch on autonomous surface vehicles and sonar fundamentals.
- **ADCP (Acoustic Doppler Current Profiler)** – Practical training in measuring and analyzing current velocities.
- **Water Levels & Currents** – Integrating lectures and field activities at The Launch to study water column data.
- **Acoustics I–IV** – Classroom and field sessions on underwater acoustics and applications in observation.
- **Plate Tectonics & Seafloor Spreading** – Geological structures and ocean crust dynamics.
- **Oceanic Lithosphere & Hydrothermal Circulation** – Study of hydrothermal systems, supported by ROV simulator training.
- **Sediment Dynamics** – Lab and lecture-based study of sediment transport and deposition processes.

- **Oceanic Sediment & Carbon** – Sediments and their role in ocean chemistry and the carbon cycle.
- **Global Biogeochemical Cycles** – Nutrient and energy flows in marine ecosystems.
- **Geological Carbon Storage** – Off-site lecture at the Johnson GeoCentre on carbon sequestration potential and risks.
- **Seabed Minerals & Mining** – Case studies on marine mineral resources and potential extraction practices as another off-site lecture at the Johnson GeoCentre.
- **MBES (Multibeam Echo Sounder)** – Field and lab training on seabed mapping techniques.
- **Environmental Sampling** – Hands-on use of standard oceanographic sampling tools and techniques.
- **ROV & Operations** – Practical training in the operation of remotely operated vehicles.
- **Nautical Charts** – Lectures and practical exercises on interpreting and applying nautical charts.
- **Nautical Information** – Understanding the sources and applications of navigational information.

A comprehensive table of instructional modules, instructors, delivery formats, and learning outcomes is available **here**.

Appendix C:

MI - Winter Term

January - April, 2025

During the Winter 2025 semester, scholars combined a mandatory core course with elective modules, labs, and professional enrichment activities. The required course, **OTEC 6013: Ocean Observation**, ensured that all scholars advanced their technical understanding of ocean monitoring systems and data collection practices.

Alongside this shared course, each scholar selected one elective tailored to their background and career goals: **GEOG 2202: Ocean Remote Sensing**, **OTEC 6008: Geostatistics and Seabed Characterization**, or **FISH 6003: Statistics and Study Design for Fisheries Science**. These electives provided opportunities for focused technical or advanced graduate-level learning alongside Marine Institute students, encouraging both interdisciplinary exchange and integration into the Canadian academic community.

The weekly timetable also included hands-on labs, health and wellness sessions, and community-building activities such as the Conversation Café. This combination of coursework, practical training, and informal gatherings created a balanced structure that supported both academic achievement and personal development.

➤ A detailed weekly calendar of courses and activities is available **here**.

Course Descriptions

Oceanography Elective Courses

Scholars chose from the following elective courses based on their interests and prior experience. This approach allowed each scholar to tailor their academic pathway, supporting their Project A research, while maintaining a shared observational oceanography experience.

GEOG2002 - Ocean Remote Sensing

Description: This course explores ocean remote sensing techniques and technologies, with a focus on extracting marine and oceanic parameters. Students will engage with both theoretical and practical components, learning how remote sensing equipment and methodologies are applied to the study of the ocean. Topics include multispectral and bathymetric remote sensing, photogrammetry, ocean surface phenomena, and atmospheric properties. Hands-on labs will cover image processing and data analysis.

Learning Outcomes

- Understand and apply key concepts in remote sensing and its oceanographic applications.
- Conduct image processing and evaluate remote sensing data.

- Apply remote sensing techniques for ocean surface phenomena, bathymetry, and atmospheric analysis.
- Analyze oceanographic data from remote sensing instruments.
- Develop workflows for measuring ocean parameters and assessing limitations of remote sensing technologies.

Structure

- Lectures: 3 hours/week (39 total hours) – TR 09:00–09:50, W 11:00–11:50
- Labs: 2 hours/week (26 total hours) – M 15:00–16:50
- Total Instruction Hours: 65

Evaluation: Pass/Fail – routine feedback on assignments and activities; content examinations may be oral.

Instructor: Mr. Chris Keats

OTEC 6008 – Geostatistics and Seabed Characterization

Description: This course introduces statistical and geospatial methods for analyzing and interpreting seabed data. Scholars learn how to apply geostatistical tools to characterize marine habitats and ocean floor features, with a focus on practical applications in seabed mapping and resource assessment.

Learning Outcomes

- Design ground-truthing surveys for a range of applications and to evaluate their adequacy
- Integrate acoustic, imagery and sediment data within a geospatial framework
- Implement a range of statistical approaches (e.g., interpolation, supervised and unsupervised classification), and
- Construct an opinion based on scientific evidence and express this opinion cohesively (both in written and oral form), and respectfully engage in critical debate.

Structure

- Lectures/Labs: Combination of classroom instruction and computer labs. (Weekly schedule varies; ~3–4 hrs/week)
- Total Instruction Hours: ~65 hours.

Evaluation: Pass/Fail – based on assignments, lab work, and participation.

Instructor: Dr. Salem Morsey

FISH 6003 – Statistics and Study Design for Fisheries Science

Description: This course focuses on quantitative approaches to fisheries and marine science, introducing scholars to statistical methods and experimental design. Emphasis is placed on applying appropriate study designs for ecological and fisheries research, supported by practical examples and data analysis exercises.

Learning Outcomes

- Ability to design a statistically robust study
- Define, build, and run an appropriate model for a dataset using R Statistical software
- Understand and apply regression-type analysis, ranging from simple linear regression to more complex generalized linear mixed-effect models
- Understand and apply model selection approaches
- Use power analysis to determine the size of the study needed
- Ability to apply the technique of meta-analysis to measure the weight of evidence on a given topic

Structure

- Lectures/Seminars: 3 hours/week – TR 13:30–14:50
- Total Instruction Hours: ~65 hours.

Evaluation: Pass/Fail – based on participation, assignments, and applied exercises.

Instructor: Matthew Robertson

Oceanography Mandatory Course

Scholars were required to complete the mandatory core course, **OTEC 6013: Ocean Observation**, which provided a shared foundation in modern ocean monitoring systems and data practices.

OTEC 6013 – Ocean Observation

Description: A mandatory course for all scholars, this class introduces ocean observing systems, instrumentation, and data management practices. Scholars learn the principles of ocean data collection and monitoring, including the design and operation of integrated observation networks.

Learning Outcomes:

- Understand key oceanographic and meteorological principles.
- Operate and maintain instruments for data collection.

- Apply data acquisition and analysis techniques for MetOcean instrumentation.
- Conduct field deployments of oceanographic and meteorological instruments.
- Analyze and present MetOcean data.

Structure

- Lectures/Labs: Multiple sessions per week (schedule varies).
- Total Instruction Hours: ~65 hours.

Evaluation: Pass/Fail – based on participation, assignments, and practical engagement.
Instructor: Ray Roche

Appendix D:
The Hakai Institute Overview + Schedule

The Hakai component of the NF-POGO COE Canada program took place on Quadra Island and Calvert Island, British Columbia, over a period of 3.5 weeks. This phase introduced scholars to ecosystem-based coastal research and advanced field station infrastructure, with a balance of structured programming and independent study time.

Structure & Delivery

- Location: Hakai Institute, Quadra Island & Calvert Island, BC
- Duration: 3.5 weeks (April 23 – mid-May 2025)
- Format: Field-based training, site tours, lab sessions, lectures, and independent project work

Focus Areas

- Biodiversity Monitoring: MARINe intertidal surveys; mobile invertebrate quadrats, swath counts, and seaweed point intercepts
- Genomics & eDNA: Bio-blitz, tissue sampling, DNA barcoding, environmental DNA (eDNA) and ancient DNA (aDNA) workflows
- Watersheds & Carbon Cycling: Hikes to monitoring stations; streamflow, weather, and carbon storage data collection at the Kwakshua Watersheds Observatory
- Oceanography & Climate: Mooring and glider deployments, acidification monitoring, biogeochemical sampling
- Geospatial Technology: Boat-based multibeam mapping, ROV and drone operations, GIS data processing and mobilization
- Citizen Science & Low-Cost Tech: GEM-in-a-box demonstrations, Integrated Coastal Observatory tools, and crab megalopae light-trap sampling

Learning Outcomes

- Apply interdisciplinary approaches to biodiversity, genomics, and oceanographic monitoring.
- Understand watershed–ocean connections and the importance of long-term monitoring.
- Gain hands-on experience with advanced and low-cost observing technologies.
- Strengthen science communication and collaboration with Hakai researchers.

Cultural & Community Activities

- Hiking, kayaking, and local eco-tourism
- Whale-watching trip (observing orcas, sea lions, eagles, tidal rapids)
- Professional and community engagement with Hakai scientists during shared meals and town hall meetings

Week-by-Week Snapshot

Week 1 – Quadra Island (April 23–27, 2025)

- Arrival and orientation at Hakai Quadra Field Station
- Hike at Rebecca Spit Marine Provincial Park
- Virtual “Hakai Town Hall” with staff introductions
- Scholar “About Me” research presentations
- Light programming to allow rest and adjustment
- Sightseeing and whale watching boat tour

Week 2 – Quadra Island (April 28–May 2, 2025)

- MARINe intertidal biodiversity surveys (quadrats, swath counts, seaweed intercepts)
- Bio-blitz and lab work with the Biodiversity & Genomics team
- Training in DNA barcoding, eDNA and aDNA workflows
- Independent project study time

Week 3 – Calvert Island (May 3–9, 2025)

- Travel to Calvert Island Ecological Observatory by float plane
- Watershed hikes: weather monitoring stations, bog ecosystems, beaver habitats
- Oceanography: buoy and glider deployments in Kwakshua Channel
- Data integration workshops: linking monitoring to climate and ecosystem studies
- Shared meals and community engagement with Hakai scientists

Week 4 – Quadra Island (May 10–16, 2025)

- Low-cost observation technology: GEM-in-a-box, Integrated Coastal Observatory
- Citizen science methods: crab megalopae light traps
- Geospatial technology module: multibeam mapping, drones, ROV operations, GIS processing
- Guest lecture: cryosphere and glaciology (Brian Menounos)
- Closing activities: kayaking tour, island hikes
- Reflections and wrap-up before departure

Calendar snapshots from the Hakai Field School can be found here.

Additional Links

- **Weekly Calendar**
- **Calvert Visitor Information Sheet**
- **Quadra Centre Visitor Information**

Appendix E:
OFI at Dalhousie: Schedule and Curriculum

Halifax Schedule: Overview

Delivery Method: University-based seminars, professional workshops, independent project work, and governance training at Dalhousie University, Halifax, Nova Scotia.

Overview

The Ocean Frontier Institute at Dalhousie University hosted the final phase of the NF-POGO COE Canada program. This stage emphasized the synthesis and application of the knowledge gained throughout the year. Scholars finalized their independent ocean science research (Project A) and home-country GOOS evaluations (Project B), while also developing professional and leadership skills to prepare them for careers in ocean science and policy.

Focus Areas

- Independent Projects: Completion of Project A and Project B, culminating in final written reports and oral presentations.
- Professional Skills: Workshops on science communication, data management, intellectual property, and career development.
- Ocean Governance Training: Participation in the IOI-Canada program, covering UNCLOS, integrated coastal zone management, and international sustainability frameworks.
- Networking: Engagement with ocean industry, government, and NGO partners in Halifax.
- Cultural & Community Activities: Reflection sessions, social events, and cohort celebrations to mark the end of the program.
- Graduation Ceremony: Formal conclusion of the program at Dalhousie University, with scholars presenting their work to mentors, partners, and invited guests.

Learning Outcomes

- Strengthen the ability to communicate research to diverse audiences.
- Deepen understanding of science-policy connections in ocean governance.
- Expand professional networks through academic and industry engagement.
- Finalize independent and collaborative projects to a publishable standard.

Week-by-Week Snapshot

Weeks 1–2 – Arrival & Orientation (Mid May)

- Scholars arrive in Halifax and settle into accommodations
- Orientation sessions at Dalhousie University and OFI
- Early workshops on academic integrity, career planning, and science communication
- Community welcome events and networking with faculty and partners

Weeks 3–6 – Research & Skills Development (Late May–June)

- Focused time on Project A (independent research) and Project B (GOOS country evaluations)
- Professional workshops on data management, intellectual property, and open science practices
- Mid-phase peer review sessions to strengthen project outcomes
- Opportunities for independent study and one-on-one mentorship
- Cultural outings and social activities to explore Halifax and the region

Weeks 5-9 – Ocean Governance Training (June–July)

- Participation in the International Ocean Institute - Canada program, covering:
  - UNCLOS and maritime law
  - Integrated coastal zone management
  - International sustainability frameworks and policy tools
- Applied case studies and group assignments
- Guest lectures from international experts in governance and policy

Weeks 10–11 – Finalization & Presentations (Mid–Late July)

- Completion of written reports for Project A and Project B
- Final oral presentations to audiences of faculty, government, industry, and NGO partners
- Workshops on career development, publishing, and future leadership
- Team reflections and cultural activities

Week 12 – Graduation & Program Conclusion (Late July)

- Preparation for departure and next steps
- Graduation Ceremony at Dalhousie University with presentations and recognition of scholars' achievements
- Celebration with mentors, partners, and the Halifax ocean science community

A detailed calendar is available **here.**

Professional Development Workshops and Courses

Science Communication Workshop

May 29-30, 2025

Description: This workshop introduces scholars to ocean literacy, communication theory, media relations, and best practices for communication science.

Learning Outcomes

- Understand differences in audience types and the importance of tailoring key messages to the audience
- Frame their science story in an easily understood way
- Confidently speak about science and technical topics to a variety of audiences, including media
- Understand best practices in visual communication and social media

Structure: Two-day workshop in May with face-to-face instruction, discussion, and practice.
Total hours: 14
Evaluation Methods: Informal feedback.

Science Communication Workshop Agenda

CIOOS Data Management Workshop

June 4, 2025

Delivered in collaboration with the Canadian Integrated Ocean Observing System (CIOOS), this session introduced scholars to best practices in marine data management. Scholars gained hands-on experience in metadata standards, FAIR data principles, and open-access data platforms.

Learning Outcomes

- Understand the role of CIOOS in Canada's ocean data infrastructure.
- Apply FAIR data principles (Findable, Accessible, Interoperable, Reusable).
- Gain practical skills in archiving, sharing, and visualizing marine datasets.

Facilitators

- Shayla Fitzsimmons, Executive Director, Canadian Integrated Ocean Observing System Atlantic
- Jared McLellan, Ocean Data Manager, Canadian Integrated Ocean Observing System Atlantic
- Brad Covey, Transforming Climate Action Chief Data Officer, OFI

CIOOS Data Management Workshop Agenda

Intellectual Property Workshop

June 5, 2025
Facilitator: Dr. Morteza Jeyhani, Innovation and Commercialization Manager, OFI

Description: Within this component of the program, scholars gain exposure to ocean, marine, and coastal industries across locations through field trips, the H2O Conference, guest lectures, and two modules of OFI's IP 101 program.

Understanding the significance of intellectual property (IP) is crucial for both achieving commercial success and fostering a positive societal impact. Importantly, IP protection becomes a backbone in preserving traditional knowledge, cultural expressions, and the resources of indigenous and local communities, both in Canada and on the global stage. The IP 101 program equips participants with essential knowledge on comprehending, disclosing, protecting, and licensing intellectual property (IP).

Module 1: Understanding IP Basics (1.5 hours)

- Fundamentals of Intellectual Property
- Overview of different types of IP
- IP & Commercialization as a tool for impact
- What is a patent
  - Criteria for patentability: novelty, non-obviousness, utility
  - Types of patents: utility, design, etc.
  - Patent structure: Who is inventor, who is assignee, what are claims, etc.
- Patent search and prior art analysis
  - Understanding patent claims
  - Patent trees and families
- Patent application process and costs
  - Timeline and filing process
  - Provisional patent: Opportunities for advancements

Module 2: Applications in Research, Collaboration, and Commercialization (1.5 hours)

- Using IP in Research
  - Important of IP in academic research
  - Strategies for protecting research findings
  - IP management for researchers

- Understanding Rights and Collaborating with Industry
  - Collaborative research and IP considerations
  - Technology transfer and licensing
  - Academic-academic collaboration

- IP Considerations for Innovation and Commercialization Strategy
  - Basics of technology commercialization and IP strategy
  - Commercializing your research
  - Partnering on commercialization
  - Sharing insights
  - Best practices

Learning Outcomes

- Become familiar with IP terminology
- Understand the importance of IP in academic research, and beyond
- Be able to engage in informed discussions and decisions regarding IP matters
- Gain an awareness of the ocean industry in Canada

Field trips to local industry and government facilities provided further support for IP learning.

Additionally, scholars attended the in-person **H2O Conference** held June 10-11, 2025 (14 hours), in Halifax, NS.

International Ocean Institute - Canada Ocean Governance

June-July 2025, Halifax, NS, in-person

Description: Policy, Law and Management: Adapted from a highly successful training program that has run for over 30 years, this content explores key issues in three core areas of ocean governance—Law of the Sea, State of the Ocean, and Fisheries, Aquaculture, and Food Security—through a combination of lectures, discussions, videos, and readings. Lecturers from NGOs and governments are brought in to ensure scholars obtain a holistic understanding of ocean governance from a wide range of perspectives.

Learning Outcomes:

- Gain an introductory understanding of law of the sea and ocean governance fundamentals
- Be able to discuss global fisheries, aquaculture and food security
- Become aware of the climate impact on the state of the ocean
- Gain an appreciation for Indigenous ways of knowing and perspectives in Canada

Structure: 15 lectures (1.5 hours each), two full-day field trips (8 hours each), and three half-day field trips over five weeks (4 hours each).

Total hours: 50.5
Evaluation Methods: Not applicable.
Instructor: Various lecturers, coordinated by Michael Butler and the IOI team.

- **International Ocean Institute Canada Ocean Governance Schedule**

Appendix F:
Scholar Projects A, B, and C

Throughout the NF-POGO COE Canada program, scholars completed three structured research projects that spanned the entire program duration. Project A: Independent Research Project, Project B: GOOS Country Evaluation, and Project C: Group Academic Journal Publication. Each project was built on the program's training modules, field experiences, and international collaboration, culminating in reports, presentations, and a publication.

Scholars submitted detailed written reports for both Project A (independent research) and Project B (GOOS country evaluation). These reports documented objectives, methods, results, and reflections, serving as capstone outputs of their year in Canada. They were reviewed by program faculty and mentors, with feedback provided to strengthen future publication opportunities.

Each scholar also delivered formal presentations of their projects during the final Halifax phase, attended by faculty, program partners, and invited guests from government, academia, and industry. These sessions provided scholars with the opportunity to present their work, engage in question-and-answer sessions, and practice communicating science to diverse professional audiences.

The scholars' reports, presentations, and the group research publication are included in this appendix for reference:

- **Scholar Reports**
- **Scholar Presentations**
- **Final Presentation Recordings**
- **Group Research Publication**
- **Project Titles and Mentors**

Appendix G:
Scholar Career Pathways

This appendix provides detailed information on the immediate next steps, long-term goals, and professional focus areas of the 2024–25 NF-POGO COE Canada scholars. These pathways demonstrate how the program's technical training, fieldwork, and cross-cultural collaboration are already translating into meaningful contributions in academia, government, NGOs, and industry.

A full table outlining each scholar's current position/academic step, their short- and long-term goals, and their sector of focus is provided in this appendix.

- **Scholar Career Pathway Table**

Highlights & Accomplishments

In addition to their academic and professional steps, several scholars achieved notable recognition during the program year:

- *DeepSense Ocean of Data Challenge:*
  - Two scholars, working together, placed third in the 11th Challenge (Telling Ocean Stories).
  - One scholar, working alone, later won first place in the 12th Challenge (AI in Action).

These achievements highlight the calibre of the inaugural Canadian cohort and their ability to apply ocean data science in innovative and competitive ways.

Future Tracking

Scholar pathways will continue to be followed through the NF-POGO Alumni Network for the Ocean (NANO). This network not only strengthens global alumni connections but also supports cross-cohort collaboration, joint publications, and sustained contributions to the Global Ocean Observing System (GOOS) and related initiatives.

Appendix H:
Scholar Feedback

Feedback from scholars and host institutions has been essential in evaluating the first year of the NF-POGO COE Canada program.

Feedback - Phase I (Marine Institute)

- **Strengths:** Intensive Oceanography Bootcamp established strong academic foundations; access to The Launch provided valuable early field experience. Scholars praised the mentorship, technical training, and sense of community built during the first semester.

- **Challenges**: Scholars noted the heavy workload and intensity of coursework, suggesting adjustments to balance lectures with project work. Some also recommended keeping the cohort together in the second semester to maintain collaboration.

Report(s):

- Pre-Arrival and Orientation Feedback
- Phase I Feedback Report

Feedback - Phase II (Hakai Institute)

- **Strengths:** Field-based learning was a program highlight. Scholars valued biodiversity surveys, geospatial training, and time at the Calvert Island Observatory. Direct interaction with Hakai researchers and exposure to citizen science projects were particularly impactful.

- **Challenges:** Scholars felt the programming could be better aligned with their prior training and ongoing projects. Suggestions included tailoring modules more closely to the cohort's backgrounds and interests, while keeping time for independent study and project work.

Report(s)

- Phase II Feedback

Feedback - Phase III (OFI at Dalhousie)

- **Strengths:** IOI-Canada governance training was highly praised, alongside professional skills workshops in science communication, data management, and intellectual property. Presenting projects to academic, government, and industry audiences strengthened both confidence and networks.

- **Challenges:** Balancing governance training, workshops, and final project preparation was demanding. Scholars wished for more structured collaboration time earlier in the phase to support project outcomes and suggested refining the schedule to allow greater project focus while maintaining professional development.

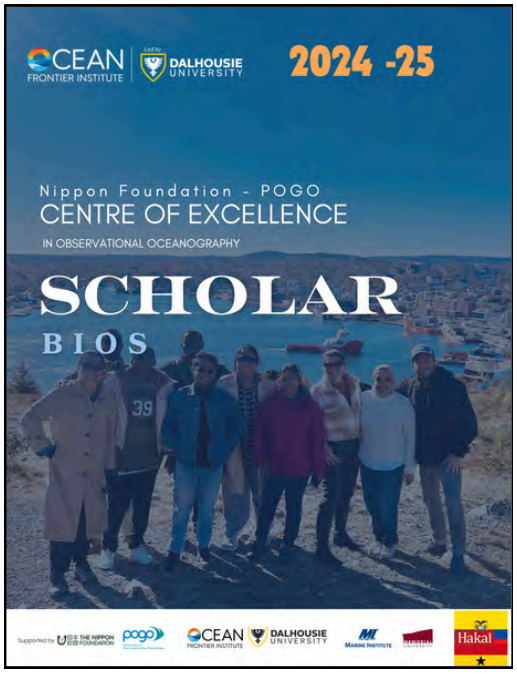
Report(s):

- **Science Communication Workshop Feedback**
- **Phase III Feedback Report**
- **IOI Ocean Governance Feedback**

Feedback from across the three sites confirms the program's overall success, while also identifying areas for improvement, particularly in workload balance and integration between sites. These insights will guide program refinements for 2025–26, ensuring future cohorts benefit from a more streamlined, collaborative, and impactful experience.

Appendix I:
Scholar Bios

The 2024–25 NF-POGO COE Canada cohort brought together ten early-career ocean professionals from across the Global South, representing India, Ghana, Brazil, Mexico, Bangladesh, Indonesia, Senegal, the Philippines, Egypt, and Kenya. Each scholar was selected through a rigorous international competition and contributed unique expertise, cultural perspectives, and leadership to the program.



Throughout the year, they demonstrated academic excellence, resilience, and a spirit of collaboration that defined the first Canadian cohort. Beyond their research and training, they built strong personal and professional connections, forming a network that will continue to shape their careers and contributions to global ocean science.

Complete biographies, including academic backgrounds, research interests, and career aspirations for all scholars, are available here:

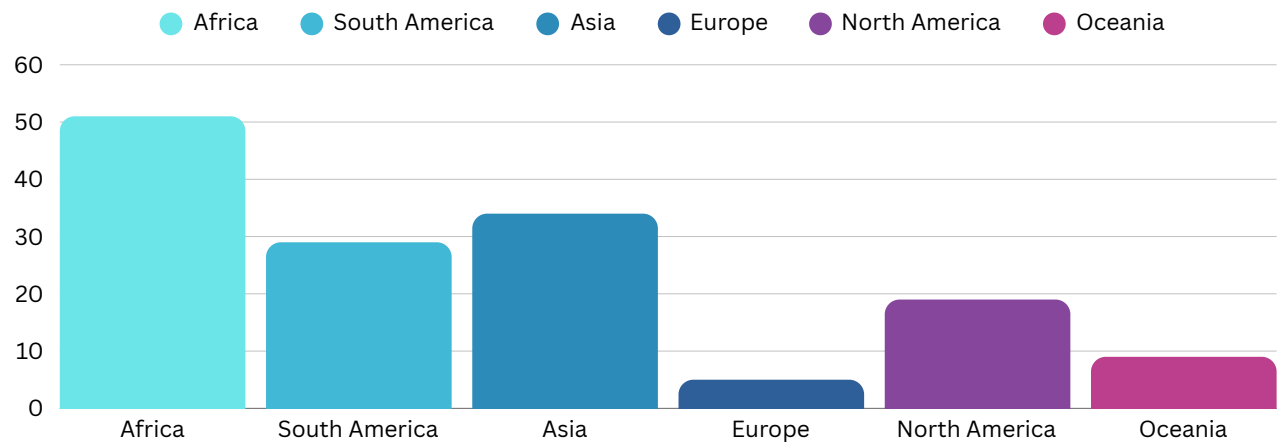
- **Full Scholar Biographies**

Appendix J:
Application, Review and Selection Overview

1 Application Phase

The 2024-25 COE saw 148 applications from 47 countries.

Applicants submit a detailed application package, which includes academic transcripts, letters of recommendation, research statements, and a personal essay outlining their career goals and motivation for pursuing the program.



2 Review Process

Applications are screened by a panel of international reviewers, representing both academic institutions and partner organizations. Each application was assessed against clear criteria, including academic achievement, research potential, relevance of background to POGO and the Nippon Foundation, as well as ocean observation and governance, and potential for impact in their home regions.

While three reviews per application were the target, due to the high number of applications, each was reviewed by two independent reviewers.

3 Evaluation

Emphasis was placed on creating a diverse cohort in terms of discipline, geography, and gender. Candidates were evaluated not only on their academic merit but also on their potential to become leaders and contributors to global and regional marine science.

4 Interview Phase

28 applicants (13 male, 15 female) were invited for interviews. Candidates represented a diverse range of countries, including Bangladesh, Ecuador, Argentina, Brazil, India, Tunisia, Senegal, Ghana, Kenya, Pakistan, Nigeria, Liberia, Madagascar, Tanzania, Indonesia, Mexico, Philippines, Egypt, and Iran.

Interviews were conducted online in April 2024 with committee members from the Ocean Frontier Institute, the Marine Institute, POGO, and the Hakai Institute. Candidates were evaluated based on their responses to interview questions and English proficiency.

5 Candidate Selection

Interview scores were compiled and reviewed, resulting in the creation of a top-ten candidate list and a backup list of seven individuals. The interview committee, POGO, and the Nippon Foundation formally approved the selection.

6 Offer Stage

Official letters of offer were sent by email on May 10, 2024. One candidate declined due to personal and financial reasons; an alternate candidate from the backup list was offered and accepted the position.

7 Visa Processing

Selected scholars commenced their study permit application process immediately after acceptance. All ten visas were approved without issue, ensuring full participation in the cohort.

Appendix K:
Multimedia

The NF-POGO COE Canada program generated a vast collection of photos, videos, and other media documenting the scholars' journey. These materials showcase training, fieldwork, cultural exchange, and special events across all three Canadian sites. They serve as a valuable resource for program promotion, alumni engagement, and institutional memory.

- **2024-25 Photos**
- **2024-25 Scholar Photo Book**
- **2024-25 Scholar Graduation Video - English**
- **2024-25 Scholar Graduation Video - Japanese**

Appendix L:
Key Contacts

For questions about the NF-POGO Centre of Excellence in Observational Oceanography (Canada), please get in touch with the program team:

Program Contacts:

Scientific Coordinator: **Dr. Sean Mullan**, Instructor, School of Ocean Technology, MI-MUN

Program Coordinator (MI): **Krista Sweetland**, International Program Officer, MI International

Program Coordinator (OFI): **Tracey Woodhouse**, Training and Early Career Program Development Manager

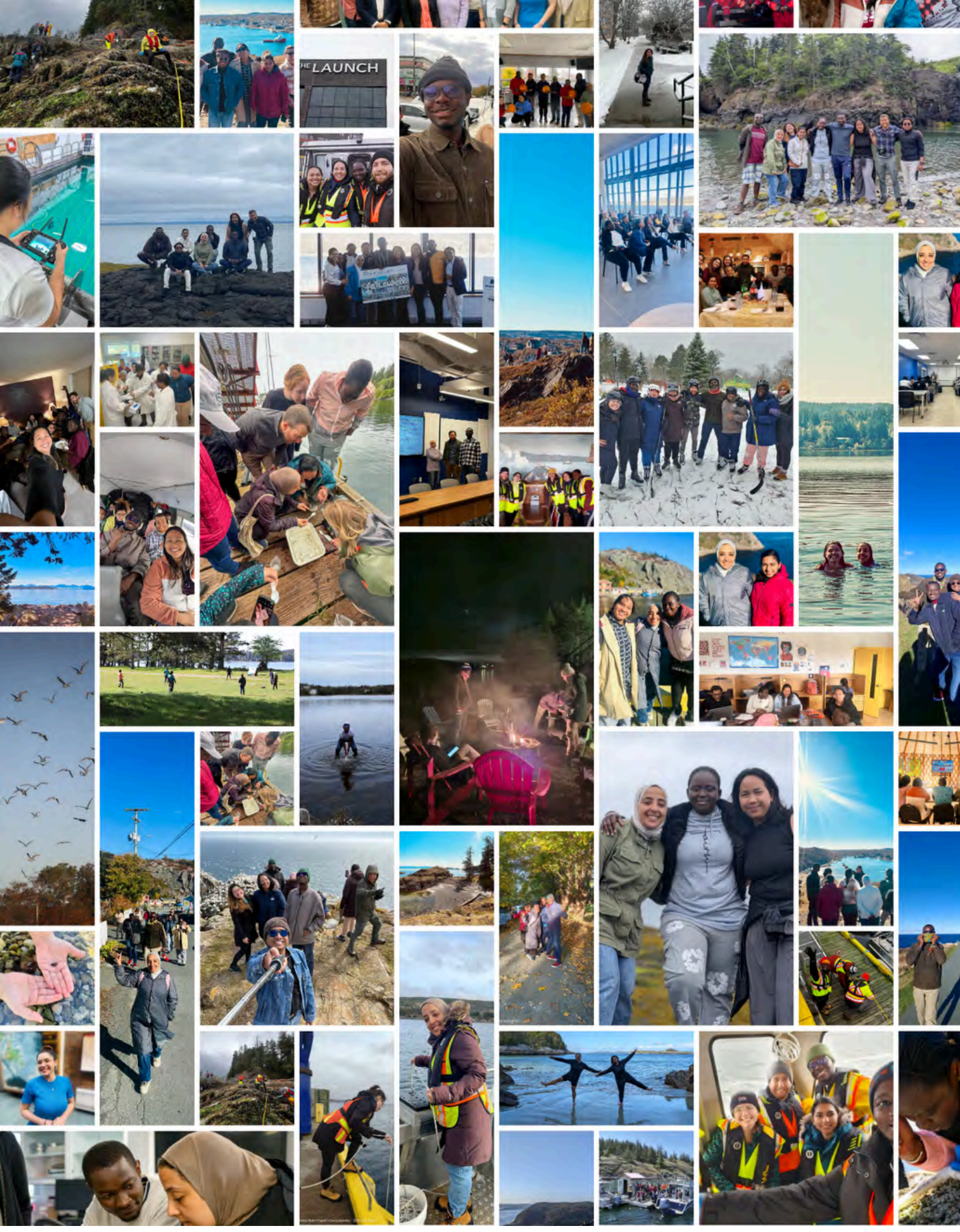
Program Coordinators (Hakai):

- **Kacie Conrad**, Project Manager, Tula Foundation
- **Naomi Boon**, Project Manager, Tula Foundation

Program Website: https://www.ofi.ca/programs/centre

International Ocean Institute - Canada

Michael Butler, Director
Madeleine Coffen-Smout, Program Officer



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