

PRESS RELEASE
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CANADIAN, INUIT AND INTERNATIONAL RESEARCH SET SAILS FOR A JOINT EXPEDITION ABOARD THE SCIENTIFIC ICEBREAKER CCGS AMUNDSEN

St. John's, Newfoundland and Labrador, July 11, 2024 – More than 150 researchers from Canadian and international organizations, including from the North and Inuit communities, will share ship-time on Canada's only dedicated research icebreaker this summer and fall to generate new knowledge on the high Arctic. The Canadian Coast Guard Ship (CCGS) *Amundsen* will leave the port of St. John's, Newfoundland and Labrador on July 11th for 112 days at sea divided in four scientific Legs. Once departed, the ship will follow the Nunatsiavut Coast in the Labrador Sea towards Baffin Bay, Smith Sound and Nares Strait. The CCGS *Amundsen* will continue its way further north for scientific operations, knowledge exchange, and training until reaching the Lincoln Sea if ice conditions permit.

A Multidisciplinary and International Collective of Researchers

Researchers of the 2024 cohort are part of seven multidisciplinary programs and will study Arctic and sub-Arctic marine ecosystems through a variety of activities and integrated studies targeting physical, chemical and biological environments, as well as seabed geology. This year we are very proud to have research programs that are international. Teams of scientists are coming from various French institutions, from Switzerland, Norway, Iceland and from Alaska and the United Kingdom.

Recurring Programs Onboard the CCGS Amundsen

During the first scientific Leg of the expedition, the *Amundsen* will sail along the coast of Nunatsiavut, the Labrador Sea, Baffin Bay and Baffin Island. On board, researchers from various backgrounds, the Amundsen Science technical team and the Canadian Coast Guard crew will carry out scientific operations with the CTD-Rosette, the box core, the Remotely Operated Vehicle (ROV) and others.

In collaboration with local Nunatsiavut researchers, these various operations are part of the Imappivut Marine Planning Initiative and the DFO Benthic-Refuge program will allow scientists to identify, study and monitor vulnerable coastal ecosystems, and learn more about the fish communities and marine primary producers in these regions. This year, an area of focus relates to the recently discovered seafloor cliffs and vertical gardens of deep ocean corals recently discovered off Makkovik and Nain. Several ROV dives and coring operations are planned to better understand the ecology of these unique sites. Other benthic surveys are planned across the Labrador Shelf and Baffin Bay, including a deep-water ROV dive to 1300 meters planned for Davis Strait.

"We are excited to go back to Makkovik for the third time, now with more specific scientific objectives that include to better understand coral environmental preferences and why Makkovik

is so suitable to them. Part of this will be to study feeding behavior in relation with other species in their habitats and the influence of coral growth on nearby sediment macrofauna, microbiota, and geochemistry. We also have a study to investigate how long these corals communities have been living there. And this just one study area!”, says Bárbara Neves, Research Scientist, Department of Fisheries and Ocean Canada.

The DFO-led programs KEBABB (Knowledge and Ecosystem-Based Approach in Baffin Bay) and ArcticCORE (Conservation, Observation, Research and Engagement) are coming back aboard the *Amundsen*. Established in 2019, the KEBABB program focuses on the collection of environmental data that can support an ecosystem-based approach to fisheries management in Baffin Bay. ArcticCORE was established in 2022 to collect critical baseline data about the sea-ice ecosystem in the Canadian Arctic Archipelago and north of Ellesmere Island in support of conservation initiatives in the recently established Tuvaijuittuq Marine Protected Area. This research will fulfill key knowledge gaps for sustainable harvest and fisheries management and conservation efforts in the eastern and high Arctic.

New research programs

New multidisciplinary and international research programs are coming on board the *Amundsen* to study pressing challenges related to climate and the conservation of Arctic marine ecosystems. *Transforming Climate Action* (TCA) is a Canada First research program from Dalhousie University, UQAR, Université Laval and Memorial University which aims to learn more about the essential roles of the North Atlantic in the ocean carbon cycle and the mitigation of global warming. In Baffin Bay, scientists from Canada, Switzerland and France will collect a comprehensive suite of biogeochemical samples and data along the longest transect ever done in this area with the CCGS *Amundsen*.

“As the Arctic Ocean is deeply and rapidly impacted by warming, its capacity to produce much needed food is altered and its interactions with the global climate system are redefined. In this regard, Baffin Bay is a key nexus where glacial meltwater and ocean currents carrying different quantities of heat, freshwater, nutrients, carbon, oxygen, living organisms, plastics and nanoparticles converge before exiting into the western North Atlantic. The TCA teams onboard will sample currents and coastal fjords to better understand how the changing Arctic Ocean and bordering lands connect to areas of deep-water formation in the Labrador Sea as well as nourishing fishing grounds located ‘downstream’ along the eastern coast of North America.”, says Jean-Éric Tremblay, polar oceanographer and professor at Université Laval.

REFUGE-ARCTIC is another new research program coming onboard the CCGS *Amundsen* from August 8th to October 3rd. Gathering scientists from Canada, France, Norway, Denmark and Sweden, REFUGE-ARCTIC aims to establish a comprehensive baseline of a unique refuge in the Arctic Ocean. These two Legs of the 2024 *Amundsen* Expedition will take place in the Nares Strait and near the glaciers and in the fjords of Ellesmere Island. If ice conditions permit, the ship may proceed into the northern reaches of the Nares Strait, The Lincoln Sea. Scientific operations are planned at the 82nd parallel, to better understand the impact of climate change on this region considered to be the last refuge for sea ice-dependent ecosystems. Operations at this latitude include the recovery of a mooring that was deployed in this remote location during the 2023 *Amundsen* Expedition.

“This is a first on the CCGS Amundsen. An international collaboration of multidisciplinary scientists gathered by a scientific focus on the Tuvaijuittuq. This area is a key region where changes are

rapidly impacting Arctic Ocean. Sea ice, hydrography, biogeochemical cycles of nutrients and contaminants, and marine ecosystems will be studied simultaneously. We want REFUGE-ARCTIC to show the fragility of this region and demonstrate the importance and beauty of these fascinating and threatened environments.” mentioned Mathieu Ardyna, Biological Oceanographer at Takuvik, University Laval

International Graduate Field School

In addition to these new programs, Université Laval's Sentinel North program and the WAGE Circumpolar Partnership will coordinate activities aboard the ship as part of their International Graduate School focusing on the Emergence of Innovative Blue Economies in the Arctic. This experiential training initiative aims to deepen understanding of the impacts and opportunities of changes occurring in Ungava Bay for Northern communities, bridging Inuit knowledge with social and natural sciences.

Participants will have a unique opportunity to engage with globally renowned researchers through interdisciplinary and trans-sectoral research approaches. Learning in this collaborative context is crucial for the next generation of researchers to develop comprehensive expertise and essential skills in addressing the complex issues brought by accelerating climate changes and socio-economic development in the Arctic.

Cutting-edge Technologies

This year, we have implemented new advanced technologies to meet the evolving needs of our community users. The GEOTRACES team from the University of Victoria will deploy their specialized trace metal clean seawater rosette, conducting sampling for the first time in the moon pool room. A new telescopic arm has been installed to enable stabilized deployment of the rosette in the moon pool. A clean room was also built in the same room to facilitate the collection, processing and storage of pure water samples. These innovations in pure water collection and processing represent a unique addition to Amundsen Science's scientific equipment package, and set us apart from other oceanographic research vessels.

Other improvements have been made to the ROV, the CCGS *Amundsen* barge and to our system for collecting and sharing data in real time throughout the expedition. The ROV is now equipped with a new suction pump for improved biological sample collection methods. Furthermore, the barge has been equipped with a new sub-bottom profiler arm for mapping shallow-water sub-bottoms. Our system now facilitates real-time data sharing on weather, atmospheric conditions, and various water and ice properties encountered during operations.

The 2024 *Amundsen* Expedition will involve over 1,500 scientific operations, including ROV dives, helicopter, barge and zodiac operations. Working as part of the most well-equipped research vessel in Canada, the Canadian, Inuit and international researchers will work day and night to collect the samples and data needed to achieve their scientific objectives.

About Amundsen Science

Based at Université Laval, Amundsen Science is the organization responsible for managing the scientific mandate of the research icebreaker CCGS *Amundsen*. Mobilized for research in 2002 thanks to major grants from the Canada Foundation for Innovation and other partners, the *Amundsen* is at the heart of a revitalized Canadian effort to study the changing Arctic Ocean. Since 2003, the research icebreaker has welcomed more than 115 Canadian and foreign teams, who have deployed 45 major scientific programs, totalling nearly half a billion dollars in research investment. For more information on Amundsen Science and the CCGS *Amundsen*, visit our website: www.amundscience.com.

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