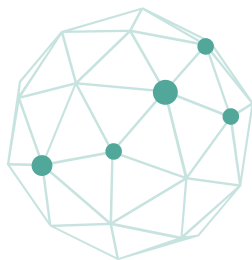


CIOOS

CANADIAN INTEGRATED OCEAN
OBSERVING SYSTEM



SIOOC

SYSTÈME INTÉGRÉ D'OBSERVATION
DES OCÉANS DU CANADA



CIOOS Annual Report

2022 - 2023



From the Executive Committee

We are excited to release our third annual report highlighting the achievements of 2022-2023.

While CIOOS continues to provide open access to high-quality datasets and data products, in the past year there has been significant effort to transition from a pilot phase into a mature ocean observing system. We are increasing awareness at conferences, expanding our scope by partnering with data providers in the Great Lakes and Arctic, and improving our infrastructure and applications. A National Advisory Committee was established to guide CIOOS through this transition. This group of external experts provides strategic guidance and offers a perspective that will help CIOOS achieve sustainability.

CIOOS is emerging on the international stage. We are increasing our presence within the Global Ocean Observing System (GOOS) and aligning with the new Data and Information Strategy for the Ocean Decade. We are using this momentum to continue advancement of

international standards and partnerships.

In addition to compliance with the FAIR principles, CIOOS is striving to be fully adherent to the CARE principles for Indigenous Data Governance and the First Nations principles of OCAP. Our newly established working group for Indigenous data is leading this effort with input and feedback from communities on how CIOOS can more effectively meet their needs. CIOOS is also working with Local Contexts to implement Traditional Knowledge and Biocultural labels for Indigenous datasets within the data catalogue, which allows communities to state the conditions for using and sharing their data, in accordance with existing governance and protocols.

We would like to thank the CIOOS community and partners, who work tirelessly to contribute to Canada’s ocean observing community. We look forward to where the next year will take us.

CIOOS Executive Committee



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About CIOOS

The Canadian Integrated Ocean Observing System (CIOOS) was established in 2019 as a national collaboration to share high-quality bilingual data on the state of Canada's ocean and coastal waters.

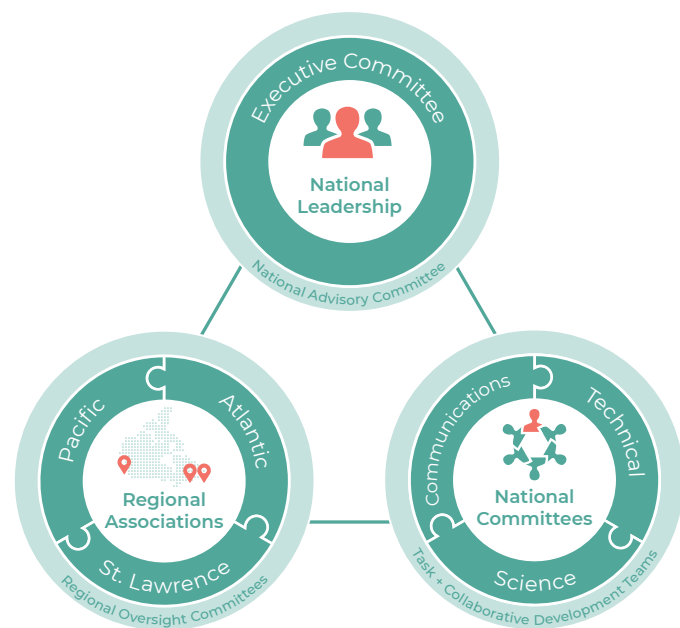
CIOOS' online platform is structured so that data integrated into the system are findable regionally, nationally, and internationally. The more data that are shared, the more robust the information platform becomes for ocean users. CIOOS

uses the network of shared data to create models and visualization tools which enable the discoverability, accessibility, and interoperability of essential data and information for ocean users.

With major datasets and decades of observations in key basins from coast to coast to coast, CIOOS is a primary resource when reviewing past observations, making informed decisions, or proposing new projects.



Governance



CIOOS welcomes the formation of our National Advisory Committee. This diverse and talented group is has been assembled to advise CIOOS on strategic initiatives. This independent group will help us identify emerging opportunities for growth and relevance over the dynamic Ocean Decade and bustling Blue Economy.

Strong governance and oversight is crucial to ensure the success of a cross-Canada and multi-partner initiative. CIOOS currently consists of three distinct Regional Associations (RA). Coordination of regional activities and national leadership is conducted by the Executive Committee, which is also responsible for strategic planning and decision-making in accordance with our vision and mission. Finally, the national committees have representation from all Regional Associations, ensuring a consistent national approach and opportunity for sharing of best practices.

Name	Representation
David Bolduc	Green Marine
Chuck Cooper	Vulcan LLC
Sandra Corbeil	Ingenium
Chris Hall	Shipping Federation of Canada
Angela Hatton	National Oceanography Centre (UK)
Paul Lansbergen	Fisheries Council of Canada
Jennifer LaPlante	Canada's Ocean Supercluster
Debbie Murray	Association of Canadian Port Authorities
Kevin O'Brien	University of Washington, NOAA
Ken Paul	Wolastogey Nation, NB
Trevor Swerdfager	University of Waterloo
Keith Lennon	Fisheries and Oceans Canada
Doug Wallace	MEOPAR
Naomi Boon	CIOOS National
Kacie Conrad	Fisheries and Oceans Canada



Executive Committee

In 2022-2023, the Executive Committee welcomed some new members:

- Tim Kearns
- Jonathan Kellogg

Their experience and ideas are valued additions to the team.

We thank Pauline Chauvet (representing the National Web Presence) for her thoughtful contributions to the committee and wish her well.

The strategic direction provided by this committee has guided CIOOS to be well positioned as we transition from a pilot project into an established program.

Name	Representation
Brad De Young	Pacific RA
Andréane Bastien	St Lawrence RA
Shayla Fitzsimmons	Atlantic RA
Keith Lennon	Fisheries and Oceans Canada
Andrew Stewart	Fisheries and Oceans Canada
Douglas Wallace	MEOPAR
Eric Peterson	Tula Foundation
Tim Kearns	Great Lakes Observing System
Jonathan Kellogg	Communications Committee
Ray Brunsting	Technical Committee & Data Stewardship Node
Jeff Cullis	Technical Committee
Jennifer Jackson	Science Committee
Anne-Sophie Ste-Marie	National Web Presence
Kacie Conrad	Fisheries and Oceans Canada
Isabelle Tremblay	MEOPAR
Naomi Boon	CIOOS National




National Updates

- Awarded \$2.5m for a 3-year project to accelerate adoption of artificial intelligence in the ocean space after successful Atlantic-led proposal
- Increased engagement with the Global Ocean Observing System (GOOS) and began process of becoming an official GOOS Regional Alliance
- Established an Indigenous and community data expert group to coordinate engagement nationally
- Established an expert group on essential variables for monitoring the ocean, biology, and climate
- Promoted CIOOS at 47 conferences, workshops, and events



Successes & Developments

CIOOS is advancing its strategic objectives through thoughtful conversations with our partners so we may meet national and regional needs.



1779

Datasets

+220 new datasets
integrated, discoverable,
and accessible



123

Partners

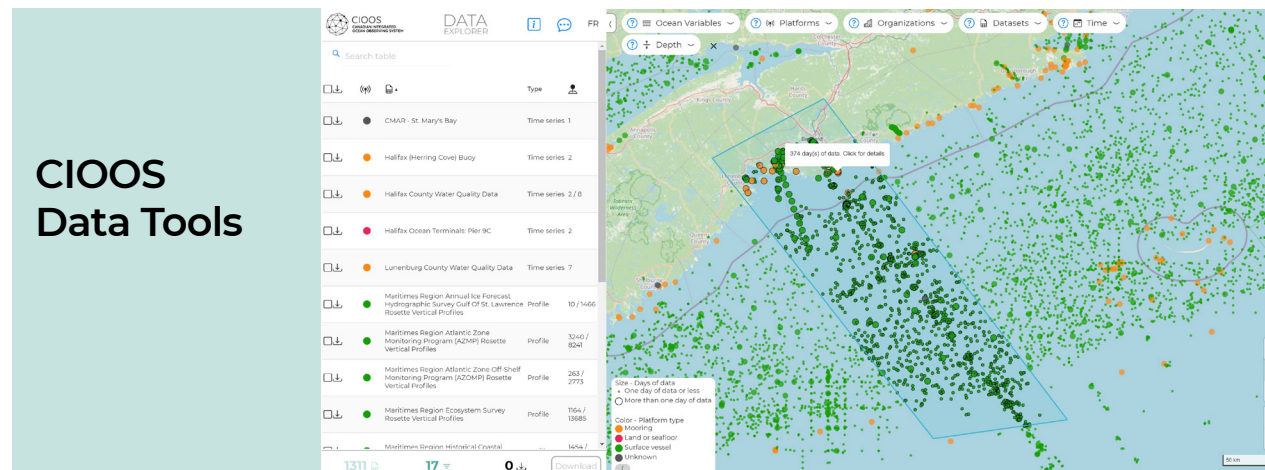
+25 additional partnering
organizations

CIOOS is committed to implementing best practices for data management, quality, and standards. We are committed to the [TRUST](#) principles for data repositories, the [FAIR](#) principles for data management, [CARE](#) principles of Indigenous data governance, and First Nations principles of [OCAP](#). CIOOS also provides full support for all Essential Ocean Variables aligned with the Global Ocean Observing System (GOOS), and is continuously expanding to meet user needs.

Currently, CIOOS hosts a variety of near real-time and historical data from contributors in government, industry, academia, and non-profit organizations. Data providers are able to increase the recognition of their work and further validate their data. Sharing data also facilitates knowledge exchange which reduces redundant or overlapping research, saving time, money, and maximizes the data's value and utility by facilitating open access for all. CIOOS provides a national framework for new data sources.

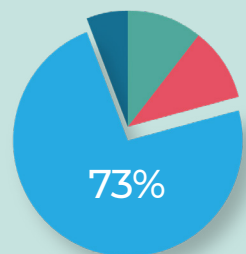
Through partnerships, CIOOS is working to integrate data from all ocean sectors, bringing multiple streams and types of data together.

CIOOS Data Tools

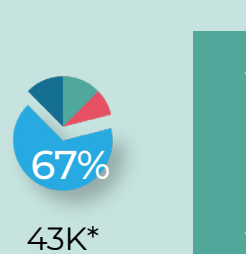


Updates to the Data Explorer and Catalogue Map make it easier to search, filter, and download the data that meet your needs.

Online Stats & Social Media



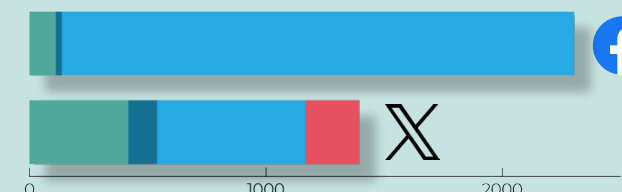
73%
233K*
Page Views



67%
43K*
New Users

← Web traffic was up 13% over the prior year. Traffic percentage notably increased across the National and Atlantic sites.

↓ Social media followers are up 7% on Facebook and 9% on Twitter.



Followers

* Based on Apr 1, 2022 - Mar 31, 2023



Regional Updates

New applications, new datasets, and new learning opportunities. CIOOS is improving access to ocean data for the next generation.

CIOOS Pacific

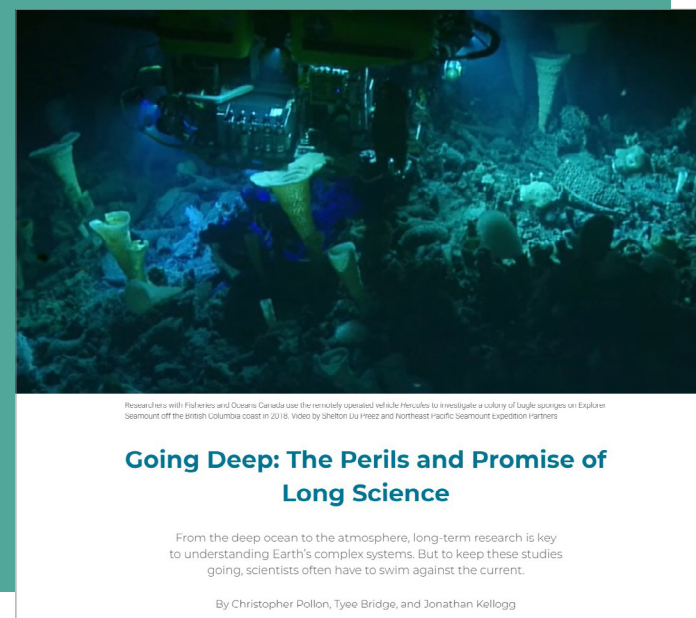
- Improved functionality and usability of the [CIOOS Data Explorer](#) for easier access to interoperable data
- Published feature length science story, [Going Deep: The Perils and Promise of Long Science](#)
- Contributed to an open data training with Inuit research managers and youth science ambassadors
- Engaged with 5 new organizations and added 153 new datasets

St. Lawrence Global Observatory

- Ingested multidisciplinary datasets (including geological data) into pre-production
- Improved visualization tools, including [Navigation](#), [Marine Conditions](#), and the [Marine Mammal Observation Network](#)
- All SLGO datasets are now fully compliant with CIOOS infrastructure
- Added 13 partners, 48 new datasets, and 19 additional datasets are in pre-production

CIOOS Atlantic

- Developed an extension to the CIOOS catalogue that enables inclusion of restricted datasets while maintaining our open data mandate
- Created the online course [7 Ocean Data Things](#) that introduces early career researchers to data management principles
- Wrote report on technological approaches for sharing sensitive data in a "data trust"
- Engaged with 11 new organizations and have 19 new datasets with an additional 14 in progress.



CIOOS Pacific's new scrolly story about the importance of long-term monitoring.

Committee Updates

Diverse opinions from national experts are essential to the success of the robust CIOOS infrastructure available to all Canadians.

Science

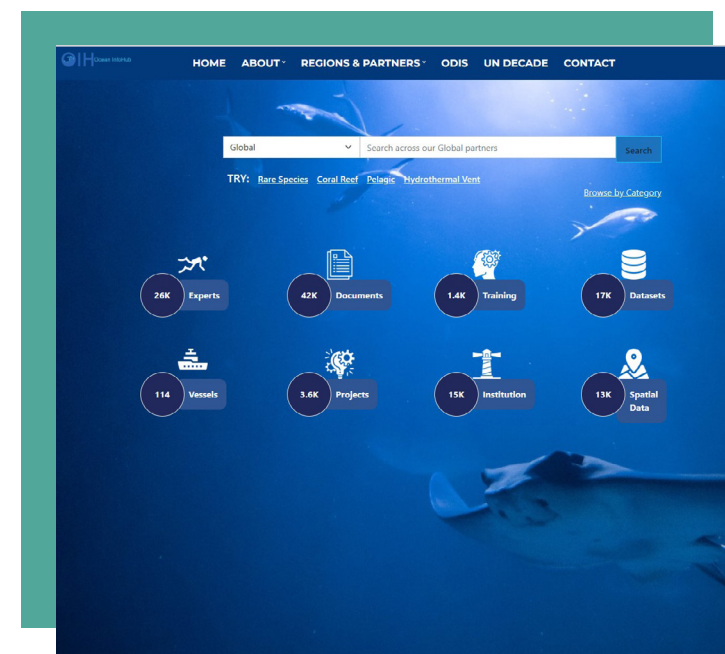
- Established working groups to focus on priority topics for CIOOS: Essential Variables (for ocean, biology, and climate) and Indigenous data
- Identified and sought representation on international scientific committees to increase CIOOS reach

Technical

- Collaborated with Ocean InfoHub to make CIOOS datasets discoverable on this international platform
- Supported standardization of biological data to OBIS and made them discoverable through CIOOS
- Collaborated with DFO MEDs and supported the development of a DFO ERDDAP server to share DFO data
- Supported the development of national tools including the CIOOS Data Explorer and the Catalogue Map

Communications

- Presented at national conferences, providing updates on CIOOS developments to national and international audiences
- Developed Data Management Resources page to help contributors integrate their data and metadata
- Produced training video Accessing CIOOS Data Using ERDDAP to help new users
- Engaged with members of industry to learn how CIOOS could better suit their needs



CIOOS datasets will soon be discoverable on the global Ocean InfoHub platform.



Testimonies



Renaud Gosselin Commandant NGCC Cap Percé, Canadian Coast Guard

As the commander of the Quebec rescue station, I use data available on SLGO to get an overview of the weather conditions in my area and surrounding areas (water temperature, wind direction and strength), on a daily basis. Having to cover the area between Batiscan and Cap-à-l'Aigle, this data helps me prepare my trips on the river.



Diana Cardoso Data & Information Projects Leader, Fisheries and Oceans Canada

The CIOOS team provided skilled technical support and advice to enable smooth publishing of these large datasets in a relatively short time. This has reduced our effort in responding to data requests. I will continue to work with CIOOS to publish both historical and recently acquired data.



Tim Kearns Chief Information Officer, Great Lakes Observing System

The U.S. IOOS Great Lakes Observing System is unique among regional associations because our data and information services support a bi-national audience. Working closely with CIOOS has been rewarding for GLOS because we are ensuring that users in the region are receiving the information they need, when they need it.

The Course Ahead

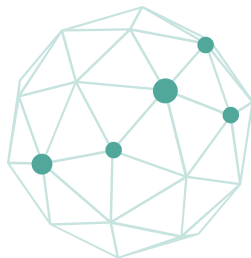
We're making progress, but there's still much to be done to make Canada's ocean data accessible for all.

- Become a Regional Alliance of the Global Ocean Observing System.
- Develop a national Indigenous engagement strategy.
- Determine criteria for data quality assurance and quality control. This will require development of tools that can check for this automatically.
- Collaborate with Ocean Infohub to make CIOOS metadata discoverable within this global ocean data information system.
- Make additional training videos to improve the accessibility and useability of CIOOS tools.
- Collaborate with national efforts in the development of Digital Twins of the Ocean as part of the United Nations Decade of Ocean Science for Sustainable Development.



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What discoveries can be made
if we just connect the dots?

info@cioos.ca
cioos.ca

Regional websites:

cioospacific.ca

slgo.ca

cioosatlantic.ca

Funding partners



Fisheries and Oceans Canada
Pêches et Océans Canada

Tula
FOUNDATION