

Conference Summary

May 16-19, 2022

Halifax, Nova Scotia, Canada



INTRODUCTION

The Ocean Frontier 2022 Climate Action Conference united global leaders in science, industry, policy, and philanthropy. The purpose was to identify priorities and pledge action to solve the next frontier of ocean-climate challenges.

Attendees had opportunities to engage with diverse speakers and delegates and learn from shared experiences.

Some of the most pressing global issues at the frontier of the ocean-climate nexus were discussed, including achieving net zero, developing sustainable food from the ocean, and protecting ocean biodiversity.

Focused Topics

1.
Achieving Net Zero

2.
People and the Ocean

3.
The Imperative of Ocean-Based carbon dioxide removal (CDR)

4.
Food from the Ocean

5.
Innovation and Commercialization

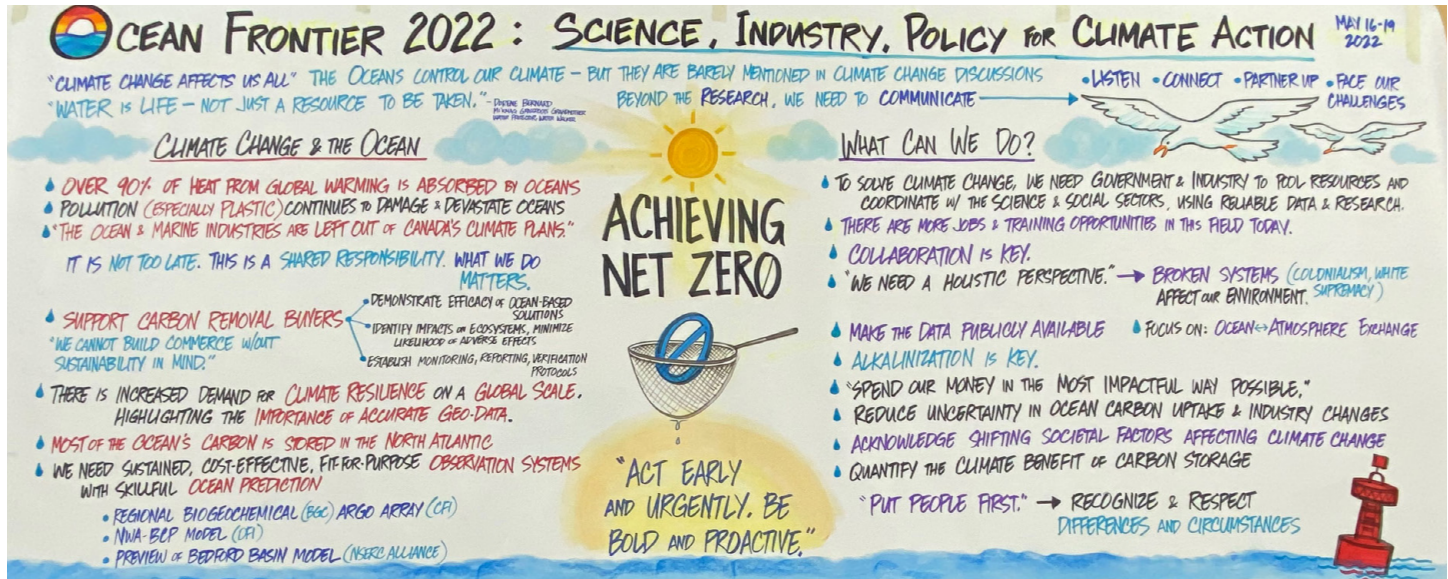
6.
Biodiversity



The conference began with a water ceremony conducted by Dorene Bernard, Mi'kmaq Grassroots Grandmother, Water Protector, and Water Walker.

PROGRAMME AND SPEAKERS

Day 1 plenary session: Achieving Net Zero



Moderated by **Marie-Chantal Ross**, Ocean Program Director, National Research Council Canada, the session convened leaders in industry, policy and science to discuss the most pressing issues facing industry and policy in achieving net zero and how OFI research is working to provide necessary insights into this complex issue.

SESSION SPEAKERS

Steven Guilbeault

Minister of Environment and Climate Change Canada

Catherine Abreau

Founder and Executive Director, Destination Zero

Stacy Kauk

Head of Sustainability, Shopify

Katja Fennel

Killam Professor, Dalhousie University

David Millar

Government Accounts Director, Americas, Fugro

Jean-François Houle

Vice President Engineering, National Research Council, Canada

Rachel Chang

Assistant Professor and Canada Research Chair in Atmospheric Science, Dalhousie University

Mike Smit

Deputy Scientific Director, Ocean Frontier Institute and Associate Dean (Academic), Faculty of Management, Dalhousie University

Anya Waite

Chief Executive Officer and Scientific Director, Ocean Frontier Institute and Associate Vice President Research (Ocean), Dalhousie University

KEY TAKEAWAYS FROM SESSION MODERATOR



The panel provided diverse views in achieving net zero, from data management advocacy to investing in a carbon economy. It is apparent that all people and industries can make advancements that would together drastically reduce the carbon footprint of human activities.

There are several initiatives underway that aim to reduce emissions from land-based sources. These initiatives could be improved with better collaboration and an awareness of personal biases for improved impact.

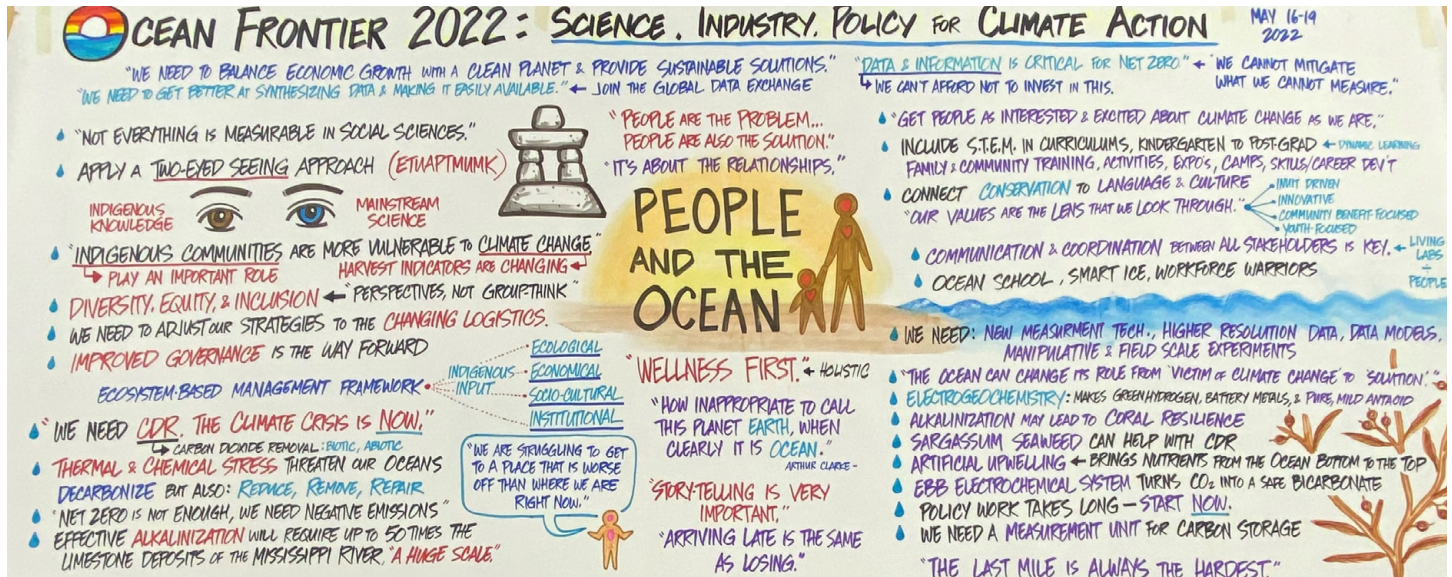


Working with the ocean to absorb carbon is the missing piece. The current suite of research shows massive potential, but more research is needed. Canada could provide leadership in this area if we all work together and learn from land-based initiatives.

PROGRAMME AND SPEAKERS

Day 1 plenary session:

People and the Ocean



Moderated by **Ratana Chuenpagdee**, University Research Professor and Canada Research Chair in Natural Resource Sustainability and Community Development, Memorial University, the session highlighted some of the most pressing issues and challenges at the interface of people and the ocean in a changing climate. Social sciences and humanities researchers, community leaders, and representatives from non-governmental organizations (NGOs) discussed the complex interactions between society, economy, culture, and marine coastal environments in Canada and globally.

SESSION SPEAKERS

Shelley Denny

Director of Aquatic Research and Stewardship, Unama'ki Institute of Natural Resources

Karen Gillam

Chief Executive Officer, Workforce Warriors

Tanna Pirie-Wilson

Officer, Workforce Warriors

Carolann Harding

Chief Executive Officer, SmartICE Sea Ice Monitoring and Information Inc.

Robert Stephenson

Research Scientist, St. Andrews Biological Station

Jac Gautreau

Director of Business Development, Distribution and Production, National Film Board of Canada

PROGRAMME AND SPEAKERS

Day 1 plenary session:

The Imperative of Ocean-Based CDR

Brad Ack, Executive Director and Chief Innovation Officer, Ocean Visions, started the session convening leaders across disciplines to outline the critical priorities for science, investment, measurement, reporting, and verification, social and political license, and governance. Speakers participated under three sub-headings as follows:

Current state of ocean-based pathways, obstacles, and the most critical priorities

- **Adam Subhas**, Assistant Scientist, Woods Hole Oceanographic Institution
- **Doug Wallace**, Professor, Department of Oceanography, Dalhousie University
- **Antonius Gagern**, Program Director, Ocean CO2 Removal at Additional Ventures

Showcase of innovators

- **Will Burt**, Senior Marine Chemist, Planetary Technologies
- **Randall Purcell**, Founding Director, Seafields
- **Matthew Eisaman**, Chief Technology Officer, Ebb Carbon

CDR Support – Policy, Science, Commercialization

- **Anya Waite**, Chief Executive Officer and Scientific Director, Ocean Frontier Institute
- **Surita Maddox**, Regional Director General, Innovation, Science and Economic Development Canada
- **Ryan Orbuch**, Partner, Lowercarbon Capital

“Significant investment in science is necessary to understand the efficacy and impacts of the emerging technologies in this space. Effective use of the ocean’s significant carbon removal and storage potential is one of the most promising paths to net zero, but many open questions remain. It is critical to invest in fundamental and applied science and social science to address these questions.”

PROGRAMME AND SPEAKERS

Day 2 plenary session:

Food from the Ocean

Moderated by **Laurenne Schiller**, Liber Ero Postdoctoral Research Fellow, Carleton University, the session convened leaders in industry, policy, and science to discuss the most pressing issues facing industry and policy in managing these precious resources and how OFI research is working to provide necessary insights into these complex systems.

SESSION SPEAKERS

John Risley

Chairman and Chief Executive Officer, CFFI Ventures and Chair, Canada's Ocean Supercluster

The Honourable Andrew Furey

Premier of Newfoundland and Labrador

Chief Terry Paul

Chief of the Membertou First Nation and Chief Executive Officer of the Membertou Development Corporation

Jean-Paul Deveau

President and Chief Executive Officer, Acadian Seaplants

Peter Tyedmers

Professor, School for Resource and Environmental Studies, Dalhousie University

Stefanie Colombo

Assistant Professor and Canada Research Chair, Aquaculture Nutrition, Department of Animal Science and Aquaculture, Dalhousie University

Kristin Kleisner

Senior Director, Environmental Defense Fund

Matthew Rise

Professor, Department of Ocean Sciences, Memorial University

Jennifer LaPlante

Executive Director, DeepSense

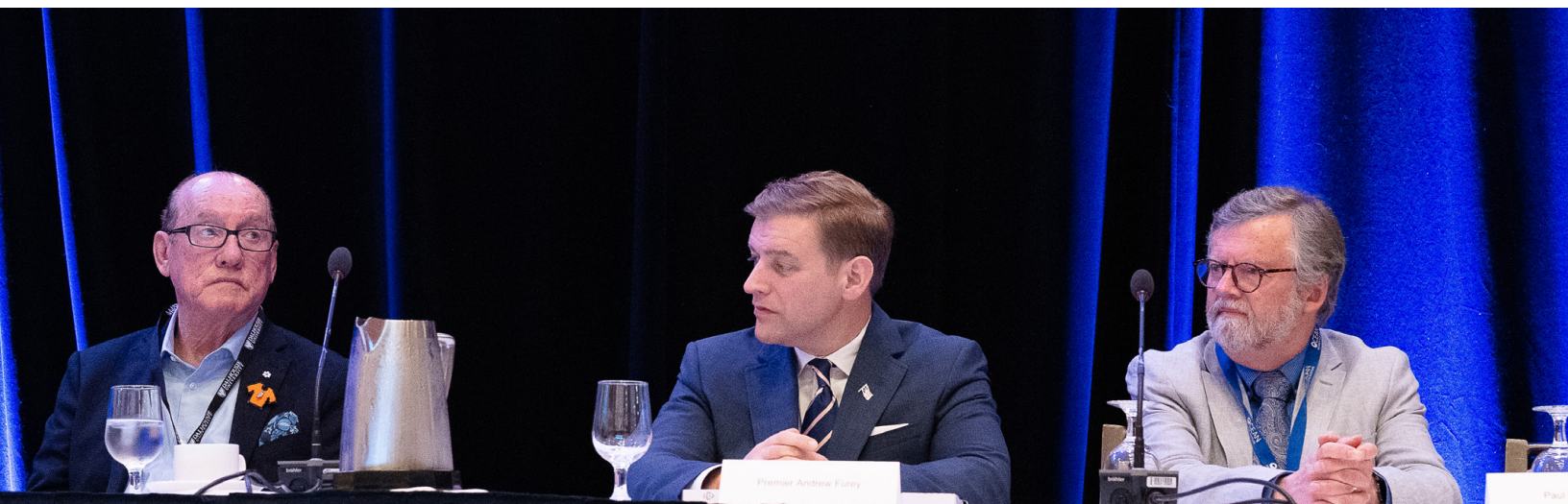
Mark Fast

Pathology and Microbiology Professor, University of Prince Edward Island



KEY TAKEAWAYS FROM SESSION MODERATOR

- Many speakers shared personal reflections on the connectivity of people and the ocean and our dependence on healthy ecosystems for food, livelihood, and culture. This was a constant theme throughout the session, regardless of the source (e.g., local or global, capture fishery, aquaculture).
- It is important to think outside the box for solutions (e.g., incorporating multiple ways of knowing and different types of knowledge to find locally-relevant solutions to fisheries governance challenges).
- There is a need for stronger collaboration between scientists and industry. Current opportunities exist, but due to certain barriers (e.g., different types of deliverables and/or measurements of success, lack of knowledge on how to make connections or pitch ideas, wariness of some academics to be funded by or work with companies), these opportunities may be missed.



PROGRAMME AND SPEAKERS

Day 2 plenary session:

Innovation and Commercialization

Ocean Frontier Institute and Ocean Startup Project form the base of the innovation and commercialization funnel through aligned programs to inspire, initiate, and invest in new ocean ventures. Founders from Seed Fund, Lab2Market, Ocean Startup Challenge, and Creative Destruction Lab programs provided three-minute speed presentations on their work to develop new ventures to support ocean sustainability.

SESSION SPEAKERS

Kendra MacDonald

Chief Executive Officer, Canada's Ocean Supercluster

Kerri Smith

OFI Seed Fund, Reconstructing the spatial and trophic ecology of the stranded Sambre blue whale

Fadi Oudah

OFI Seed Fund, Probabilistic tools to assess the impact of climate change on coastal infrastructure

Rachael Cadman

OFI Seed Fund, Participatory mapping on Labrador Inuit use and value of the marine environment

Hugh MacIntyre

OFI Seed Fund, Up-cycling high-nutrient wastes through algal culture

Kyle Rauch

OFI Seed Fund, UV-LEDs for disinfection of salmon pathogens

Daniel Ruzzante

OFI Seed Fund, Population abundance estimates of ecologically and economically important species

Peter Rawsthorne

Ocean Set, Brokerage platform to acquire and exchange ocean data and algorithms

Beth Mason

Skaldyr, Green extractions of marine derived natural products and ingredients

Kshitij Jha

Kavacha, Improving shellfish farming sustainability by reducing biofouling and plastics

Stephen Jones

Ashored, Sustainability-enabling technologies for the commercial fishing industry

Celeste Leroux

SeafookCheck, Evaluating Illegal, unreported and unregulated fishing risk in seafood trade

Zhuliang Tan SuBait

Sustainable lobster bait

Ben Wiper

3F Waste Recovery, High-value collagen products from seafood processing by-products

SCIENTIFIC POSTER SESSION

Day 2 poster session

Over 60 posters were presented during the session and were judged based on:

- Ease of understanding the scope and science of the project
- Engaging poster and presentation
- Visual presentation of poster

Awards were given to:

Best Postdoc Poster: Kristina Boerder, *Establishing the value of blue carbon to Nova Scotia: a case study*

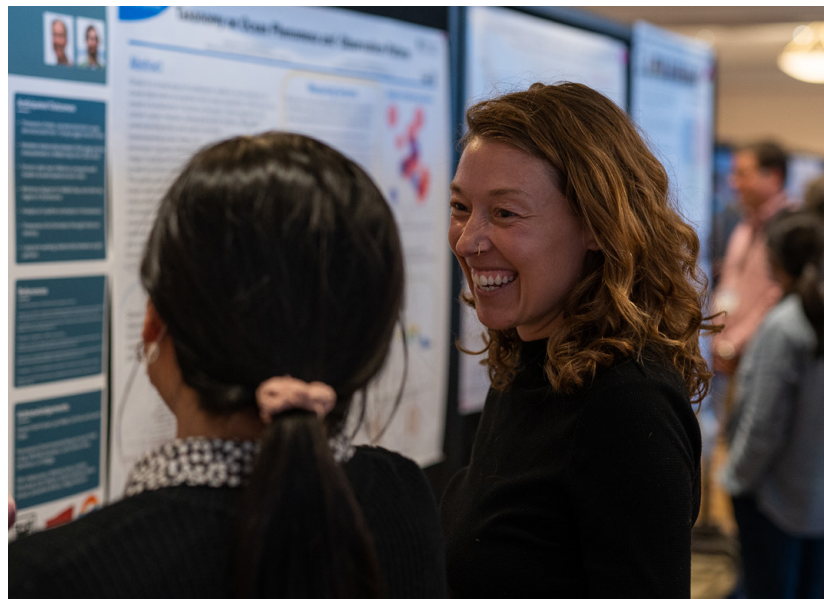
Best Overall Student Poster: Kameswari Devi Ayyagari, *Fish detection and classification using deep learning*

Best Student Poster for Coherence: Amy Irvine, *Incorporating climate change impacts into the protected seascape*

Best Student Poster Design: Kathryn Smith, *Characterizing estuary thermal regimes using drone-based thermal infrared imaging and distributed temperature sensing techniques*

Best Student Poster Demonstration: Kayla Hamelin, *'The people's fish': Socio-cultural dimensions of recreational mackerel fishing in Nova Scotia*

Special mention for creativity and science communication: Vincenzo Corelli, *Integrating Climate Change into Marine Protected Areas*



PROGRAMME AND SPEAKERS

Day 3 plenary session:

Biodiversity

Moderated by **Jake Rice**, Chief Scientist, Emeritus, Department of Fisheries and Oceans Canada, the session convened leaders in industry, policy, and science to discuss pressures on ocean biodiversity, and how industry, policy and science can align to provide the needed insights, protection, and investments to achieve a healthy and productive ocean ecosystem.

SESSION SPEAKERS

Deep Saini

President and Vice-Chancellor, Dalhousie University

Andy Fillmore

MP for Halifax and Parliamentary Secretary to the Minister of Innovation, Science and Industry

Johan Lopez

Network Coordinator for the Americas, United Nations Environment Programme Finance Initiative

Peter Houlihan

Executive Vice President Biodiversity and Conservation, XPRIZE

Kristina Gjerde

Senior High Seas Advisor, International Union for Conservation of Nature's Global Marine and Polar Programme

Paul Snelgrove

Associate Scientific Director, Ocean Frontier Institute and Research Professor, Department of Ocean Sciences and Biology Department, Memorial University of Newfoundland

Julie Laroche

Professor, Department of Biology, Dalhousie University

Daniel Boyce

Research Scientist, Fisheries and Oceans Canada

Derek Tittensor

Jarislowsky Chair in Marine Ecosystem Forecasting and Associate Professor, Dalhousie University

Geneviève Therriault

Professeure en psychopédagogie de la formation pratique au secondaire, Université du Québec à Rimouski

Boris Worm

Professor, Department of Biology, Dalhousie University

KEY TAKEAWAYS FROM SESSION MODERATOR

- We already have a lot of tools that, when used appropriately, can contribute to outcomes that are better for the well-being of both biodiversity and humanity. Using those tools appropriately is not simple. One size does not fit all, and each use must be adapted to take into account both the ecological and human social/economic contexts.
- Although decision-making should be objectives-based as well as evidence-based, there is no single state of the ocean nor a single set of objectives for all humanity that is the right state. We must learn to tolerate and promote diversity in human cultures and protect diversity in natural systems.
- Not only are we always going to be limited by insufficient data, key processes (both on the ocean ecosystems and in the human social systems) are sufficiently stochastic that we will always be making decisions under uncertainty, and for this reason, we need to give more attention and priority to risk-based approaches to decision-making.



OUTCOMES AND NEXT STEPS

1. Submit proposal to Canada First Research Excellence Fund

- Transforming Climate Action: Addressing the Missing Ocean
- Led by Dalhousie University with partner institutions Université du Québec à Rimouski, Université Laval, and Memorial University of Newfoundland

2. Organize the 2022 Ocean Carbon Workshop

- Build on the outcomes from Ocean Frontier 2022 and the Ocean Carbon Workshop in 2021, which identified that the ocean is missing from global climate models and international climate strategy

3. Attend and participate in COP27 / COP15

- Host COP27 panel discussion on investing in ocean observation to meet climate targets and the importance of deep blue carbon

4. Host a student networking session

5. Organize the next Ocean Frontier conference in 2024

SPONSORSHIPS AND PARTNERS

Sponsors and partners of Ocean Frontier 2022 benefited from the international reach and profile of the Ocean Frontier Institute.

Brands were highly visible to conference attendees including policymakers, international investors and philanthropic leaders, industry representatives and scientists.

Brands also had a digital presence including the conference webpage and the Ocean Frontier Institute's social media channels.



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