Going Beyond AIS:
Applying Different Technologies to Assess the Impact of Non-AIS Vessels in the Marine Environment

Canadian Marine Shipping Risk Forum

Fall 2023

ABOUT

The Canadian Marine Shipping Risk Forum is a community of practice launched in 2019 by MEOPAR and Clear Seas. The CMSRF provides cross-sector knowledge sharing opportunities on the topic of marine shipping risk in Canada.

This webinar series will investigate different ways technology is being applied to understand the marine environment, with a particular focus on the activity and impacts of vessels that are not using Automatic Identification Systems (AIS) transponders.

OVERVIEW:
Applying Different Technologies to Shipping Risk

Date	Focus Area	Topics
Sep 21	Satellites	• Dark vessel tracking • smartWhales program
Oct 5	Aerial	• National Aerial Surveillance Program (NASP) • RADARSAT and aerial surveys • Drones
Oct 19	Shore-based	• Wildlife cameras and image processing • Cameras and hydrophones • X-band marine radar, AIS, optical cameras and software
Nov 9	Water-based	• Autonomous vessels • CoastAware™ platform and buoys • Hydrophones
Nov 23	Traditional Indigenous Knowledge	• Indigenous-led Cumulative Effects of Marine Shipping Assessment
Nov 30	Data Collection	• Canadian Integrated Ocean Observing Systems

Session 1: Satellite Technology
September 21, 2023 | 10:00-11:30 AM PDT

1. Detecting Dark Vessels with Colin Robertson, Director of Data Science, GSTS

Dark vessels remain a persistent challenge for monitoring the maritime domain from environmental, security, and operational perspectives. In this talk we'll highlight some key dark vessel detection methods and how they can be deployed within a broader suite of integrated maritime modelling and management tools.

2. Smart Whale Program Overview and Ecological Modelling with Josh van Berkel, Head of Sustainability Solutions – Marine & Coastal, DHI Water & Environment Inc.

Via the modelling stream of smartWhales program implemented by the Canadian Space Agency, DHI and WSP are developing an integrated dynamic habitat and Agent-based North Atlantic Right Whale (NARW) modelling system that includes forecast predictions of vessel strike risk. The system is being further developed into a Decision Support System aimed at supporting regulatory response awareness of NARW risks. This presentation will describe key project workflows, model input and setup parameters and the results achieved to-date.

Register: https://us06web.zoom.us/meeting/register/tZcpduCgpzkuHdOcTYauDncl4u8Zozf445H9

Session 2: Aerial Technology
October 5, 2023 | 10:00-11:45 AM Pacific time

1. Collecting data on non-AIS vessels using aerial surveys with Norma Serra, Transport Canada and Jorge Quijano, JASCO

Use of sensors mounted on Transport Canada's National Aerial Surveillance Program aircraft to capture information on non-AIS vessels, and how this information is applied in underwater noise assessments in the Pacific region.

2. Monitoring marine conservation areas effectiveness using aerial and RADARSAT-2 vessel detection with Lily Burke, Fisheries and Oceans Canada

Use of RADARSAT and aerial survey data (NASP and DFO creel surveys) to assess fishing activities in MPAs.

3. Risk-Aware Autonomous Port Inspection Drones (RAPID) with James Riordan, University of West Scotland

Combine and extend drone technology for a fully automated and safety-assured maintenance inspection service for bridges, ship hull surveys, and more. Specifically, the service will combine self-sailing unmanned surface vehicles with autonomous unmanned aerial systems.

Register: https://us06web.zoom.us/meeting/register/tZckduioqzguHNcQIK44DlNiZwP2H-51iEvR

Session 3: Shore-based Technology
October 19, 2023 | 10:00-11:45 AM Pacific time

1. Chiix̱waay K̲aydts'id | Chaawsalii Damaan Tl'a K̲ingga Monitoring Small Vessel Traffic on Haida Gwaii with Kil Hltaanuwaay Tayler Brown, Council of the Haida Nation, Virgil Hawkes, LGL Limited, Mike Sylvester, Transport Canada

The Haida Gwaii Marine Awareness Project aims to improve awareness and Haida oversight of marine traffic in Haida Territories. Due to a significant and identified data gap, CHN and LGL Limited designed and implemented a study to monitor 18 nearshore areas (May – Sept. 2021) using wildlife cameras and the Enhanced Maritime Situational Awareness (EMSA) System.

2. Using cameras to collecting data on non-AIS vessels for underwater noise assessments with Rianna Burnham, Fisheries and Oceans Canada

Example of the use of camera and hydrophone technology to capture information about small vessel traffic near Pender Island, BC

3. Marine Monitor (M2) Shore Installation with Samantha Cope, Senior Scientist, Protected Seas

Provide an overview of the M2 system, a shore-based monitoring platform that integrates X-band marine radar, AIS, and optical cameras with custom software to autonomously track and report on vessel activity of all types. Case studies will assess how M2 is being used to support maritime safety and independently monitor vessel activity.

Register: https://us06web.zoom.us/meeting/register/tZMvc-uvrzwoEtx7BXv_LQ1gqG_OzOaw9vtT

Session 4: Water-based Technology
November 9, 2023 | 10:00-11:45 AM Pacific time

1. Using Autonomous Vessels for Maritime Observation, Monitoring, and Security with Fritz Stahr, CTO, Open Ocean Robotics

Open Ocean Robotics uses solar-powered autonomous vessel technology to collect and communicate ocean data to address illegal fishing activity, detect pollution, reduce greenhouse gases from shipping, and understand climate change in the ocean environment with many potential applications increase marine safety and sustainability.

2. Applying real-time coastal intelligence to quantify marine hazards and optimize decisions with Scott Beatty, CEO, Marine Labs

Overview of the CoastAwareTM platform and the various sources of data to provide both real-time and historical information to support informed decision-making. Data sources include sensors on buoys to collect wind and wake data. Marine Labs has also just launched BerthWatch, a first-of-its-kind real time berth depth monitoring and reporting system to optimize docking and loading.

Register: https://us06web.zoom.us/meeting/register/tZcrdeCsrTIsGtHNo5h0Ef7XoHxOxBbHKkaT

Session 5: Traditional Indigenous Knowledge
November 23, 2023 | 10:00-11:30 AM Pacific time

1. Approach to Indigenous-led Cumulative Effects of Marine Shipping Assessment with the Salish Sea Indigenous Guardians Association

The Salish Sea Indigenous Guardians Association is working in collaboration with member Nations to launch an Indigenous-led Cumulative Effects of Shipping assessment to incorporate Indigenous perspectives and priorities into the process of understanding shipping related impacts on the marine environment. This approach will combine communities' Traditional Knowledge with other data from diverse sources and develop a methodology that supports Nations to meaningfully participate in the cumulative effects process and develop thresholds and condition indicators relevant to their situation. The goal of this process is to lead to a better understanding for all.

2. Title and speaker to be confirmed.

Register: https://us06web.zoom.us/meeting/register/tZcrdeCsrTIsGtHNo5h0Ef7XoHxOxBbHKkaT

Session 6: Data Collection and Application
November 30, 2023 | 10:00-11:00 AM Pacific time

Explore CIOOS: Canada's Home for Ocean Observing Data

From the Atlantic Coast to the Salish Sea, the Canadian Integrated Ocean Observing System (CIOOS) is Canada's nucleus for integrated ocean science and observing activities. We work with partners from coast to coast to coast applying internationally recognized standards to consolidate data into a resource for all ocean people. CIOOS makes fully interoperable data available across Canada's ocean basins and, with continued development of new tools to explore the resources, it is now easier than ever to connect the dots and better manage our ocean resources and operate safely in our waterways. This session will help users understand the current state of CIOOS and will seek feedback from the community on future needs to better support the shipping industry.

Register: https://us06web.zoom.us/meeting/register/tZAlcOqsrTMqHtM7BI3Nnsy2x9Z44eQC5ysb