

Enhancing Environmental Transparency Towards Sustainability With OCIANA®

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## O1 About GSTS

**O2** About OCIANA®

**O3** Digitization, Collaboration & Decarbonization with OCIANA®

- Collaborative Optimisation Solution (COS)
- Environmental Performance Management (EPM) Toolkit

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## carbonization with OCIANA® Solution (COS) e Management (EPM) Toolkit

# About GSTS

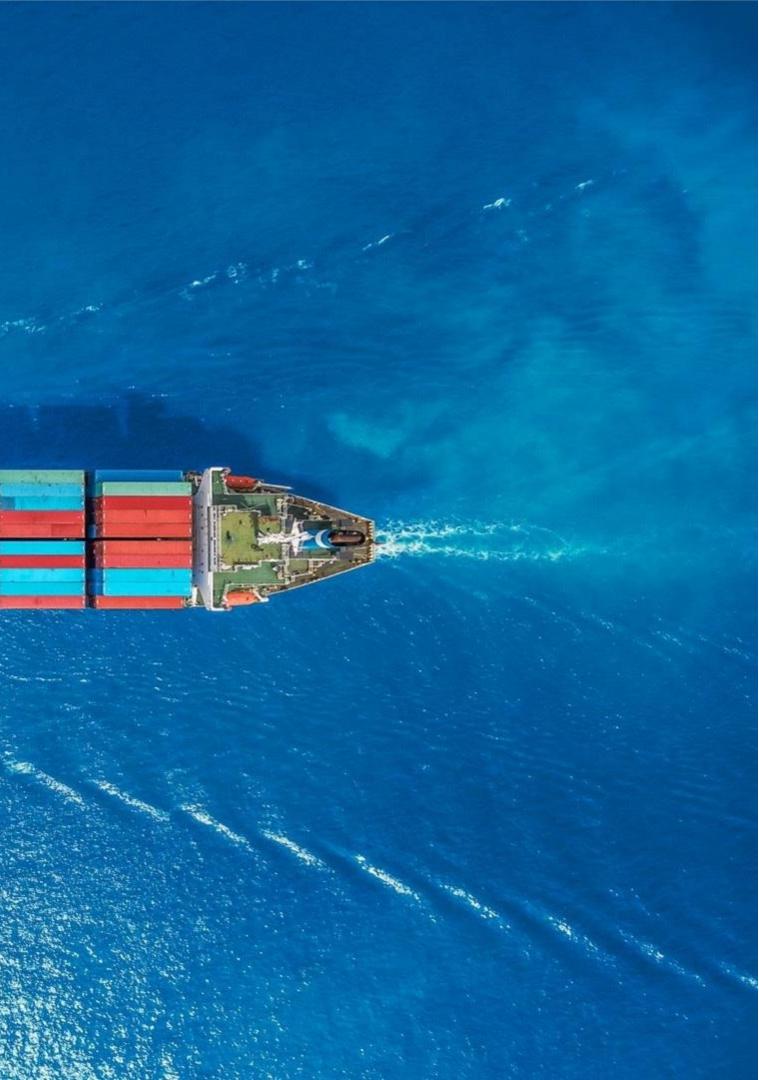
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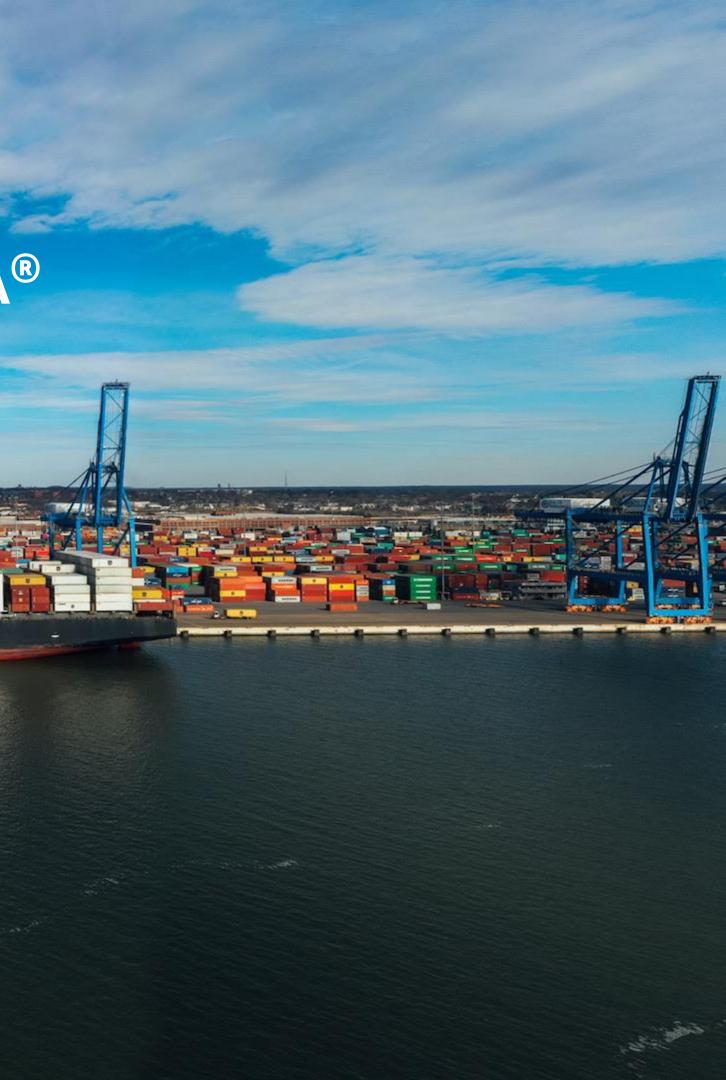




## **About GSTS**

- Global maritime company spun out of a Canadian space company that developed the world's first commercial global maritime monitoring satellite.
- **FOCUS:** Delivering predictive AI-powered solutions to solve major challenges faced by the maritime industry
- **SPECIALTY:** Customer-focused technical team intent on developing solutions in support of maritime safety and security, supply chain resilience and climate change using innovative data collection and analysis techniques and leveraging advanced AI technologies to adapt to a dynamic maritime environment
- **SOLUTION:** Proprietary SaaS platform, OCIANA<sup>®</sup>, designed to enhance real-time decision making and enable collaboration across the maritime industry

# About OCIANA®





# **OCIANA®: Maritime Collaboration Platform**

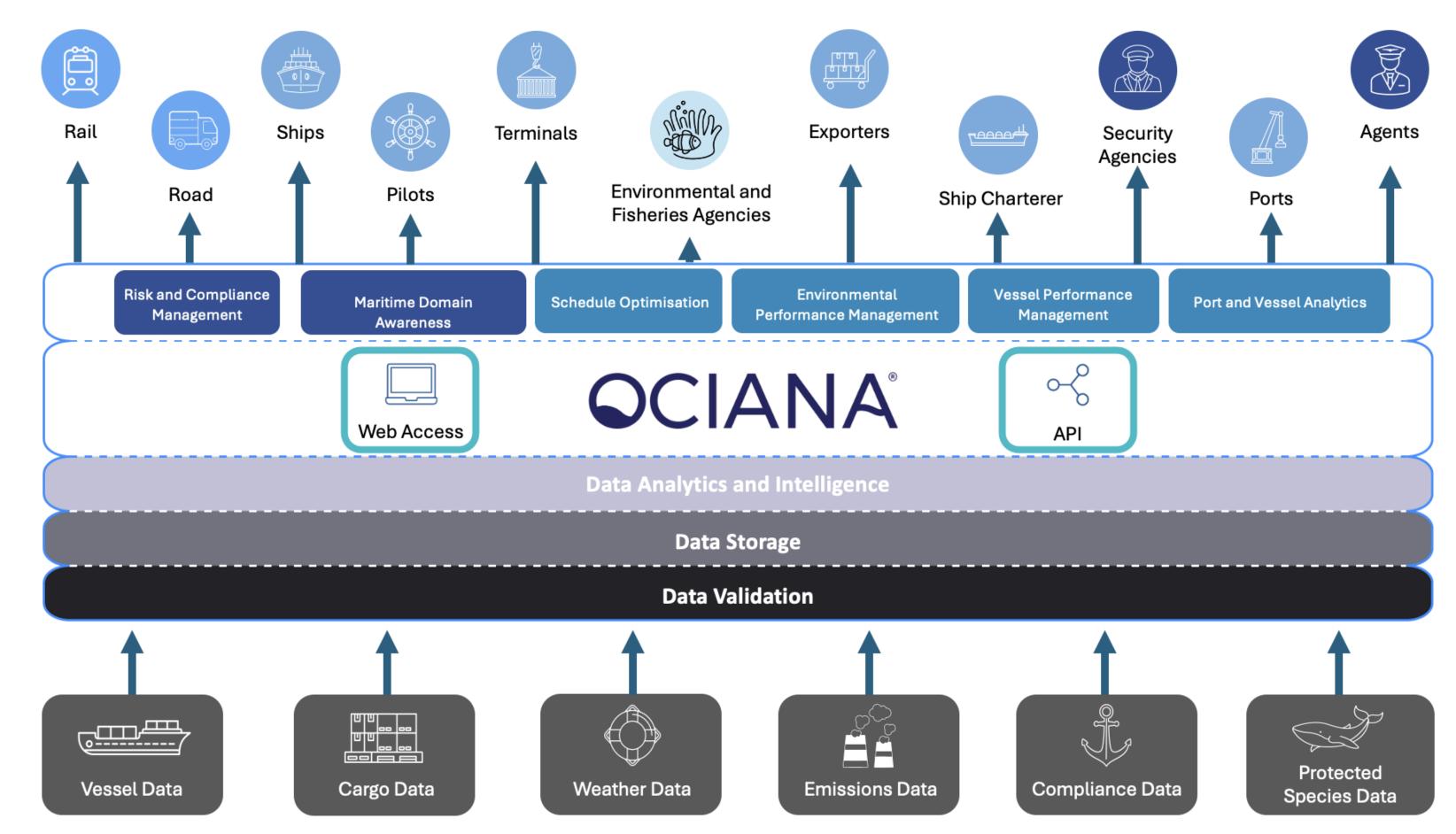
OCIANA<sup>®</sup> incorporates the latest developments in Artificial Intelligence and Big Data Analytics to improve maritime situational awareness and provide real-time decision-making intelligence.

#### **Multi-Source Data Analytics**

- Designed to ingest a wide range of data sources including global AIS data, an array of satellite imagery and third-party datasets
- OCIANA<sup>®</sup> spatially and temporally correlates the data and employs AI algorithms
- Output from the AI/ML trained models can be accessed through the web-based UI or API supporting data interoperability

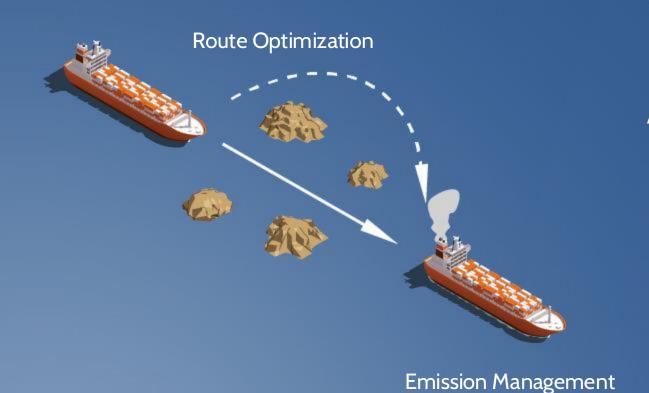
#### **Partner Communication**

- Embedded communications channel enables multiple users to share information in real time
- Advanced chat and collaboration tools facilitate coordinated response
- Rooted in data governance data quality, data stewardship, data protection and data management



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Anchor Management

Berth Optimization

Compliance Management

OCIANA® Maritime Collaboration Platform

Supply Chain Optimization and Resilience





F

Management

Environmental



Protected Species Management



#### Risk Management





# **Industry Collaboration**

5+ years of successful collaboration with key maritime players resulting in several capabilities targeted at streamlining vessel berthing to support Just-in-Time Arrivals and Green Voyages.

#### **Port Arrivals**

- ETA Prediction accurately predict ETA of all vessels arriving at port
- Intelligent Geofences automatically receive alerts and updated ETA predictions when ships cross pre-defined checkpoints

#### **Port Performance and Optimisation**

- Port Analytics provide current wait times and traffic conditions
- Schedule Optimisation Planner explore a set of feasible sequences to process operations based on the optimal allocation of port resources

#### **Environmental Performance Management**

- GHG Emissions Calculator calculate carbon footprint within port boundaries
- Digitized Trade Routes tabulate emissions for all vessels globally; report on vessel voyages between two or more ports where Green Shipping Corridors are established













**•**SL



Vancouver Fraser Port Authority







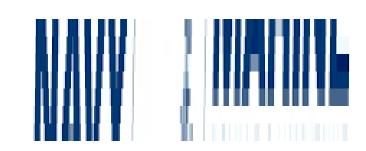


Canada Border Services Agency



## **Customers & Collaborators**





CENTRE POUR LE TRANSPORT MARITIME RESPONSABLE Clear Seas ITRE FOR RESPONSIBLE MARINE SHIPPING

# **Collaborative Optimisation Solution**





# **Ocean Supercluster Project**

- Awarded a \$12M two-year contract to advance the capabilities of OCIANA<sup>®</sup> to enable all stakeholders involved in the port call process to improve efficiency and sustainability of maritime operations
- OCIANA's latest capability, the Collaborative Optimisation Solution will connect ports, terminals, ships, waterways and pilotage authorities via a common platform to:
  - Bring together operational data currently stored in separate systems – to facilitate data sharing and empower maritime collaboration
- Based on IMO standards, OCIANA will:
  - Enable seamless data exchange between various systems
  - Ensure interoperability with various systems
  - Streamline processes for vessel reporting







# **OCIANA®** Collaborative Optimisation Solution

**Optimizing Ports Calls and Supply Chain Operations through AI Predictive Insights** 

Allowing for the sharing of real-time data, coordinated planning and enhanced decision-making through Just-in-Time Port Call Open API specifications

Facilitating JIT Arrivals aimed at:

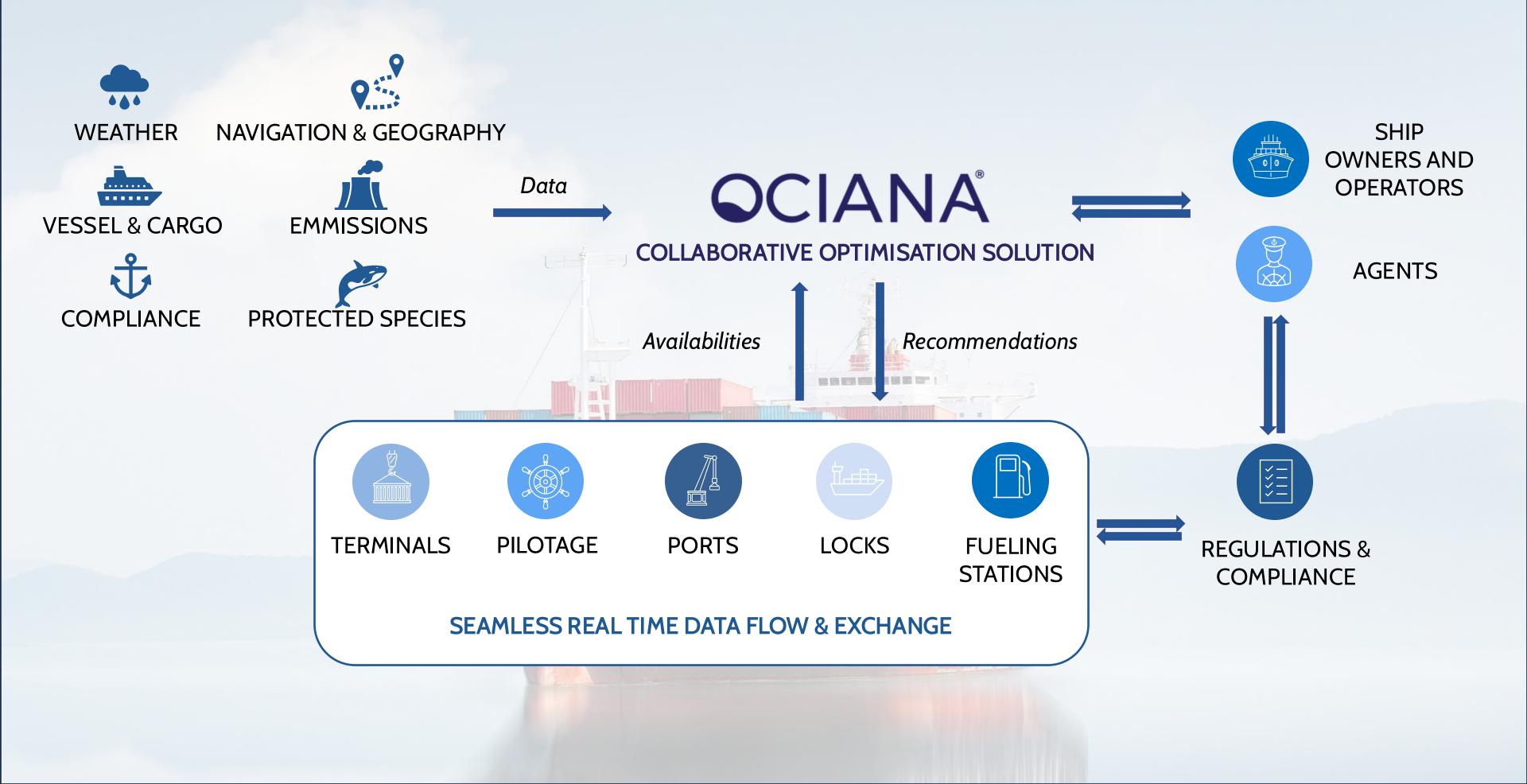


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Enabling ships to optimise steaming speed, thereby lowering fuel consumption and reducing emissions

Minimizing waiting times and maximizing operational efficiency across the maritime industry

## **OCIANA®:** Maritime Ecosystem Optimization





# **Key Objectives**

## Connect all stakeholders via a common platform, OCIANA® to:

- Receive more accurate information on vessel movements and resource delays in real-time
- Leverage data insights to enhance planning and coordination and streamlining vessel berthing
- Provide decision-making intelligence for dynamic environments
- Support route optimization toward green voyages





## **Expected Outcomes**

- Reduction of delays for all maritime stakeholders
- Improved transit times for ships
- Reduced fuel consumption and inherent reduction of GHG from JIT Arrival
- Human resource schedule optimization through improved <sup>sн</sup> planning and coordination
- Optimization of berth occupancy
- Long-term anticipated enhanced intermodal coordination



## OCIANA's Collaborative Optimisation Solution - Screens

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## **Incoming Vessels Screen**

## Leveraging OCIANA's ETA Prediction & Intelligent Geofences

#### OCIANA INCOMING VESSELS

MAP BERTH SCHEDULE

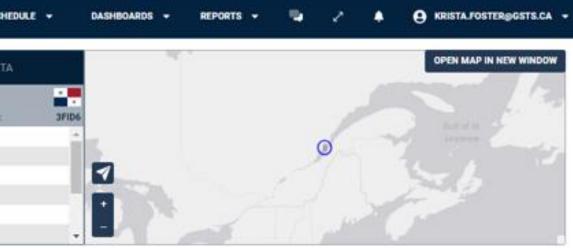
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ISBON EXPRESS /	60-61 - Berth 2	Container Ship (Fully Cellular)		66W	2024-04-22 11:57		4d.22h.27m	Les Escournins	2024-04-22 19:20		5d:05h:50m	CAMTR	2024-04-23 07:37		5d:18h:06m
ORONTO EXPRESS-7	78-79 - Berth 2	Container Ship (Fully Cellular)		66W	2024-04-23 00:29		5d:10h:58m	Les Escournins	2024-04-23 11:38		5d:22h:08m	CAMTR	2024-04-24 10:07		6d:20h:36m
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IVERPOOL EXPRESS 7	76-77 - Berth 1	Container Ship (Fully Cellular)		66W	2024-04-28 00:53		10d.11h.22m	Les Escoumins	2024-04-28 11:44		10d:22h:13m	CAMTR	2024-04-29 12:36		11d:23h:06m
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ISC DON GIOVANNI 1	67 - Berth 3	Container Ship (Fully Cellular)		66W	2024-04-26 08:37		8d:19h:06m	Les Escoumins	2024-04-26 11:56		8d:22h:25m	CAMTR	2024-04-26 22:51		9d:09h:20m
ISC MEDITERRANEAN 1	67 - Berth 3	Container Ship (Fully Cellular)		66W	2024-04-27 07:15		9d:17h:45m	Les Escourrins	2024-04-28 02:51		10d:13h:20m	CAMTR	2024-04-28 22:33		11d:09h:02m
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ISC LEIGH-?	50 - Berth 2	Container Ship (Fully Cellular)		66W	2024-04-26 20:42		9d.07h:11m	Les Escoumins	2024-04-26 23:32		9d:10h:01m	CAMTR	2024-04-28 06:55		10d:17h:24m
ISC CELINE-7	66 - Berth 1	Container Ship (Fully Cellular)		66W	2024-04-16 23:41	É.		Les Escoumins	2024-04-17 10:22	1		CAMTR	2024-04-18 14:25		1d:00h:54m
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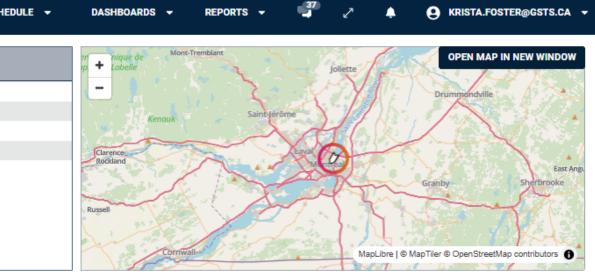


## **Schedule Entries Screen**

## Leveraging OCIANA's Port Analytics

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T1 / GEX1	MSC Tamara	TERMONT VIAU	BERTH 49	2024-07-25 6:00 AM	2024-07-26 11:00 PM														
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# Gantt Chart View of Collaborative Optimisation Solution

## Leveraging OCIANA's Embedded Communications Channel and Advanced Collaboration Tools

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Pending Requests																			Service ID		SL1	
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## **Enhanced Pre-Arrival Notification**

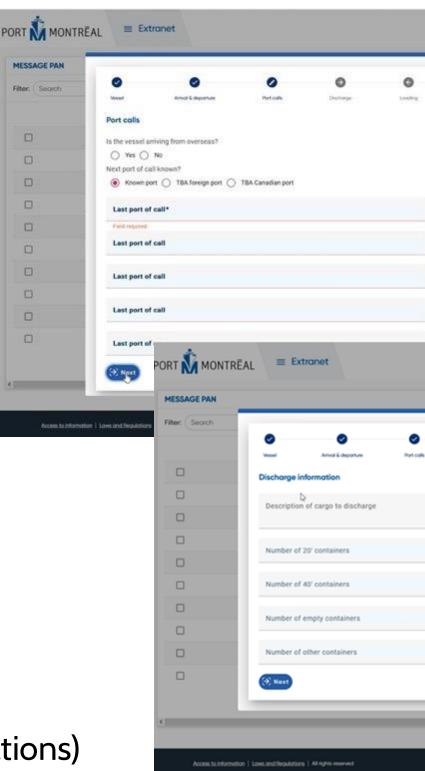
#### Basic Booking Request:

- Service Selector (if applicable)
- Vessel Information
- Arrival & Departure
- Notes & Submit

#### **Electronic Pre-Arrival Notice:**

- Port Calls
- Discharge & Loading Information
- Crew
- Passengers
- Stowaways
- Certificates
- Notes & Submit

Voyage Planning Form (Pilot recommendations)





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# OCIANA<sup>®</sup> Environmental Performance Management (EPM) Toolkit



# **OCIANA®** Environmental Performance Management Toolkit

Improving Global Decarbonization Efforts through **Environmental Transparency** 

Allowing for digital collaboration across all maritime stakeholders to action real time information to develop strategies for reducing emissions, improving fuel efficiency and enhancing overall vessel operations



## Facilitating Green Digital Shipping Corridors aimed at:

Enabling real-time monitoring and optimization of shipping corridor performance.

Identifying solutions to increase operational efficiency essential for achieving global sustainability goals and complying with IMO regulations.





## **Emissions Measurement, Reduction, and Compliance**

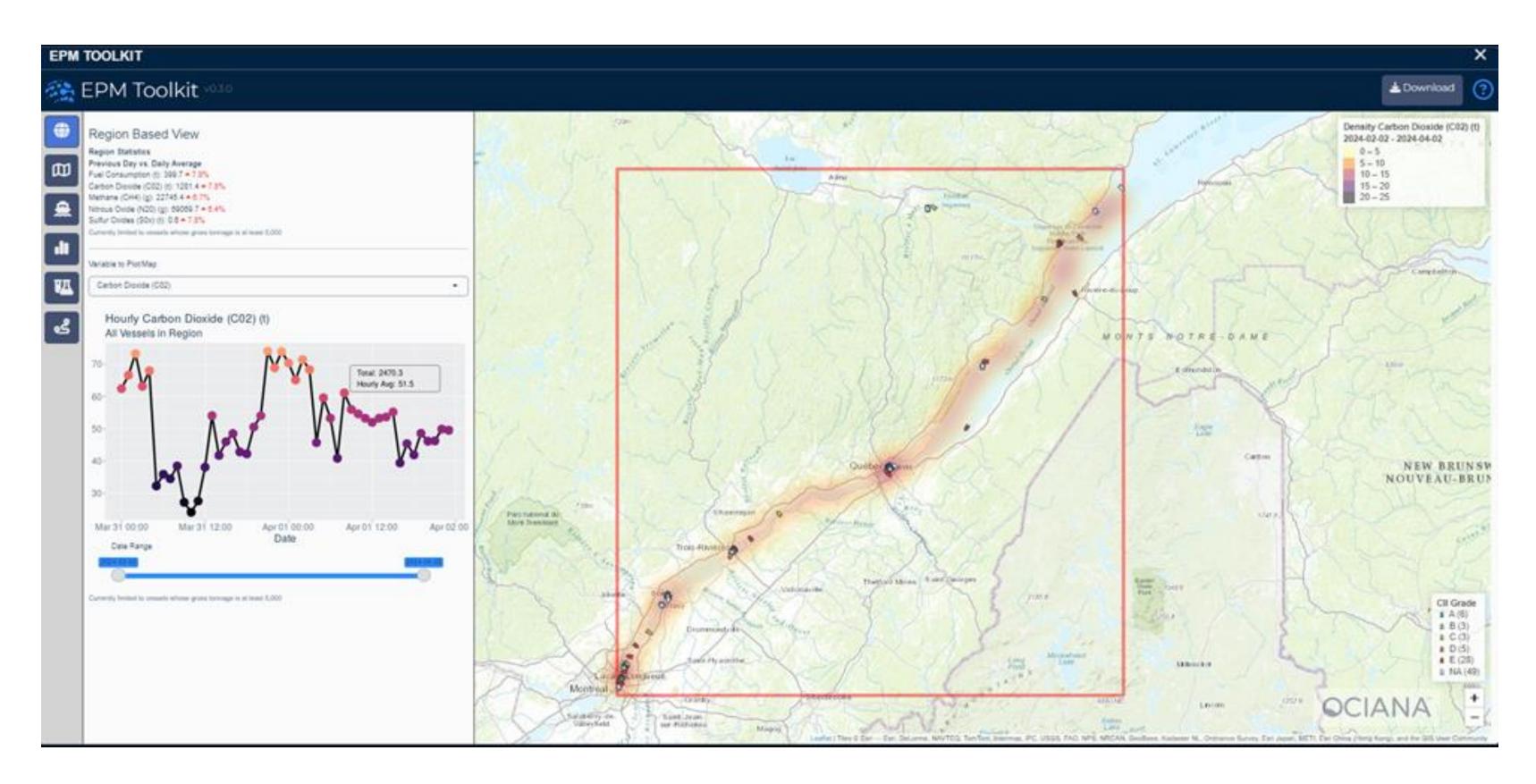
- Real-time, global monitoring and analysis of fuel consumption, greenhouse gas emissions and voyage performance
- Assess historical trends in efficiency and decarbonization and derive actionable insights to optimize vessel and port performance
- Leverage data visualization and machine learning to identify inefficiencies and implement emissions reduction strategies and optimize shipping corridor performance.
- Aggregate emissions at different levels and present them in the context of efficiency metrics (e.g., carbon intensity)
- Track compliance with regulations like the International Maritime Organization's Carbon Intensity Indicator (CII) and Energy Efficiency Existing Ship Index (EEXI)



## OCIANA's Environmental Performance Management (EPM) Toolkit - Screens

## **OCIANA® EPM Toolkit: Region View**

Current and historical emissions and fuel consumption for vessels in a geographic region, such as a port.





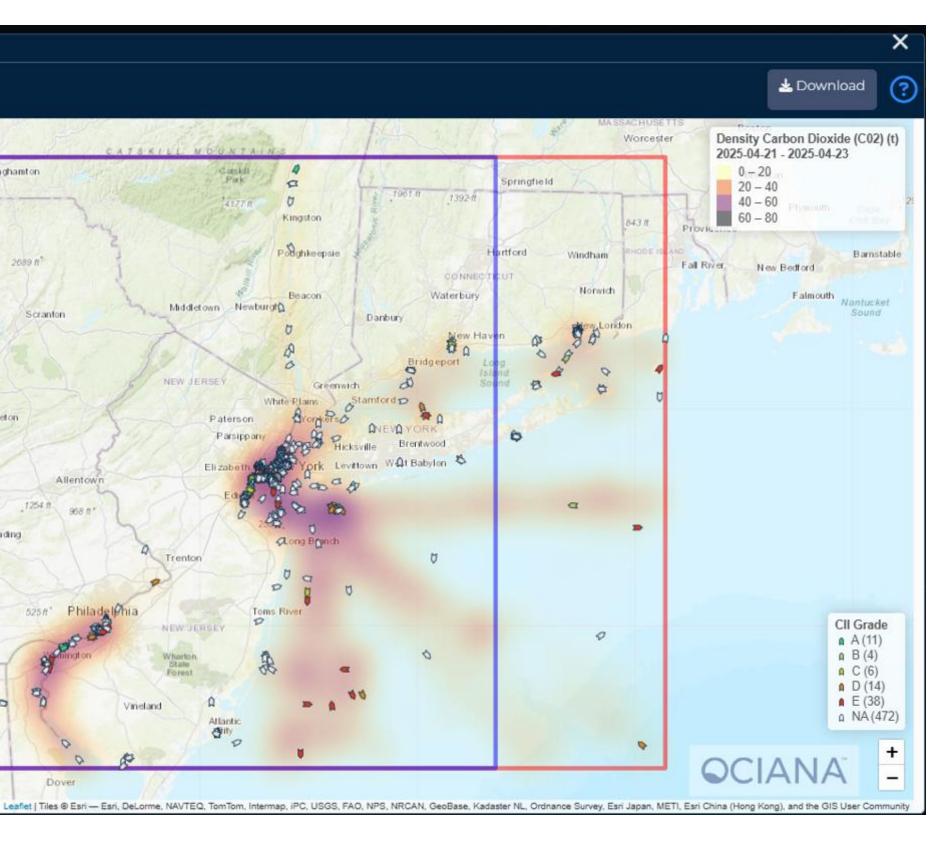
## **OCIANA® EPM Toolkit: Map Options**

Options for changing the data in the map or changing the Region of Interest.

#### EPM TOOLKIT EPM Toolkit vo.30 Map Options 4 Gankili Park Binghamton Elmira 2 Map Layers U 4177.8 Toggle Layer Kingston Berths Anchorages Polighkeepsie 2689 11 Density Beacon Middletown Newburgh Geospatial location selection Scranton Country .11 A United States Williamsport O NEW JERSEY ഷ് Go To Port White Plains Hazieton Paterson NEW YORK CITY Parsippany Port Bounds Mode Allentow 1254 # Go To Port 968 #\* Reading Cong Bond Harrisburg rentor Get Data in Region U 2 D ancaster Click button to trigger geospatial emissions ingestion in the region specified by the blue PhiladelPhia bounding box. 525 ft\* Toms River 846 ft D NEW JERSE 0 Vineland Atlantic Cally. 0 MARYLAND altimore columbi. Dover Annap oli:

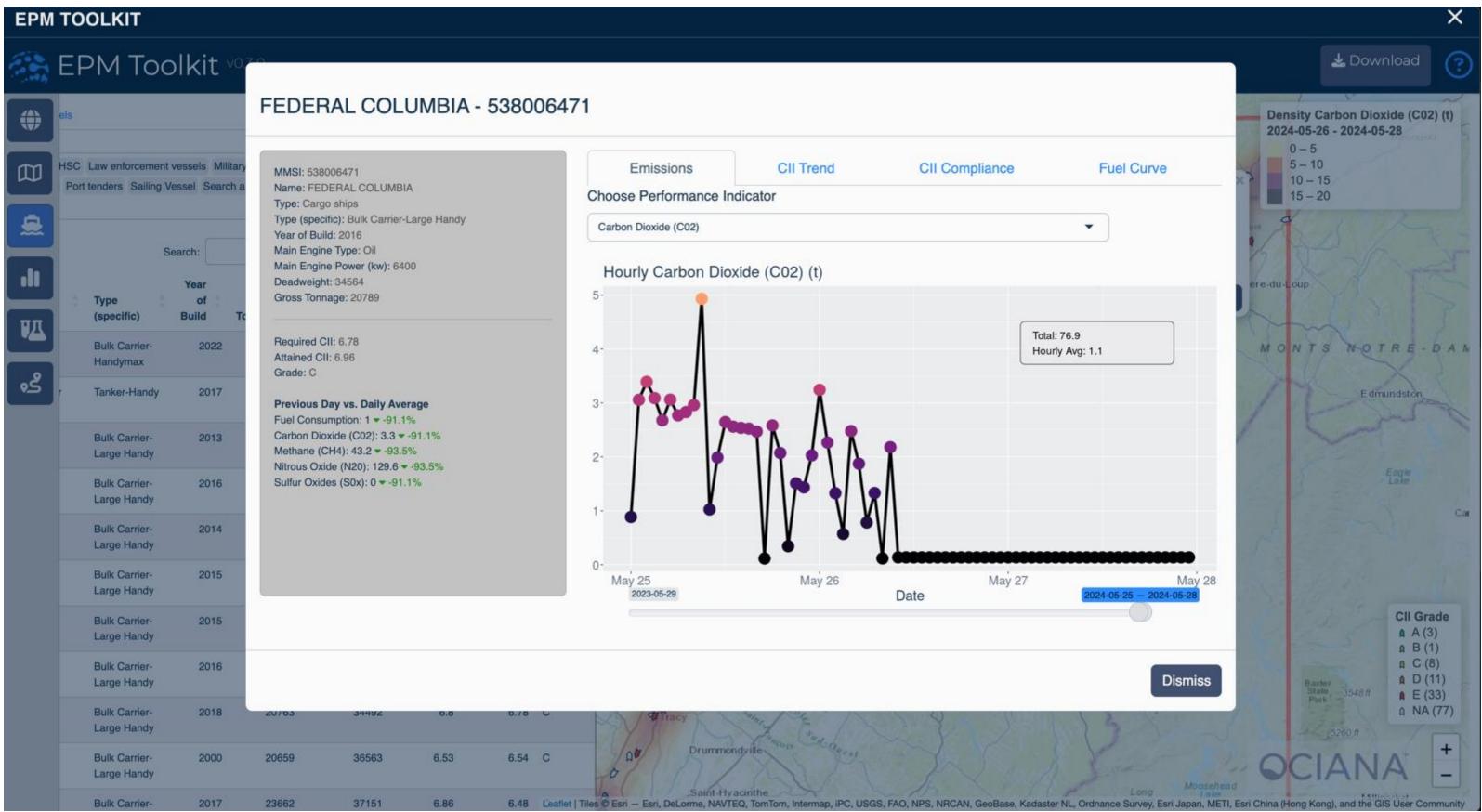
## **Options** the Region of Interest.





## **OCIANA® EPM Toolkit: Vessel View**

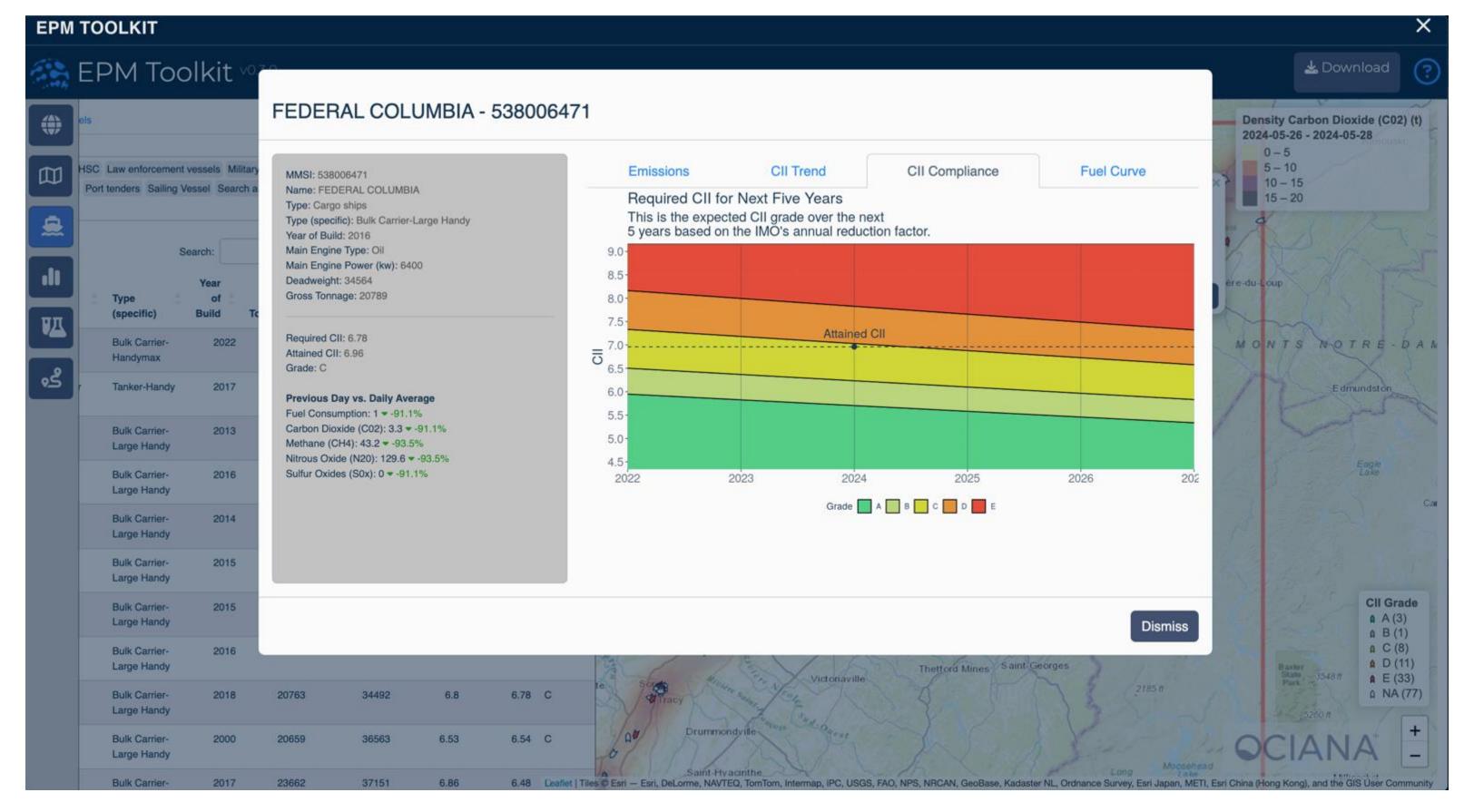
#### Enable stakeholders to quickly identify practical solutions to increase operational efficiency.





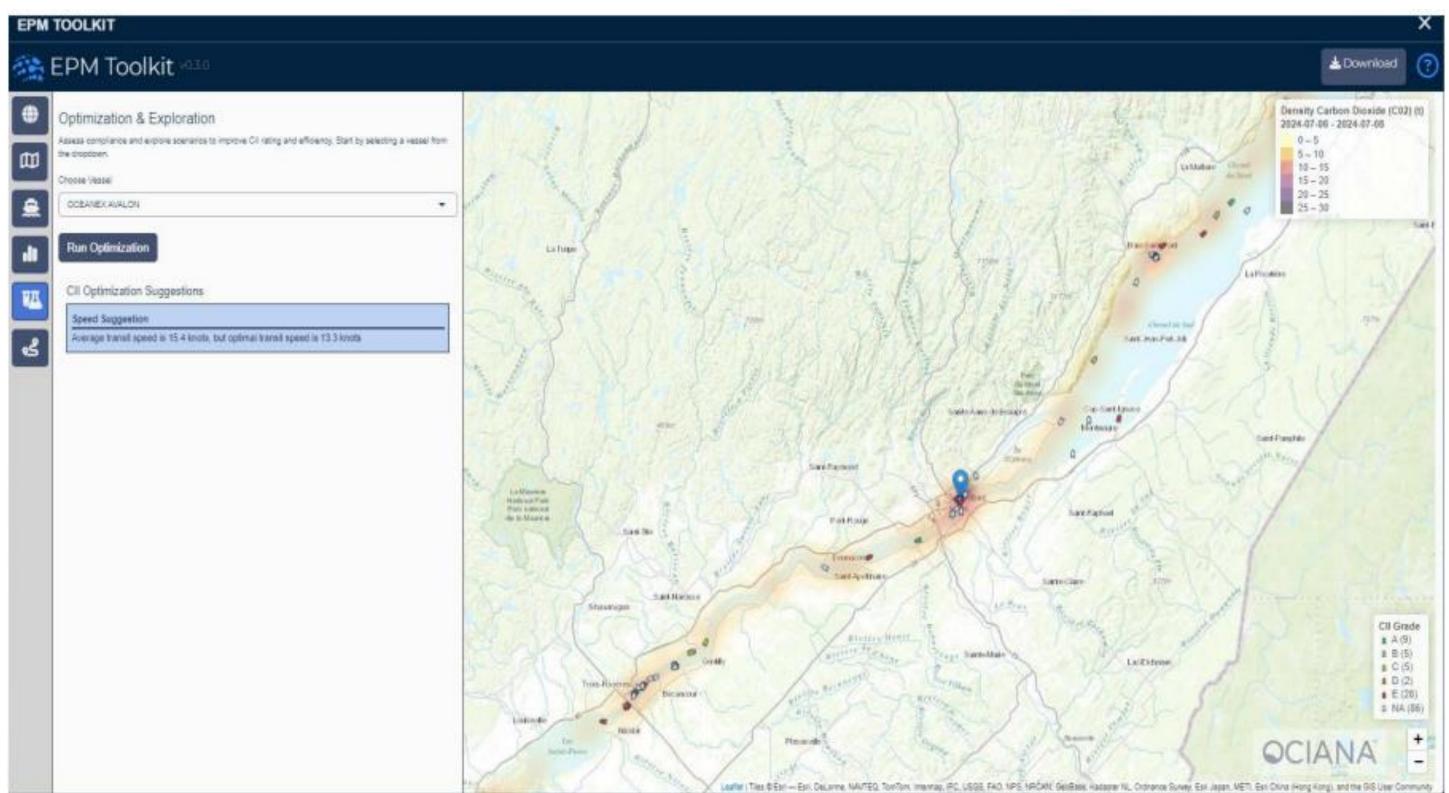
## **OCIANA® EPM Toolkit: Vessel View**

## Enable vessel operators to determine and forecast CII compliance as well as identify ways to improve CII.



## **OCIANA® EPM Toolkit: Optimisation & Exploration**

Assess compliance and explore scenarios to improve CII ratings to optimise efficiency.





## **OCIANA® EPM Toolkit: Route View**

Analyze Green Shipping Corridor performance and facilitate identification of vessels supporting green incentive programs.

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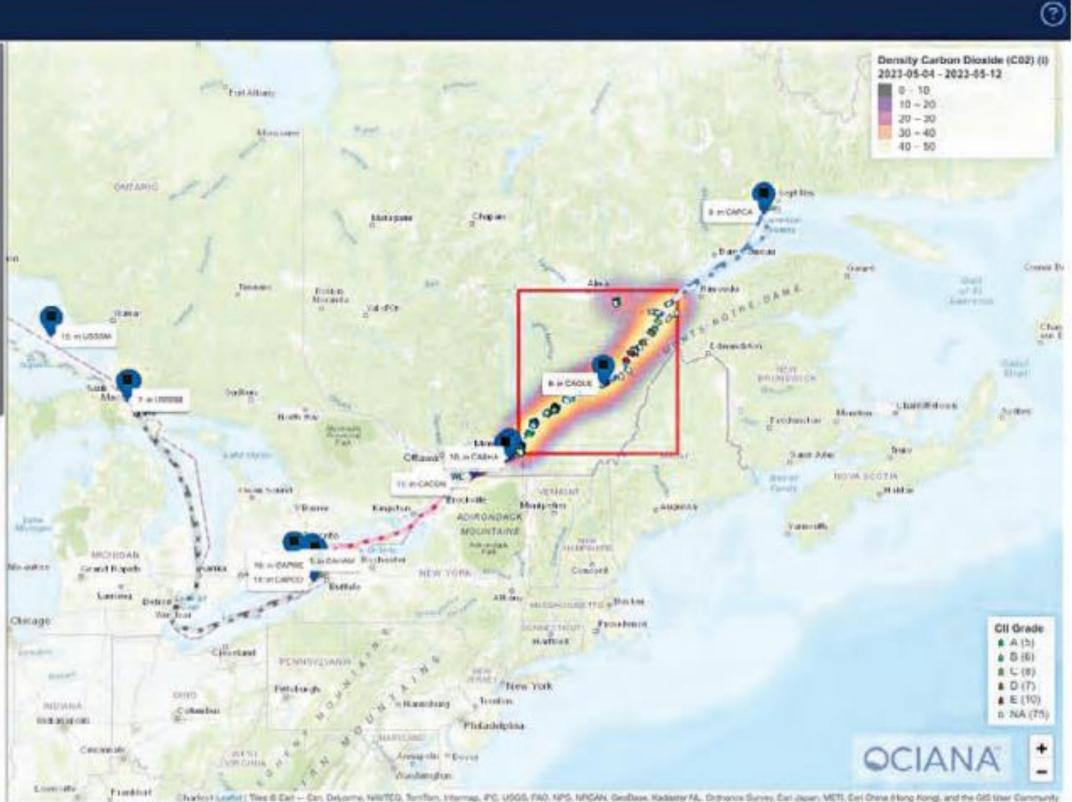


## **OCIANA® EPM Toolkit: Route View**

### Analyze vessel route performance and facilitate identification of trip segments that are underperforming.

#### EPM Toolkit 🕬

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Analyze Vessel Transits	
RE	**
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Average Speed (knots)	
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Methane (CIH)	42
Netrous Onide (N2S)	188
Natogen Oxida (NDK)	113780
Barx Carton (BC)	
Carton Monoste (CR)	276
Gaberous Ammonia (NPS)	628
Non-methane Vowele Droanic Compounds (NMV/DC)	3975
Particulate Matter (+ 10mm)	1134
Particulate Matter (< 25mm)	1096
105538 ~ USBUN 2023-04-11 06 42 54 - 2025-04-12 1	0.28 11







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## Scott MacPhee scott.macphee@gsts.ca



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