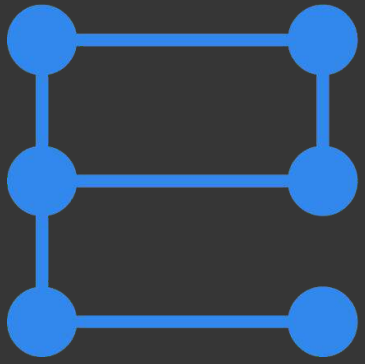




ECAP



ENVIRONMENTAL COMPLIANCE ASSISTANCE PLATFORM



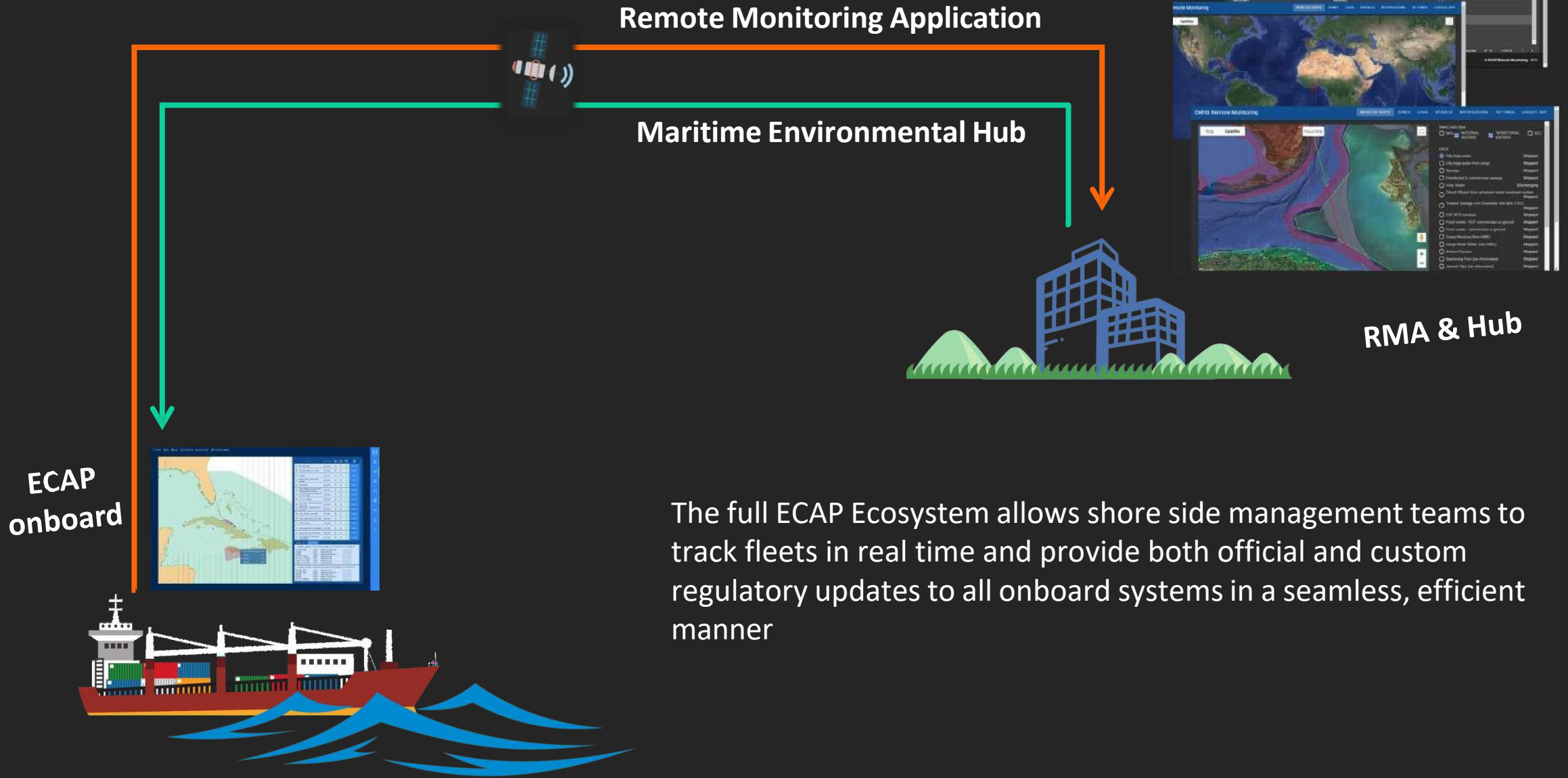


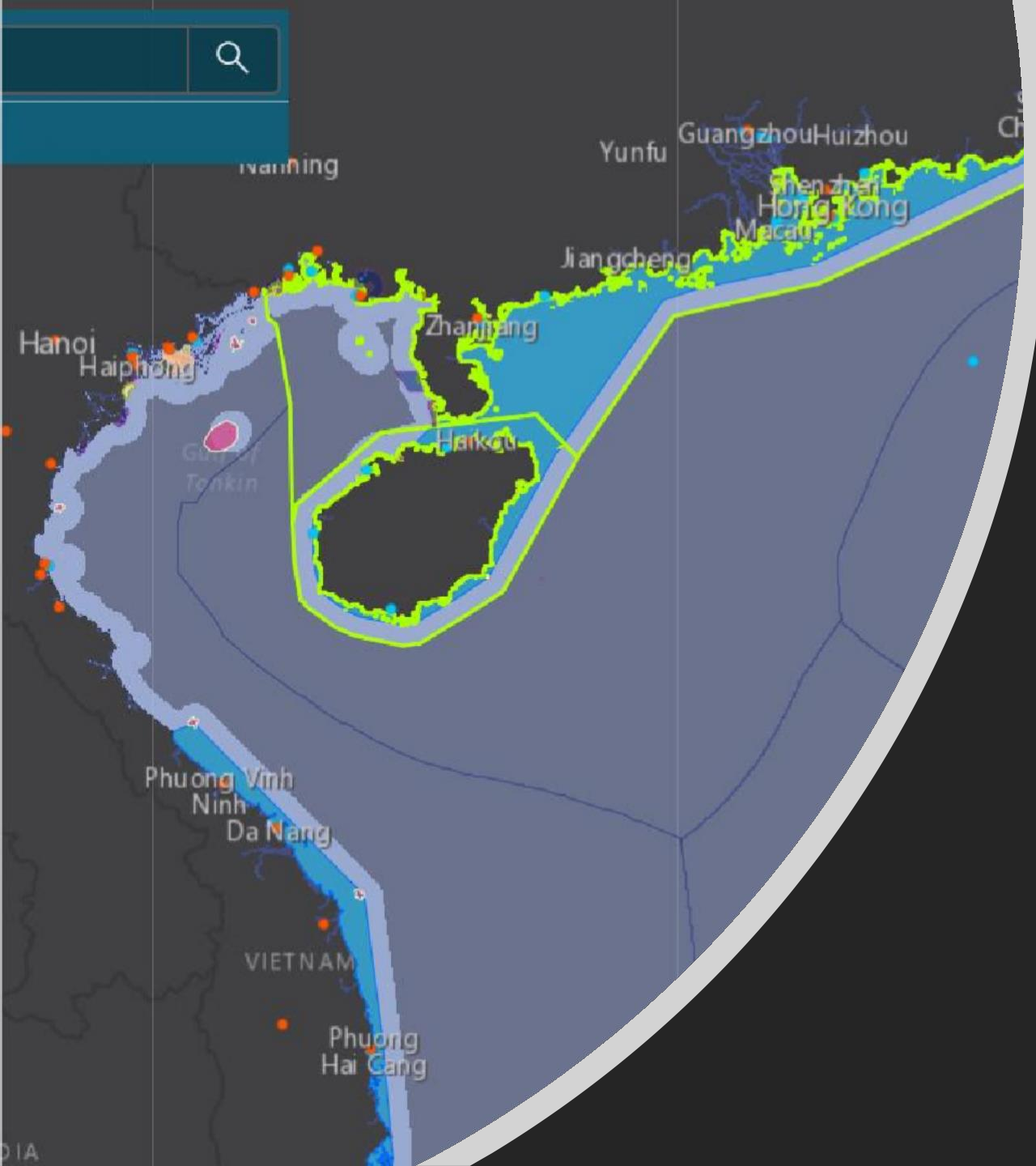
INTRODUCING **ECAP**: The Environmental Compliance Assistance Platform

A dynamic solution built for a dynamic industry.



ECAP ECOSYSTEM





Complete with a vast database of environmental zones and regulations, verified by an IACS recognized 3rd party.



Core Functions



**Route Planning
&
Chart Integration**



**Monitoring
&
Mobility**



**Data Retention
&
Security**

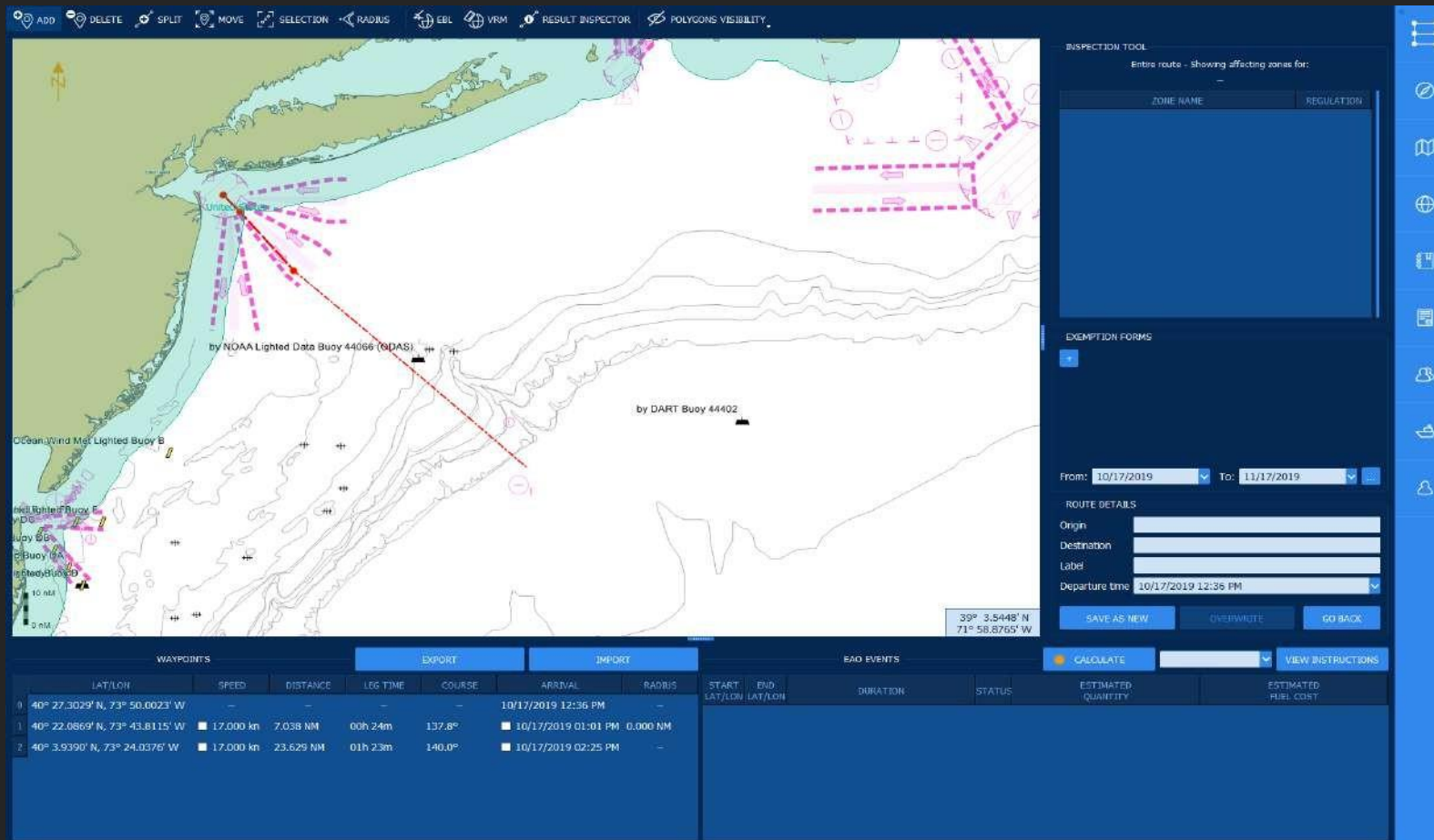


**ECAP
Support
Services**

SPECIAL FEATURES

- Interchangeable ECDIS formatted routes
- Full route planning and management with composite sailing capabilities
- Remote monitoring on multi devices over web
- User management
- Active monitoring calculations
- Real-time status display
- Route plan with instructions
- Affected zone display along route
- Regulatory Information & Document Display
- Saved data logs
- ENC chart display capabilities
- Worldwide coverage
- Territory areas, baselines, MPAs with zone highlighter tool
- Dynamic display and alarm functions
- Multi-sensor compatible
- Immediate updates via internet
- Regulation management functionality
- Regulation exemption capabilities
- Connect with Maritime Environmental Hub





Route-Planning

Full route planning functionality – Route creation drawing

Route-Planning (cont'd)

A waste type selected with color coding of route outlining where discharges are allowed based on parameters. Discharge overview is displayed on the bottom of the screen.

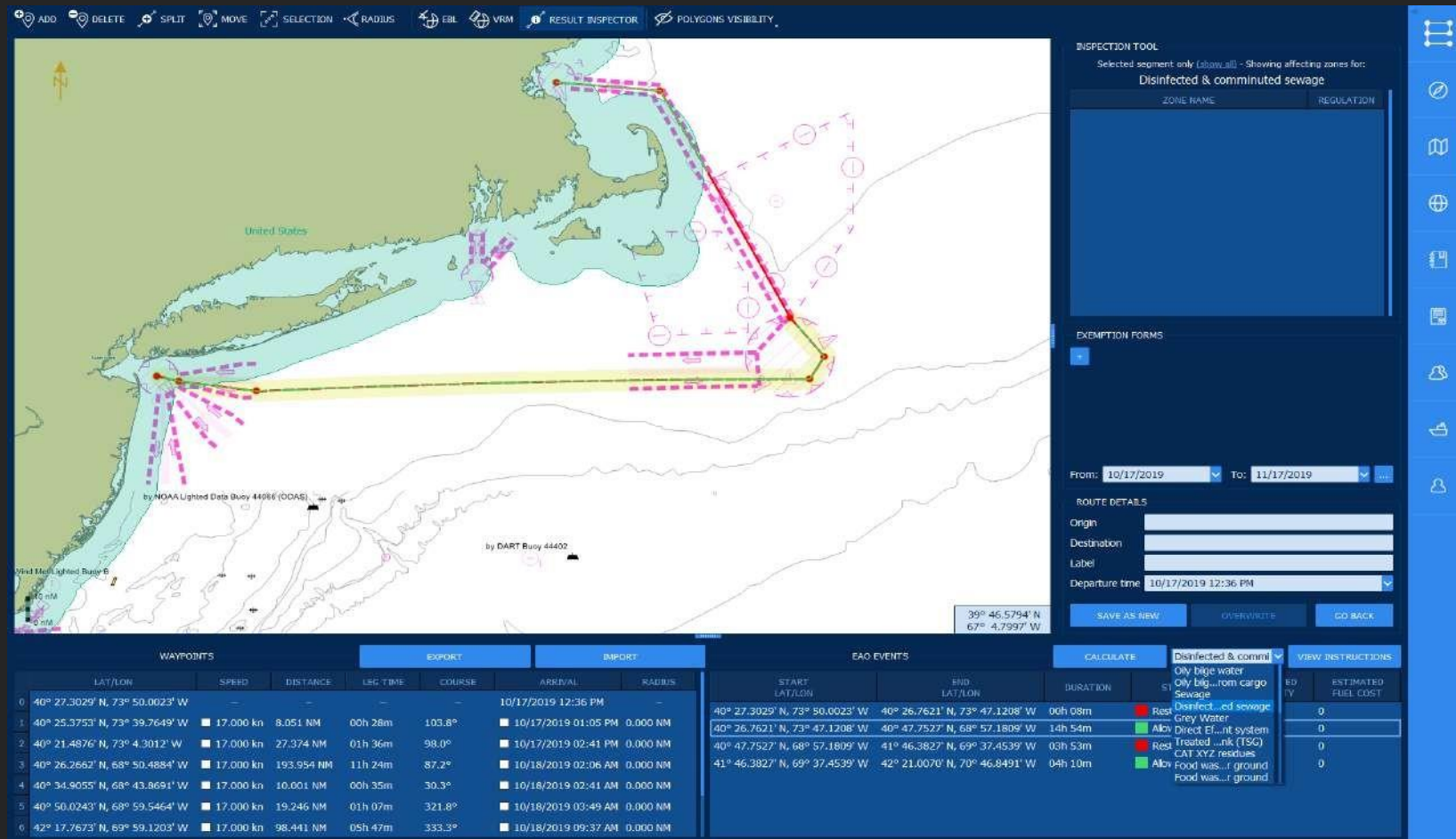
The interface includes a top toolbar with icons for ADD, DELETE, SPLIT, MOVE, SELECTION, RADIUS, EBL, VRM, RESULT INSPECTOR, and POLYGONS VISIBILITY. The map shows the United States coastline with a planned route. The route is color-coded: yellow for 'Allowed' and red for 'Restricted zone'. A red arrow points from the text to the yellow route segment. Another red arrow points from the text to the 'Disinfected & commi' dropdown menu in the bottom right panel.

WAYPOINTS

	LAT/LON	SPEED	DISTANCE	LEG TIME	COURSE	ARRIVAL	RADIUS
0	40° 27.3029' N, 73° 50.0023' W	—	—	—	—	10/17/2019 12:36 PM	—
1	40° 25.3753' N, 73° 39.7649' W	17.000 kn	8.051 NM	00h 28m	103.8°	10/17/2019 01:05 PM	0.000 NM
2	40° 21.4876' N, 73° 4.3012' W	17.000 kn	27.374 NM	01h 36m	98.0°	10/17/2019 02:41 PM	0.000 NM
3	40° 26.2652' N, 68° 50.4884' W	17.000 kn	193.954 NM	11h 24m	87.2°	10/18/2019 02:06 AM	0.000 NM

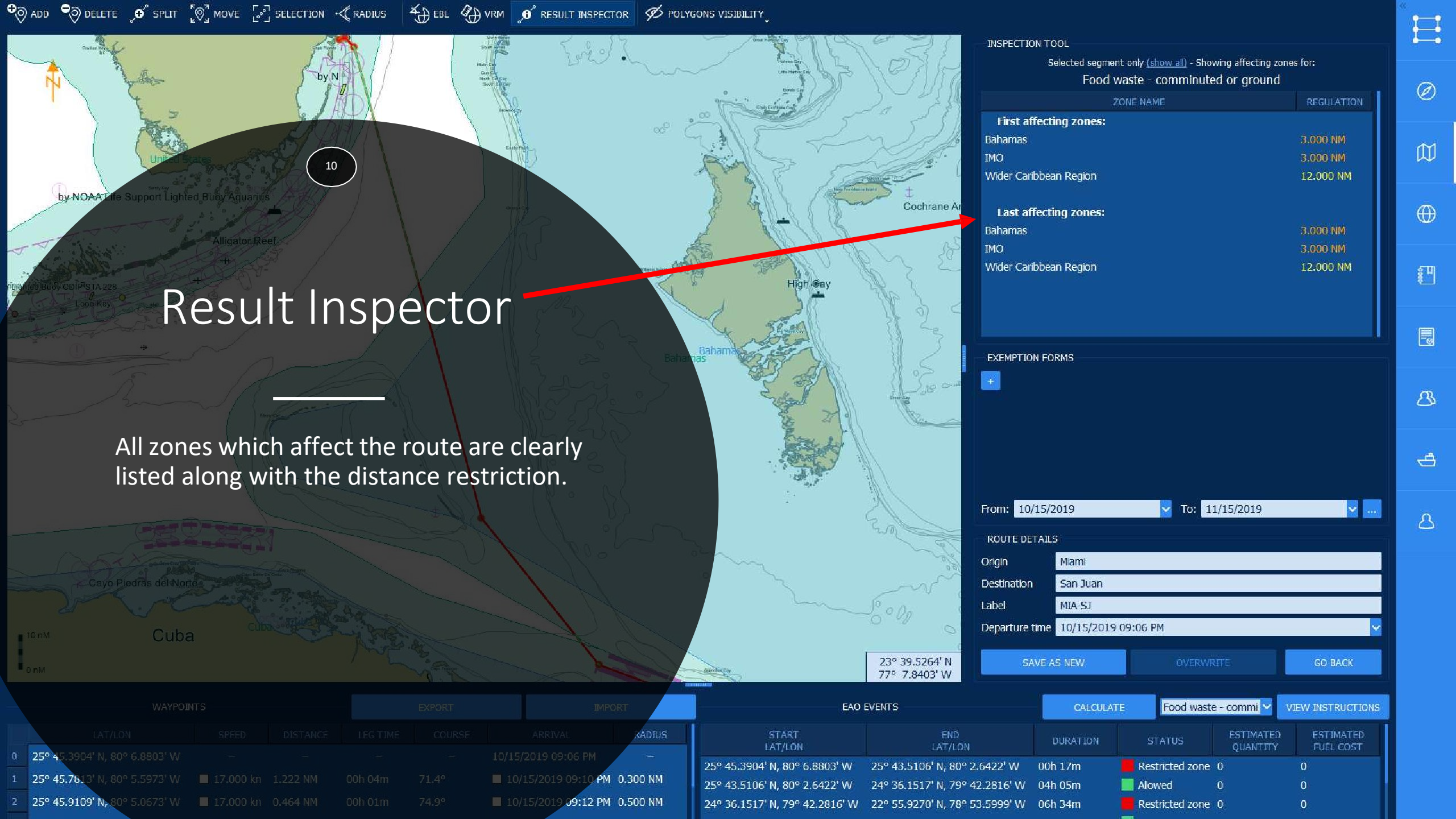
EAO EVENTS

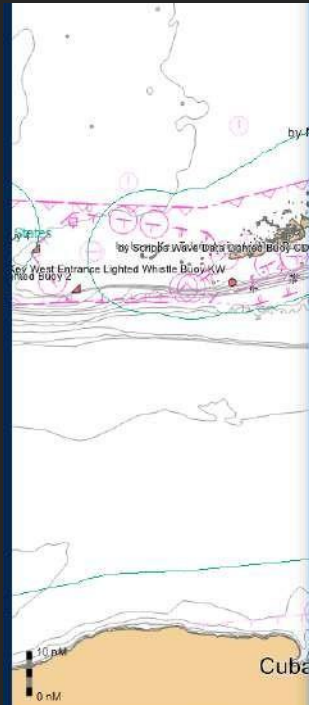
START LAT/LON	END LAT/LON	DURATION	STATUS	ESTIMATED QUANTITY	ESTIMATED FUEL COST
40° 27.3029' N, 73° 50.0023' W	40° 26.7621' N, 73° 47.1208' W	00h 08m	Restricted zone	0	0
40° 26.7621' N, 73° 47.1208' W	40° 47.7527' N, 68° 57.1809' W	14h 54m	Allowed	0	0
40° 47.7527' N, 68° 57.1809' W	41° 46.3827' N, 69° 37.4539' W	03h 53m	Restricted zone	0	0
41° 46.3827' N, 69° 37.4539' W	42° 21.0070' N, 70° 46.8491' W	04h 10m	Allowed	0	0



Route-Planning (cont'd)

Restrictions for all operations automatically calculated





Name	Florida Keys
Jurisdiction	United States
Designation	National Marine Sanctuary
Ecap Mpa Class	Regulated
Shape Subtype	National Marine Sanctuaries
Managing Authority	US EPA / USCG
Stopping Prohibited	NO
Legal References	US VGP 2.2.3.3(ballast) / 2.2.3.6.5(ballast) / 2.2.15(GW)
Updated Date	2019-09-24

Florida Keys

Florida Keys is a NOAA National Marine Sanctuary under the National Marine Sanctuaries Act

This MPA is a listed in Appendix G of the U.S. VGP under the NPDES – Waters Federally Protected Wholly or in Part for Conservation Purposes- includes National Marine Sanctuaries, Marine national Monuments, National Parks, and Wildlife refuges

All vessels:

- 1. Vessels 400gt or more shall not discharge **only bilge** within any area listed in VGP appendix G
- 2. Vessels shall not discharge **untreated gray water** within any Appendix G waters.
- 3. Vessels shall avoid discharge and uptake of ballast water while within all Appendix G waters.
- 4. Vessels shall not discharge **untreated ballast water** while within all Appendix G waters, National Parks & National Marine Sanctuaries.
- 5. Boiler and Economizer blowdown prohibited in US VGP Annex G waters.
- 6. All other materials are prohibited for discharge except:
 1. Deck wash down
 2. Engine cooling water
 3. Water generated by routine vessel operations

Large Cruise vessels (500 pax or more) OR Medium Cruise vessels(100-499 pax):

- 1. Vessels shall not discharge **pool or spa water** within any Appendix G waters.

Attachments

- [EPA-VGP-Reference.pdf](#)
- [us_marinereserves.pdf](#)

1.000 NM
0.000 NM
1.000 NM
Restricted
Restricted
0.000 NM
1.000 NM
Restricted
Restricted
Terr. Waters
Terr. Waters

To: 11/15/2019

19 09:06 PM

OVERWRITE

GO BACK

bilge water

VIEW INSTRUCTIONS

ESTIMATED QUANTITY	ESTIMATED FUEL COST
zone: 0	0

Regulation Info Page

Regulatory information displayed once a zone is selected



Zone Highlighting Tool used to color code and distinguish areas

ALERTS LIST		ZONE INFO	
Thursday, October 17, 2019 09:03:39 AM @ 24° 50.0668' N, 79° 44.3762' W			
Only bige water	Leave	Buffer zone (timeout)	Acknowledge
Sewage	Enter	Restricted zone	Acknowledge
Sewage	Leave	Buffer zone (timeout)	Acknowledge
CAT XYZ residues	Enter	Restricted zone	Acknowledge
Food was...r ground	Enter	Restricted zone	Acknowledge
Cargo R...on-HME)	Enter	Restricted zone	Acknowledge
Cargo W...on-HME)	Enter	Restricted zone	Acknowledge

Thursday, October 17, 2019 09:03:39 AM @ 24° 50.0668' N, 79° 44.3762' W			
Only bige water	Leave	Buffer zone	Acknowledge
Only bige water	Enter	Restricted zone (timeout)	Acknowledge
Sewage	Leave	Restricted zone	Acknowledge
Sewage	Enter	Buffer zone (timeout)	Acknowledge
CAT XYZ residues	Leave	Restricted zone	Acknowledge
Food was...r ground	Leave	Restricted zone	Acknowledge

Automatically
generated
instructions
for operation

Discharge Instructions

Event	Operation	Time & Date	Position	Reference
Event 0	START: EGCS (scrubber) wash - closed loop EGCS (scrubber) wash - open loop Deck Washdown Swimming Pool (de-chlorinated) Jacuzzi /Spa (de-chlorinated) STOP: Food waste - NOT comminuted or ground Direct Effluent from advanced water treatment system Grey Water Treated Sewage and Greywater mix tank (TSG) ECA Restricted Fuel Oil Untreated Ballast Oily bilge water Incinerator operations Disinfected & comminuted sewage Incinerator operations of sewage Sewage Boiler/economizer blowdown Swimming Pool / Spa water (chlorinated) Food waste - comminuted or ground	2021-05-19 18:00:15	25° 45.8464' N 80° 5.0061' W	None
Event 1	START: Incinerator operations Incinerator operations of sewage STOP: None	2021-05-19 18:08:02	25° 46.5301' N 80° 3.2458' W	Call garbage room
Event 2	START: Direct Effluent from advanced water treatment system Grey Water Treated Sewage and Greywater mix tank (TSG) Disinfected & comminuted	2021-05-19 18:12:31	25° 46.9919' N 80° 2.2608' W	Call ECR

1

	sewage Swimming Pool / Spa water (chlorinated) STOP: None			
Event 3	START: Untreated Ballast STOP: None	2021-05-19 18:50:57	25° 50.9373' N 79° 53.8309' W	None
Event 4	START: Oily bilge water Sewage Boiler/economizer blowdown Food waste - comminuted or ground STOP: None	2021-05-19 18:50:58	25° 50.9397' N 79° 53.8257' W	Call ECR
Event 5	START: ECA Restricted Fuel Oil STOP: None	2021-05-19 19:50:23	25° 57.1424' N 79° 40.8379' W	Call C/E 2 hr prior
Event 6	START: None STOP: Oily bilge water Sewage Boiler/economizer blowdown Food waste - comminuted or ground	2021-05-19 21:30:18	26° 7.5277' N 79° 18.9479' W	None
Event 7	START: None STOP: Direct Effluent from advanced water treatment system Grey Water Treated Sewage and Greywater mix tank (TSG) Disinfected & comminuted sewage Swimming Pool / Spa water (chlorinated)	2021-05-19 22:10:31	26° 11.6921' N 79° 10.1200' W	None
Event 8	START: None STOP: Incinerator operations	2021-05-19 22:15:32	26° 12.2120' N 79° 9.0158' W	None

2

Monitoring

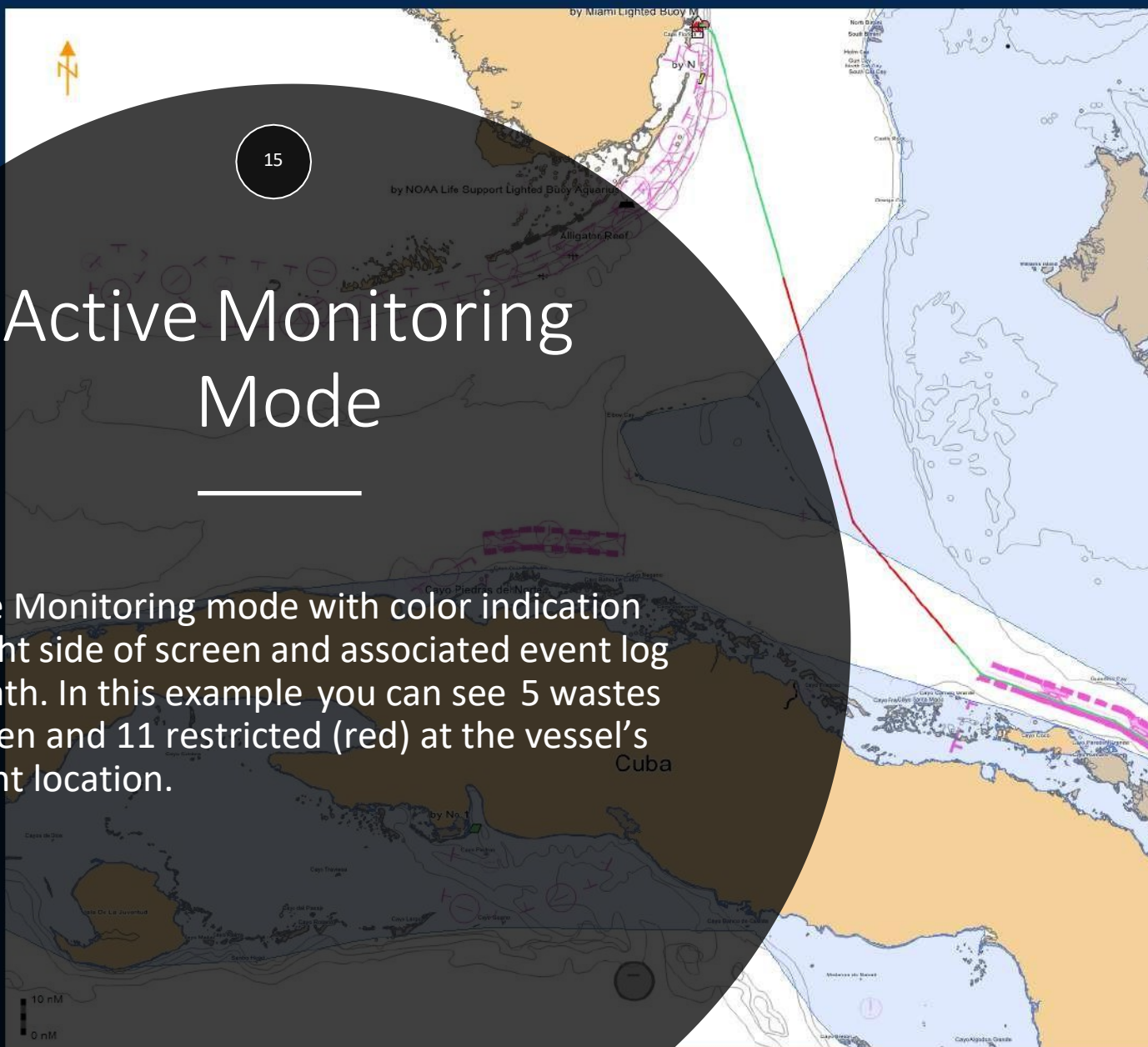
Alarm Functions

ECAP will provide visual and audible alarms to alert the user before entering or exiting a compliance area, eliminating the risk of missing an event due to a focus on other operations, and ultimately preventing wrongful discharges.

Active Monitoring Calculations

During monitoring mode, dynamic calculations are constantly being made to keep data such as distances and times to next events absolutely accurate and up-to-the minute. This assures that every vessel is aware of their position in regards to any sensitive area, including a process of assessing and confirming which operations in particular could create a violation.





Active Monitoring Mode

Active Monitoring mode with color indication on right side of screen and associated event log beneath. In this example you can see 5 wastes in green and 11 restricted (red) at the vessel's current location.

EAO	NEXT EVENT				
Oil bilge water	—	●	●	●	START
Oil bilge water from cargo	—	●	●	●	START
Sewage	—	●	●	●	START
Disinfected & comminuted sewage	—	●	●	●	START
Grey Water	—	●	●	●	START
Direct Effluent from advanced water treatment system	—	●	●	●	START
Treated Sewage and Greywater mix tank (TSG)	—	●	●	●	START
CAT XYZ residues	—	●	●	●	START
Food waste - NOT comminuted or ground	—	●	●	●	START
Food waste - comminuted or ground	—	●	●	●	START
Cargo Residue (Non-HME)	—	●	●	●	START
Cargo Wash Water (non-HME)	—	●	●	●	START
Animal Carcass	—	●	●	●	START
Swimming Pool (de-chlorinated)	—	●	●	●	START
Jacuzzi/Spa (de-chlorinated)	—	●	●	●	START
Swimming Pool / Spa water (chlorinated)	—	●	●	●	START

ALERTS LIST

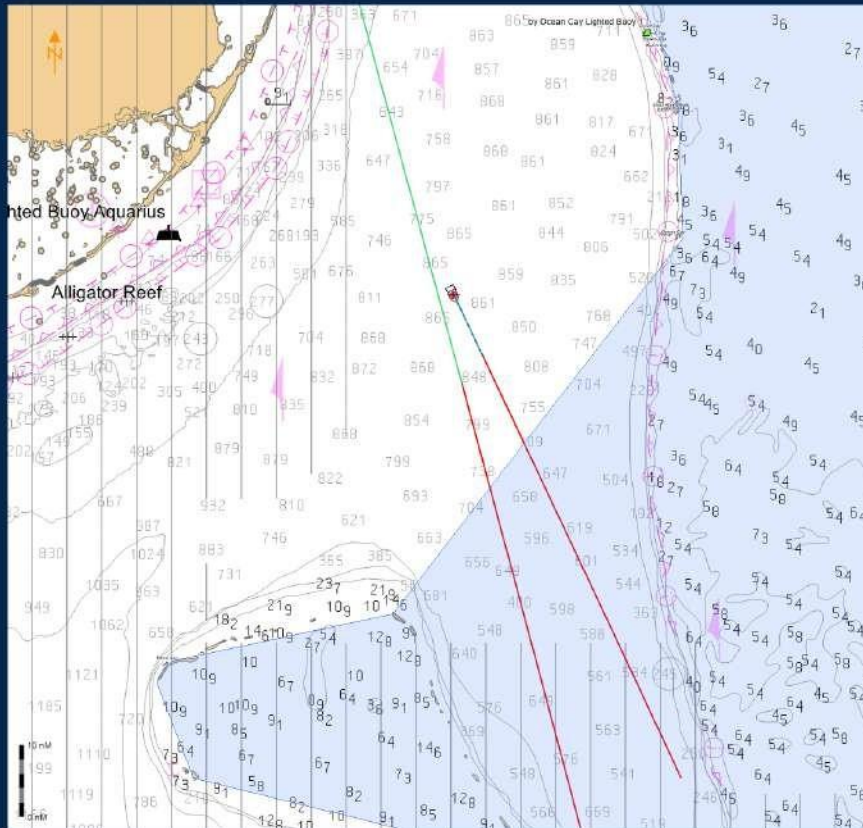
ZONE INFO

Thursday, October 17, 2019 09:03:39 AM @ 25° 45.3904' N, 80° 6.8803' W
 Ship Enter Plotted course [Acknowledge](#)

Thursday, October 17, 2019 09:03:39 AM @ 25° 45.3904' N, 80° 6.8803' W

Oil bilge water	Enter	Restricted zone	Acknowledge
Oil bilge water	Leave	Buffer zone (timeout)	Acknowledge
Grey Water	Enter	Restricted zone	Acknowledge
Grey Water	Leave	Buffer zone (timeout)	Acknowledge
Direct Effluent system	Enter	Restricted zone	Acknowledge
Direct Effluent system	Leave	Buffer zone (timeout)	Acknowledge
Food waste...r ground	Enter	Restricted zone	Acknowledge
Food waste...r ground	Leave	Buffer zone (timeout)	Acknowledge

Thursday, October 17, 2019 09:03:39 AM @ 40° 27.3029' N, 73° 50.0023' W
 Ship Leave Plotted course [Acknowledge](#)



RAD	NEXT EVENT				
Oil bilge water	00h 16m				START
Oil bilge water from cargo	02h 09m				START
Sewage	00h 16m				START
Disinfected & comminuted sewage	00h 34m				START
Grey Water	02h 09m				START
Direct Effluent from advanced water treatment system	02h 09m				START
Treated Sewage and Greywater mix tank (TSG)	02h 09m				START
CAT XYZ residues	00h 16m				START
Food waste - NOT comminuted or ground	02h 09m				START
Food waste - comminuted or ground	00h 16m				START
Cargo Residue (Non-HME)	00h 16m				START
Cargo Wash Water (non-HME)	00h 16m				START
Animal Carcass	02h 09m				START
Swimming Pool (de-chlorinated)	02h 09m				START
Jacuzzi / Spa (de-chlorinated)	02h 09m				START
Swimming Pool / Spa water (chlorinated)	02h 09m				START

ALERTS LIST	ZONE INFO
Thursday, October 17, 2019 09:03:39 AM @ 24° 50.0668' N, 79° 44.3762' W	
Oil bilge water	Leave Restricted zone Acknowledge
Oil bilge water	Enter Buffer zone (timeout) Acknowledge
Sewage	Leave Restricted zone Acknowledge
Sewage	Enter Buffer zone (timeout) Acknowledge
CAT XYZ residues	Leave Restricted zone Acknowledge
Food waste... ground	Leave Restricted zone Acknowledge
Cargo Residue (Non-HME)	Leave Restricted zone Acknowledge
Cargo Wash Water (non-HME)	Leave Restricted zone Acknowledge
Thursday, October 17, 2019 09:03:39 AM @ 24° 50.3812' N, 79° 28.9493' W	
Oil bilge water	Enter Restricted zone Acknowledge
Sewage	Enter Restricted zone Acknowledge
CAT XYZ residues	Enter Restricted zone Acknowledge
Food waste... ground	Enter Restricted zone Acknowledge
Cargo Residue (Non-HME)	Enter Restricted zone Acknowledge

Active Monitoring Mode (cont'd)

Active calculations continue whether vessel is on or off intended route.

Remote Monitoring Application

Track & manage entire fleets from anywhere, anytime. All routes, operations and logs accessible to shoreside management through the ECAP RMA.

The screenshot displays the EMHS Remote Monitoring application interface, which is divided into several sections:

- Top Navigation Bar:** Includes tabs for MONITOR SHIPS, ZONES, LOGS, VESSELS, NOTIFICATIONS, SETTINGS, and LOGOUT, SVP.
- Table Section:** A table with columns for VESSEL LOGS and EXEMPTION FORM LOGS. It lists vessels such as 'The Eight' (ID 8888, HOMINID) and 'SS EMH' (ID 563263, A.B.).
- Map Section:** A global map showing the location of monitored vessels. A red outline indicates a specific area of interest.
- Focus Ship View:** A detailed view of a specific ship's location and discharge status. It includes a map of the Caribbean region and a list of discharge types and their status.

Discharge Status List:

Select area type	MPA	INTERNAL WATERS	TERRITORIAL WATERS	EEZ
EOs				
Oily bilge water				Stopped
Oily bilge water from cargo				Stopped
Sewage				Stopped
Disinfected & comminuted sewage				Stopped
Grey Water				Discharging
Direct Effluent from advanced water treatment system				Stopped
Treated Sewage and Greywater mix tank (TSG)				Stopped
CAT XYZ residues				Stopped
Food waste - NOT comminuted or ground				Stopped
Food waste - comminuted or ground				Stopped
Cargo Residue (Non-HME)				Stopped
Cargo Wash Water (non-HME)				Stopped
Animal Carcass				Stopped
Swimming Pool (de-chlorinated)				Stopped
Jacuzzi /Spa (de-chlorinated)				Stopped

User Types



User Type 1 – System Administrator

Access to user and system management

User Type 2 – Shore Office Management (levels 1-3)

Full access to shore application

User Type 3 – Ship Master

Full access to ECAP unit and monitoring

User Type 4 – Compliance/Chief Officer

Access to most ECAP features except master only authorizations

User Type 5 – Navigation Officer

Access to ECAP features except regulation management

User Type 6 – Watch Officer

Access to limited ECAP features such as monitoring routes





EMHS
HUB

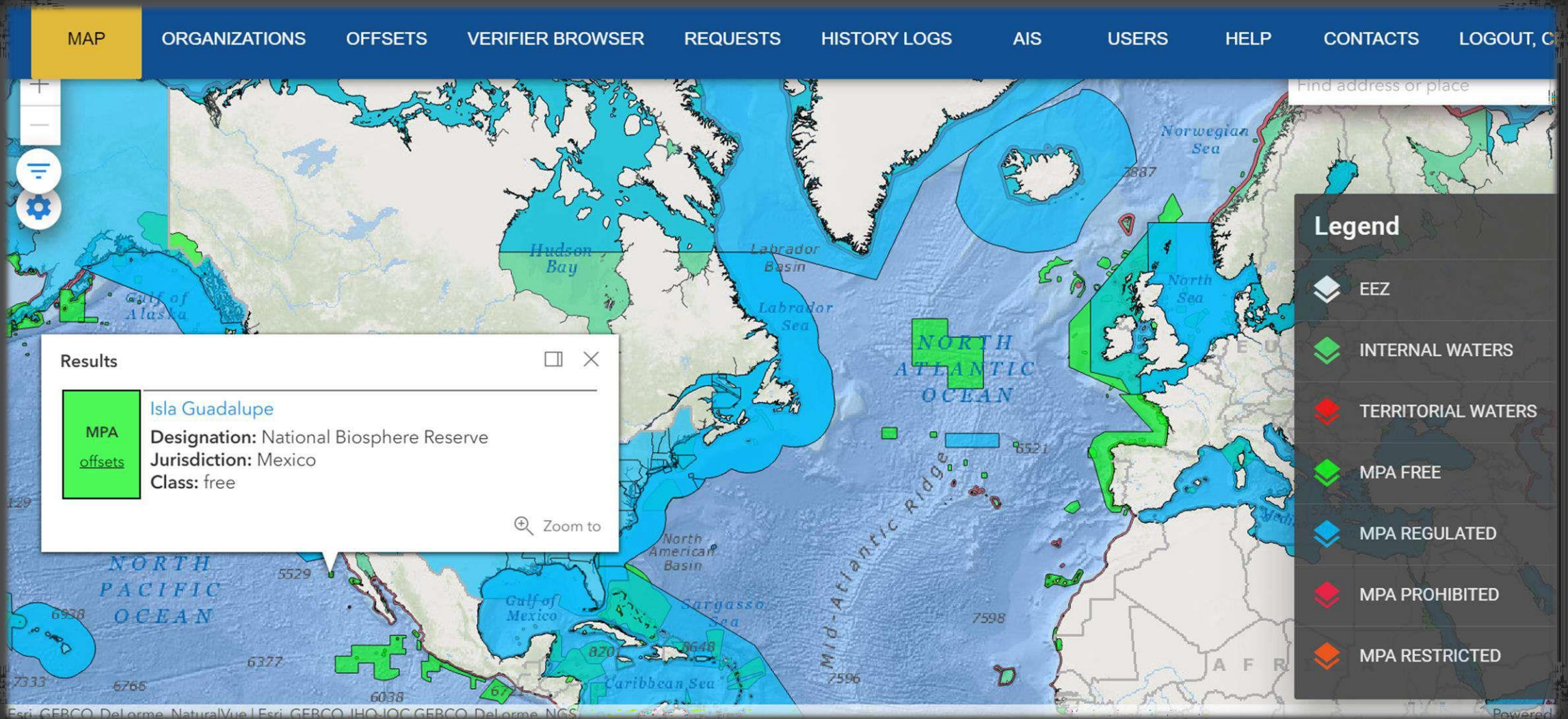
**Enforce regulatory restrictions
and guidelines**

**Build and manage your company
database by “pulling” directly from
regulators, agencies, and organizations**

The **M**aritime **E**nvironmental **H**ub is a centralized source of marine environmental and regulatory information presented in the most useful way possible.

Each user group provided with a dedicated database and a full set of global regulatory information. You have the control to add any company specific policy or additional regulation you wish your vessels to follow.





Hub map interface

MAPORGANIZATIONSOFFSETSVERIFIER BROWSERREQUESTSHISTORY LOGSAISUSERSHELPCONTACTS

+

-



Plantagenet
Esri, GEBCO, DeLorme, NaturalVue | Esri, GEBCO, IH... Powered by Esri

JurisdictionBermuda

Designation12NM

Ecap Company Classregulated

For Time

Bermudian 12 NM

This is an Exhaust Gas Cleaning System (EGCS) or "scrubber" restriction zone.

All vessels:

1. Washwater discharges from all EGCS are banned from use within this area. EGCS Washwater Prohibited.

2. Closed loop model types are ALLOWED.

3. Hybrid model types are required to be switched to CLOSED mode in order to be used.

Hub Info Pages

Restriction Management

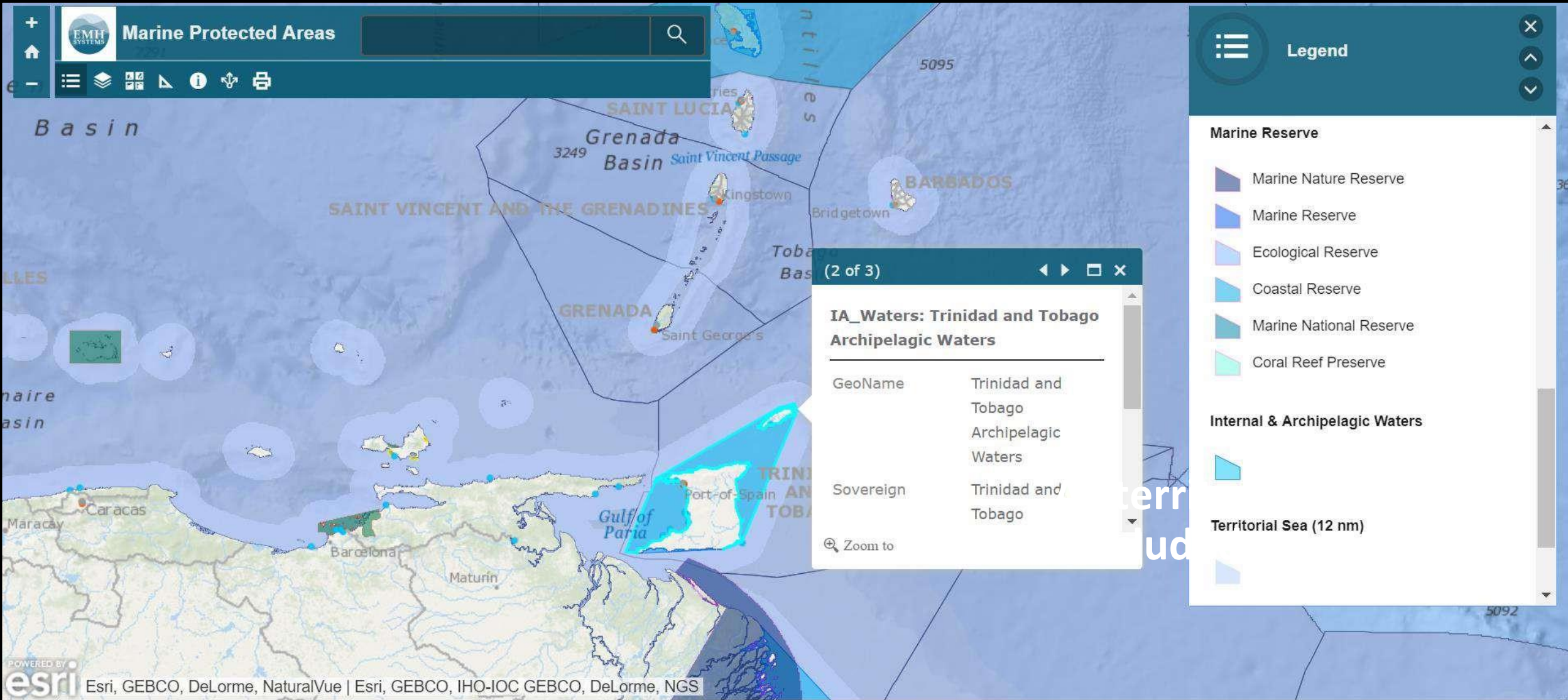
MAPORGANIZATIONS**OFFSETS**VERIFIER BROWSERREQUESTSHISTORY LOGSAISUSERSHELPCONTACTSLOGOUT, C

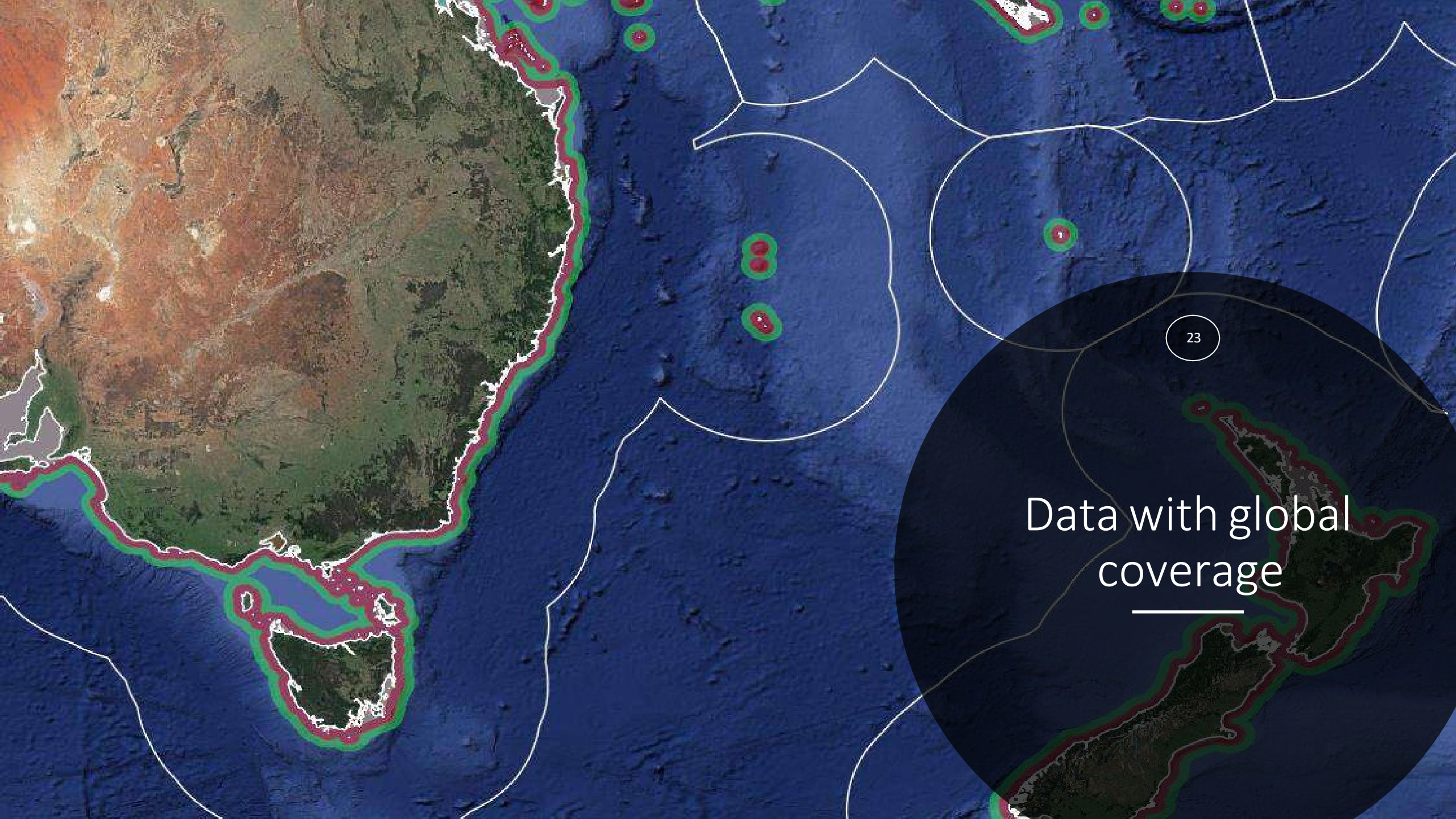
JURISDICTIONS

EAOS

MPAS

Jurisdictions	Oily bilge water	Oily bilge water from cargo	Sewage	Disinfected & comminuted sewage
Bahamas	Offset type EEZ	50 50	12 12	3 3
Bahrain	TERSEA	50 50	12 12	3 3
Bajo Nuevo Bank	CUSTOM	50 50	12 12	3 3
Bangladesh	0 0	50 50	12 12	3 3
Barbados	0 0	50 50	12 12	3 3
Bassas da India	0	50	12	3





Data with global
coverage

23

Support



Training Center



Training available in a full scale ship simulator within the
Technical University of Varna Training Center



ECAP in Action

