

# Parallel Session 2: Data analytics

## IMS Group UCM#14

Lisbon, 30.10.2019

- 1. What kind of analysis could EMSA support with the data and services?**
- 2. Which are the most important data sets and scenarios to be addressed?**

**What is available at EMSA?**

**What makes EMSA data set different from commercially available data?**

**How the different data sets could be combined?**

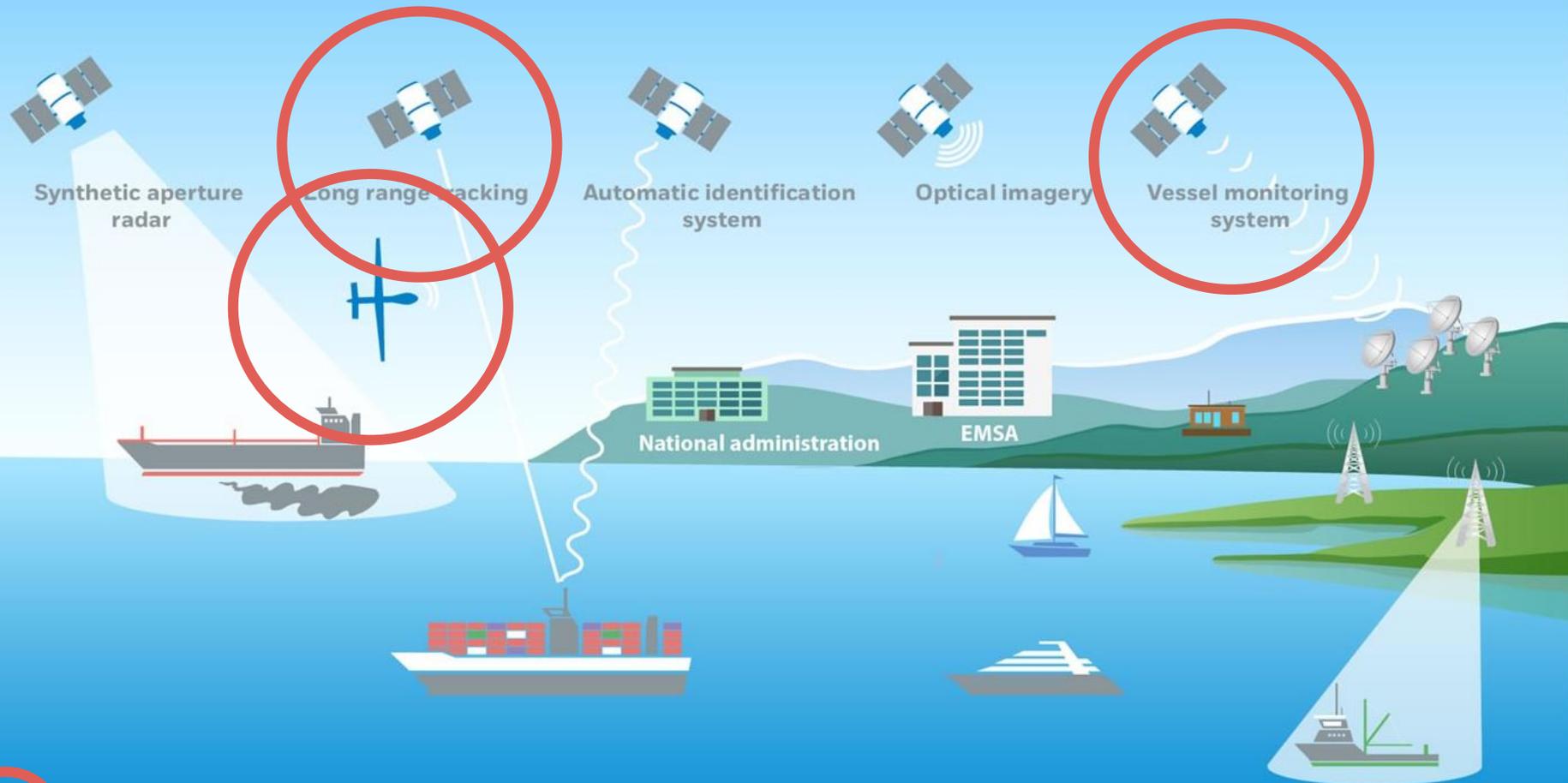
**What should be the focus?**

**What are the MS needs? (In which direction shall we go)?**

**What is the perspective of other stakeholders? What could be harmonized?**

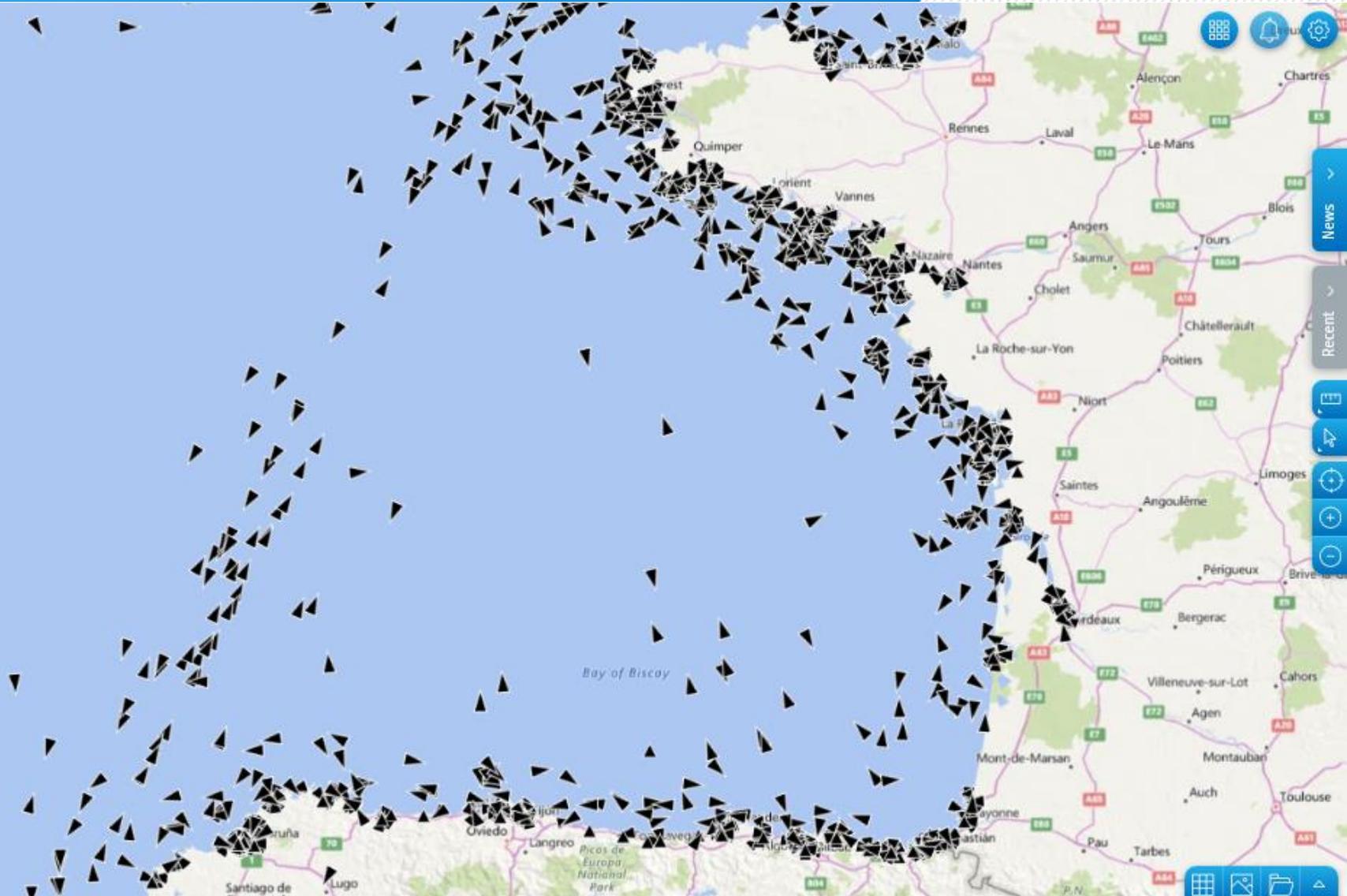
# Examples of the data sets

# Maritime Data Sources available via EMSA

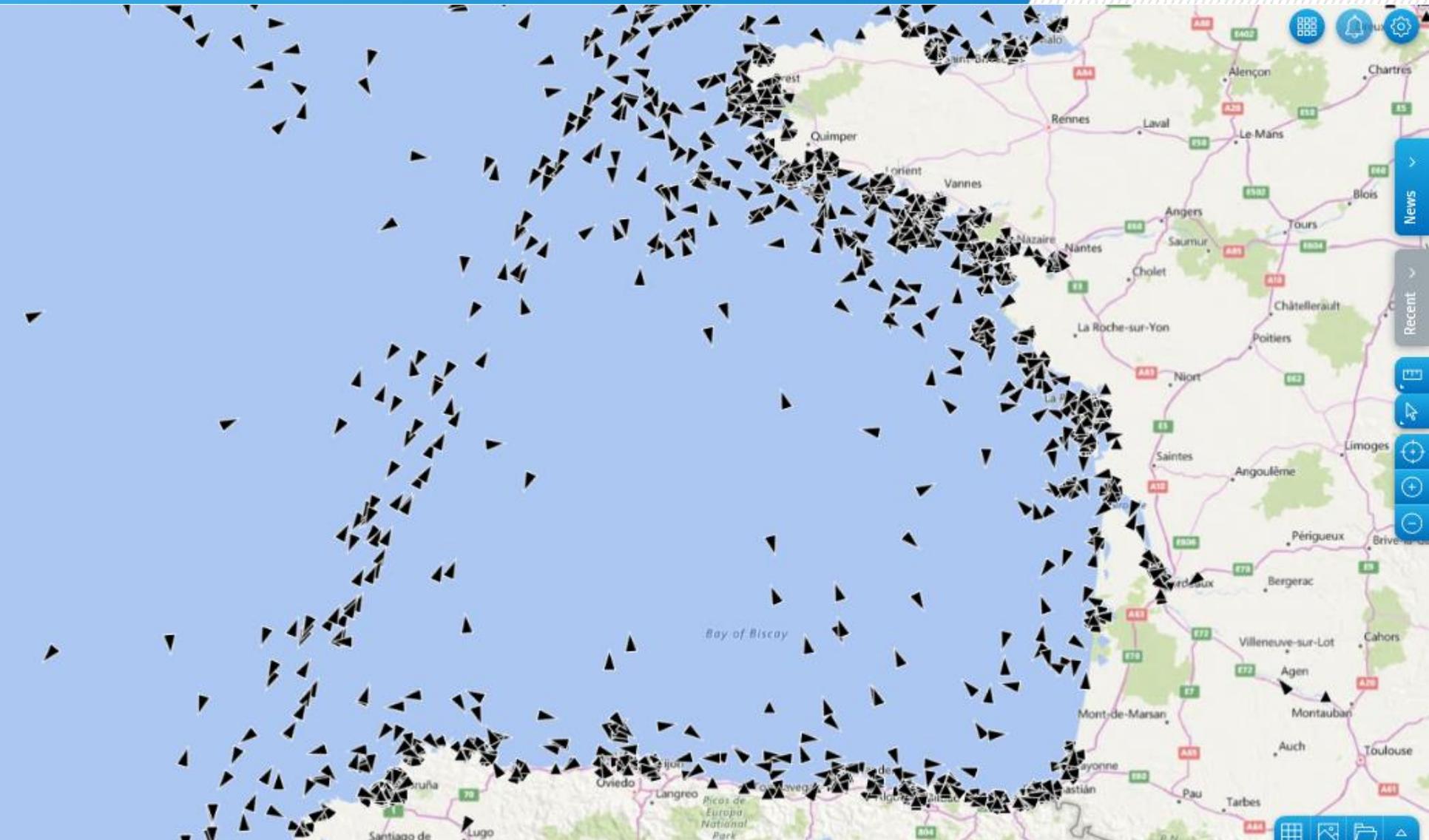


 = Not commercially available

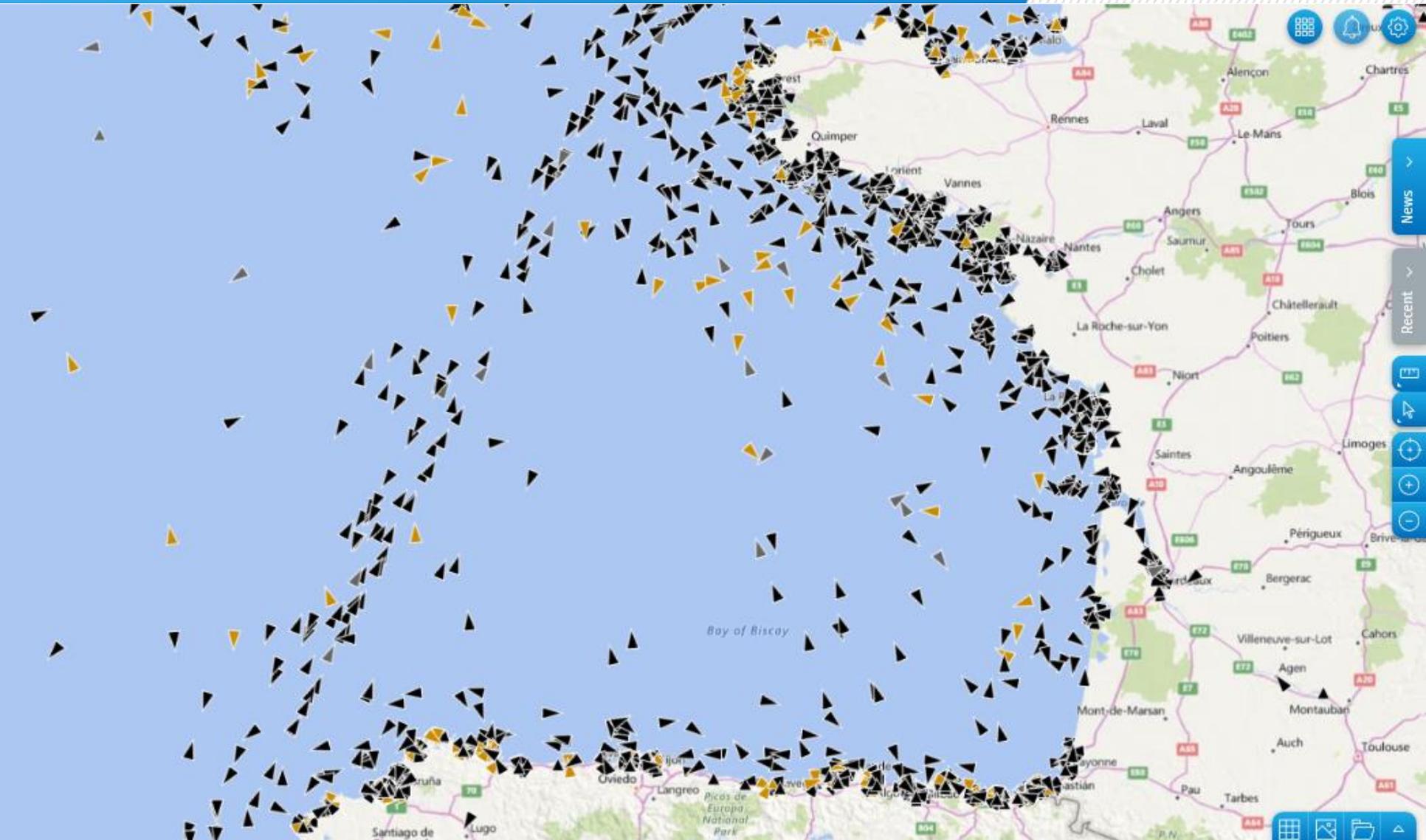
# T-AIS positions only



# T-AIS + S-AIS positions



# T-AIS + S-AIS + LRIT + VMS positions



# T-AIS + S-AIS + LRIT positions



# Mandatory Reporting Systems



# Fusion of positions into one single track



**30 months of complete (not downsampled) position data online, growing to 5 years**

# Positions + EU port calls

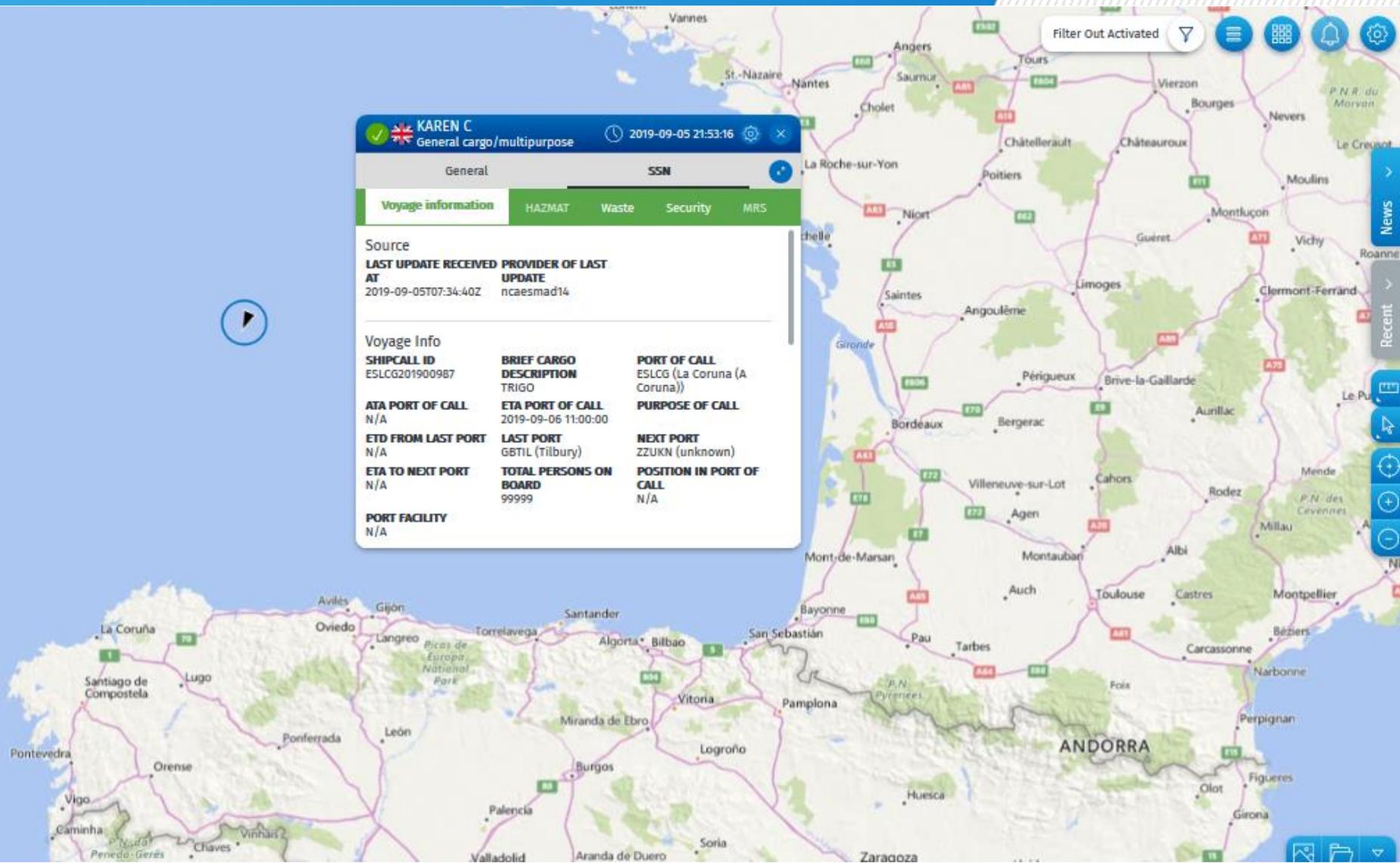
Vessel Voyages **KAREN C**

Port of Call, ATA Port Of Call, A...

Number of voyages: 11

PORT OF CALL	ATD PORT OF CALL	ETA TO PORT OF CALL	ETD FROM PORT OF CALL	LAST PORT	ETD FROM LAST PORT	NEXT PORT	ETA TO NEXT PORT	POB VOYAGE TOWARDS PORT OF CALL	SECURITY
FRURO (Rouen)	2019-08-27 13:00:00	2019-08-23 13:15:00	2019-08-27 00:59:00	FRDKK (Dunkerque)	N/A	ZZUKN (unknown)	N/A	9	
BEGNE (Gent (Ghent))	2019-08-20 18:12:00	2019-08-18 01:37:15	2019-08-20 18:00:00	ESGij (Gijon)	2019-08-13 23:00:00		N/A	9	SLI
ESGij (Gijon)	2019-08-14 14:15:00	2019-08-09 02:00:00	2019-08-14 14:00:00	GBSOU (Southampton)	N/A	BEGNE (Gent (Ghent))	N/A	9	SLI
FRURO (Rouen)	2019-07-22 21:20:00	2019-07-20 12:20:00	2019-07-23 09:00:00	FRDKK (Dunkerque)	N/A	ZZUKN (unknown)	N/A	9	
ESLCG (La Coruna (A Coruna))	N/A	2019-09-06 11:00:00	2019-09-09 19:00:00	GBTIL (Tilbury)	N/A	ZZUKN (unknown)	N/A	99999	SLI
GBLON (London)	2019-09-03 03:22:26	2019-08-30 00:30:00	2019-09-03 03:30:00	FRURO (Rouen)	N/A	ESLCG (La Coruna (A Coruna))	2019-09-05 02:30:00	9	SLI
FRDKK (Dunkerque)	2019-08-22 16:00:00	2019-08-21 06:00:00	2019-08-22 16:00:00	BEGNE (Gent (Ghent))	N/A	FRURO (Rouen)	N/A	9	SLI
GBSOU (Southampton)	2019-08-06 12:15:00	2019-08-03 07:30:00	2019-08-06 12:01:00	FRMTX (Montoir-de-Bretagne)	2019-08-03 07:00:00	ESGij (Gijon)	2019-08-06 14:45:00	9	SLI
ZZCAN (cancel)	N/A	2019-07-30 20:00:00	2019-07-31 21:00:00	FRMTX (Montoir-de-Bretagne)	N/A		N/A	9	
FRNTE (Nantes)	2019-08-01 14:20:00	2019-07-28 00:00:00	2019-08-01 00:16:00	FRDKK (Dunkerque)	N/A	GBSOU (Southampton)	2019-08-03 07:00:00	99999	SLI
FRDKK (Dunkerque)	2019-07-25 11:05:00	2019-07-23 13:00:00	2019-07-25 01:00:00	FRURO (Rouen)	N/A	FRMTX (Montoir-de-Bretagne)	N/A	11	SLI

# Positions + voyage information



# Positions + International Ship and Port Facility Security (ISPS) Code data

The screenshot shows a mobile application interface with a map of Europe. A data popup is displayed over the map, showing details for a vessel named 'KAREN C'. The popup has a blue header with a green checkmark, the vessel name 'KAREN C', and the description 'General cargo/multipurpose'. Below the header, there are tabs for 'General', 'SSN', 'Voyage information', 'HAZMAT', 'Waste', 'Security', and 'MRS'. The 'Security' tab is selected, showing a 'Summary' section with 'CURRENT SECURITY LEVEL' as 'SL1'. Below this is an 'Agent Identification' section with a table of contact information. A 'More Information' button is located at the bottom of the popup. The map in the background shows parts of France, Spain, and Andorra, with various cities and roads labeled. A 'Filter Out Activated' button is visible in the top right corner of the map area.

**KAREN C**  
General cargo/multipurpose

2019-09-05 21:53:16

General SSN

Voyage information HAZMAT Waste **Security** MRS

Summary

**CURRENT SECURITY LEVEL**  
SL1

Agent Identification

PHONE	NAME	E-MAIL
00447951712160	MR. ANGUS TAPP	N/A

FAX  
N/A

More Information

# Positions + Port State Control

**KAREN C**  
General cargo/multipurpose  
2019-09-05 21:53:16

**MMSI** 235077715  
**SOURCE** T-AIS  
**IR** N/A  
**HEADING** 203°

**LATITUDE** 45°37'38"N  
**LONGITUDE** 006°56'01"W  
**SPEED** 4.58 m/s  
**FLAG** United Kingdom (GB)

**NAVIGATIONAL STATUS** Under way using engine  
**TYPE DESCRIPTION** General cargo/multipurpose  
**TRUE HEADING** 206°

Filter Out Activated

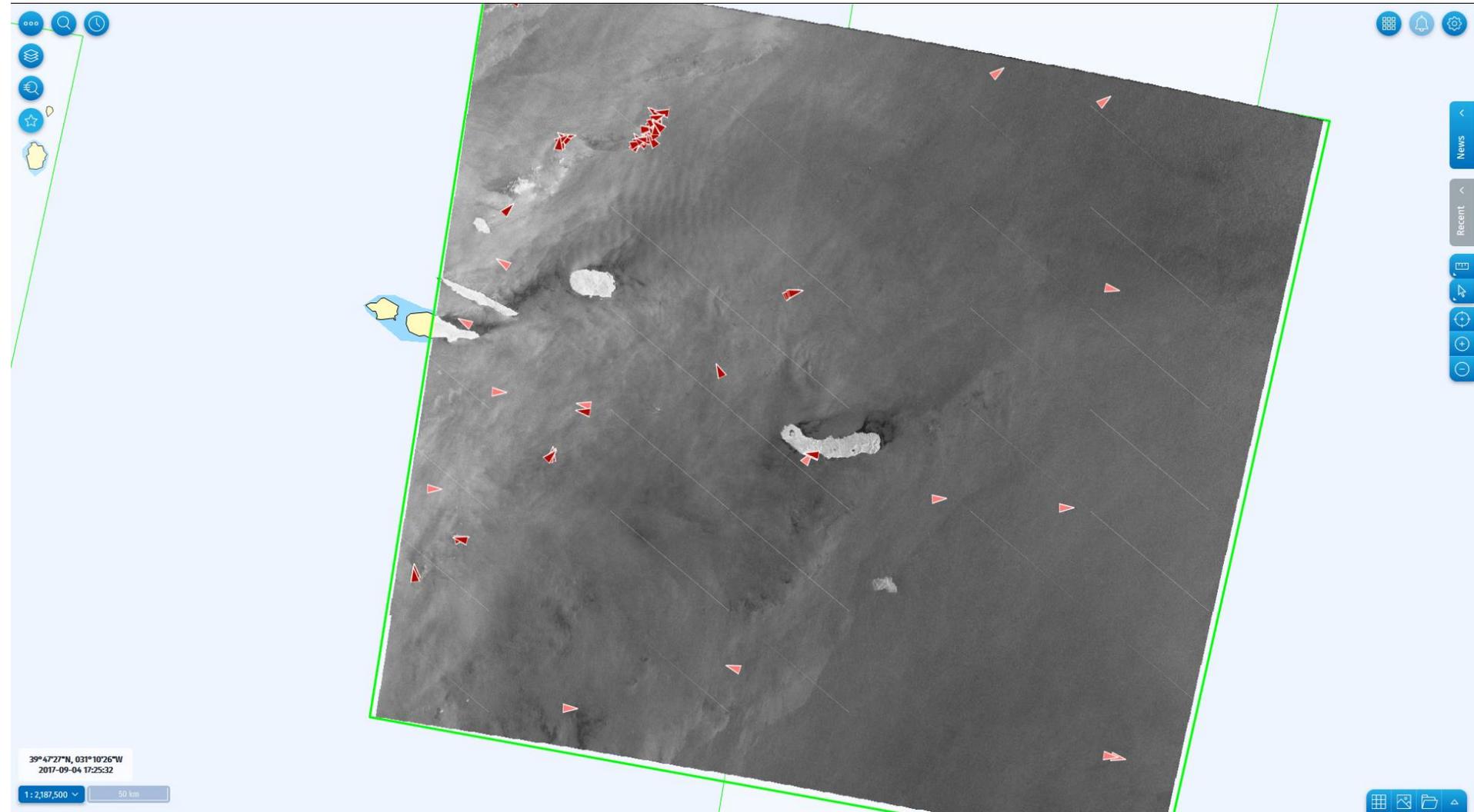
Vessel Voyages #KAREN C Inspection on KAREN C

Place of Inspection, Inspection I...

Number of inspections: 6

PLACE OF INSPECTION	INSPECTION ID	DATE OF FINAL VISIT	DATE OF FIRST VISIT	INSPECTION TYPE	NR. OF DEFICIENCIES	REPORTING AUTHORITY	DETAINED	DURATION OF DETENTION
ESCEU	321322006	2014-03-31 01:00:00	2014-03-31 01:00:00	More detailed inspection	N/A	Spain (ES)	No	N/A
CYVAS	406178972	2015-03-17 00:00:00	2015-03-17 00:00:00	Initial inspection	N/A	Cyprus (CY)	No	N/A
PTLIS	498713770	2016-01-22 00:00:00	2016-01-22 00:00:00	Initial inspection	N/A	Portugal (PT)	No	N/A
HRSPU	619618056	2017-01-26 00:00:00	2017-01-26 00:00:00	Initial inspection	2	Croatia (HR)	No	N/A
ESCEU	742030824	2018-02-08 00:00:00	2018-02-08 00:00:00	More detailed inspection	1	Spain (ES)	No	N/A
IEORK	1137564295	2019-01-02 00:00:00	2019-01-02 00:00:00	Initial inspection	N/A	Ireland (IE)	No	N/A

# Correlated and non-correlated targets



# Location and Organisation data

**Barbate de Franco**

List Vessels in Port  
List Expected Arrivals  
List Recent Departures  
List Port Facilities

LOCODE **ESBDF**  
Location Name **Barbate de Franco**  
Country **Spain (ES)**

<b>NAME</b> Barbate de Franco	<b>LOCODE</b> ESBDF	<b>IN SECA</b> N/A
<b>LOCATION NAME</b> Barbate de Franco	<b>TYPE</b> UNECE	<b>EU BORDER INSPECTION POST</b> N
<b>ALTERNATIVE NAME(S)</b> N/A	<b>FUNCTIONS</b> Port; Road terminal	<b>TRANSHIPMENT PORT</b> N
<b>COUNTRY</b> Spain (ES)	<b>LAST UPDATED ON</b> 2017-09-27 11:48:35	

1/2

**MRCC Tarifa**

List of duties

**Organisation ID** : ORG\_ES97321  
**Local Language Name** :  
**Function** : Authority; USER\_ORG  
**Location** : ESTRF (Tarifa)  
**Last Updated On** : 2019-08-27 13:10:54

<b>ORGANISATION ID</b> ORG_ES97321	<b>LOCATION</b> ESTRF (Tarifa)	<b>DEPARTMENT ADDRESS</b> Monte Camorro, 11380 Tarifa
<b>ORGANISATION NAME</b> MRCC Tarifa	<b>LATITUDE</b> 36°00'51"N	<b>FUNCTION</b> Authority; USER_ORG
<b>LOCAL LANGUAGE NAME</b> N/A	<b>LONGITUDE</b> 005°36'15"W	<b>LAST UPDATED ON</b> 2019-08-27 13:10:54
<b>COUNTRY</b> Spain (ES)		

Mandatory Reporting Systems (MRS)

Terrestrial AIS from Member States

EU port calls

Voyage information

International Ship and Port Facility Security (ISPS)

Port State Control (PSC)



# Location of ships with certain attributes

Ship, Location, IMO...

**LAYERS**

- My Filters
- Projections
- Base Layers
- PLACEMARKS
- VESSELS
- PORTS AND OFFSHORE INSTALLATIONS
- ORGANISATIONS
- EO DATA
- METOCEN
- AREAS
- ALERTS
- AOI

**VESSELS**

- Symbology
- Positions
- Tracks

**POSITIONS**

- Voyage Information
- Position Source
- Vessel Flag
- Vessel Type (PSC Types)
- Navigation Status (AIS)
- User Risk Status
- Favourites

**NAVIGATION STATUS (AIS)**

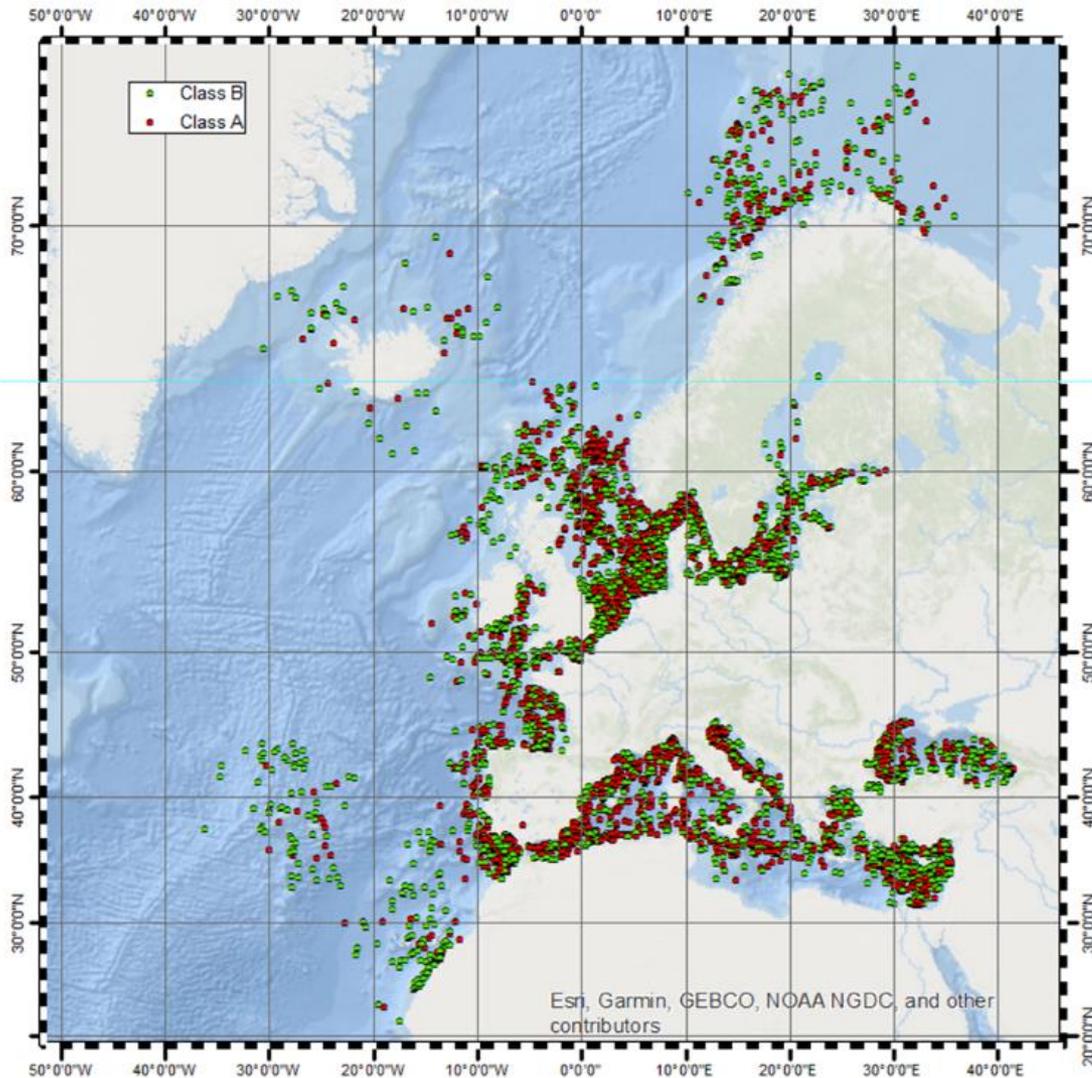
- Under way using engine
- At Anchor
- Not under Command
- Restricted manoeuvrability
- constrained by her draught
- moored
- aground
- engaged in fishing
- under way sailing
- other
- N/A

## Black List

RANK	FLAG
<b>BLACK LIST</b>	
61	Belize
62	Cook Islands
63	Vanuatu
64	Cambodia
65	Saint Kitts and Nevis
66	Sierra Leone
67	Ukraine
68	Palau
69	Moldova, Republic of
70	Tanzania United Rep.
71	Togo
72	Comoros
73	Congo, Republic of the

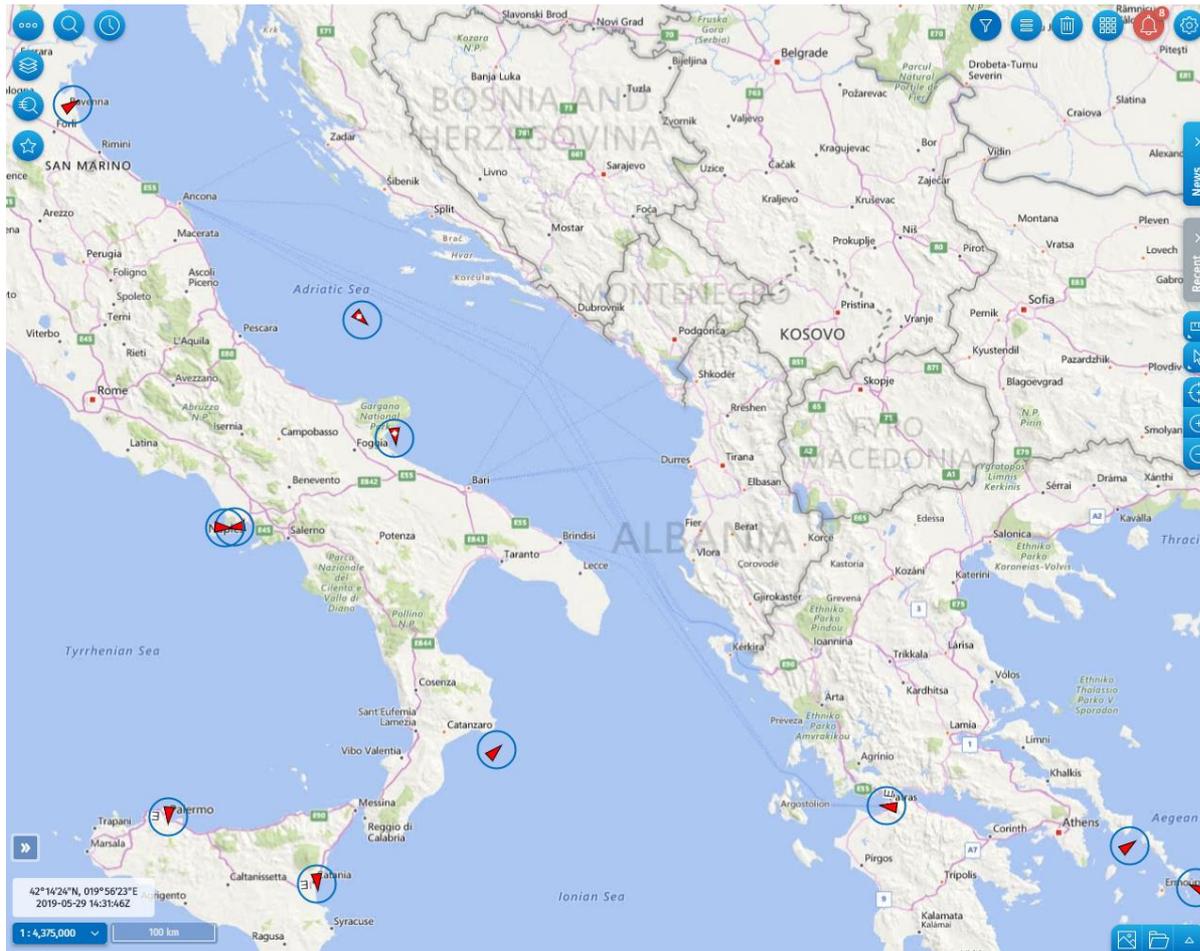
Map showing the location of ships with certain attributes (Black List) in the Mediterranean region. The map displays various countries and seas, including the Adriatic Sea, Tyrrhenian Sea, and Ionian Sea. Ship locations are marked with blue and red circular icons.

# Oil Spills - locations

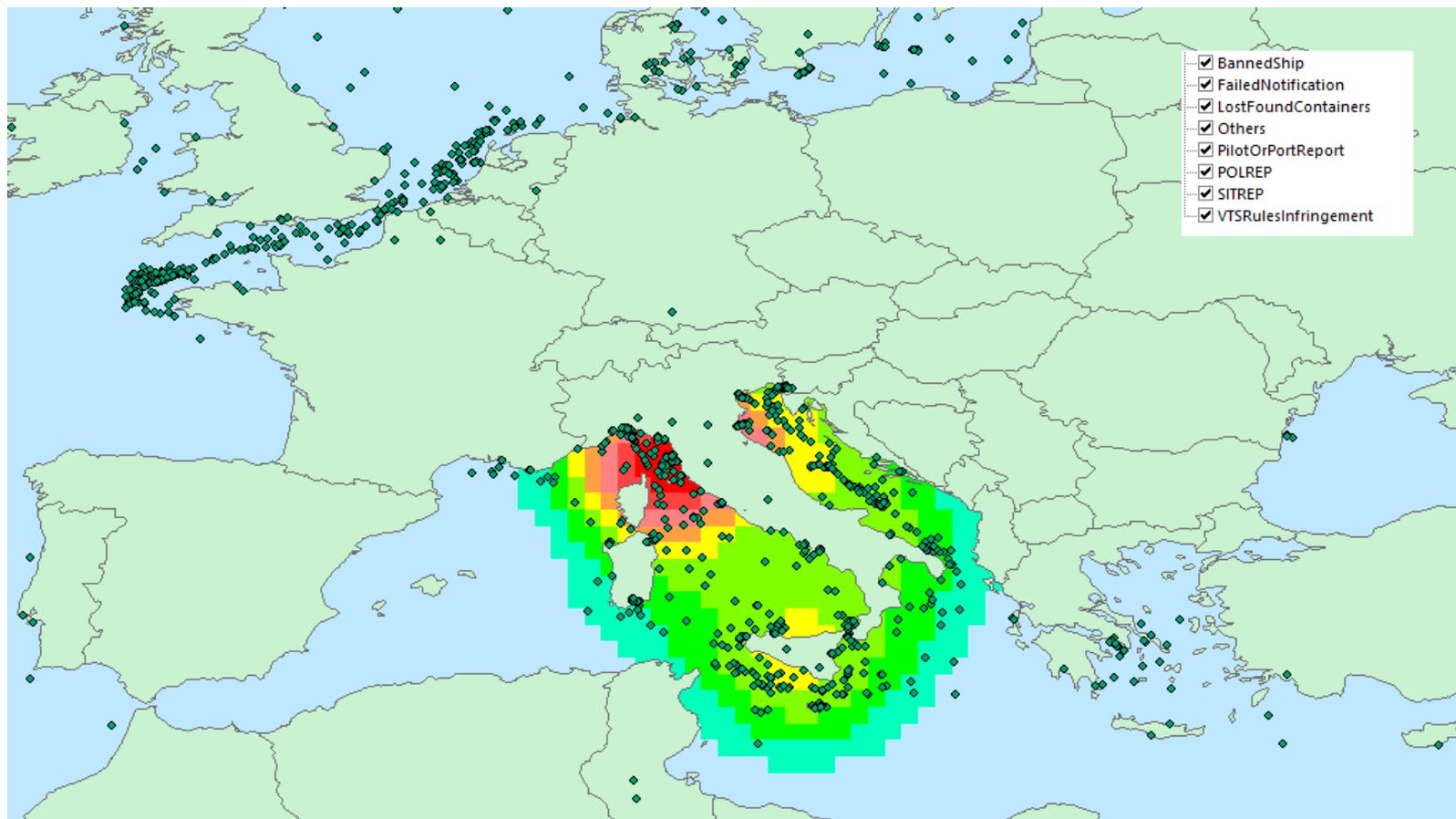


- Class A – (2018 results: 3104) – the detected spill has a **higher** detection confidence level (2017 results: 2416)
- Class B – (2018 results: 3023) - the detected spill has a **lower** detection confidence level (2017 results: 2374)

# SSN incidents (all types) – ships' latest positions



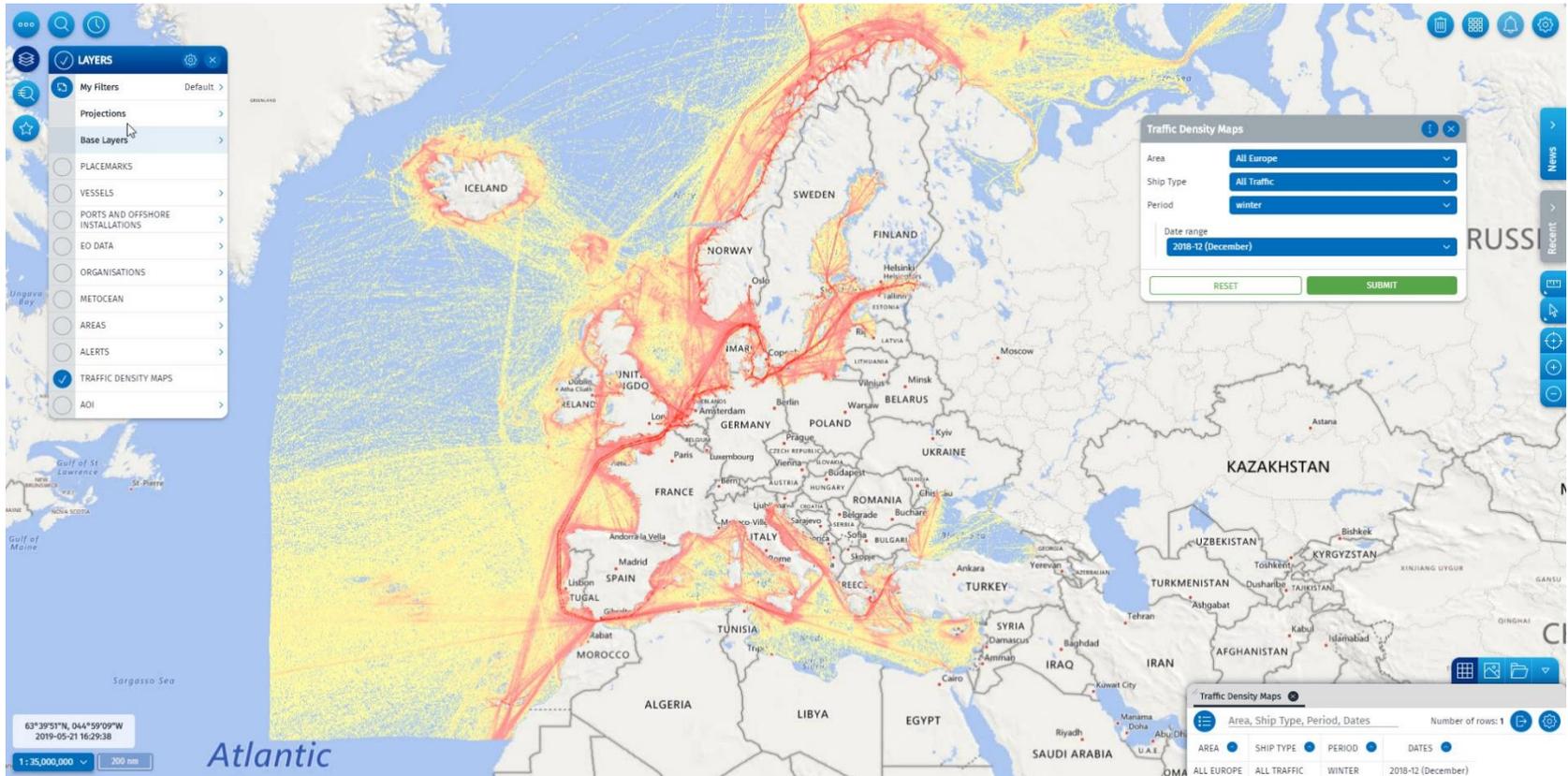
# SSN incidents (all types) 2018



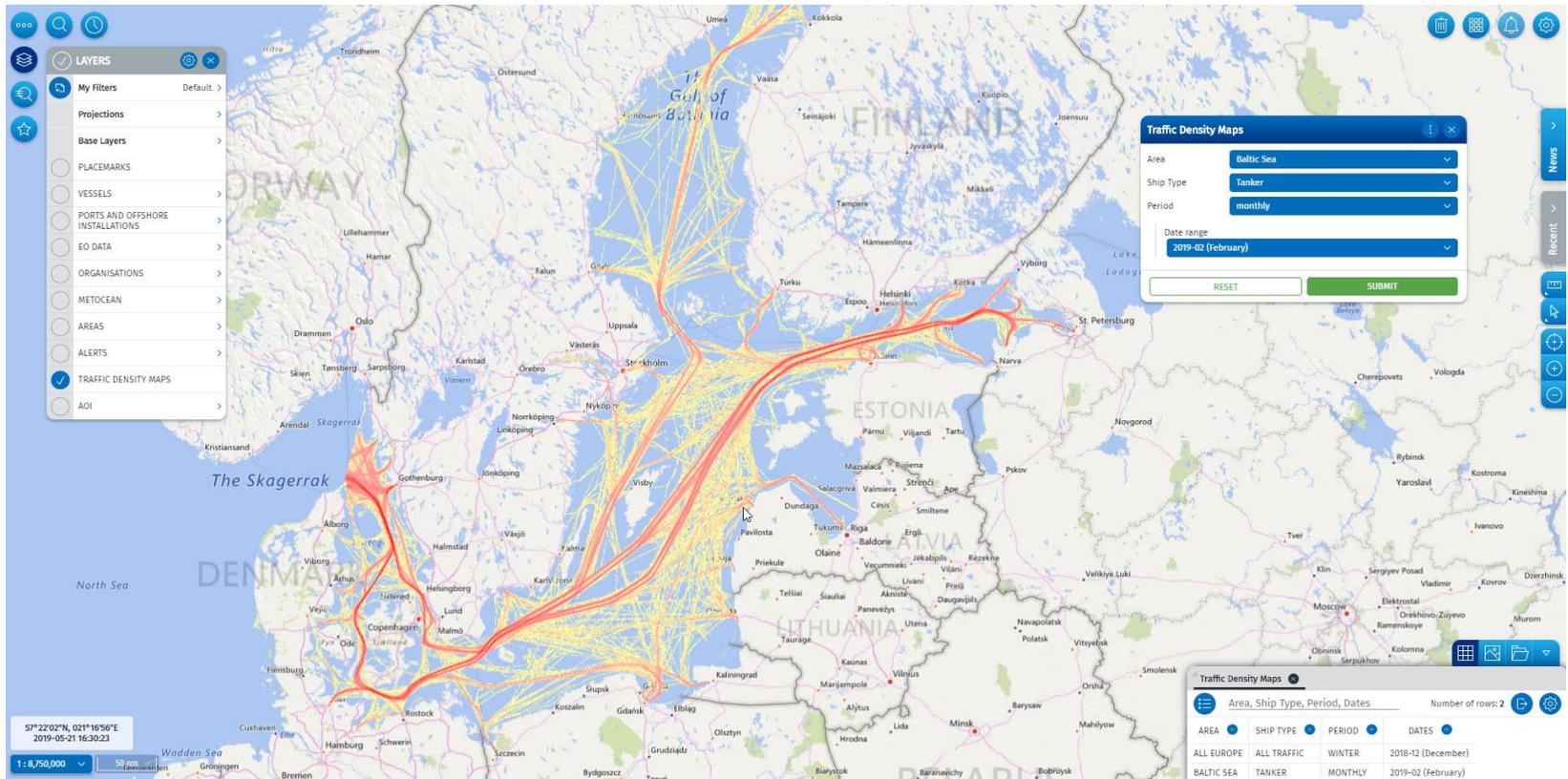
# Off shore wind farms, EO data, Vessels



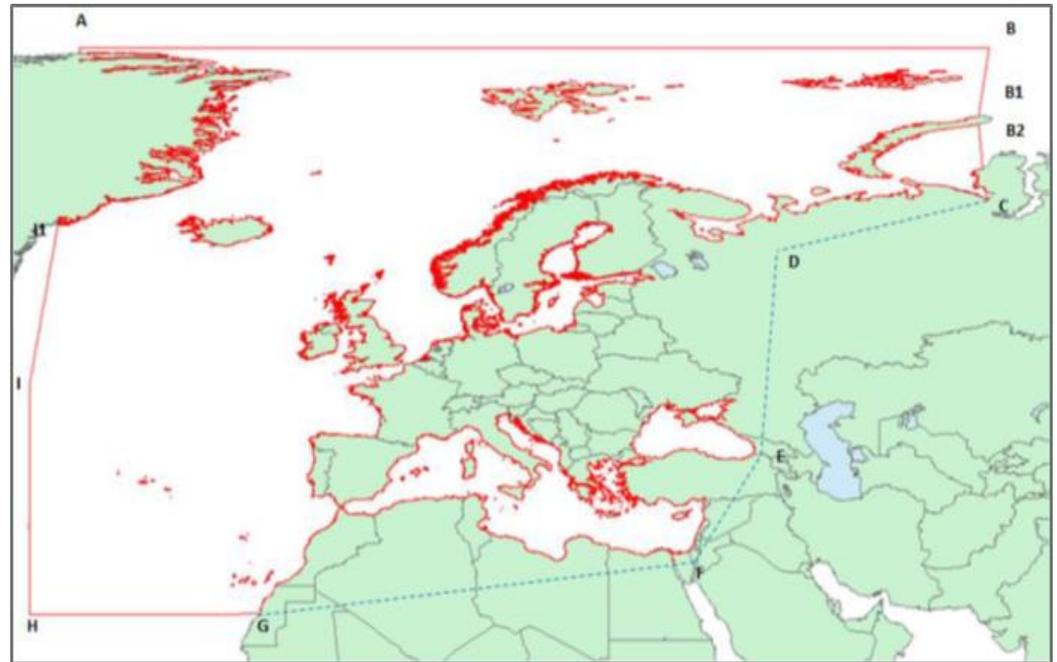
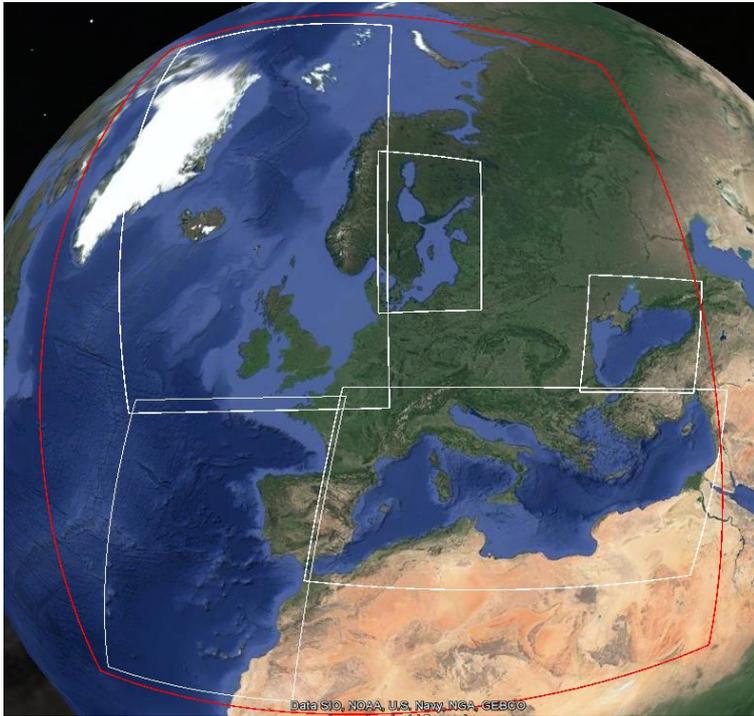
# Traffic density – support to FSA



# Traffic density - example

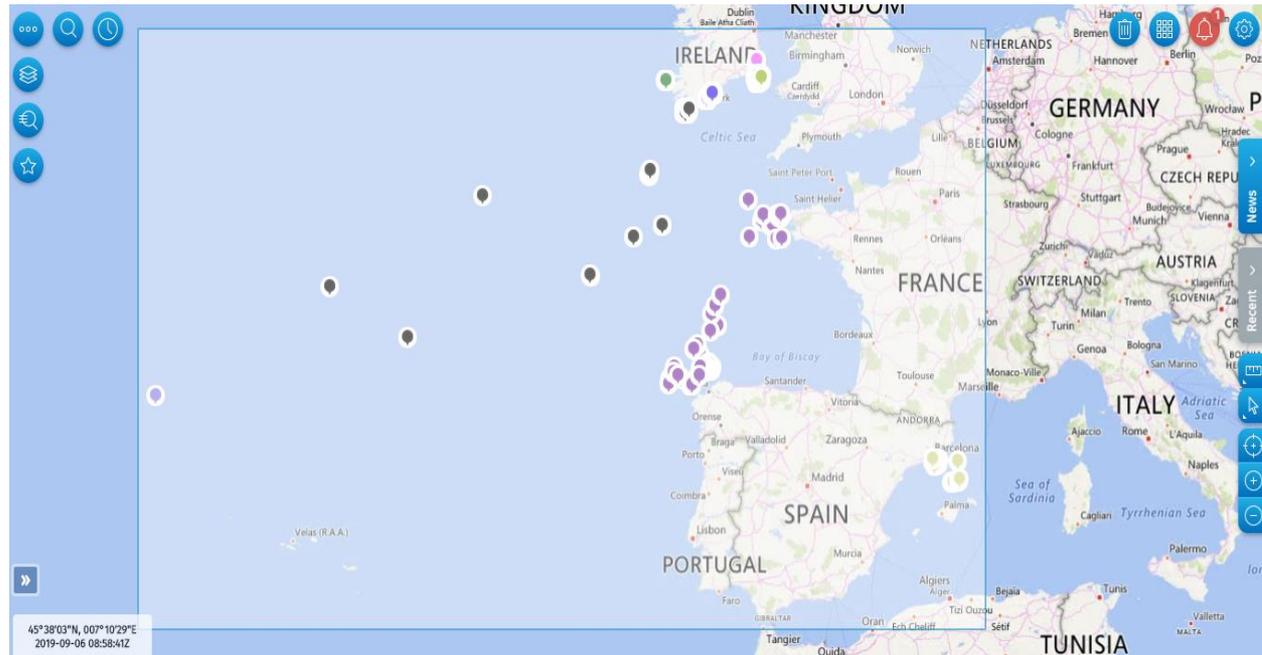
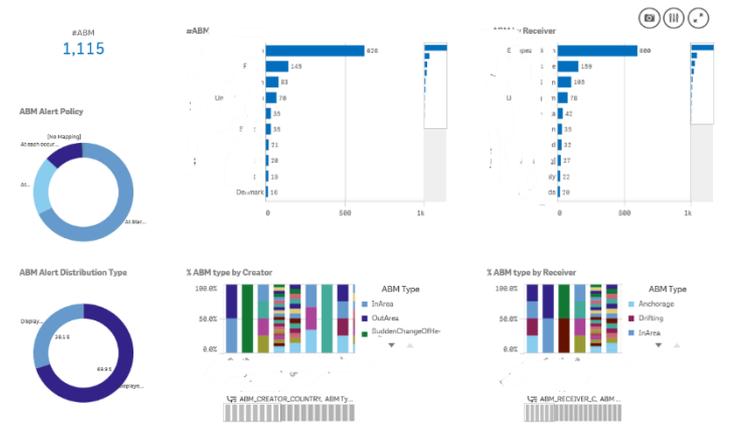


# Areas



ABM alerts used as input analytical tool;  
Identifying key areas with certain events:

e.g. drifting



## Black flag ships around EU

- Vessel is within EU and neighborhood areas;
- and
- Flag is "Black" according to the latest PSC classification.

## Black flag ships not reporting regularly around EU

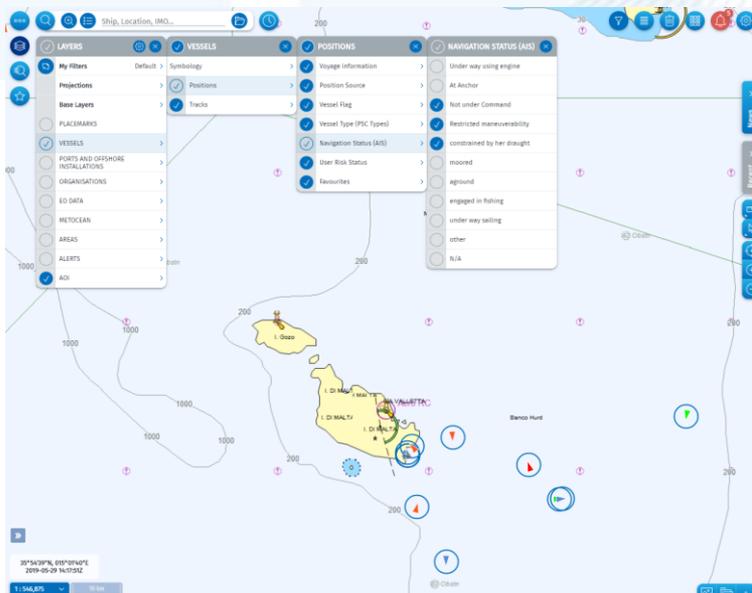
- Vessel is within EU and neighborhood areas;
- and
- Flag is "Black" according to the latest PSC classification;
- and
- There is a gap of more than 8 hours in the positions reporting.

## Drifting ships in key EU areas

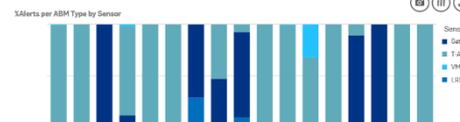
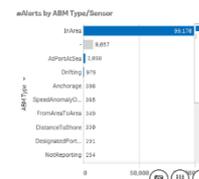
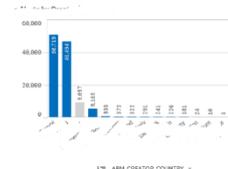
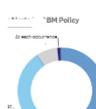
- Vessel is within EU and neighborhood areas;
- and
- Vessel was drifting in the last week.

## Not Under Command ships in key EU areas

- Vessel is within EU and neighborhood areas;
- and
- Vessel had 'Not Under Command' navigational status reported in the last week;
- and
- Vessel had frequent course and speed changes over last 24 hours;
- or
- Vessel was drifting in the last week.



113,637



New technologies, 'big data' processing as well as the supervised and unsupervised 'Machine or Deep Learning' techniques could be used on vessel positions data to decrease investigation time and increase awareness of potentially anomalous situations.

Information services should be expanded to analyse data and identify trends and risks to support safety, security and sustainability.

Usage of historical and combined ABMs should support assessment of risks, safety-related profiling of vessel or areas.



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European Maritime Safety Agency