



**Marine Cluster
Bulgaria**



**Nikola Vaptsarov
Naval Academy**

**Scientific approaches in support of port
activities -
Current states and perspectives**



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Marine cluster Bulgaria acts towards the creation of favorable conditions for the development and **enhancement of the competitiveness** of the blue economy by introducing **new organizational, productional, marketing and technological solutions**. It also works towards the **implementation of the best practices**, as well as **the unification of the efforts of the maritime business, education and science organizations**.

Nikola Vaptsarov Naval Academy is the leading Bulgarian **educational and research organization**. The Academy educates maritime personnel for **all maritime branches** and provides **scientific support** for the transformation and development of the maritime industry.

Business, education and science act together towards improvement of the quality and efficiency of port services and the development of port technologies, which are of crucial importance for all port users.



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Capacity for scientific support of port activities:

1. Informational support of coastal zone management.
2. Port and ship modelling.
3. Simulation of processes related to port activities (Liquid Cargo Handling).
4. Simulation of ship maneuvering.
5. Simulation of hydro-meteorological conditions.
6. 3-D modelling.
7. Disaster response (Oil Spill Response).
8. Traffic assessment.
9. Assessment of the impact of hydro-meteorological factors.
10. Environmental (water quality) assessment.
11. Hydroacoustic monitoring (noise pollution and seabed).
12. Environmental assessments of the impact of projects on the environment.
13. Port security.



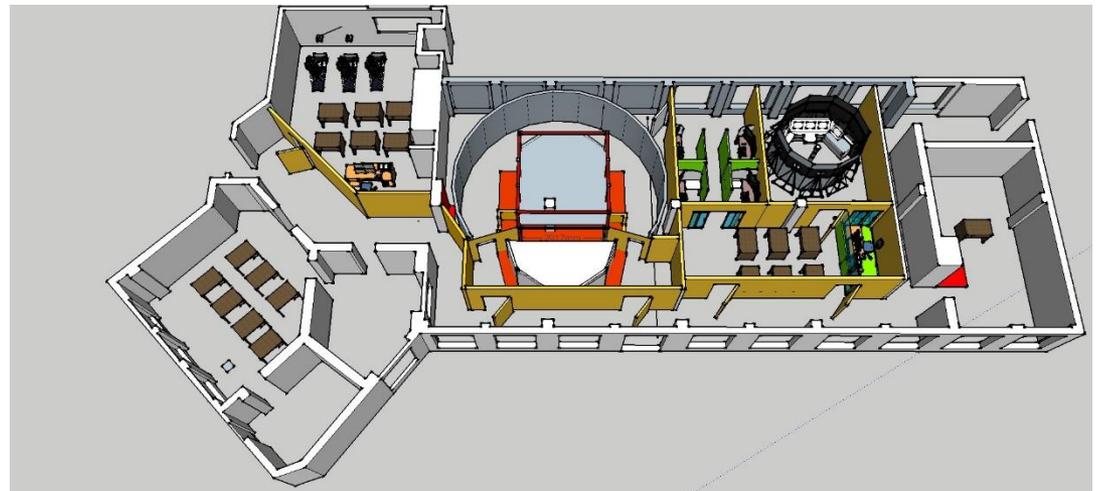
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Integrated Informational Center in Support of Coastal Zone Management





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- ▶ Port creation tool
- ▶ Ship creation tool

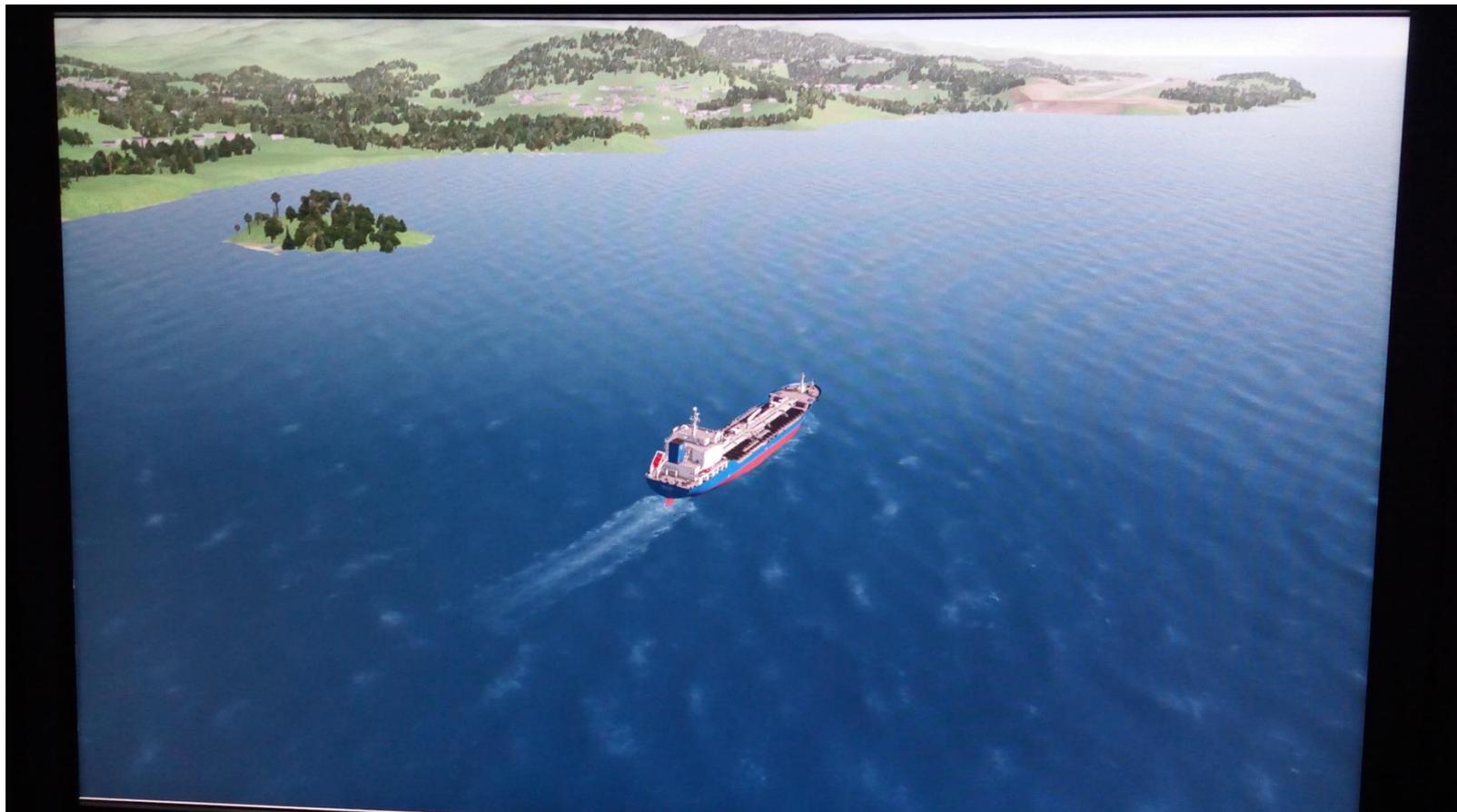




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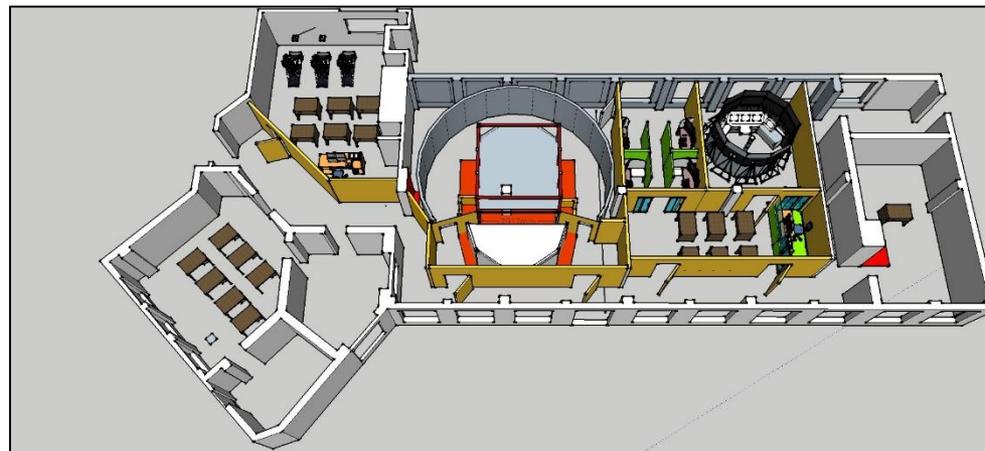


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Liquid cargo handling module





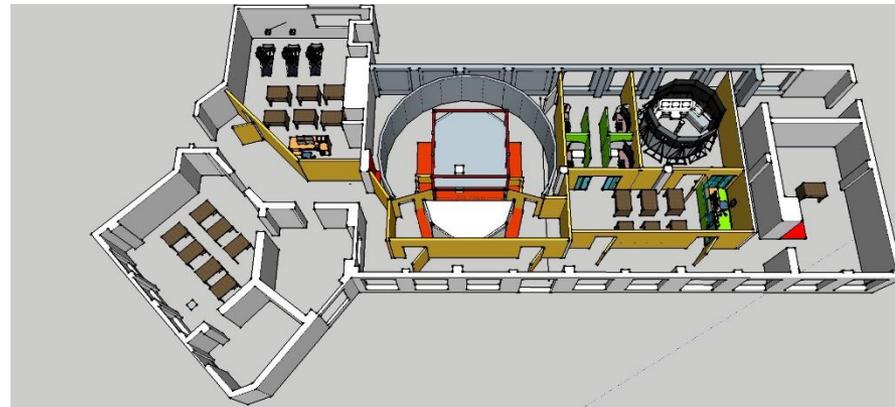
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Ship maneuvering module

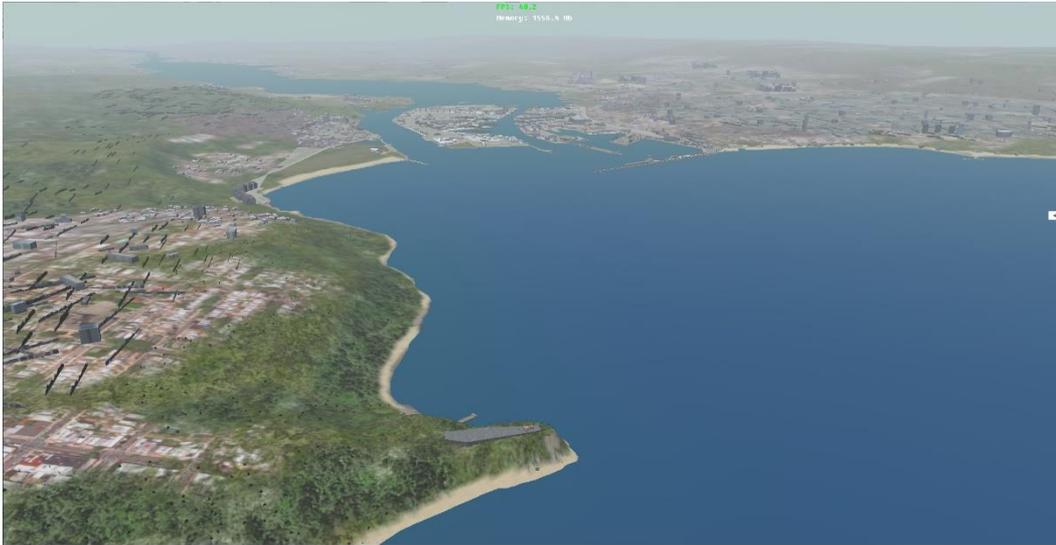




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3D Visualizations
of ports Varna &
Burgas

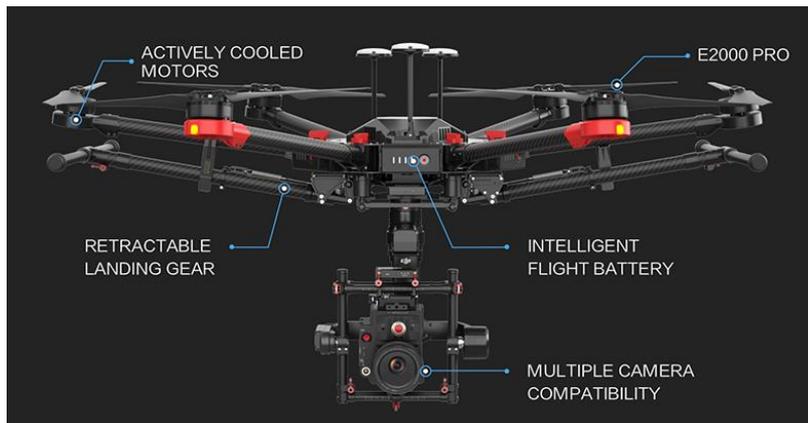




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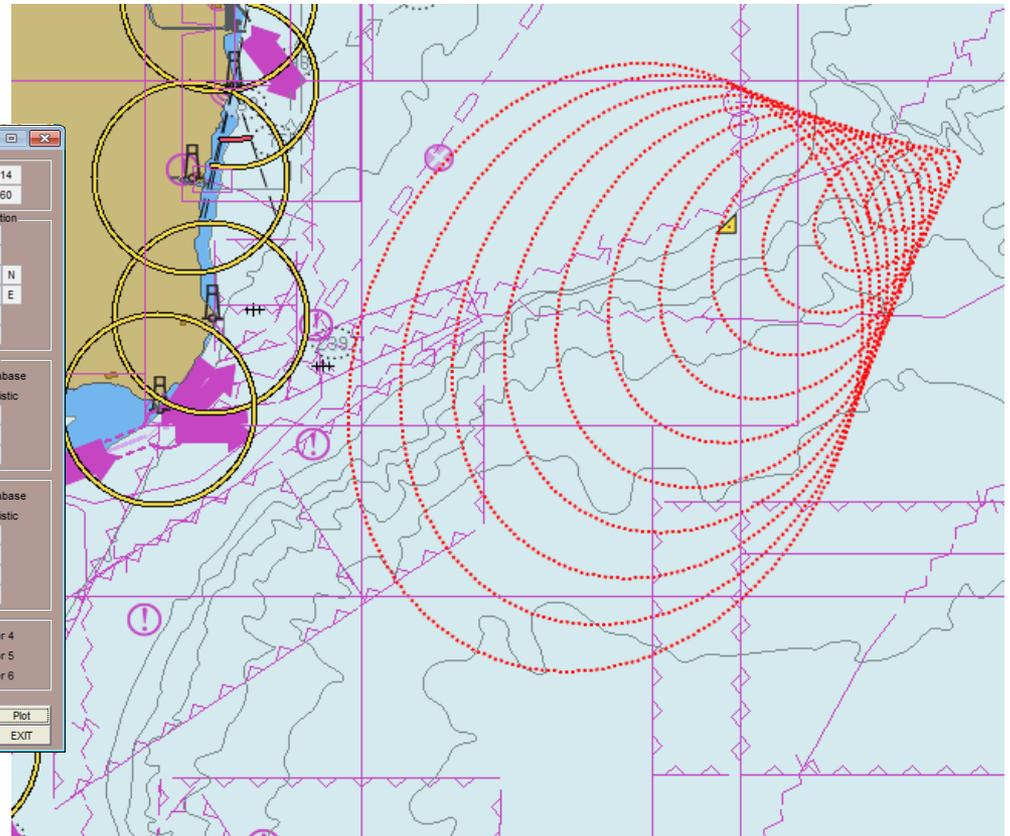
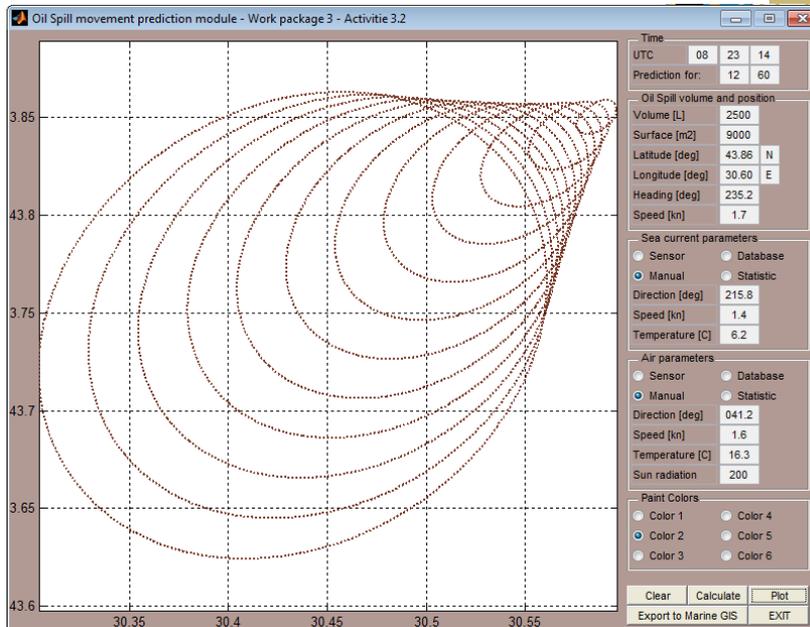


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Main operational center



Information layer Oil Pollution and Oil Spill Response Marine Maps





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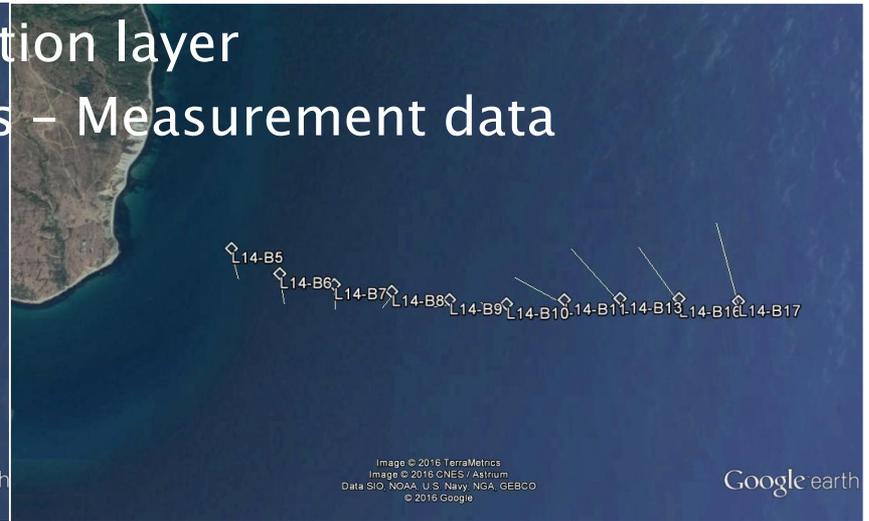
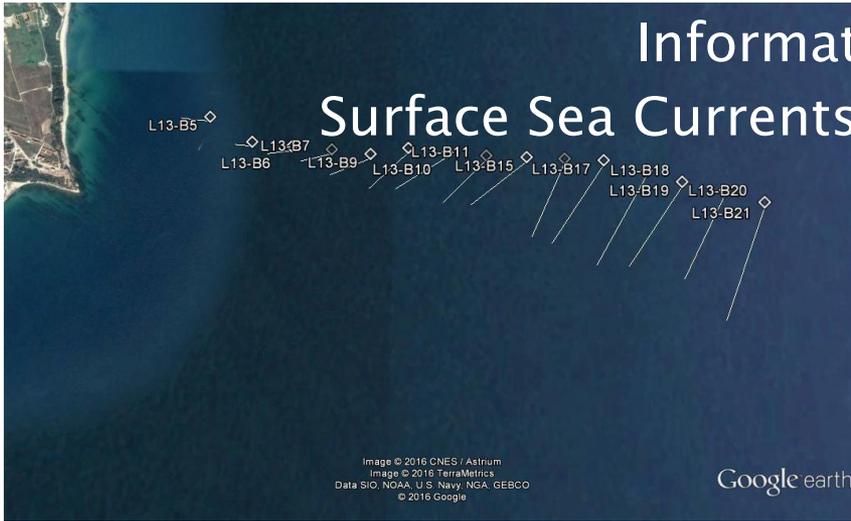
Elaboration of a model of the oil spill monitoring and movement prediction module in 3D visualization





Information layer

Surface Sea Currents – Measurement data





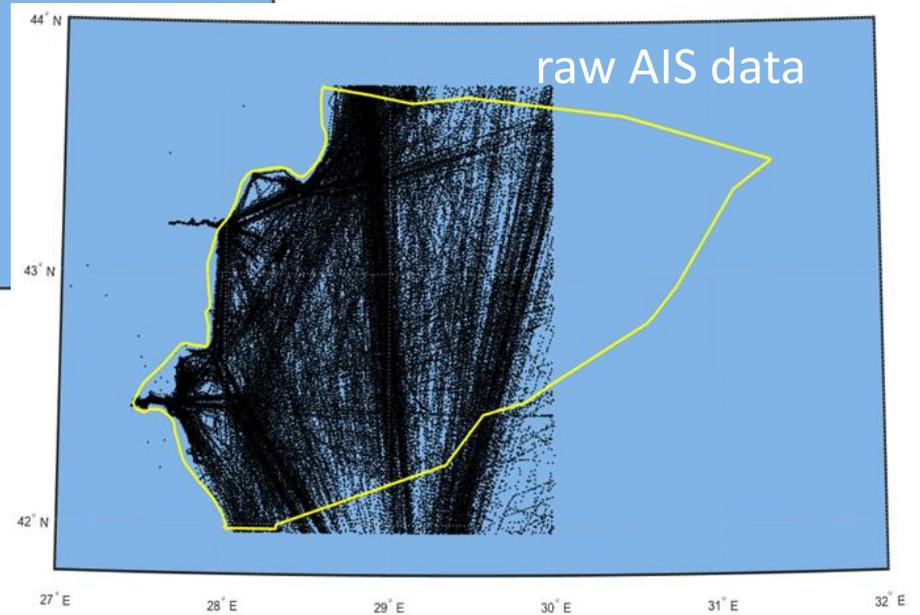
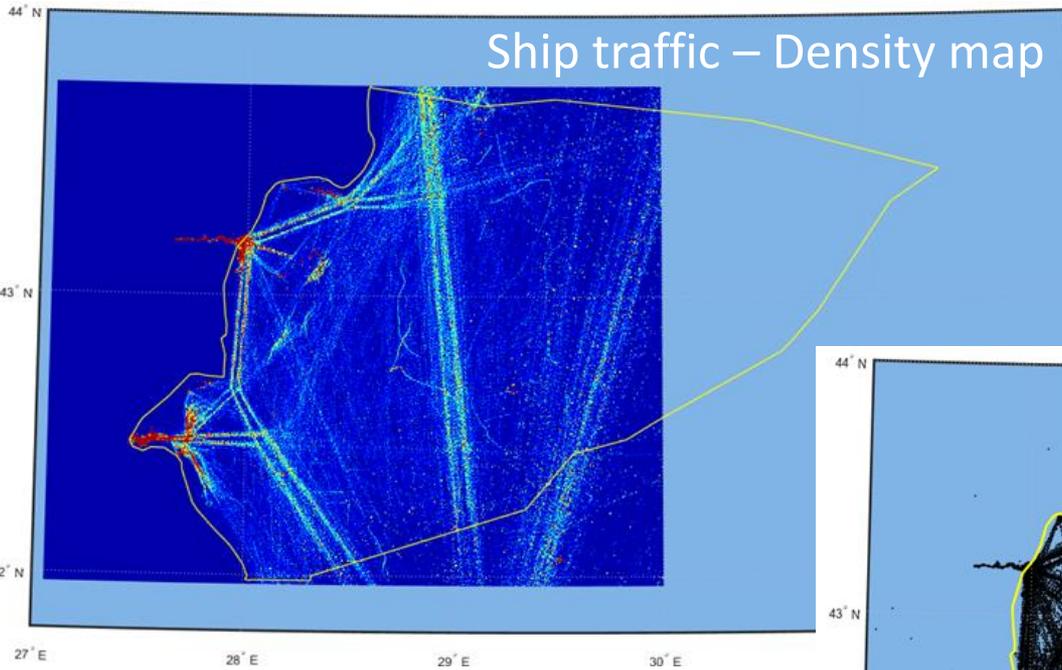
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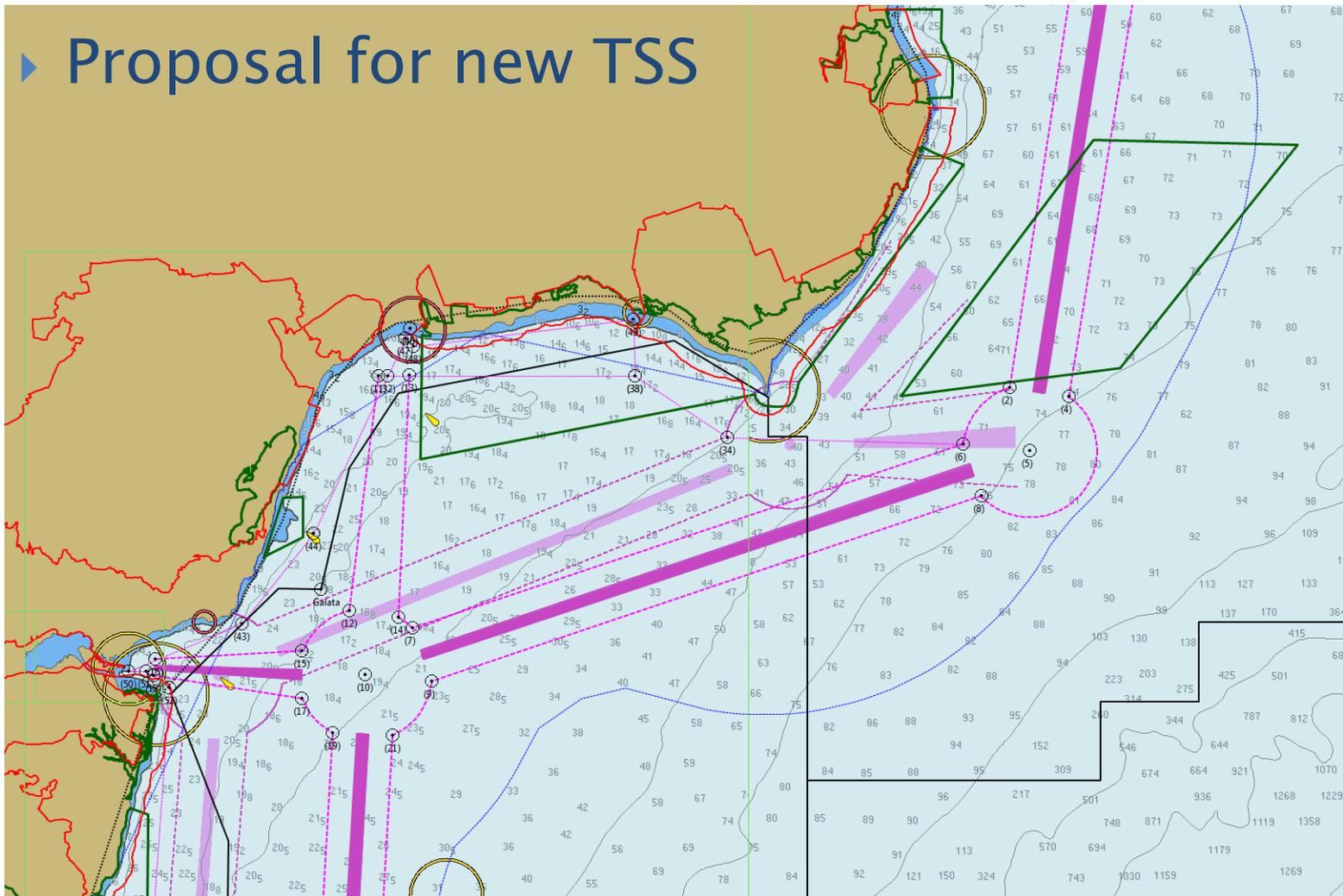
Tangible assets







► Proposal for new TSS

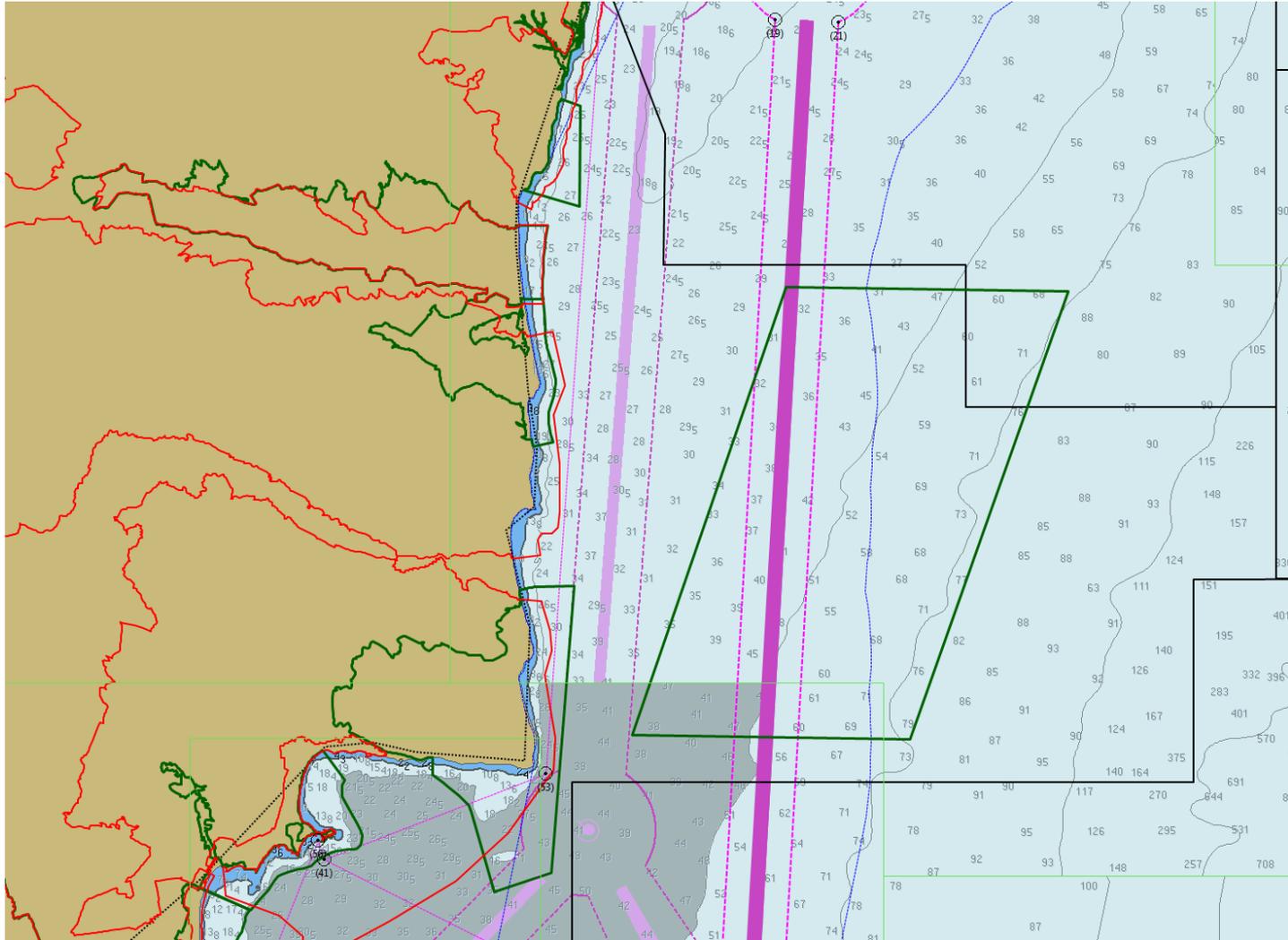




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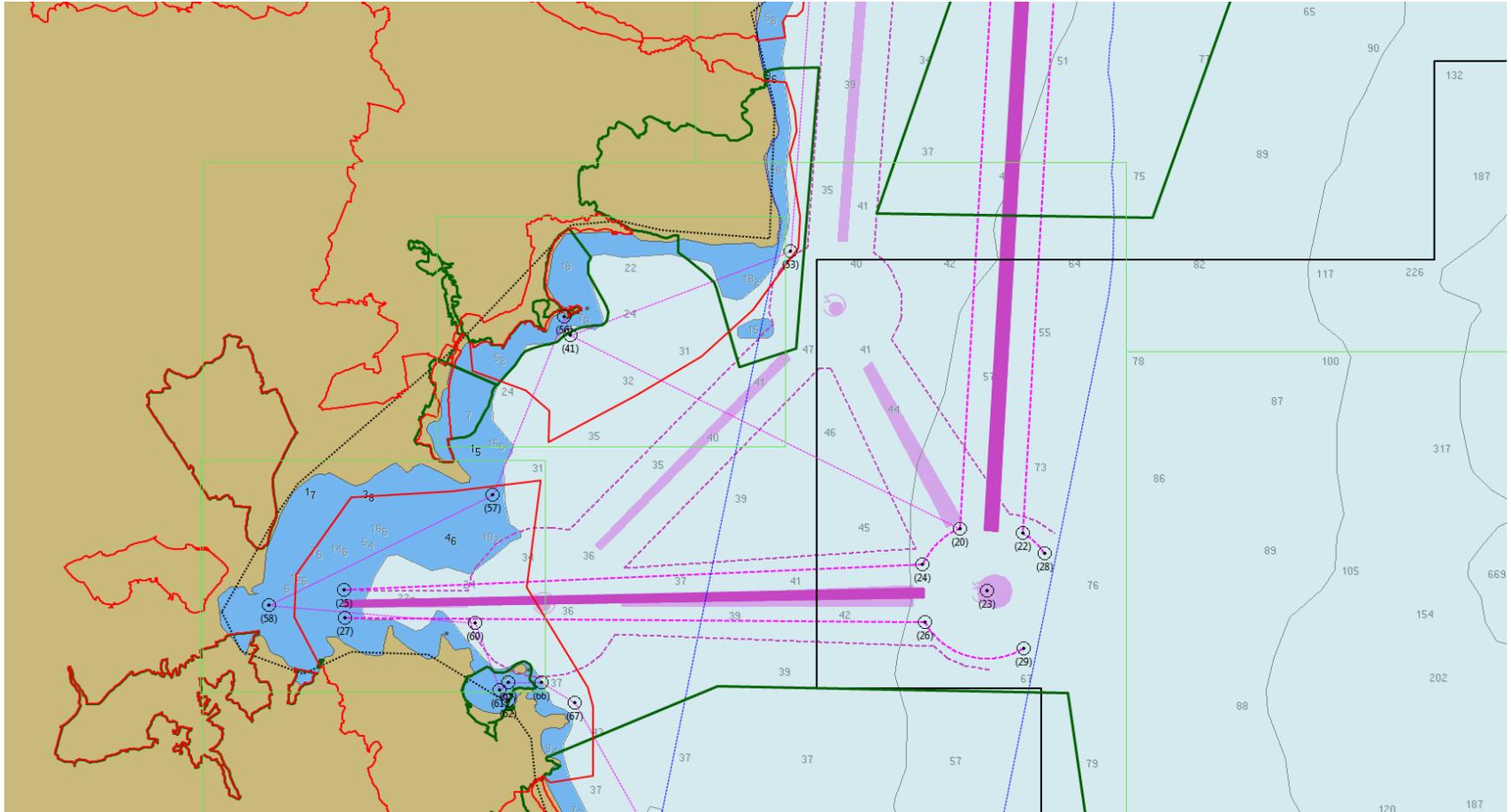




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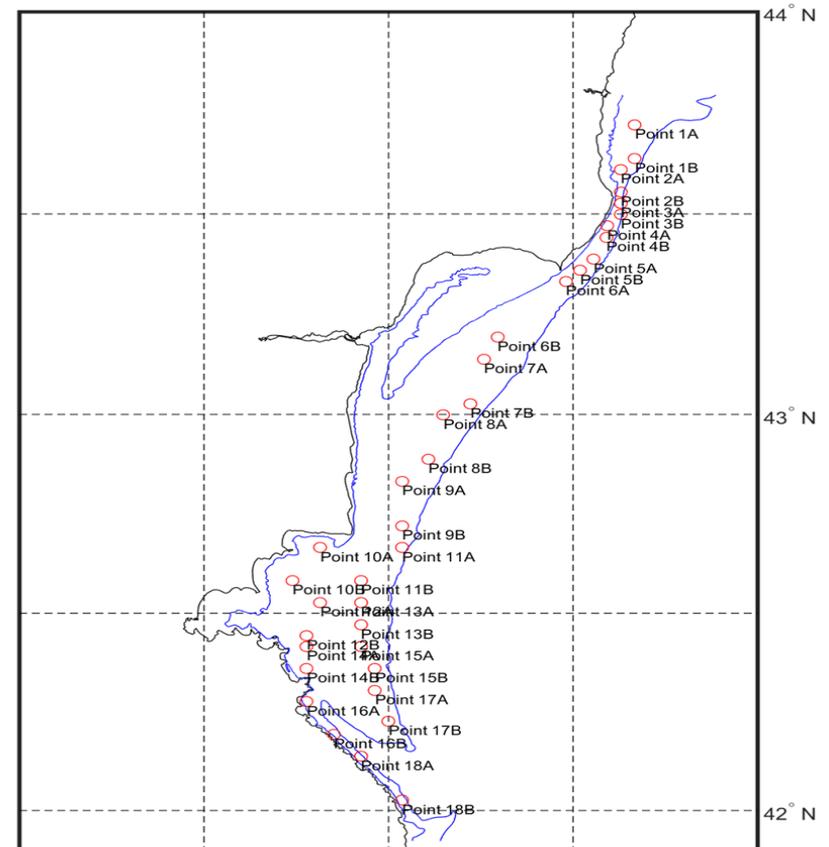
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Our research

- Bulgarian Black sea coast
- 18 areas
- 36 points
- Between the depths of 20m and 50m

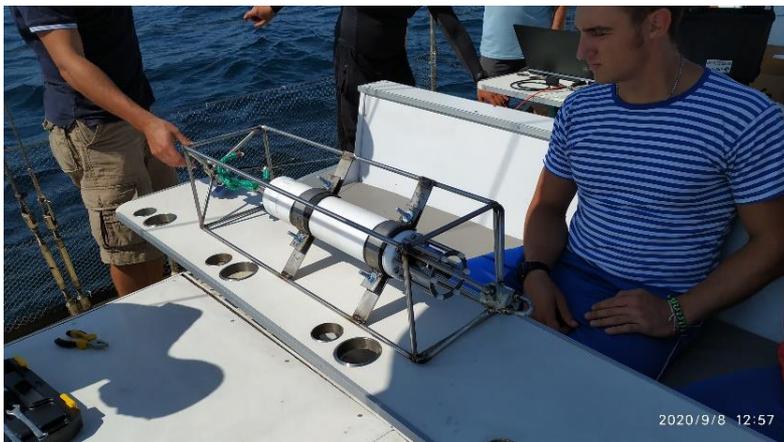
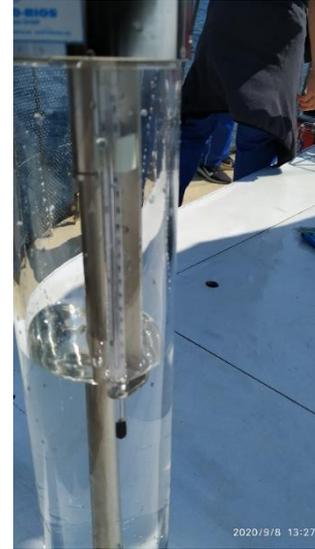




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Laboratory for ballast water management and oil spill pollution control

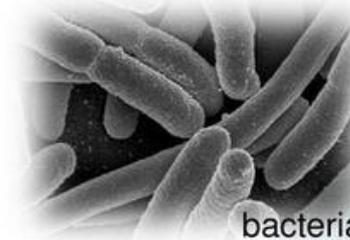
Capacity to carry out a wide range of analyzes in response to the requirements of different national regulations, European directives and international conventions



Laboratory for ballast water management and oil spill pollution control

Ballast Water Management Convention

Size Class	D2 Standard	Test Method
> 50 μm	<10 viable organisms per m^3	Laboratory
10-50 μm	<10 viable organisms per mL	Lab & On-board
<i>Vibrio cholerae</i>	<1 colony forming unit (cfu) per 100 mL	Lab & On-board
<i>E.coli</i>	<250 colony forming unit (cfu) per 100 mL	Lab & On-board
<i>Intestinal Enterococci</i>	<100 colony forming unit (cfu) per 100 mL	Lab & On-board



Project "SCience and Information towards Regional Environmental Action for the Black Sea (SCIRENA–Black Sea)"

1. Biological diversity 	2. Non-indigenous species 	3. Population of commercial fish/shellfish 	4. Elements of marine food webs 
5. Eutrophication 	6. Sea floor integrity 	7. Alteration of hydrographical conditions 	8. Concentrations of contaminants 
Good Environmental Status	9. Contaminants in fish/seafood for human consumption 	10. Marine litter 	11. Introduction of energy including underwater noise 

Descriptor	MSFD Monitoring Programme	Key Findings Progress toward GES	Key Findings Progress toward targets
D10	Marine litter	Partial coverage	Coverage
D11	Energy, including underwater noise	No GES	No targets



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Scientific approaches in support of port activities - perspectives

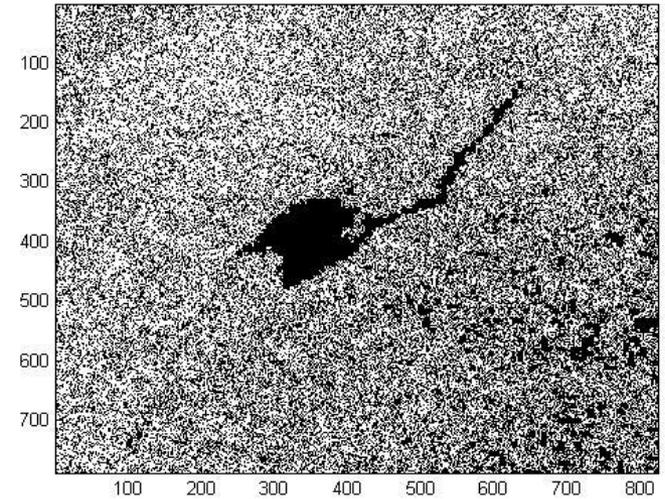
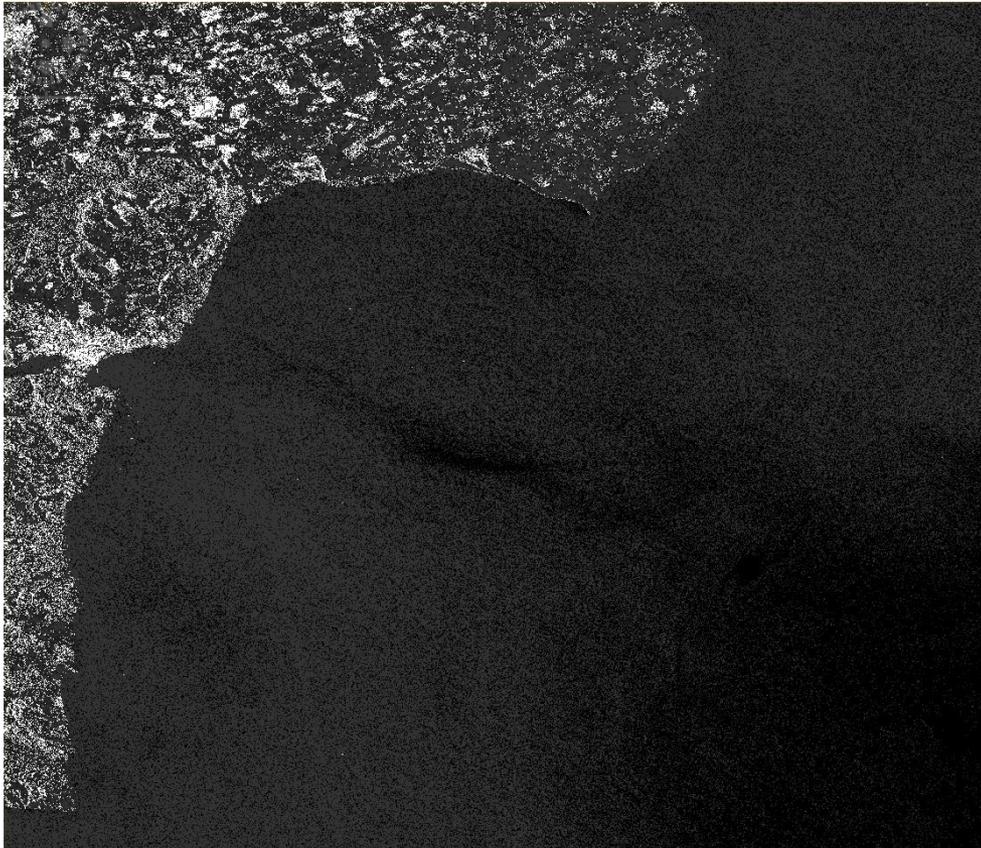


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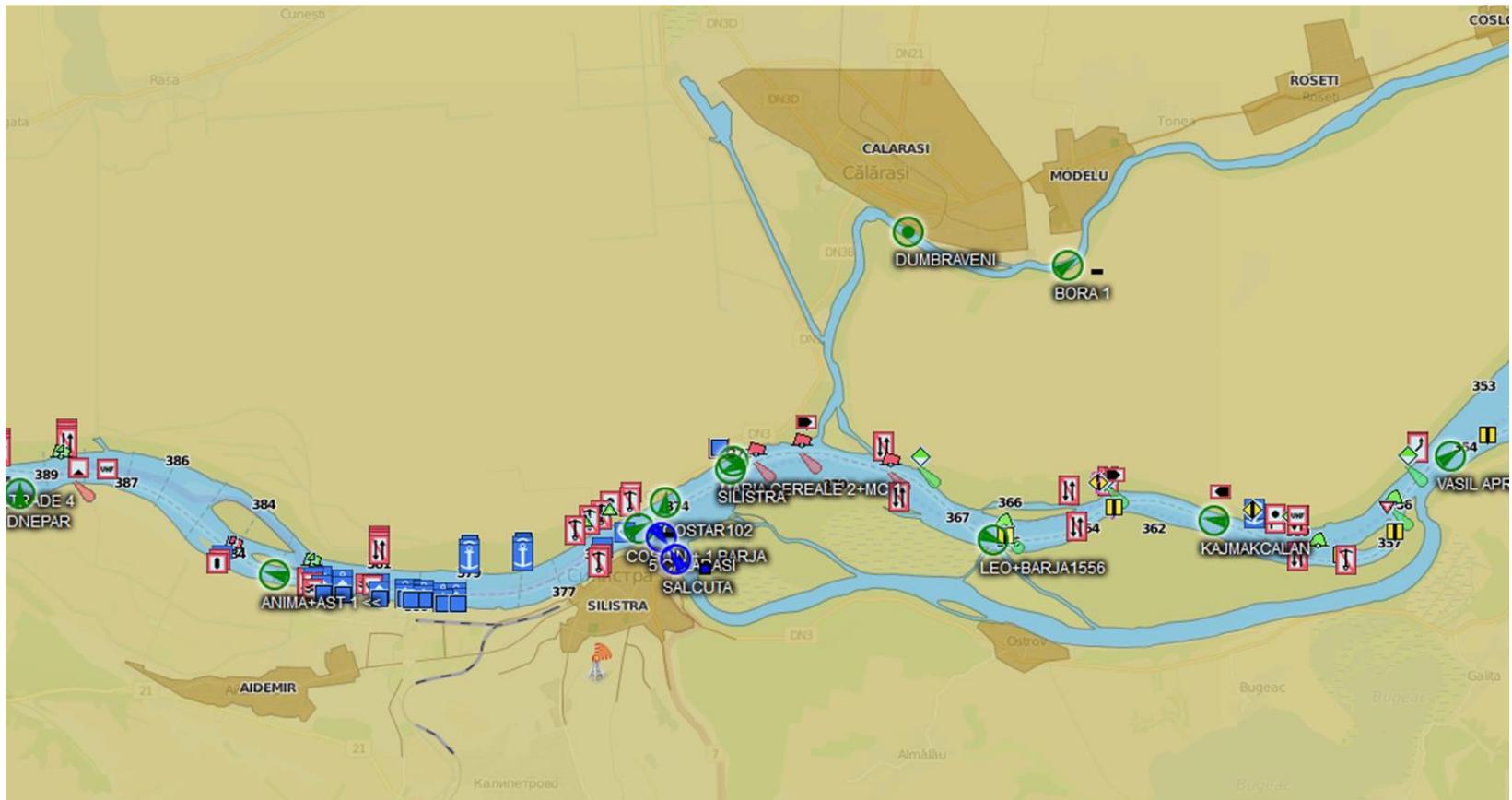
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Future evolution – Integration (Center for space observation)





Future evolution – Integration with BULRIS





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Future evolution – 3D Visualization of Danube River





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Future evolution – Oil Spill Monitoring and Response in Danube River and ports

FPS: 16.0





Future evolution – Flooding assessment



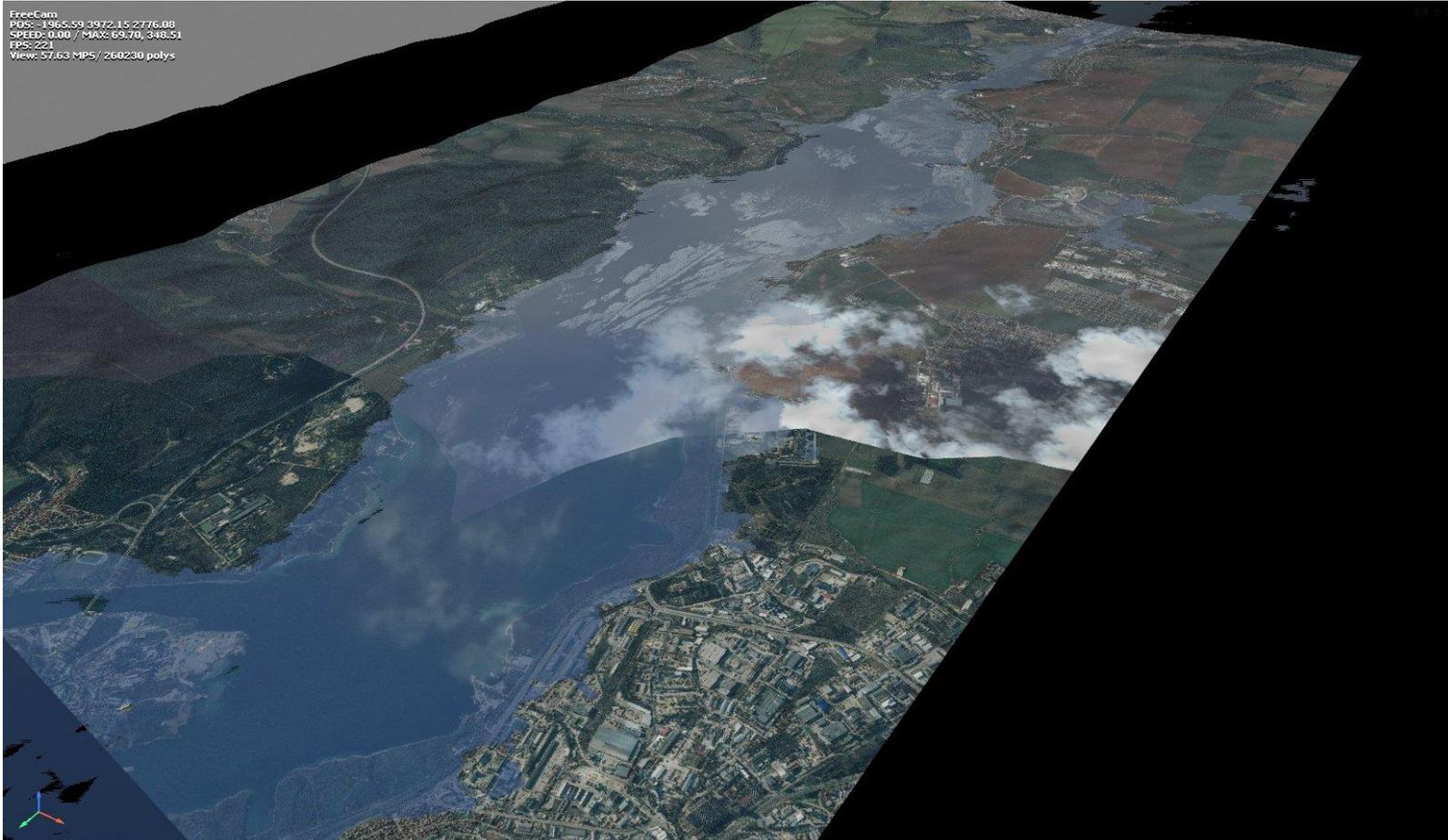


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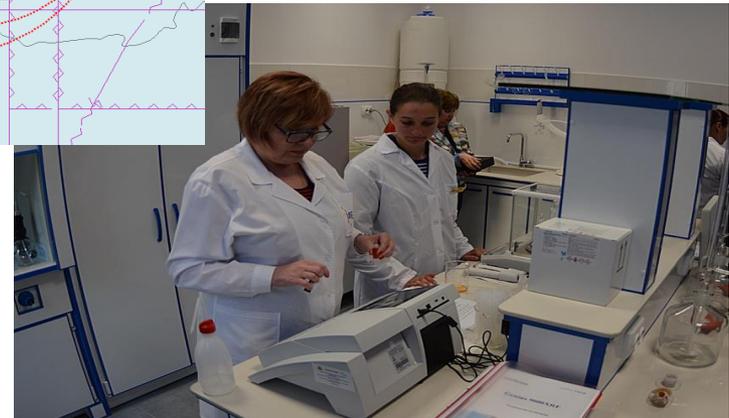
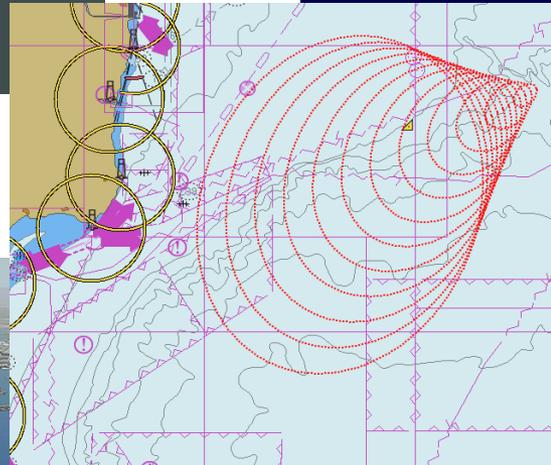
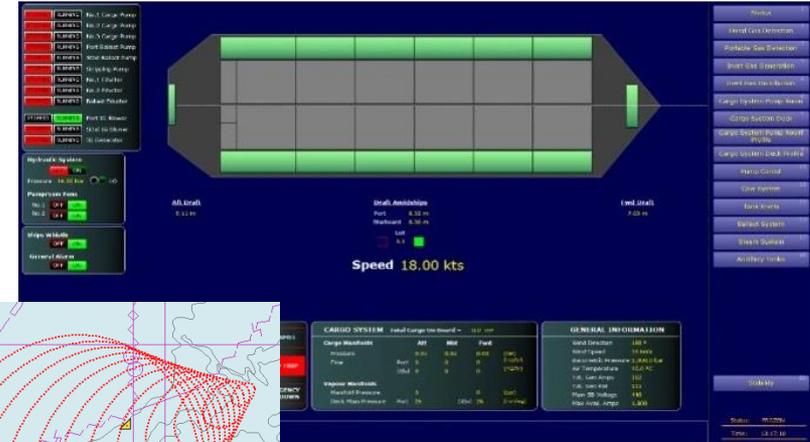
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Future evolution – Flooding assessment





Future evolution – Environmental assessments of the impact of projects





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Advancements in the port sector related to port services, financial transparency and documental procedures

The following Regulations are related to port services and documental procedures, which are of significant importance for all port users:

- ▶ **Regulation 352 from 15 February 2017 for the establishment of a framework for the provision of port services and common rules on the financial transparency of ports;**
- ▶ **Regulation 1239 from 20 June 2019 for the establishment of a European Maritime Single Window environment.**



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Regulation 2017/352 establishes:

- ▶ **a framework for the provision of port services;**
- ▶ **common rules on financial transparency on port services and port infrastructure charges**

According to this Regulation in the interest of efficient, safe and environmentally sound port management, the managing body of the port should be able to require that providers of port services are able to demonstrate that they meet minimum requirements for the performance of the service in an appropriate way. Those minimum requirements should be limited to a clearly defined set of conditions in so far as those requirements are transparent, objective, nondiscriminatory, proportionate and relevant for the provision of the port services.



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Regulation (EU) 2019/1239 establishes:

- ▶ **A framework for a technologically neutral and interoperable European Maritime Single Window environment ('EMSWe') with harmonized interfaces, in order to facilitate the electronic transmission of information in relation to reporting obligations for ships arriving at, staying in and departing from a Union ports.**

The main aim of Regulation (EU) 2019/1239 is to lay down rules for the provision of the information that is required for port calls, in particular by ensuring that the same data sets can be reported to each maritime National Single Window in the same way. Furthermore it aims to facilitate the transmission of information between declarants, relevant authorities and the providers of port services in the port of call.



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Having in mind the slides above, our proposal is to develop a project where the main objective is to conduct a Study of the present status of the existing national single window procedures of the Balkan and Black sea countries and the of the level and quality of the port services according to the requirements of the corresponding Regulations.

The outcomes of this Project will be to resolve any inconsistencies and to provide the good practices to the competent national authorities.



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Thank you for the attention!

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