



Harmonization and Networking for contaminant assessment in the Ionian and Adriatic Seas

**ADRION HarmonIA Final event & ADRION Thematic Cluster on Coastal and Marine Environment
management activities Supporting MSFD, MSP and Protocols of Barcelona Convention**

18th June 2020.

Evaluation of coastal vulnerability to marine pollution dispersion on HarmonIA Geoportal

Strategy for risk assessment

Institute of Oceanography and Fisheries, Split, Croatia

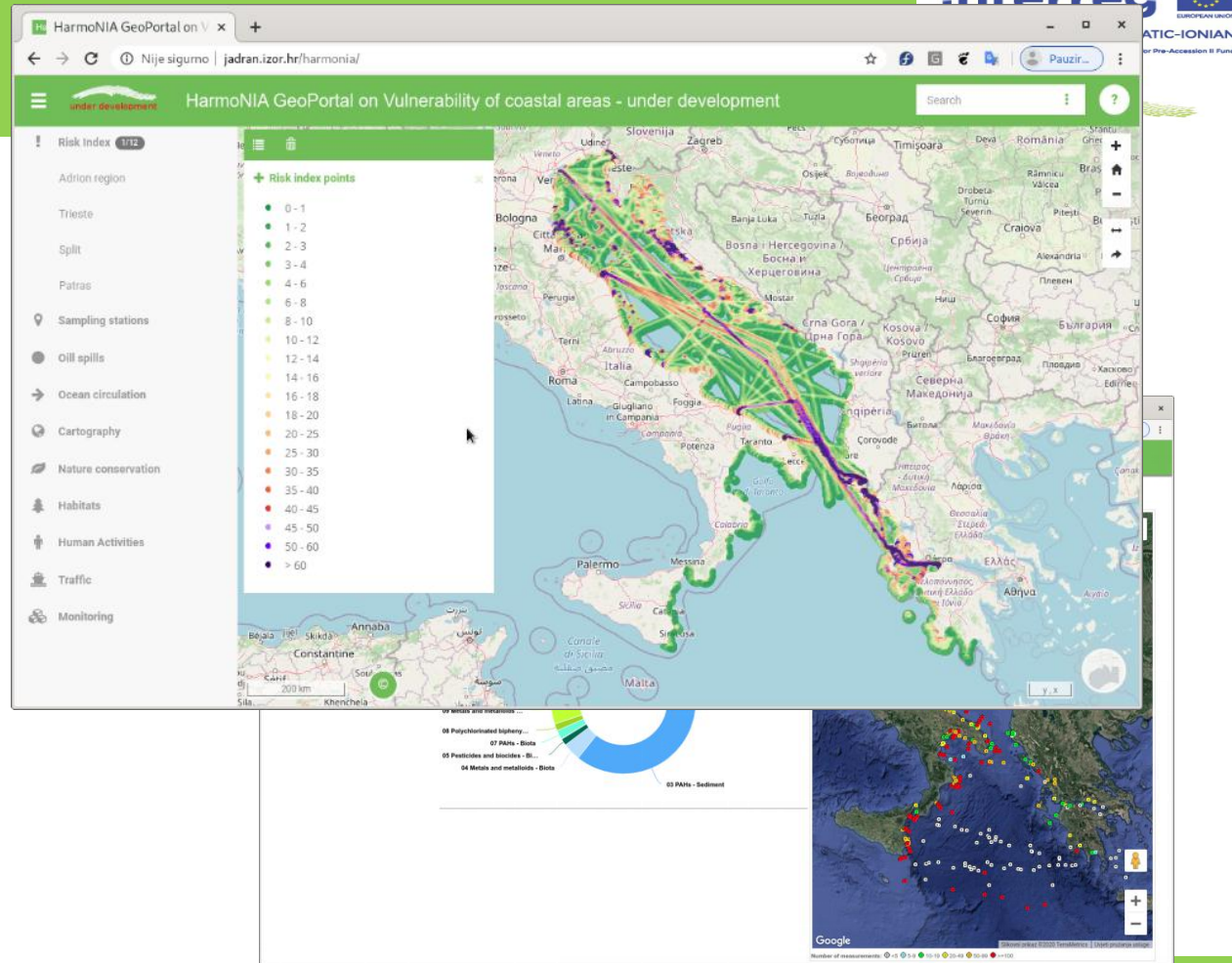
Damir Ivanković, Ivan Vučić



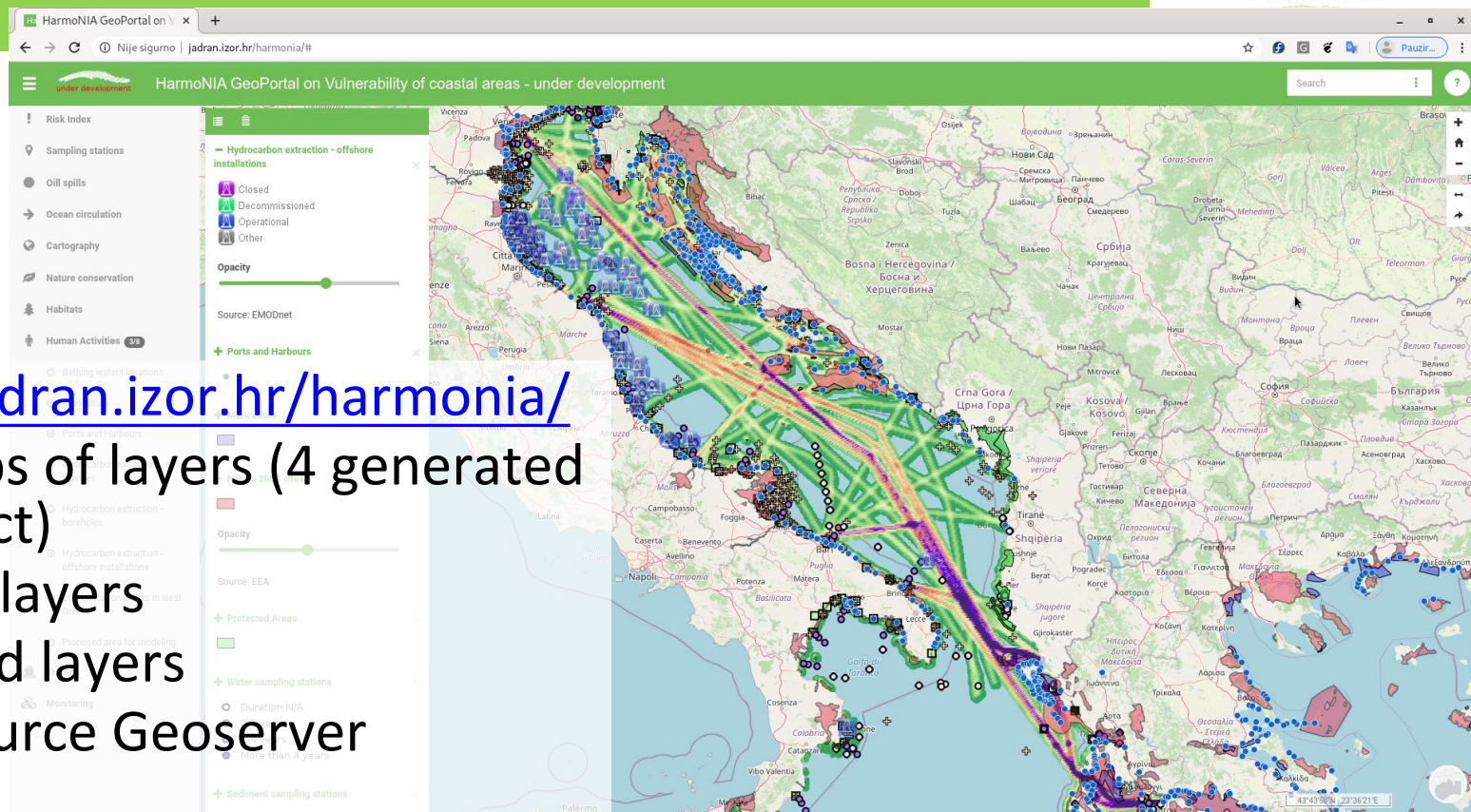
ADRION HarmonIA Final event; 18th June, 2020

Introduction

- Focus on online products
- Products available after formal ending of project
- Source of information
- Stakeholders, scientists and general public



HarmoNIA Geoportal



Layers Origin

- HarmoNIA project
- EMODnet
- HAZADR project
- European Commission
- EEA



HarmoNIA



EMODnet



HAZADR

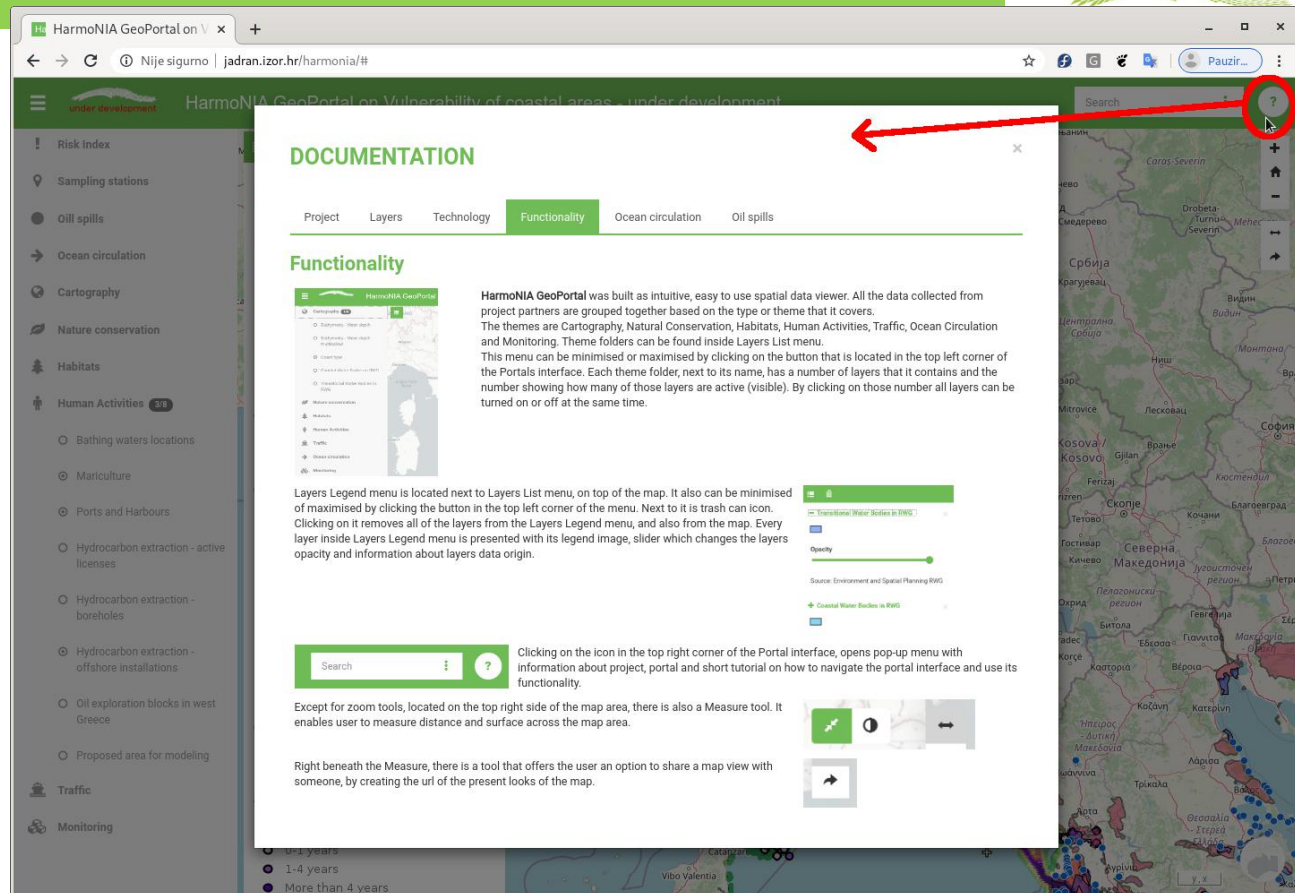


European Environment Agency



About Geoportal and how to use it

- Help section
- Upper right corner



The screenshot shows the HarmonIA GeoPortal interface. A documentation pop-up window is open, titled "DOCUMENTATION". It has tabs for "Project", "Layers", "Technology", "Functionality", "Ocean circulation", and "Oil spills". The "Functionality" tab is selected. The pop-up contains text about the portal's intuitive design and a list of themes. A red arrow points from a question mark icon in the top right corner of the portal interface to the "Functionality" tab in the pop-up. The portal interface also shows a sidebar with categories like "Risk Index", "Sampling stations", "Oil spills", "Ocean circulation", "Cartography", "Nature conservation", "Habitats", and "Human Activities". The main map area displays a map of the Adriatic-Ionian region with various layers and a search bar.

DOCUMENTATION

Project Layers Technology **Functionality** Ocean circulation Oil spills

Functionality

HarmonIA GeoPortal was built as intuitive, easy to use spatial data viewer. All the data collected from project partners are grouped together based on the type or theme that it covers. The themes are Cartography, Natural Conservation, Habitats, Human Activities, Traffic, Ocean Circulation and Monitoring. Theme folders can be found inside Layers List menu. This menu can be minimised or maximised by clicking on the button that is located in the top left corner of the Portals interface. Each theme folder, next to its name, has a number of layers that it contains and the number showing how many of those layers are active (visible). By clicking on those number all layers can be turned on or off at the same time.

Layers Legend menu is located next to Layers List menu, on top of the map. It also can be minimised or maximised by clicking the button in the top left corner of the menu. Next to it is trash icon. Clicking on it removes all of the layers from the Layers Legend menu, and also from the map. Every layer inside Layers Legend menu is presented with its legend image, slider which changes the layers opacity and information about layers data origin.

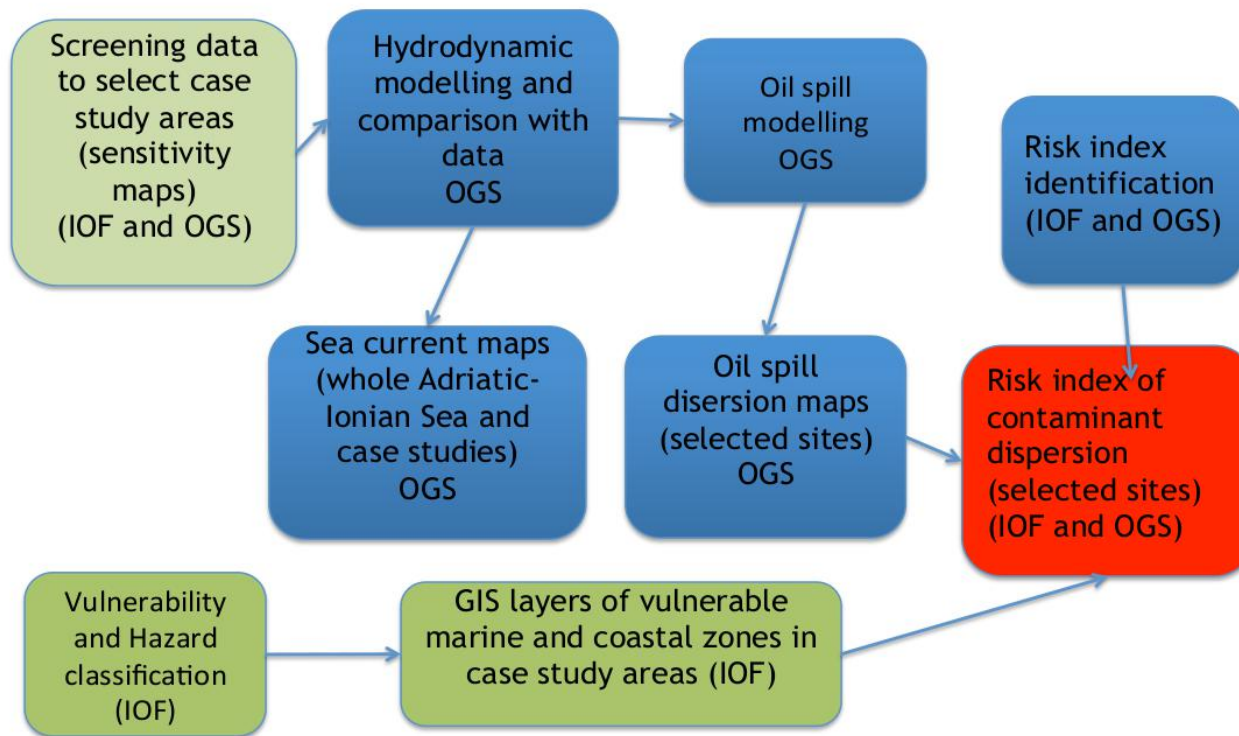
Clicking on the icon in the top right corner of the Portal interface, opens pop-up menu with information about project, portal and short tutorial on how to navigate the portal interface and use its functionality.

Except for zoom tools, located on the top right side of the map area, there is also a Measure tool. It enables user to measure distance and surface across the map area.

Right beneath the Measure, there is a tool that offers the user an option to share a map view with someone, by creating the url of the present looks of the map.

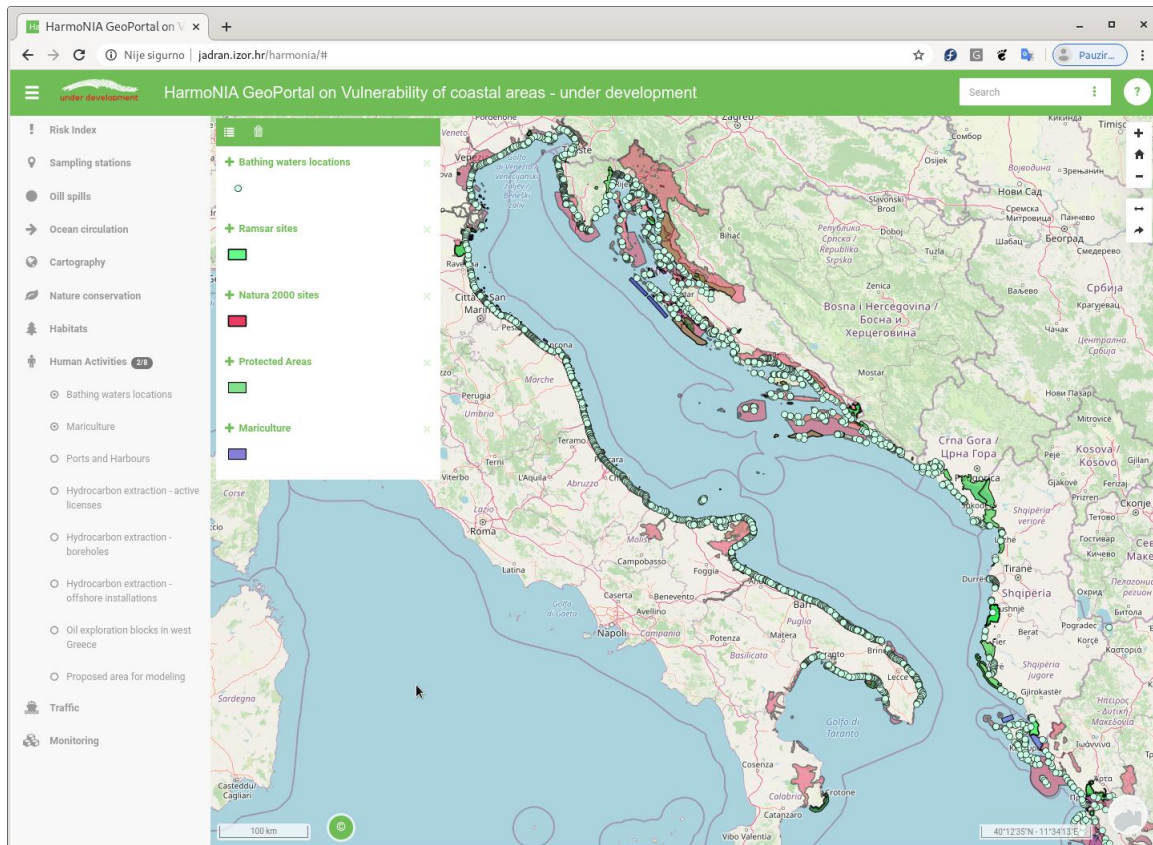


Methodology used in the oil spill risk assessment



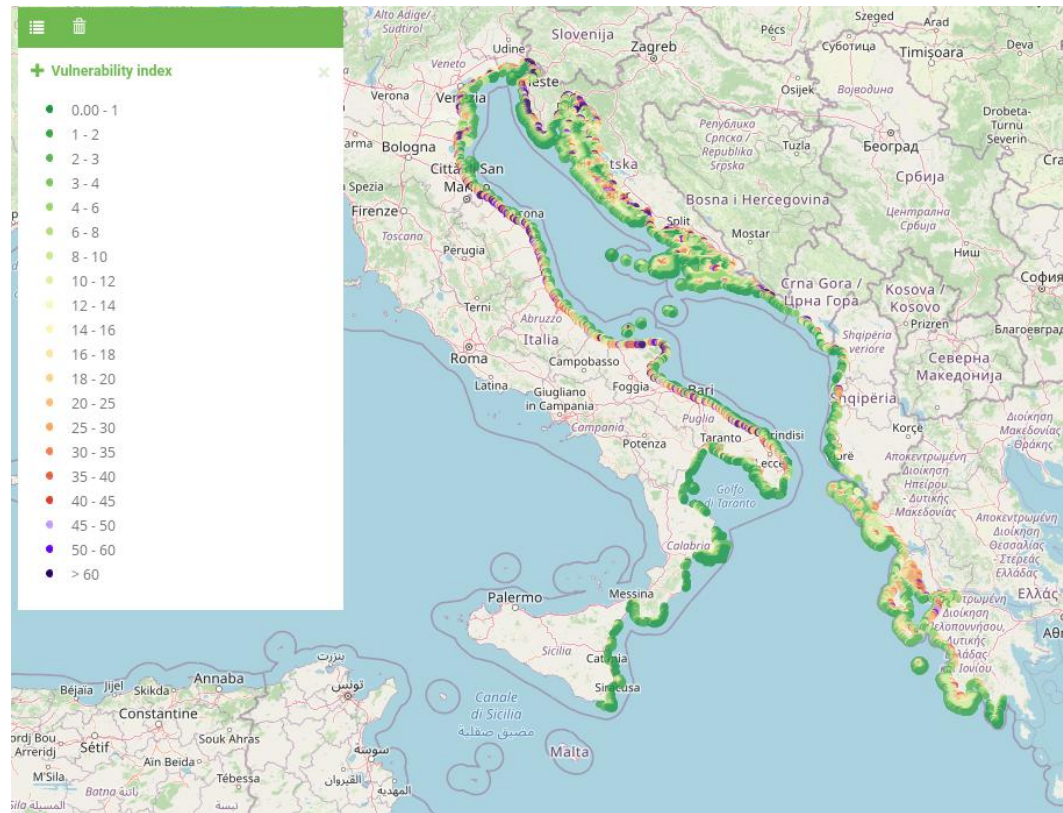
GIS layers of vulnerable marine and coastal zones

- Mariculture
- Protected areas
 - Ramsar sites data
 - Natura 2000 data
 - National data about natural protected areas
- Areas of socio-economic value
 - Bathing Water Directive



Vulnerability index

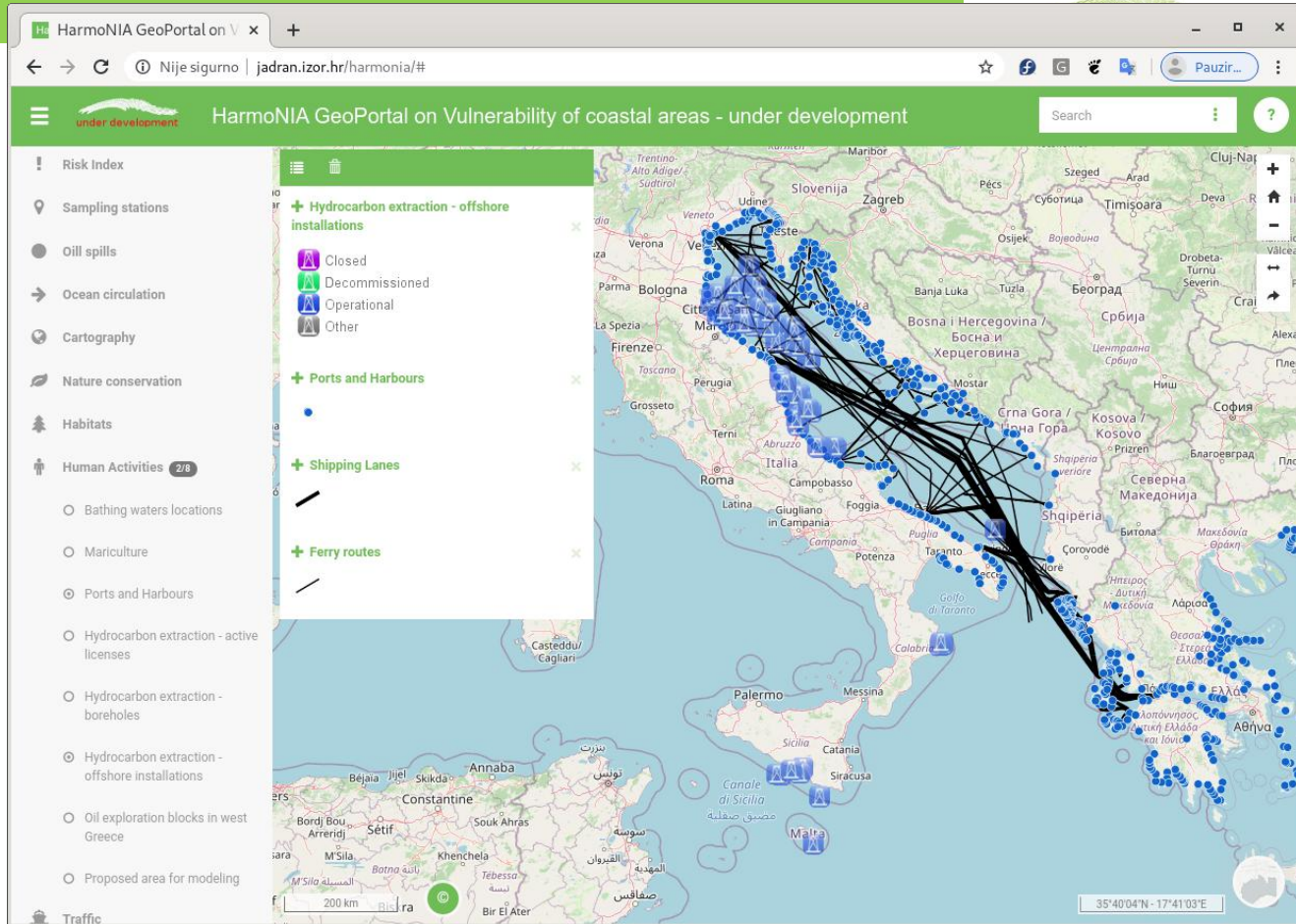
- All Natural protected areas (weight factor 1)
 - 100m buffer Index 3 (v1)
 - 3500m buffer Index 2 (v2)
 - 5000m buffer Index 1 (v3)
- Beaches (weight factor 3)
 - 300m buffer Index 3 (v1)
 - 35000m buffer Index 2 (v2)
 - 5000km buffer Index 1 (v3)
- Mariculture sites (weight factor 2)
 - 300m buffer Index 3 (v1)
 - 3500m buffer Index 2 (v2)
 - 5000m buffer Index 1 (v3)



$$v_{tot} = v1 * 3 + v2 * 2 + v3$$

GIS layers of oil spill hazard

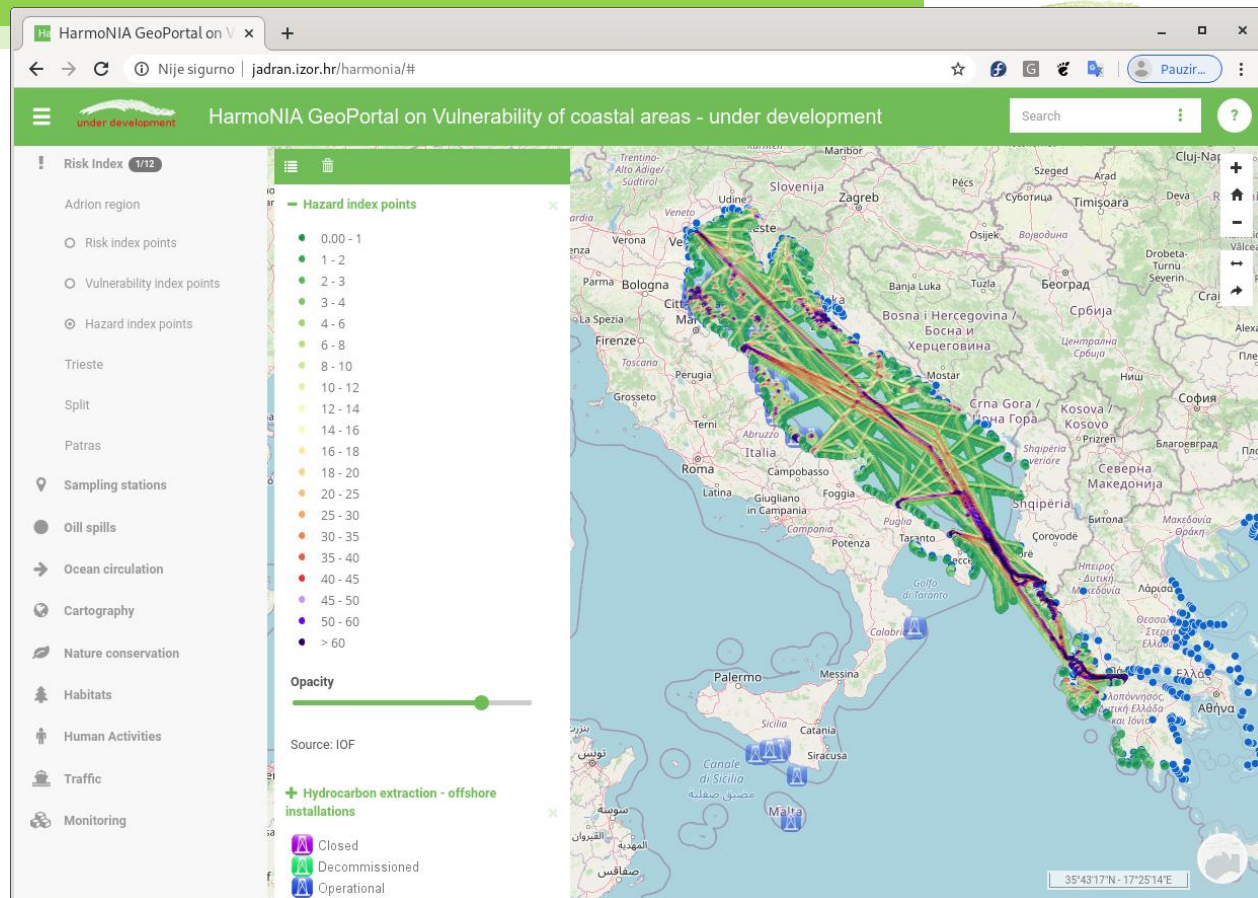
- Shipping lanes
- Ferry routes
- Ports and harbors
- Offshore platforms



Hazard index

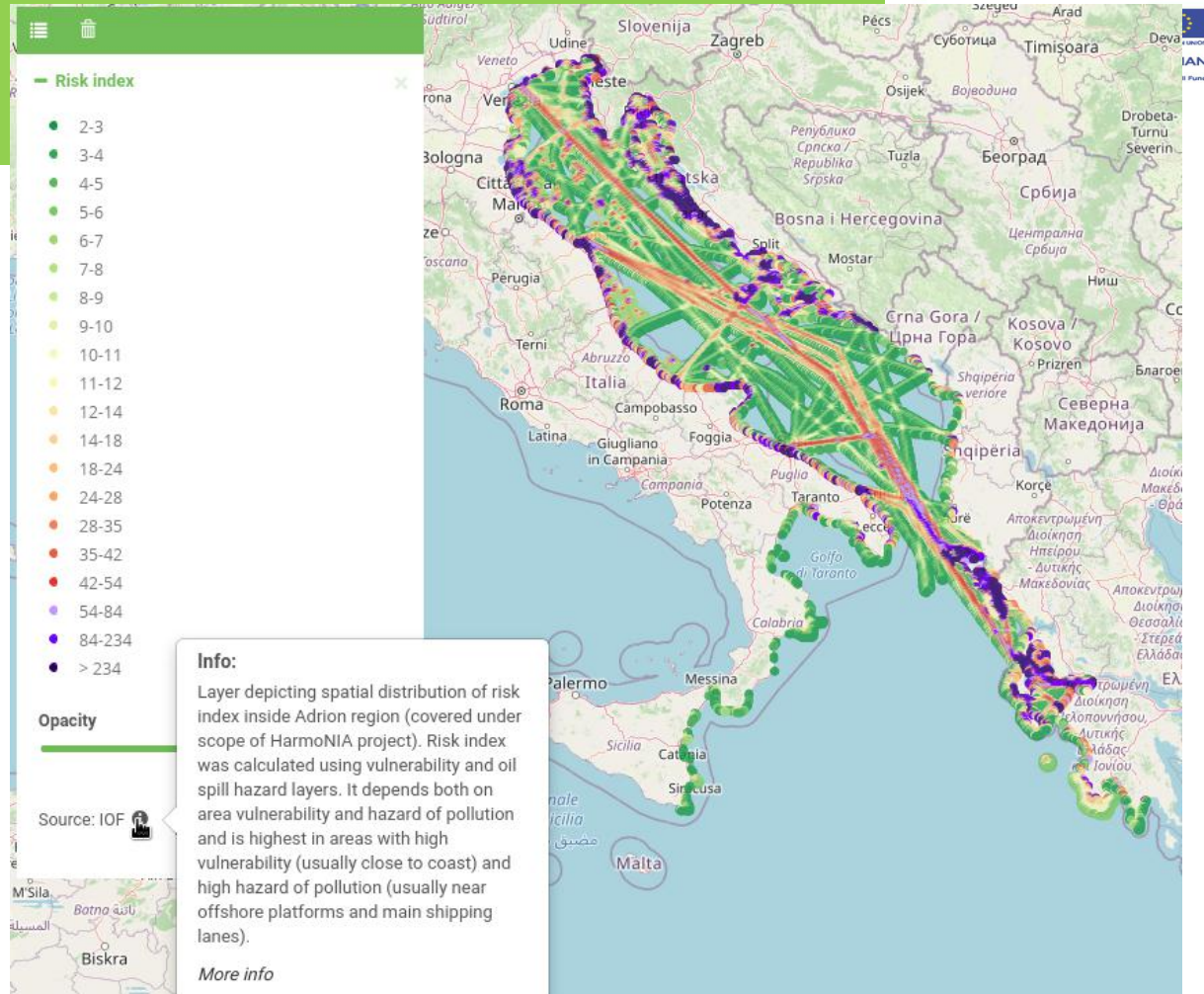
- Shipping lanes (weight factor 4)
 - 2000m buffer Index 3 (h1)
 - 3500m buffer Index 2 (h2)
 - 5000m buffer Index 1 (h3)
- Ferry route (weight factor 1)
 - 2000m buffer Index 3 (h1)
 - 3500m buffer Index 2 (h2)
 - 5000m buffer Index 1 (h3)
- Ports and harbors (weight factor 1)
 - 2000m buffer Index 3 (h1)
 - 3500m buffer Index 2 (h2)
 - 5000m buffer Index 1 (h3)
- Off shore platforms (weight factor 7)
 - 2000m buffer Index 3 (h1)
 - 3500m buffer Index 2 (h2)
 - 5000m buffer Index 1 (h3)

$$htot = h1 * 3 + h2 * 2 + h3$$



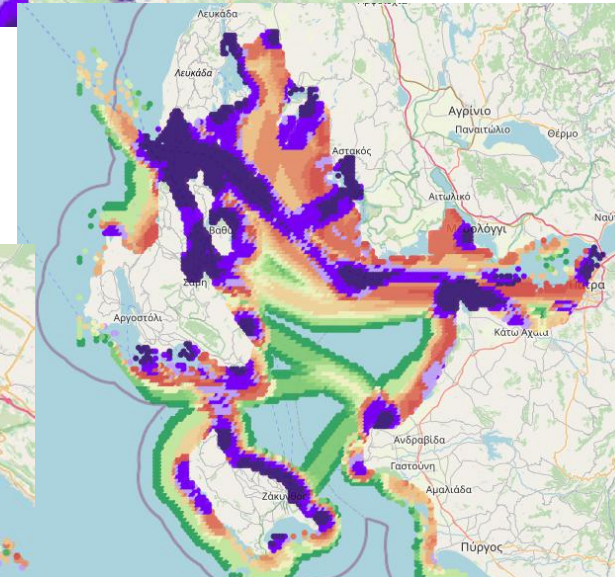
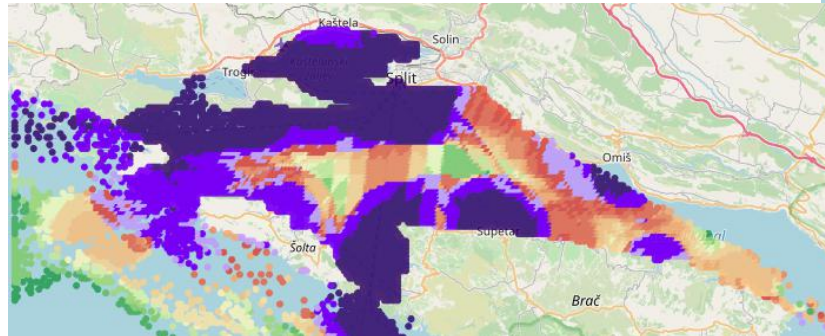
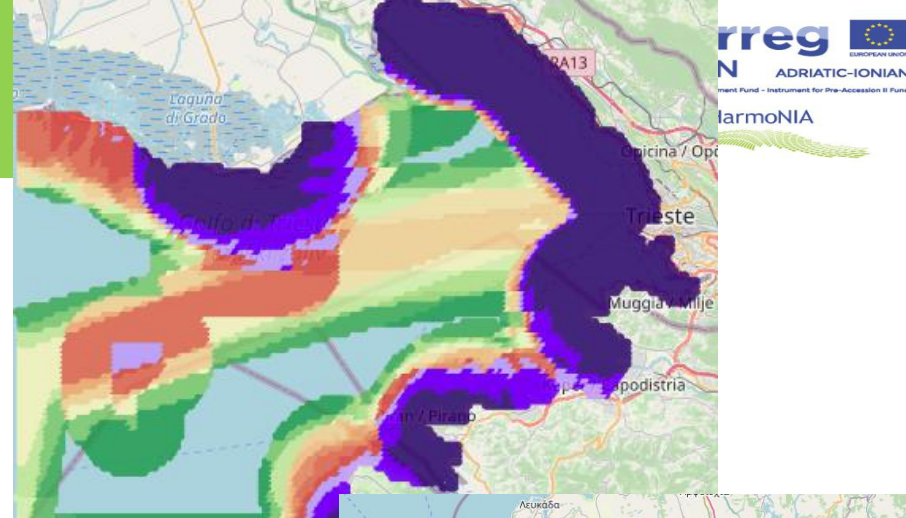
Risk index

$$\text{Hazard Index} \times \text{Vulnerability Index} = \text{Risk Index}$$



Strategy on risk assessment

- Use of hydrodynamic modeling
- Buffer method
- Hazard and Vulnerability
- Spatial analysis
- Adoptive parameters
- Accurate input layers
- Operational





Interreg

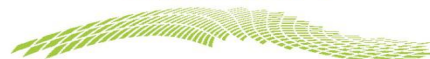
ADRION

European Regional Development Fund - Instrument for Pre-Accession II Fund



ADRIATIC-IONIAN

HarmonIA



Thank you for your attention!

