POWERED
green energy in Adriatic sea

VENETO AGRICOLTURA
Azienda Regionale per i settori Agricolo, Forestale e Agro-Alimentare

Planning mitigation in Off-Shore Wind Farm establishment

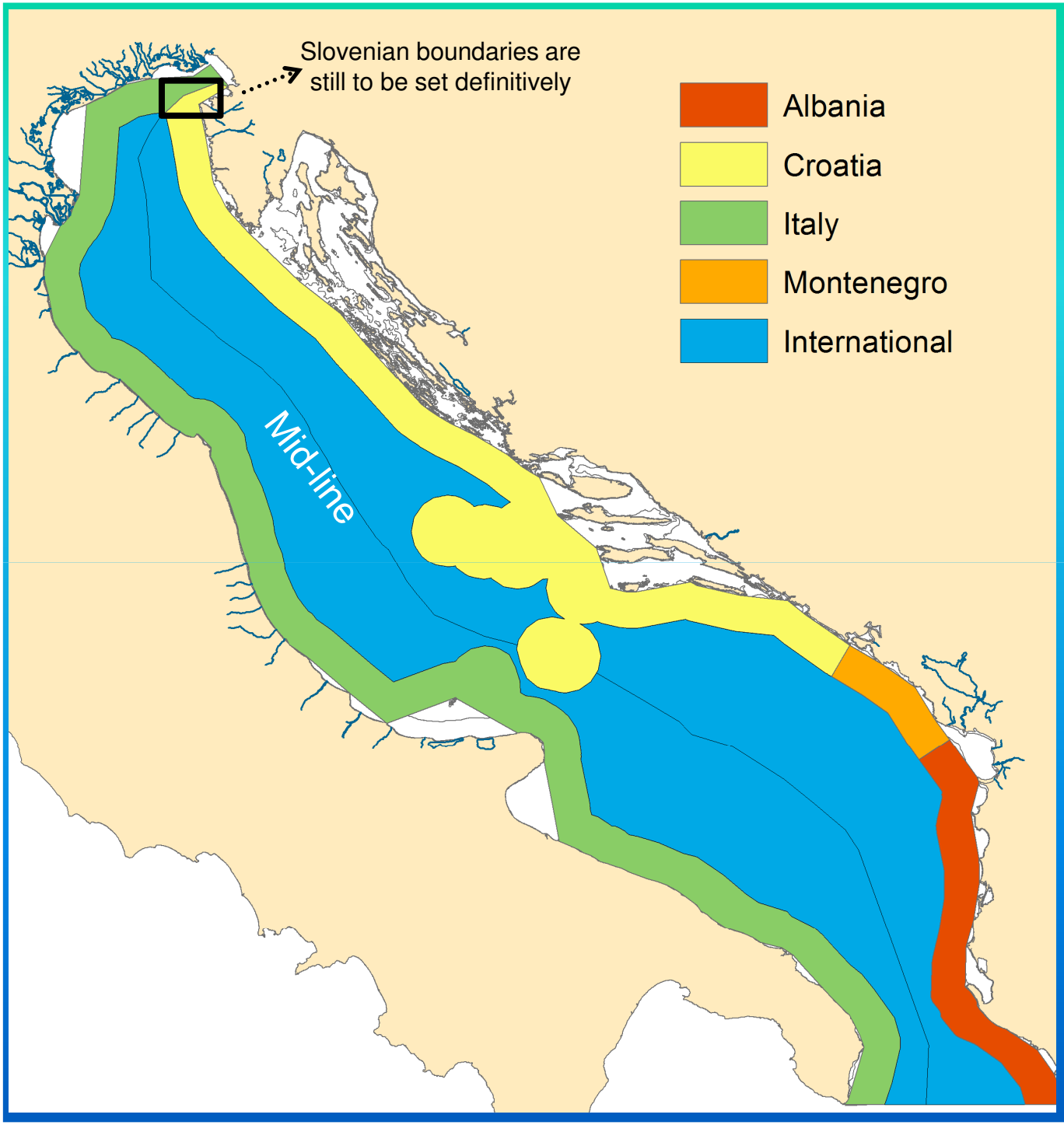
Impacts on biological resources and fisheries in the Adriatic Sea environmental context

O. Giovanardi, G. Franceschini, R. Gramolini, M. Romanelli, T. Russo, L. Sabatini

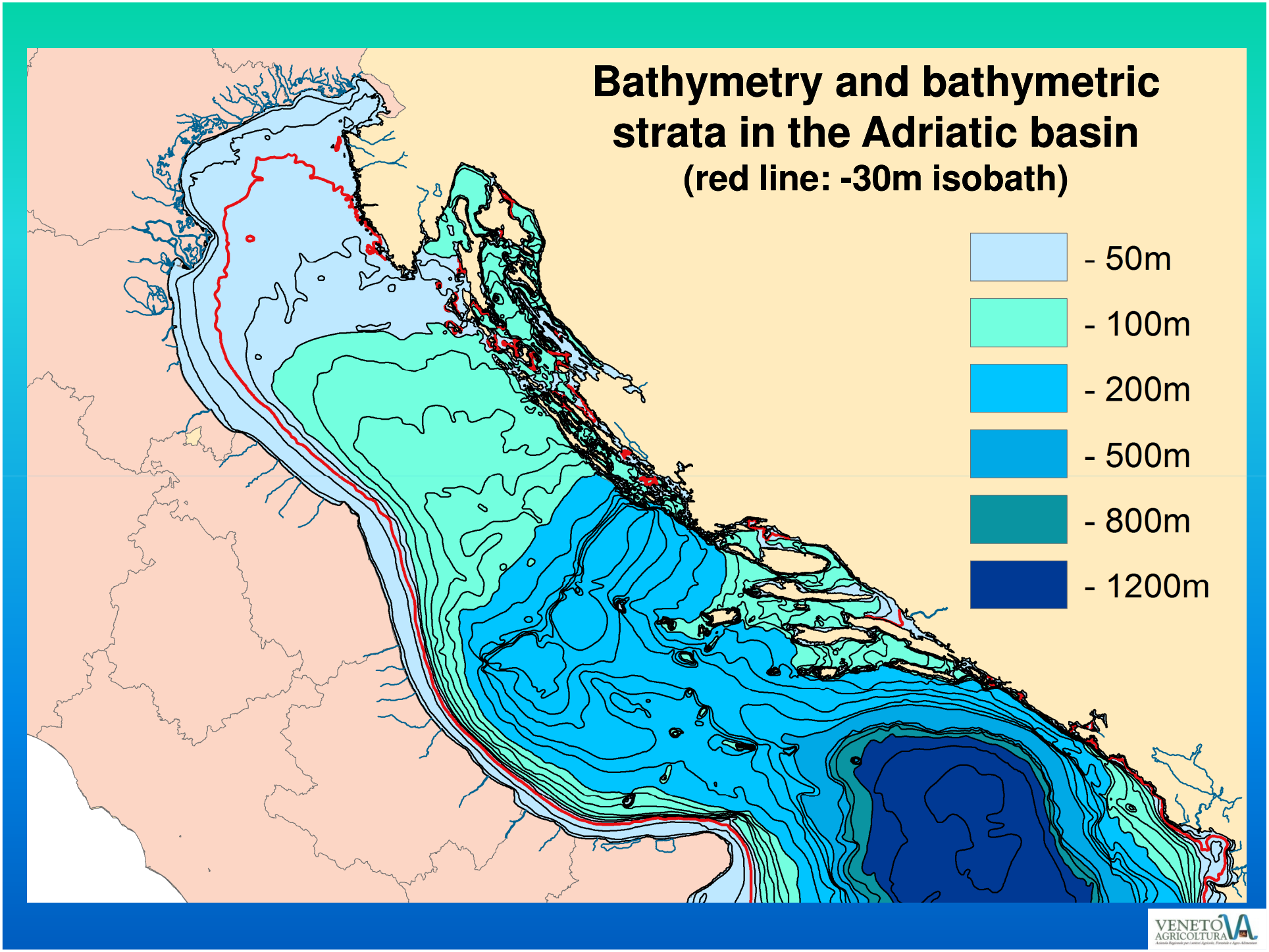
Smart Energy Expo
Verona, 11th October 2013

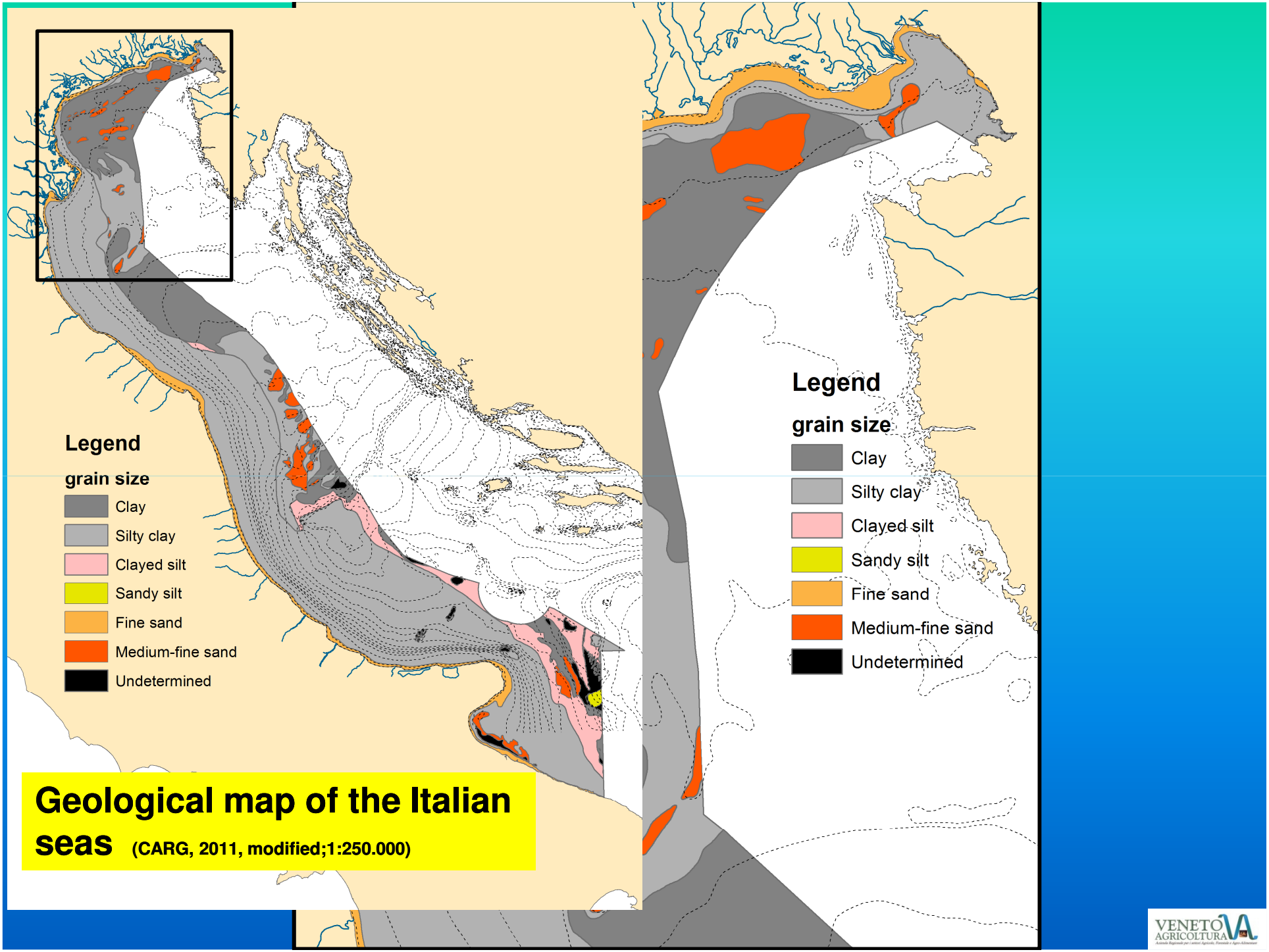
Main topics

- 1) Short **description** of the environmental features of the basin
- 2) OWF impact assessment on **commercial biological resources** and professional **fishery** in the Adriatic context
- 3) OWF as **Artificial Habitat** in Adriatic



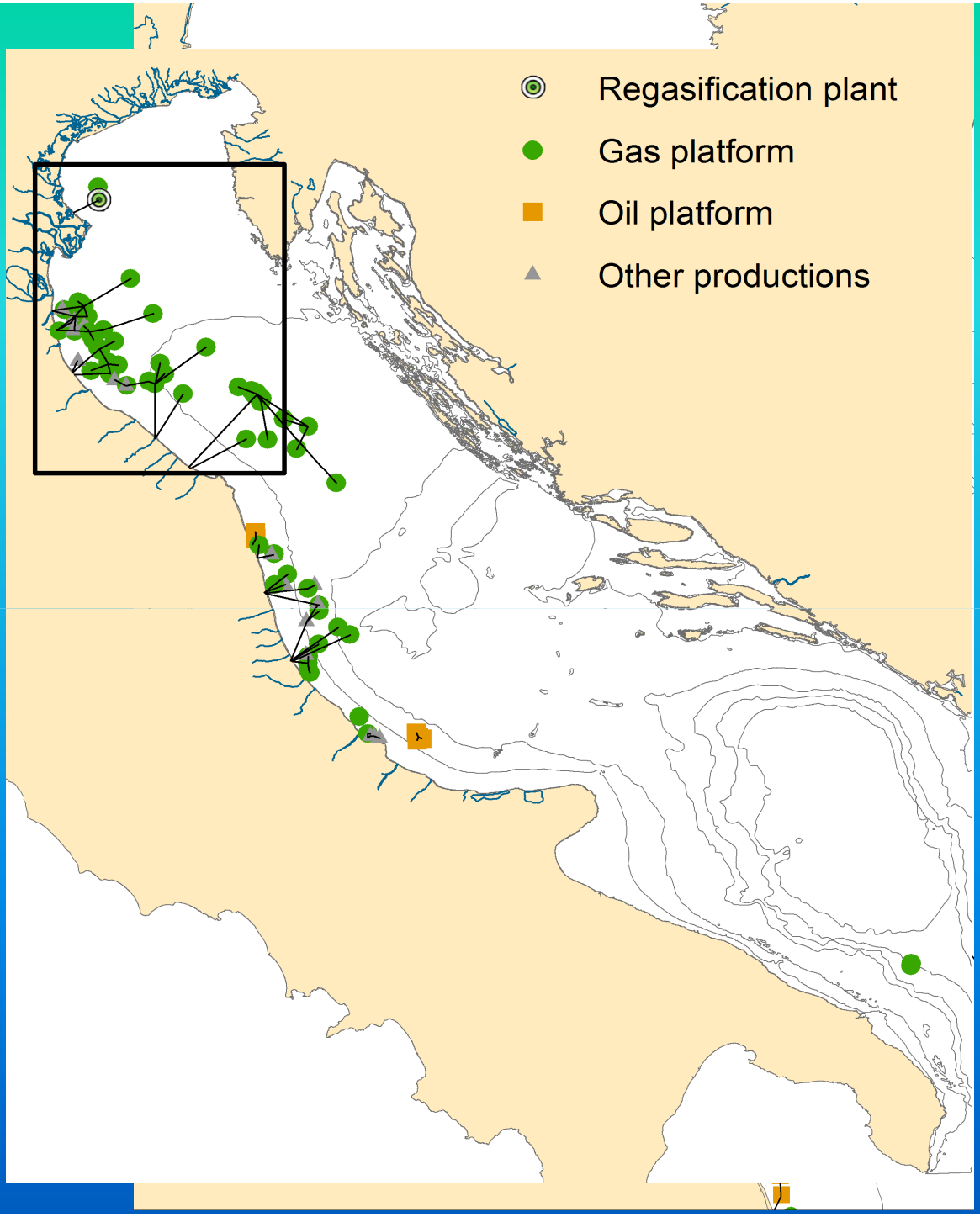
Adriatic states water boundaries

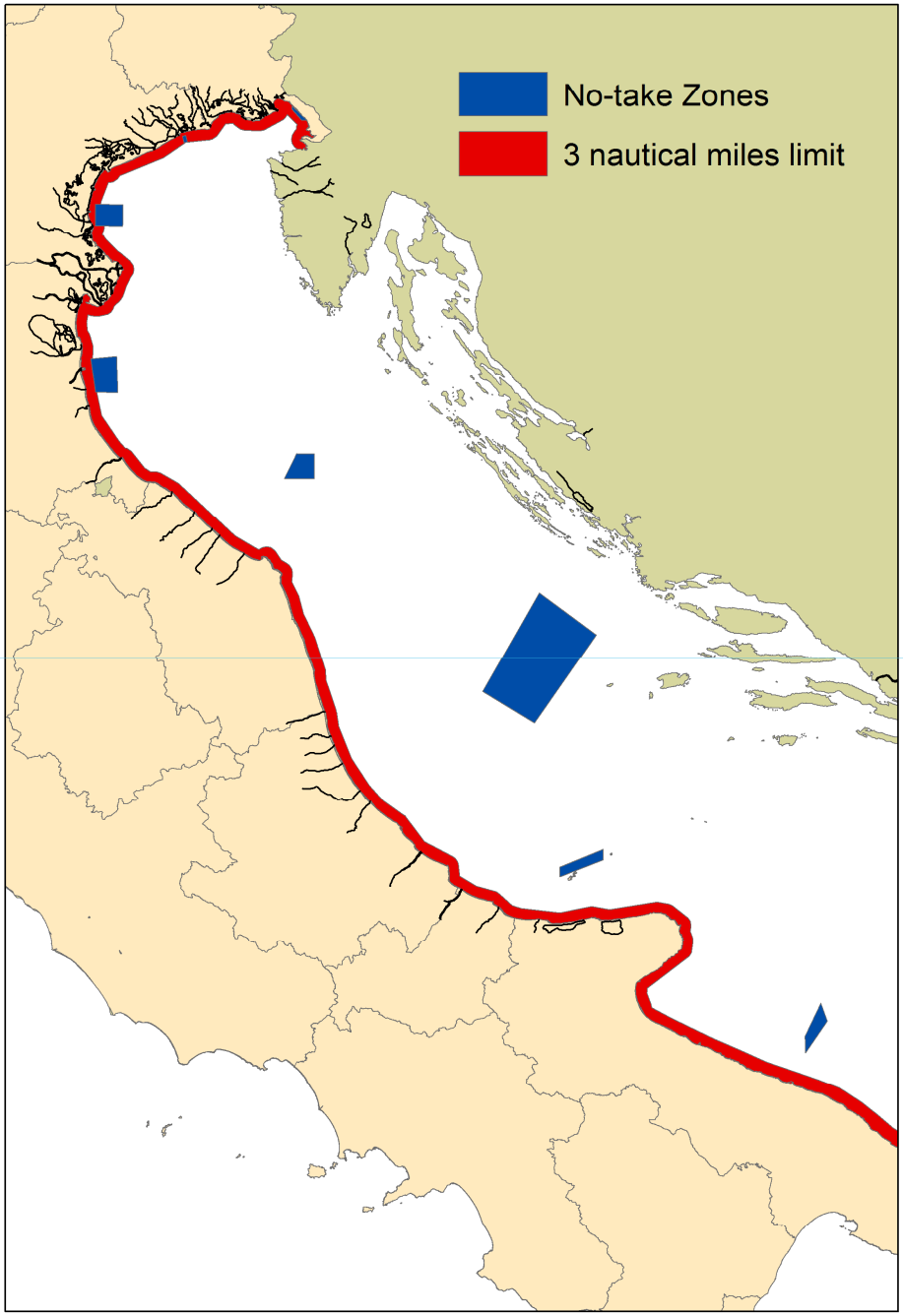

Bathymetry and bathymetric strata in the Adriatic basin
(red line: -30m isobath)
- 50m
- 100m
- 200m
- 500m
- 800m
- 1200m



Geological map of the Italian seas (CARG, 2011, modified;1:250.000)

Italian offshore platforms





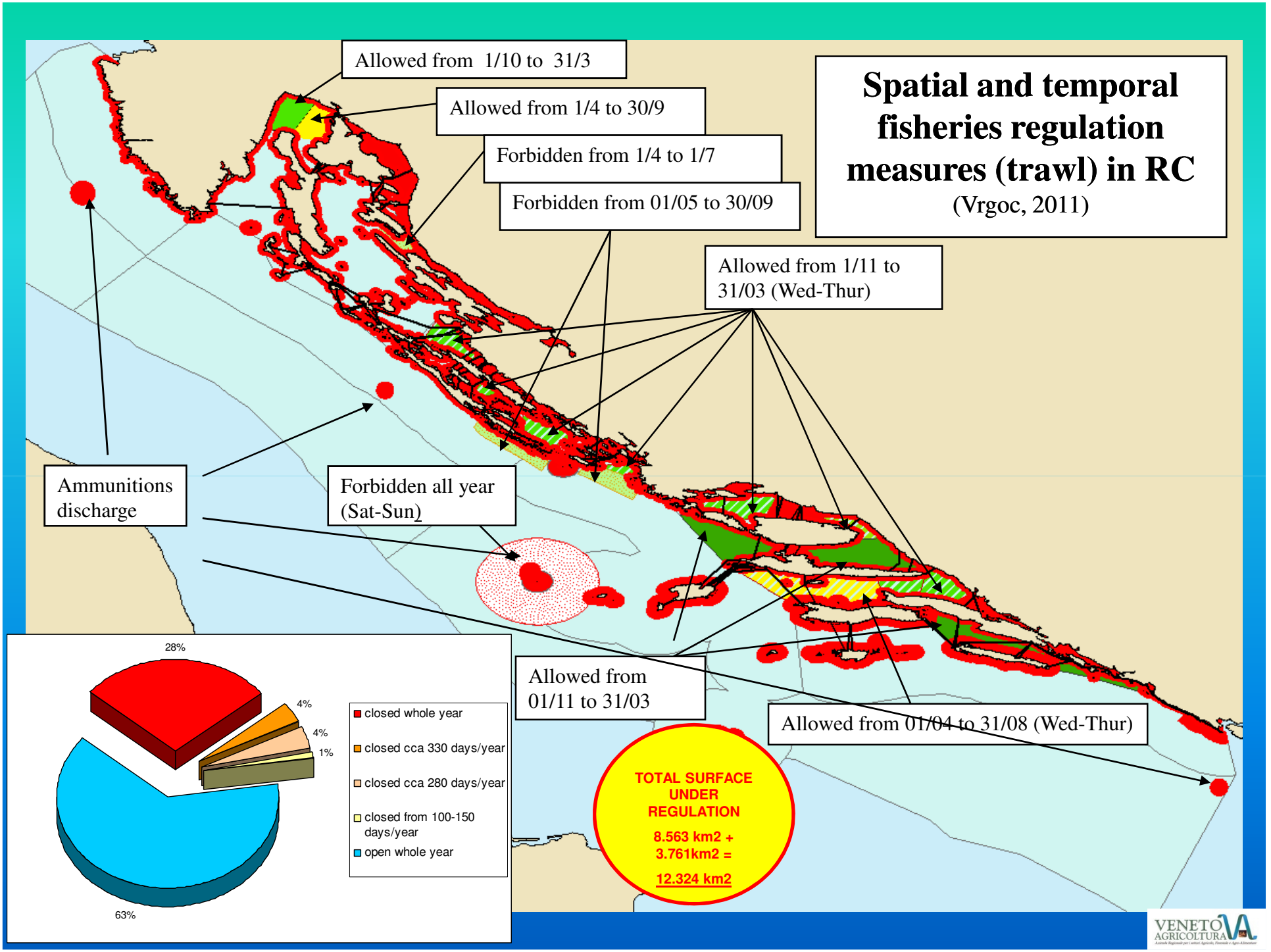
Italian No-Take Areas (trawling)

- **Miramare**
- **Porto Falconera - Caorle**
- **Tenue**
- **Off Ravenna**
- **Barbare**
- **Pomo – Jabuka Pit**
- **Tremiti**
- **Off the Apulia coasts**

Late summer temporal trawling ban (30-45 days)

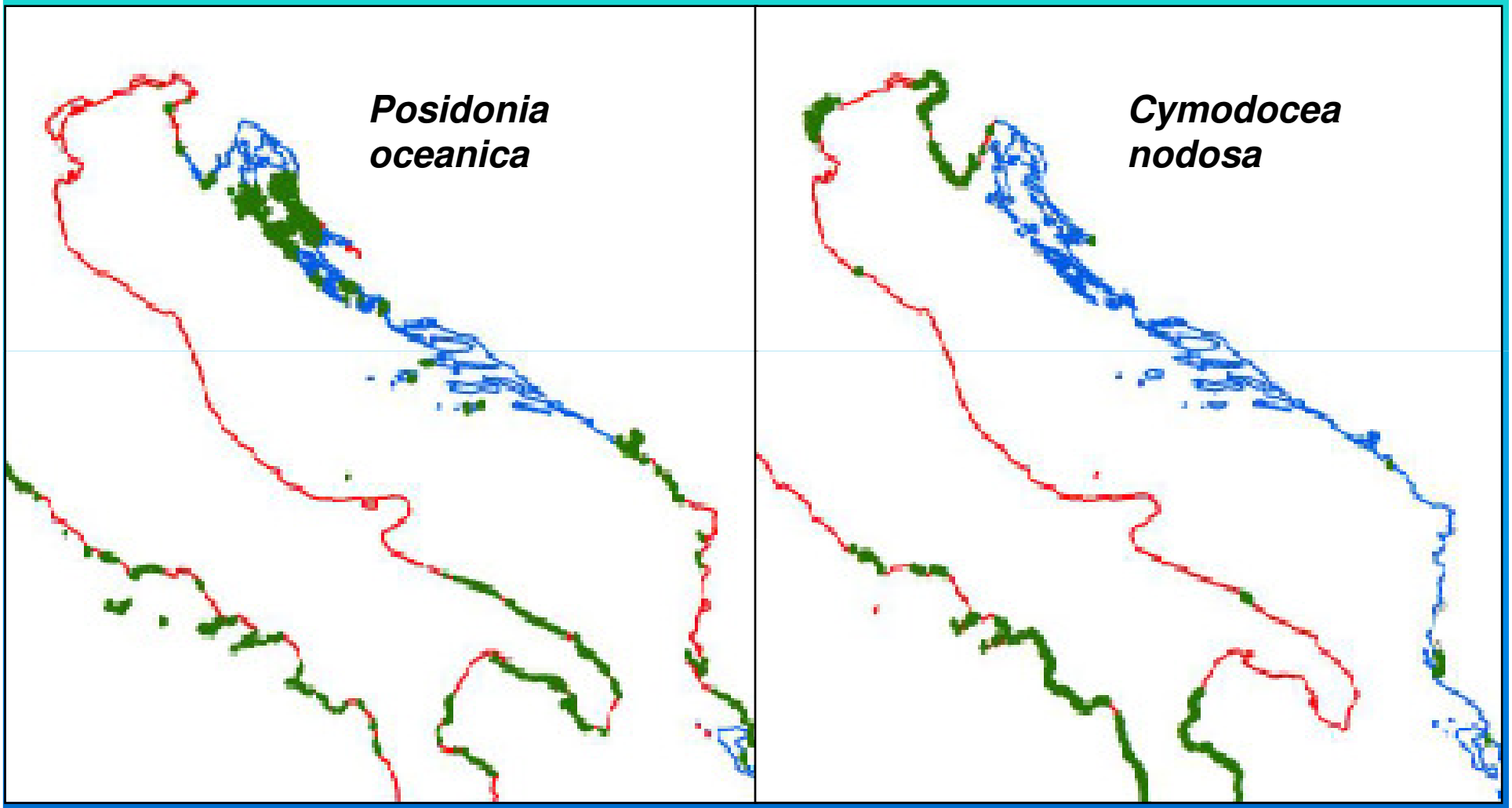
Spatial and temporal fisheries regulation measures (trawl) in RC

(Vrgoc, 2011)

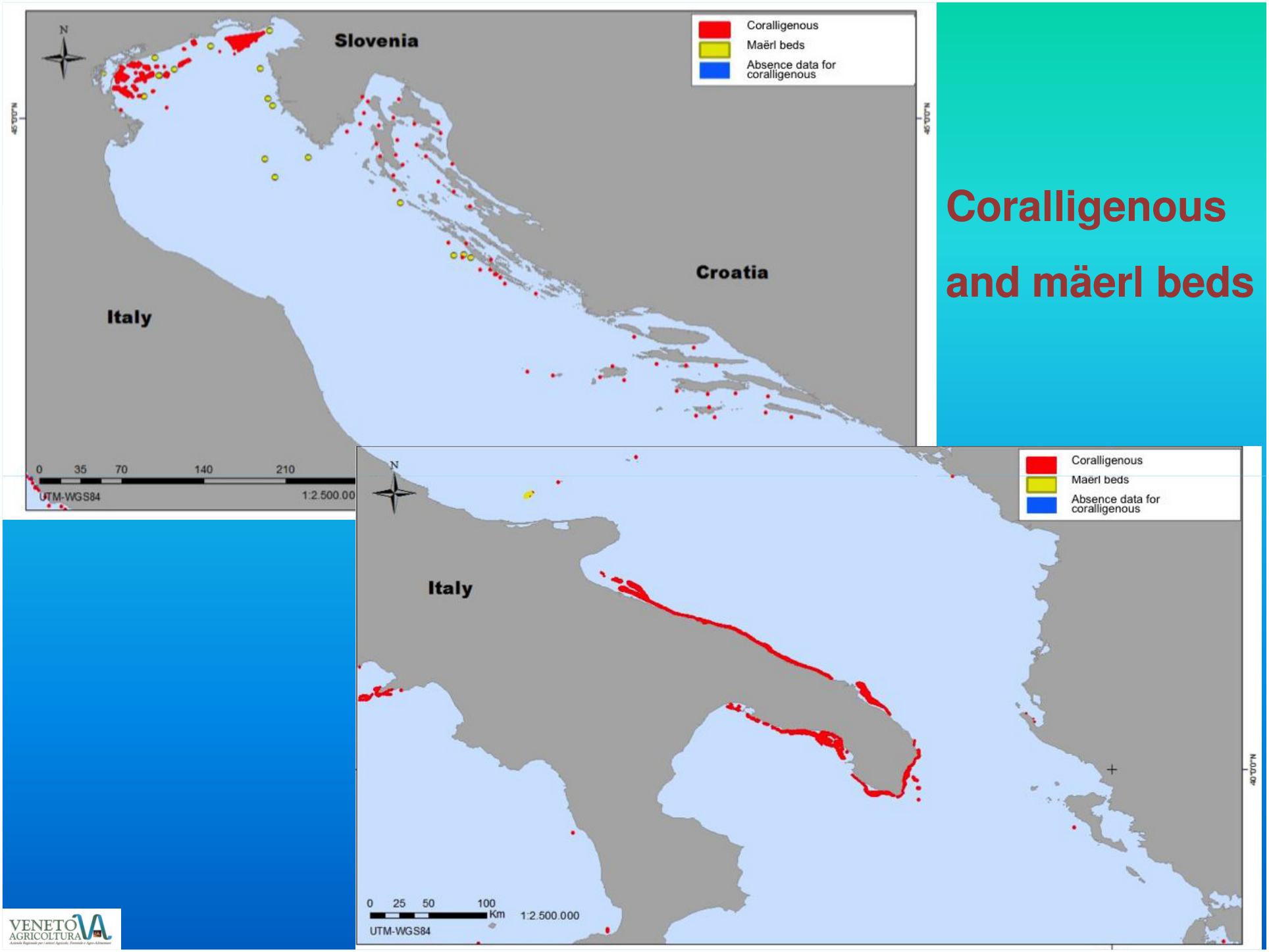


Sensitive habitats

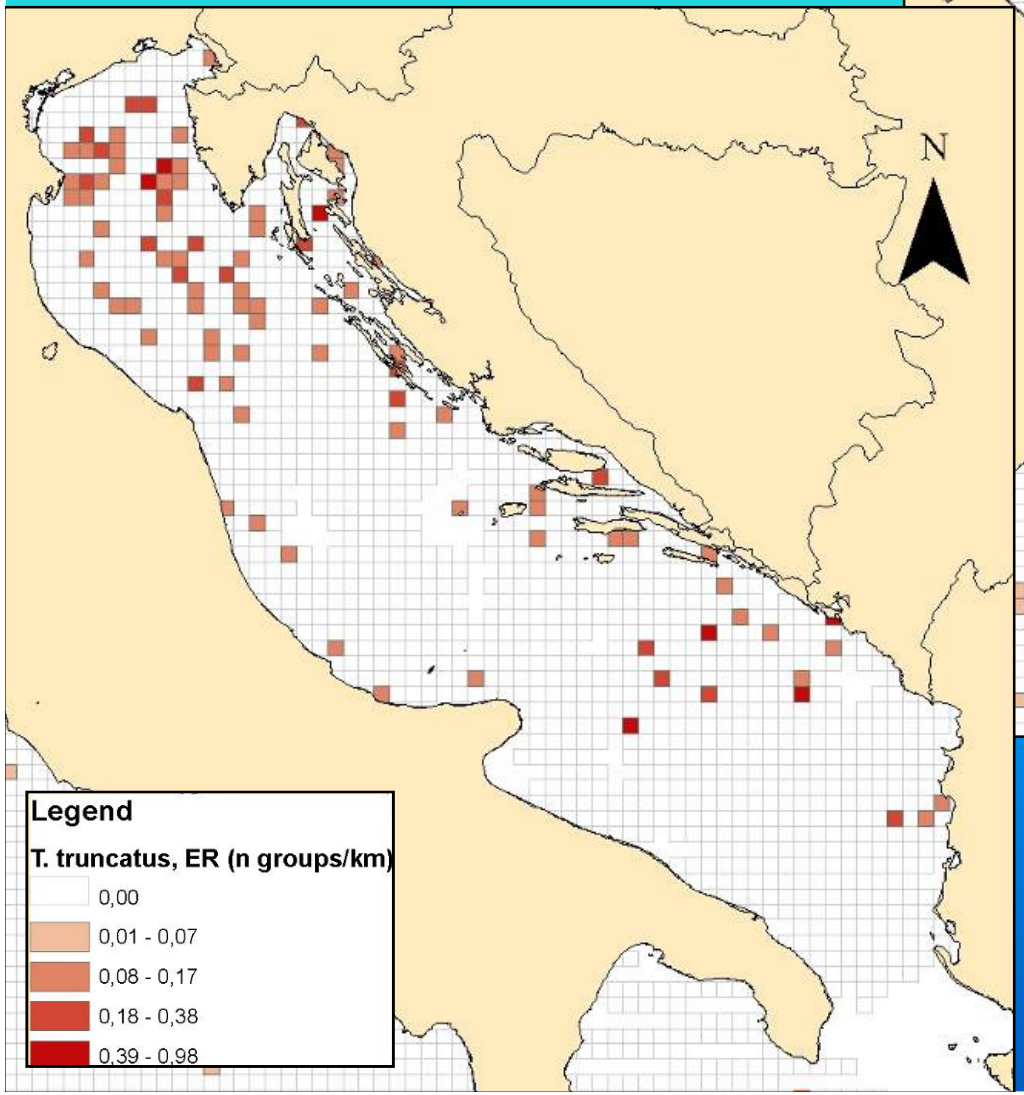
Seagrass meadows distribution

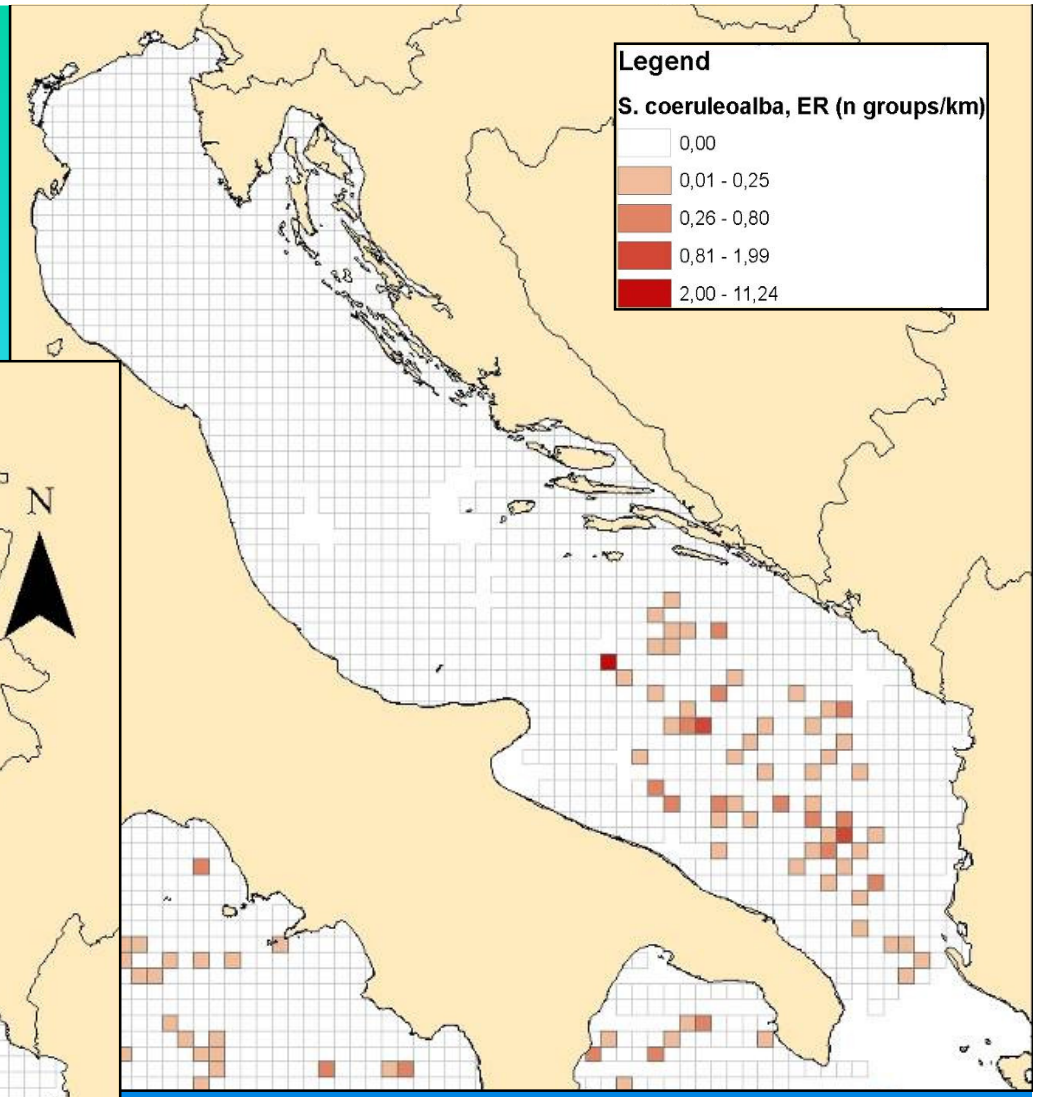


Coralligenous and mäerl beds



Distribution of Common bottlenose dolphin (*Tursiops truncatus*)





and Striped dolphin (*Stenella coeruleoalba*)

(from MSFD, 2013)

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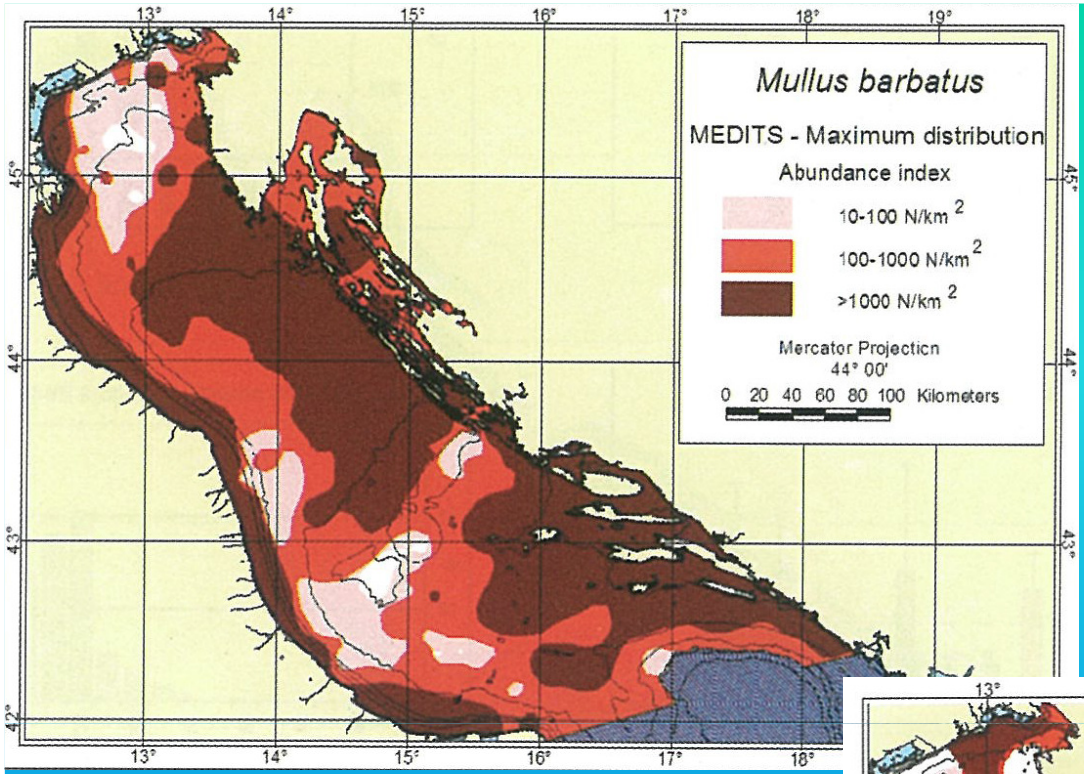
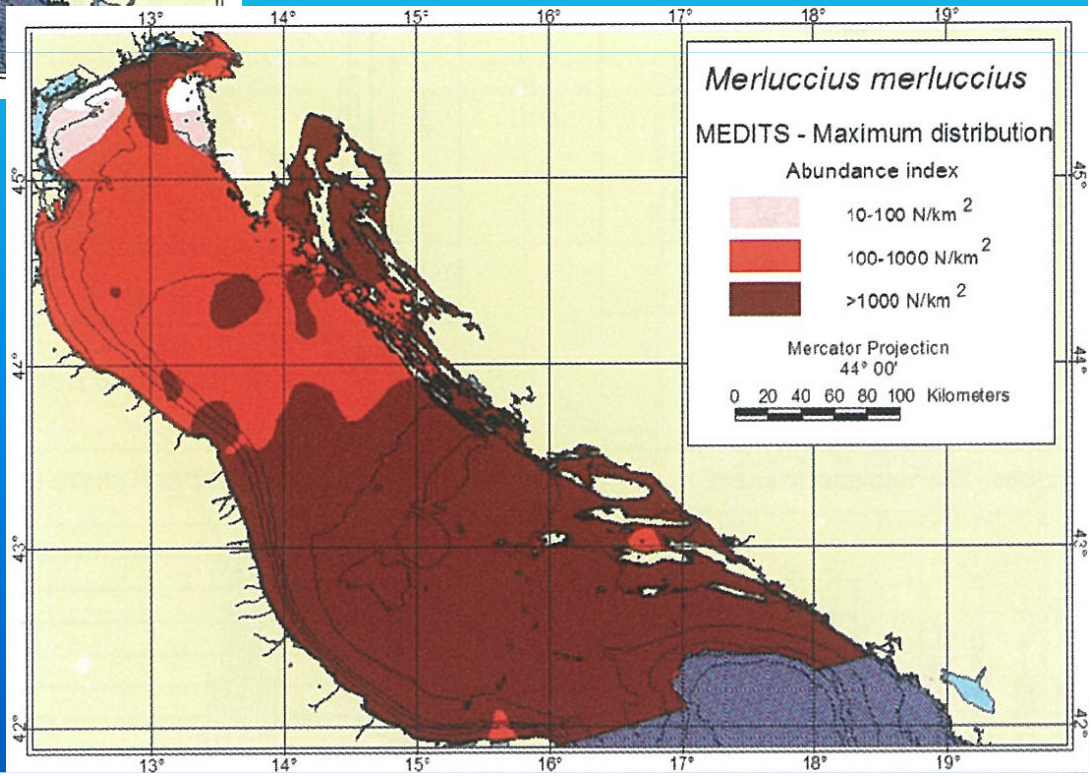
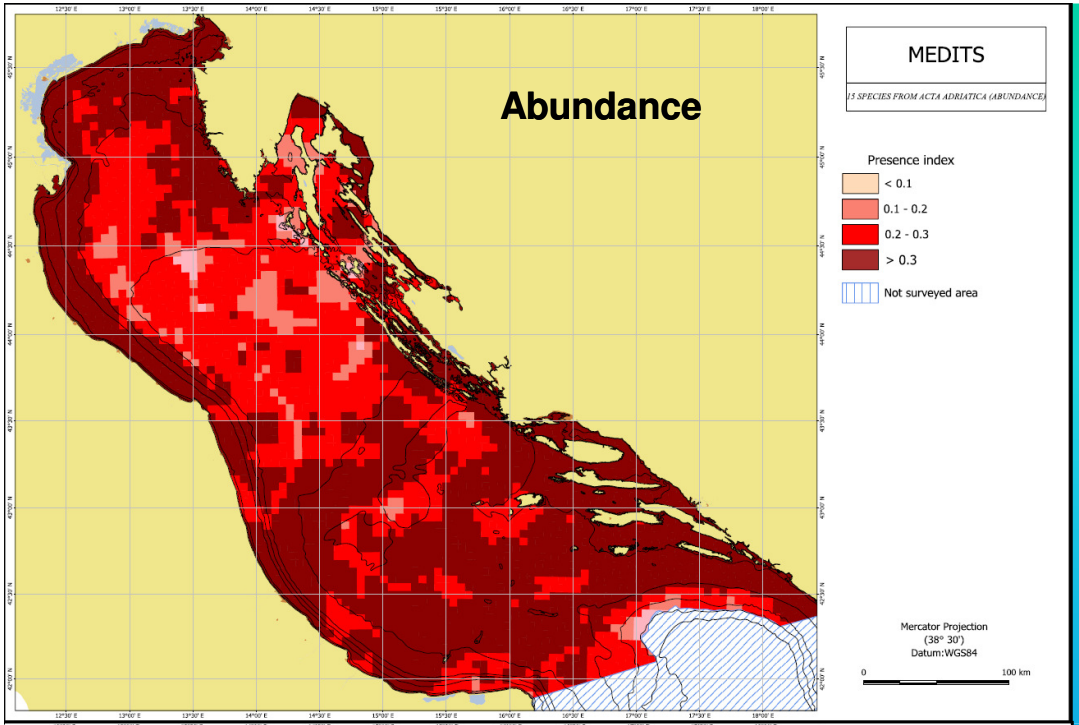


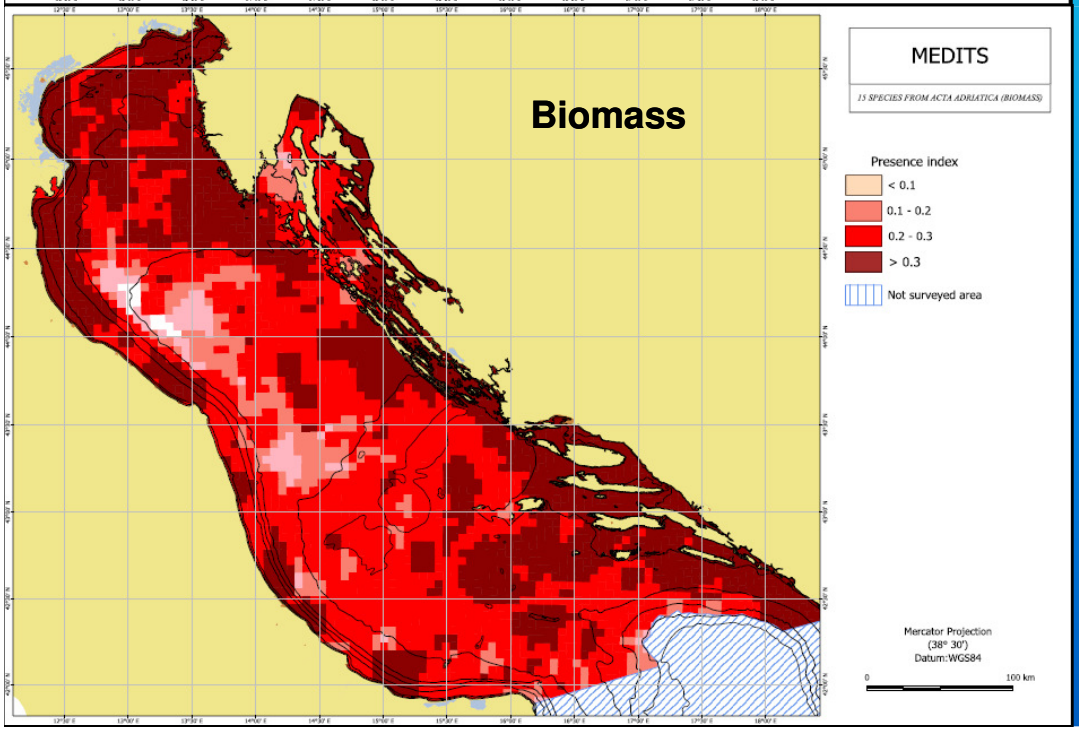
Distribution of Red mullet (*Mullus barbatus*);

(modified from Piccinetti et al., 2012)

and European hake (*Merluccius merluccius*)







Presence index of main demersal species

Species
Eledone cirrhosa
Eledone moschata
Merlangius merlangus
Illex coindettii
Loligo vulgaris
Lophius budegassa
Merluccius merluccius
Mullus barbatus
Nephrops norvegicus
Pagellus erythrinus
Scyliorhinus canicula
Sepia officinalis
Squilla mantis
Trisopterus minutus
Zeus faber

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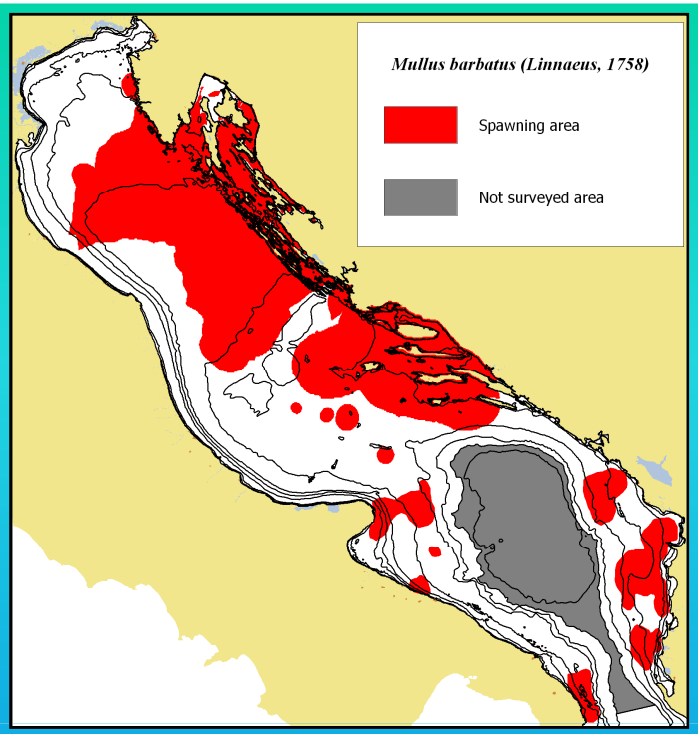
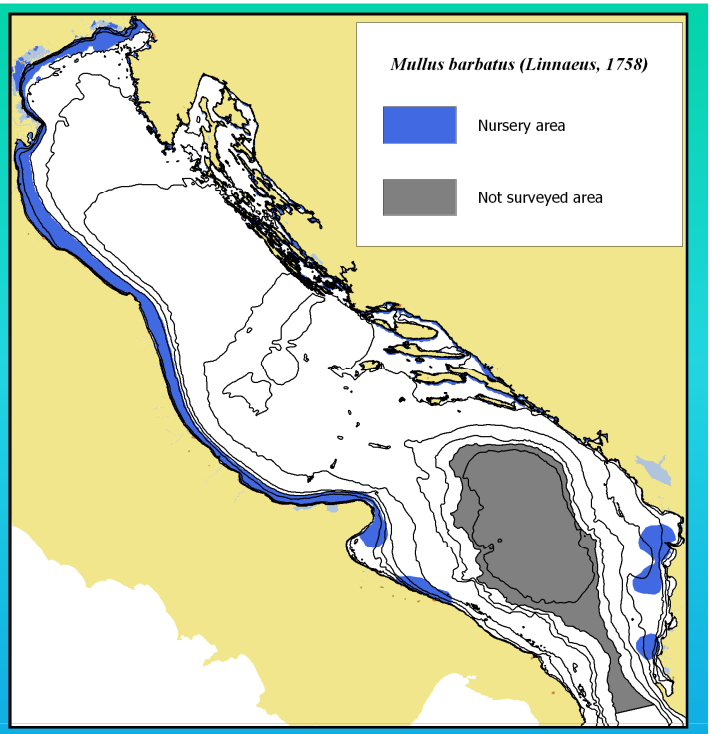
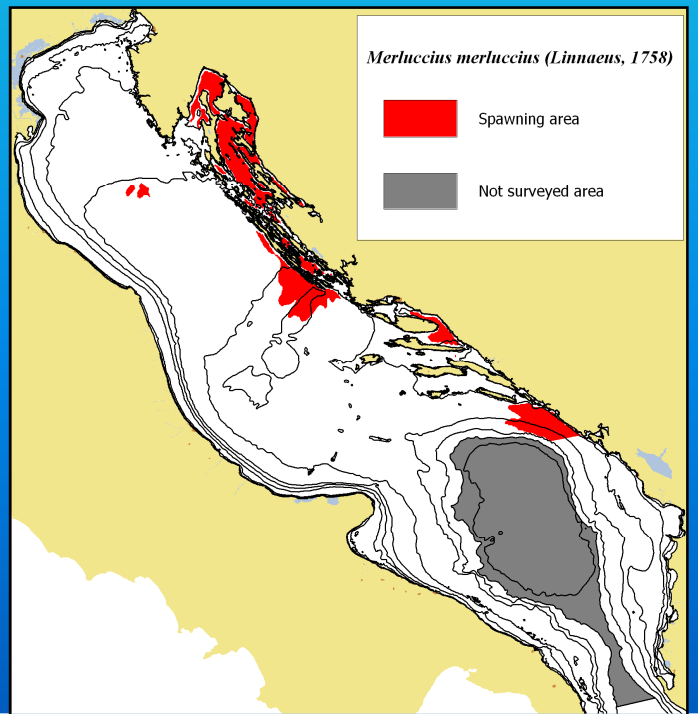
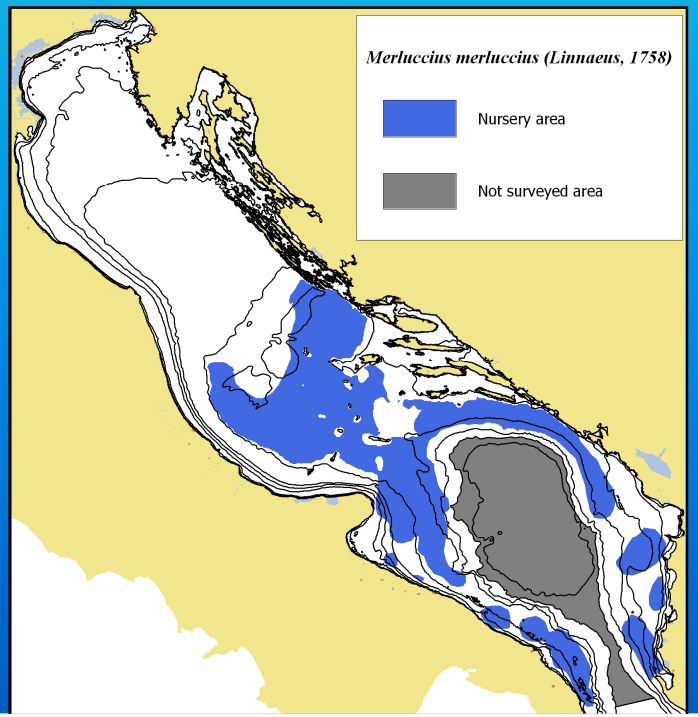
Spawning









and nursery areas

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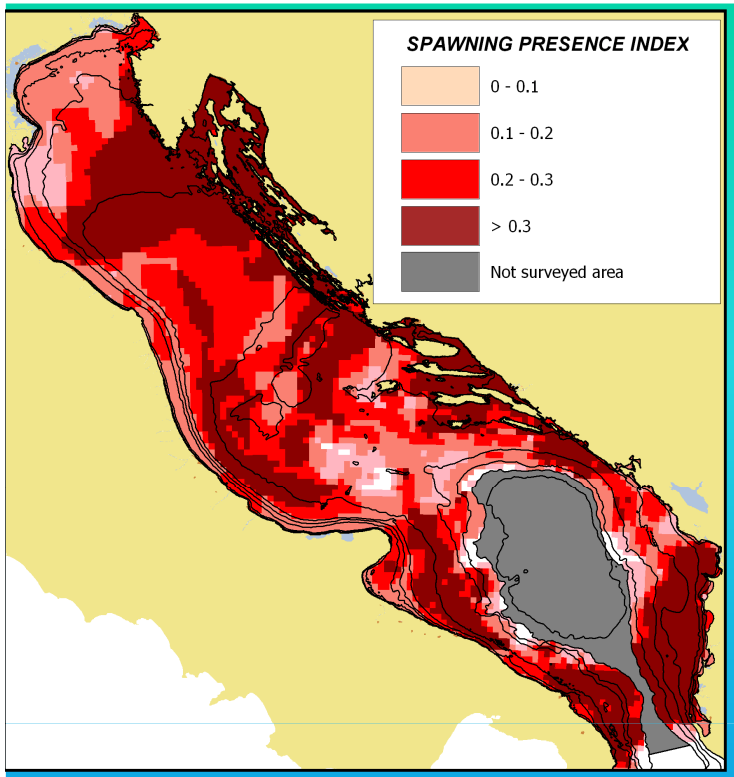
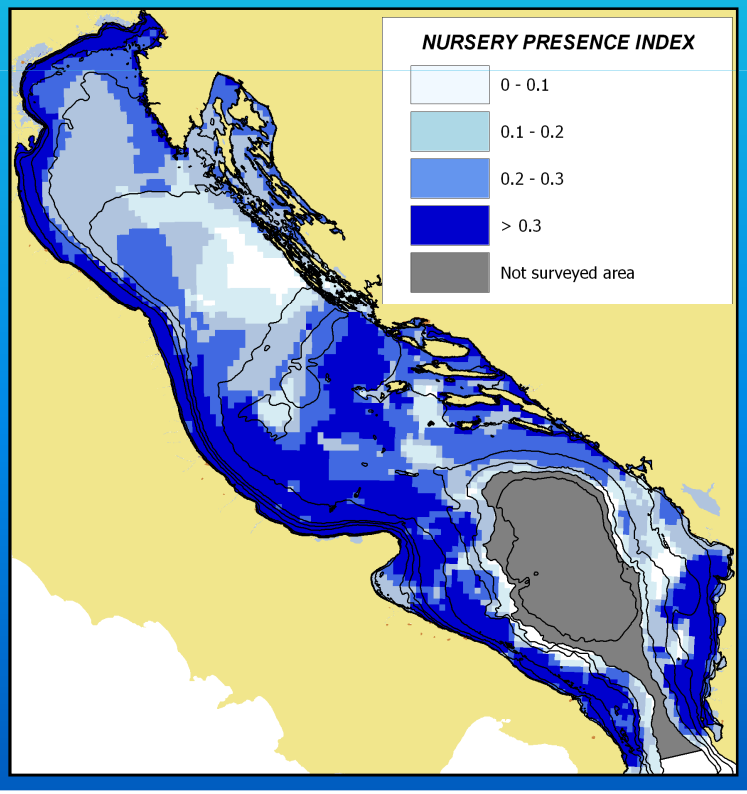
Spawning and nursery presence index of 13 species

(demersal and small pelagics)





Species
Aristaeomorpha foliacea
Aristeus antennatus
Eledone cirrhosa
Engraulis encrasicolus
Galeus melastomus
Illex coindettii
Merluccius merluccius
Mullus barbatus
Nephrops norvegicus
Pagellus erythrinus
Parapenaeus longirostris
Sardina pilchardus
Solea solea

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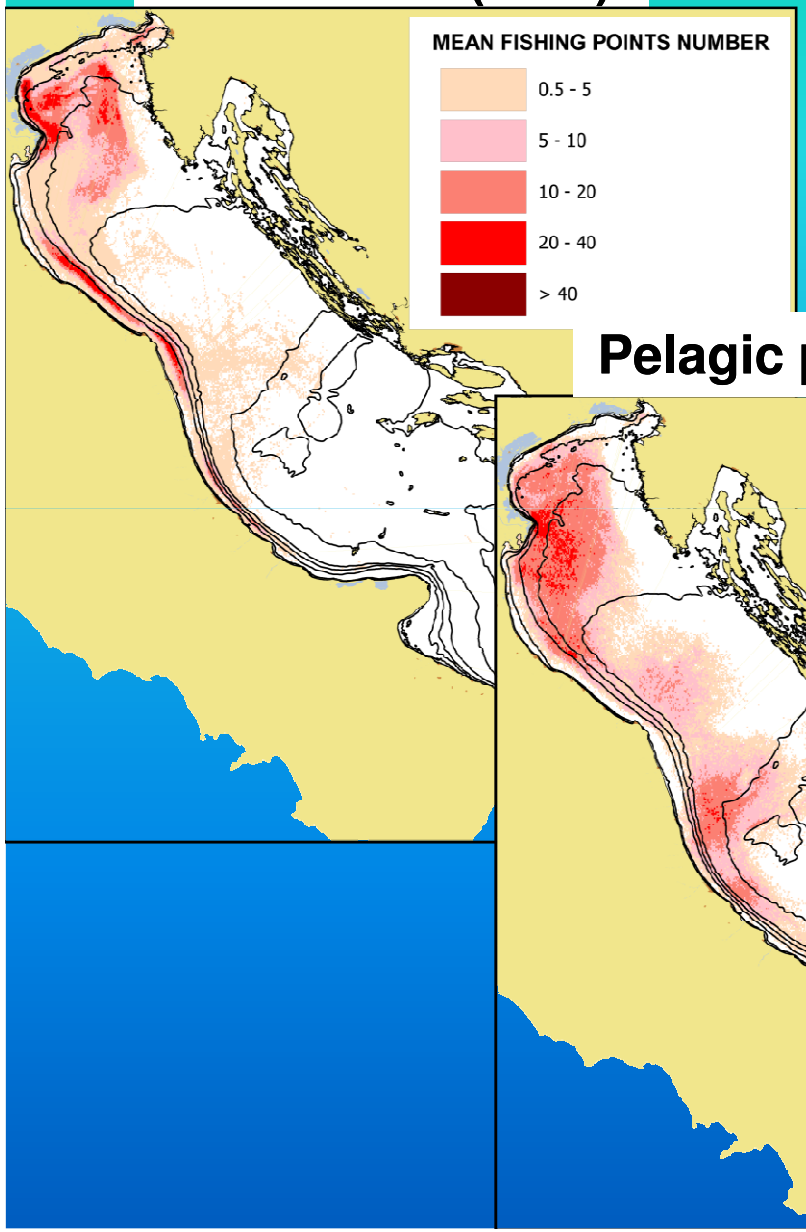
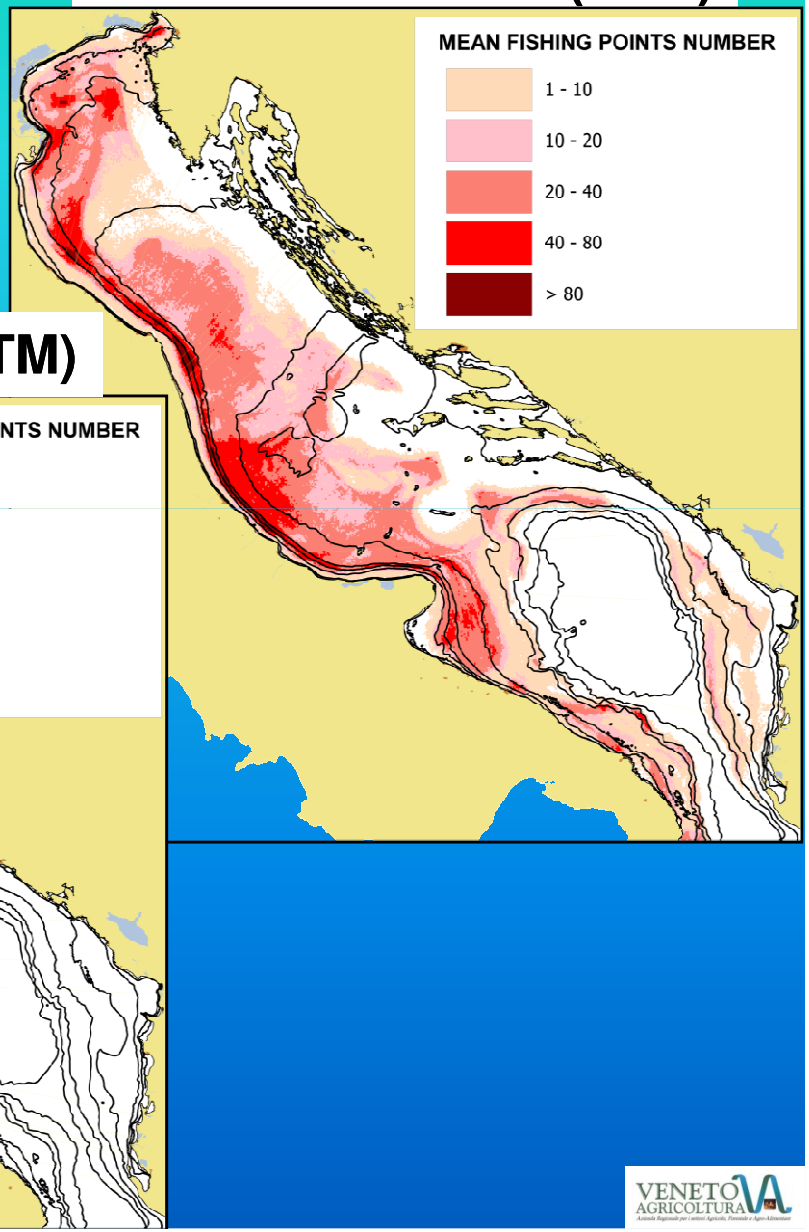
Italian trawl fishing effort distribution (multi-annual average)

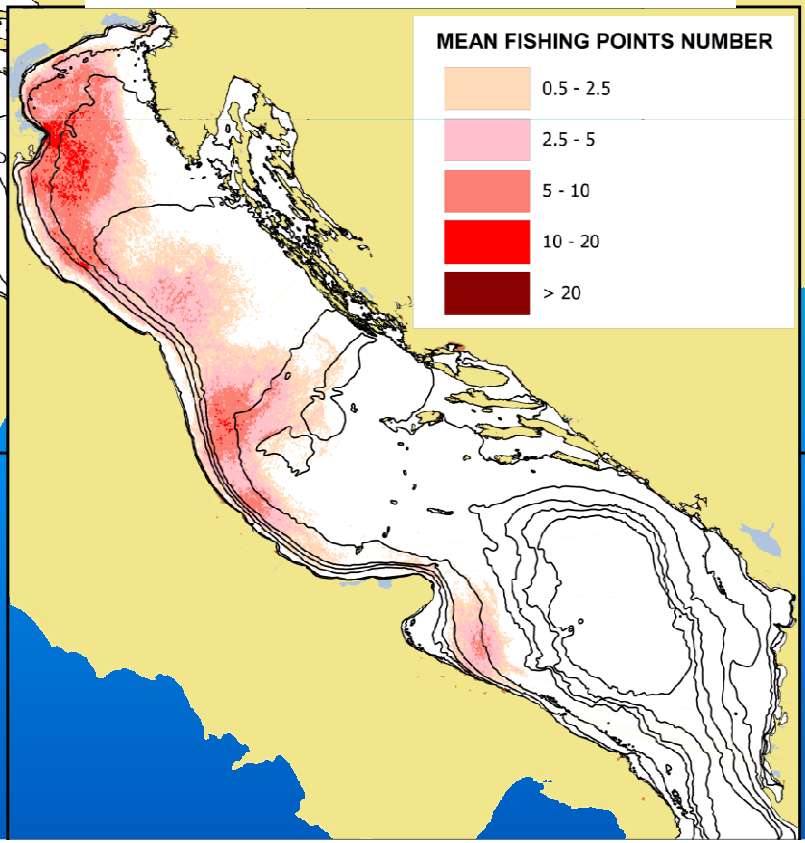
Beam trawl (TBB)



Bottom otter trawl (OTB)



Pelagic pair trawl (PTM)



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What is GRID?

- **GRID (**GeoReference Interactions Database) is a web-based flexible database and tool to analyse interactions (conflicts and synergies) in marine coastal areas
- It represents an additional Deliverable (D3.9) of **COEXIST UE** funded project
- It was developed to have :

- A tool flexible enough to be used in different Case Studies;
- an intuitive Graphic Interface to be also used by people without specific knowledge in database and GIS software;
- to allow data sharing between stakeholders;
- to model different situations such as the present one and/or future scenarios in a very easy way;
- to improve transparency in decision making process.

GRID was developed by CNR-ISMAR in Ancona with the support of Thünen Institute of Sea Fisheries, Hambourg

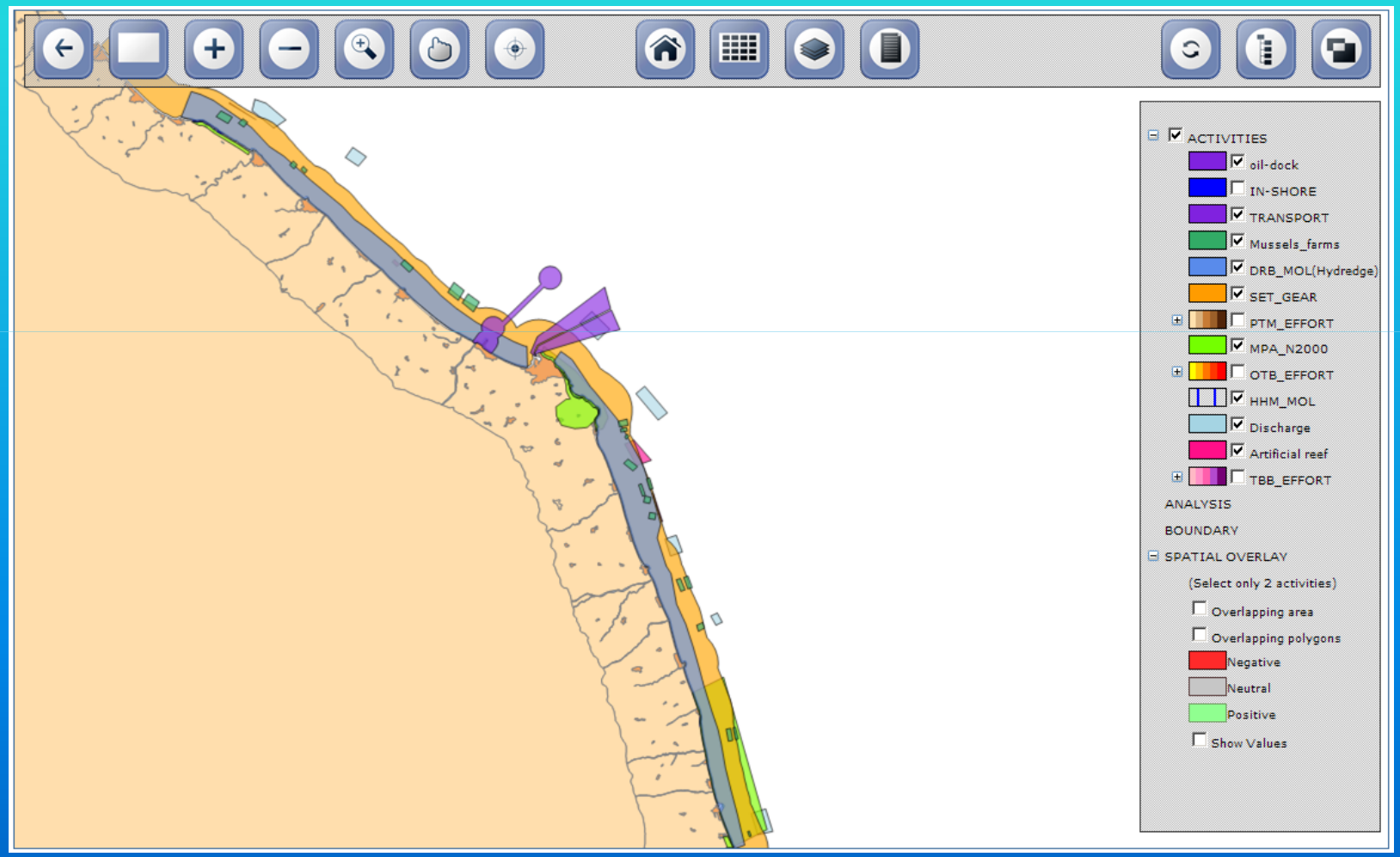
What does the GRID application do?

Version GRID 1.2 allows to perform the following analyses considering different possible scenarios:

- calculation of conflict scores;
- generation of Matrices of interactions;
- plot of maps;
- evaluation of spatial interactions existing in a marine coastal area;
- calculation of asymmetric spatial overlaps;
- calculation of stress levels.

Marche Region Case study

In-shore activities



Marche Region Case study

Off-shore activities