COLUMBUS - LIFE-ISEAS initiative for a science-policy dialogue with European Fisheries Control Agency (EFCA) about recent research activities on discards

European Fisheries Control Agency (Vigo)
2nd, February 2017

How to reduce/avoid discards

iSEAS approach to discards reduction:

- NOT focused on selectivity (fishing gears)
- Mathematical models (to analyze conditions of fishing areas) as decision support tools

ACTION B2: Development of a fish discards SDI

ACTION B3: Optimization of the fishing activity monitoring towards the sustainability of resources

OBJECTIVE:
Mathematical models to analyze the conditions of considered fishing areas

- Fishing Suitability Index (FSI) → which are the best regions for fishing (lower probability of discards)?
- Prediction of juvenile hotspots
- “Fuel-saving" models that penalize distance to ports

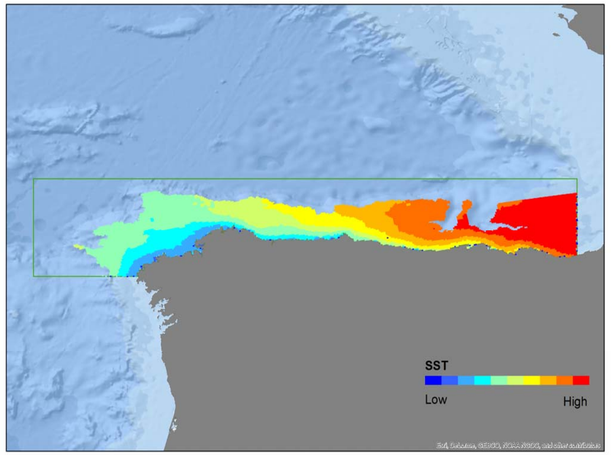
How? → Connecting environmental variables (water temperature, bathymetry, etc) to georeferenced fishing data (commercial and oceanographic campaigns)

Modelling results representation → Spatial data infrastructure/GeoPortal (colored maps)

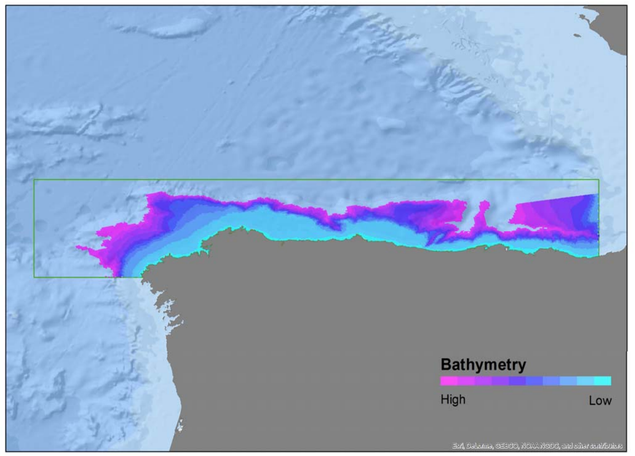
Explanatory variables:

- Bathymetry
- Slope of seabed
- Type of seabed
- SST (Sea Surface Temperature)
- SSS (Sea Surface Salinity)
- Aspect of the seabed

SST
(Sea Surface Temperature)



Bathymetry



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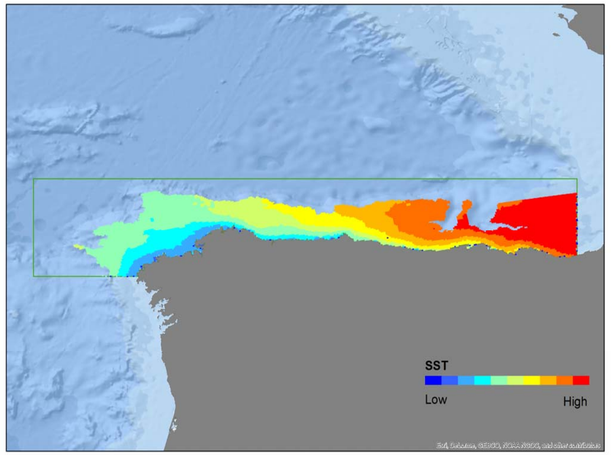

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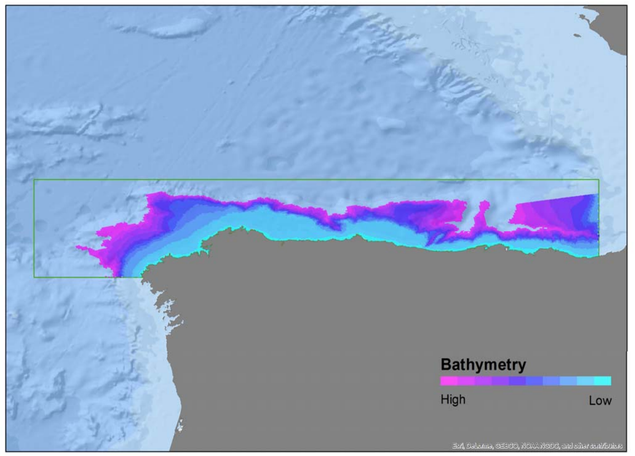

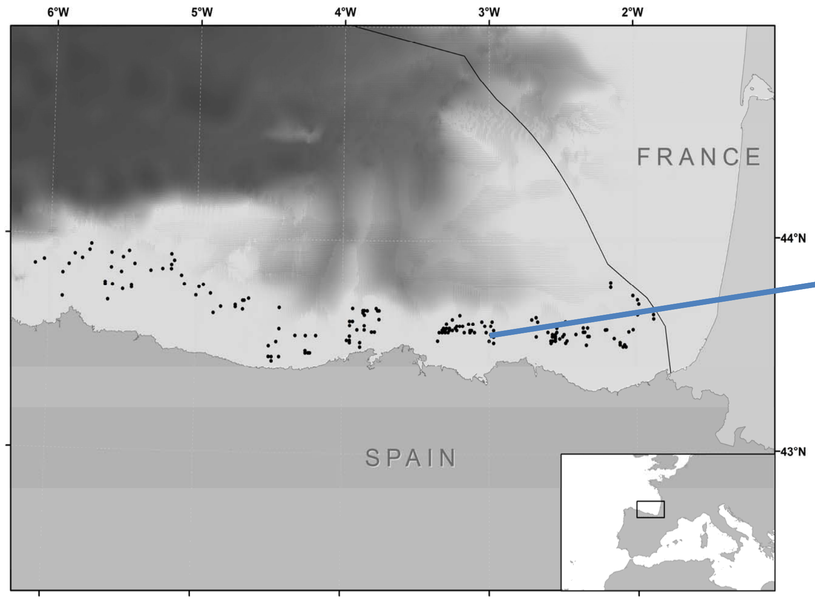

Black spots (for each species):

- Captured quantity
- Discarded quantity

→ Georeferenced

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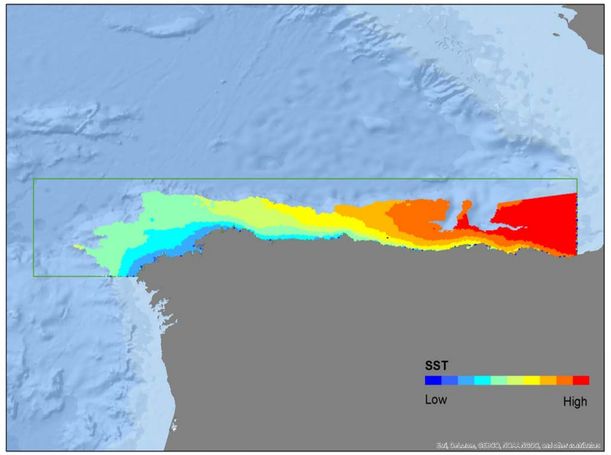
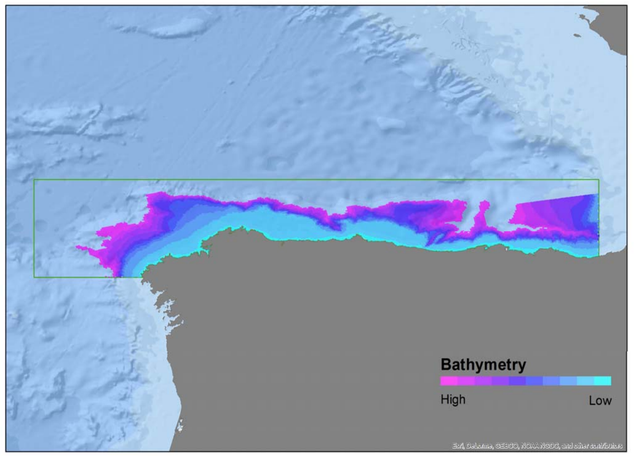
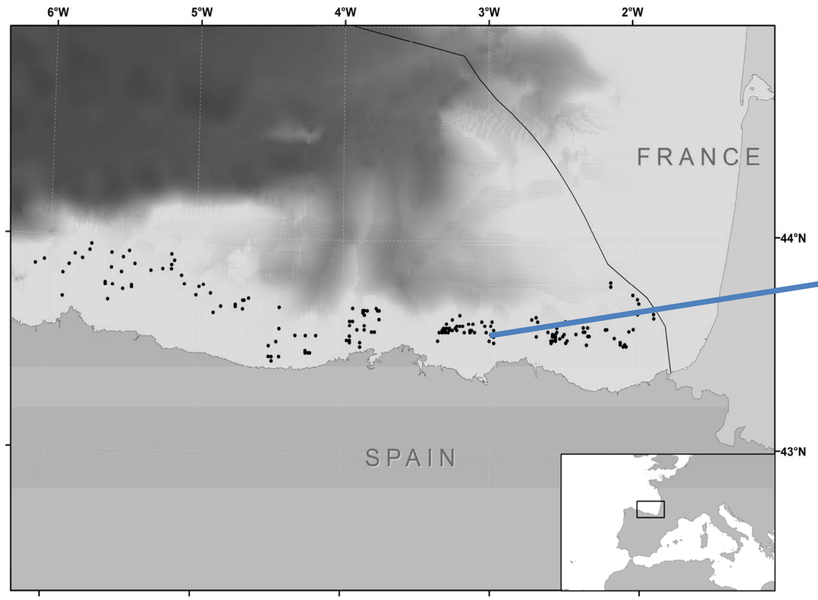


Bathymetry





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- Discarded quantity

→ Georeferenced

Mathematical model:
Probability of discard = f(explanatory variables)

GIS and Geoportal

Data from Fleets
- Rebox
- iObserver

Catches DB
POSTGIS

Data Server
- GEOSERVER

WPS

CS-W

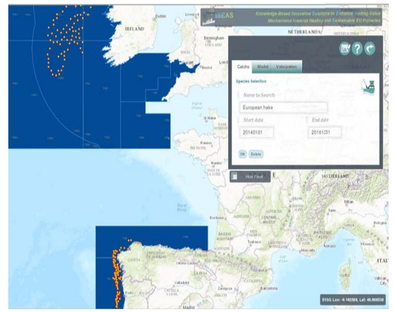
WMS

WCS

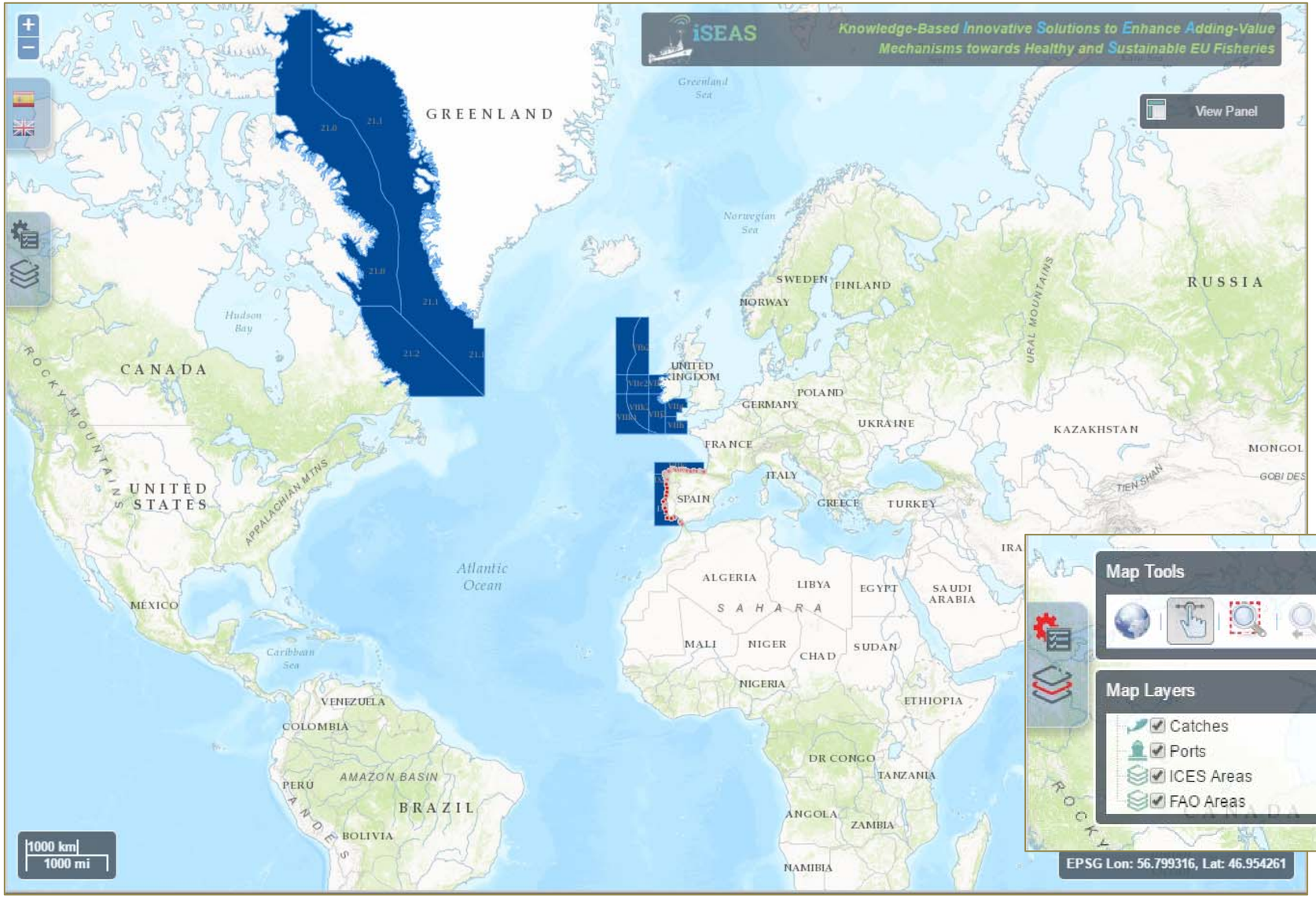
WFS

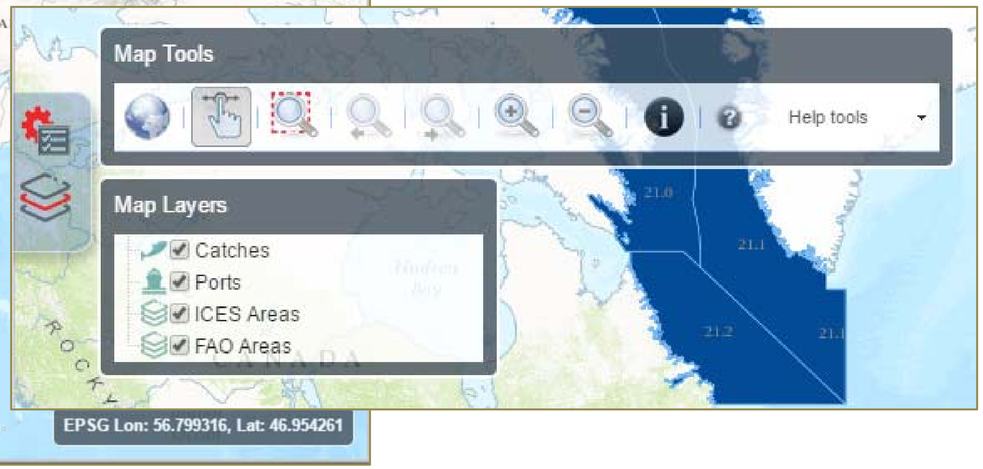
GIS Tools
- Other geoportals
- Desktop

GEOPORTAL:
Embedded mathematical model



Users
- Ports
- Fleets
- Fish Markets
- Researchers



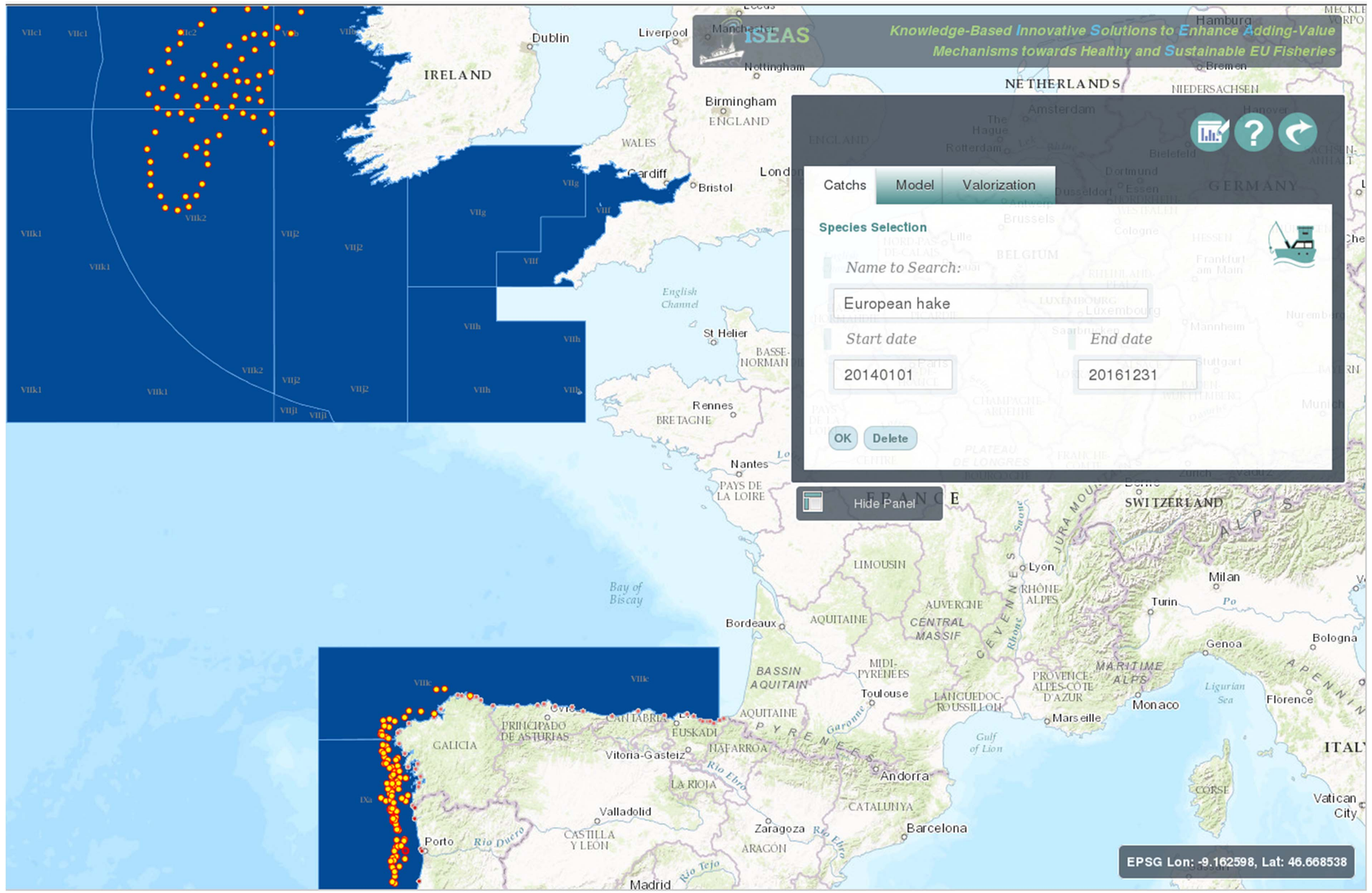


Map Tools

- Zoom
- Scrolling
- Information

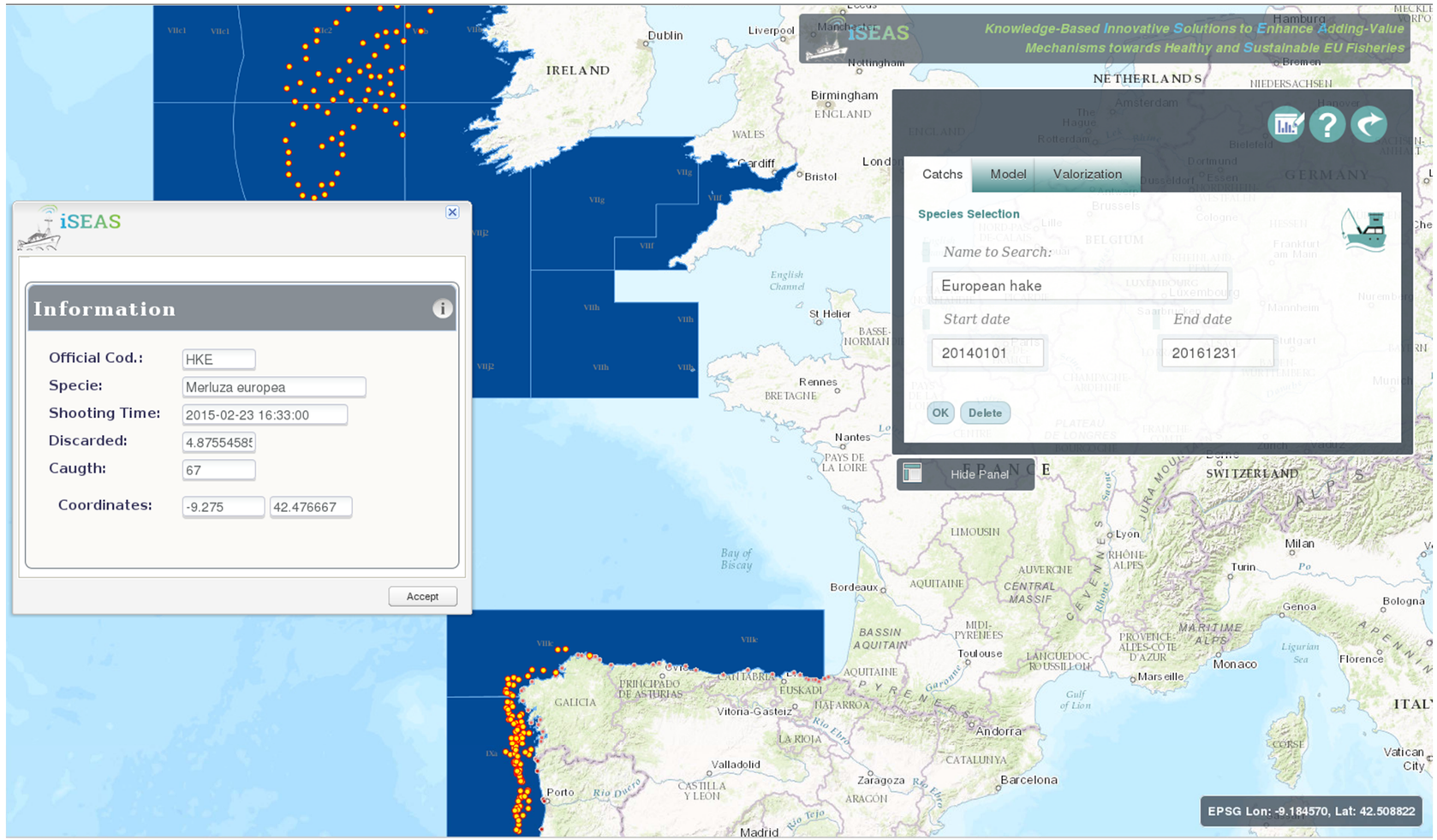
Map layers

- ICES regions
- FAO regions
- Ports
- Catch data: from database



Catch data

- Species selection
- Date selection
- Data from commercial / oceanographic campaings



Catch data

- Species selection
- Date selection
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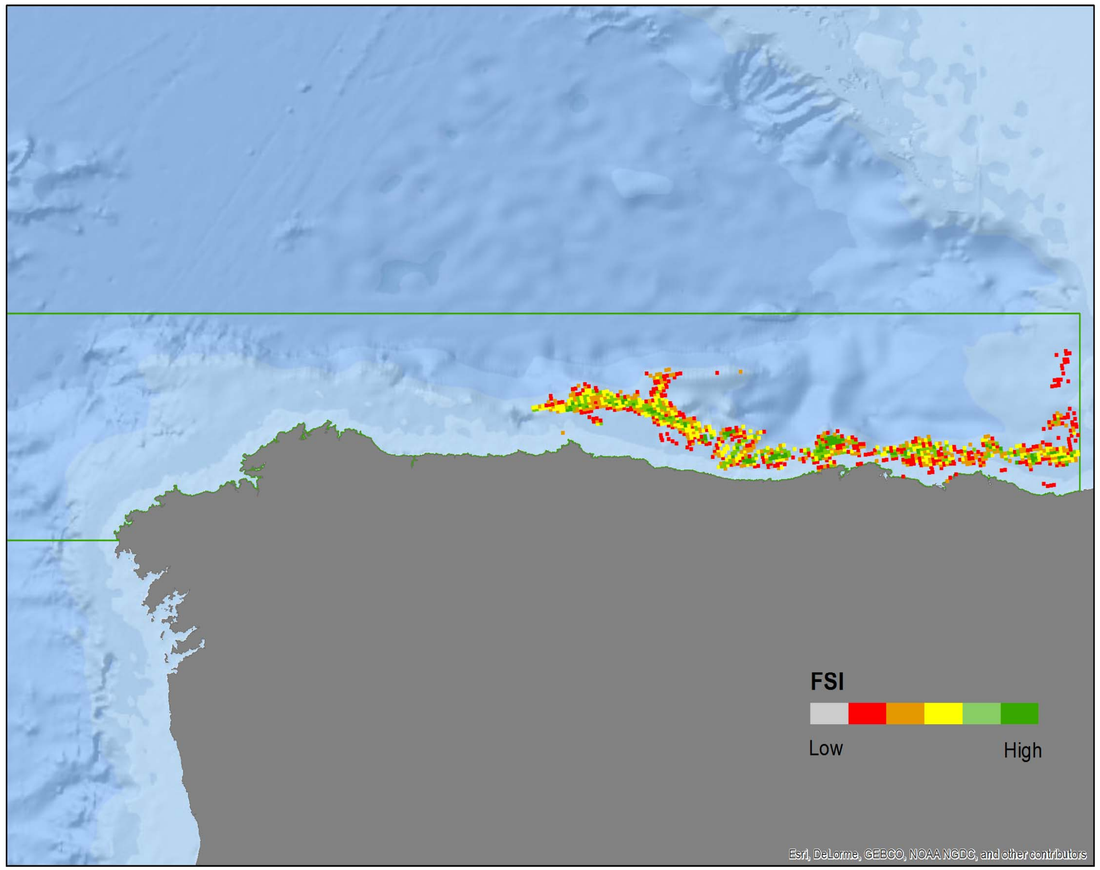
Access permissions

- Administrator
- Project partner (all data)
- Ship owner (own data)
- Public (model results)

Import/Export to other GIS tools

- INSPIRE → Infrastructure for spatial information in Europe

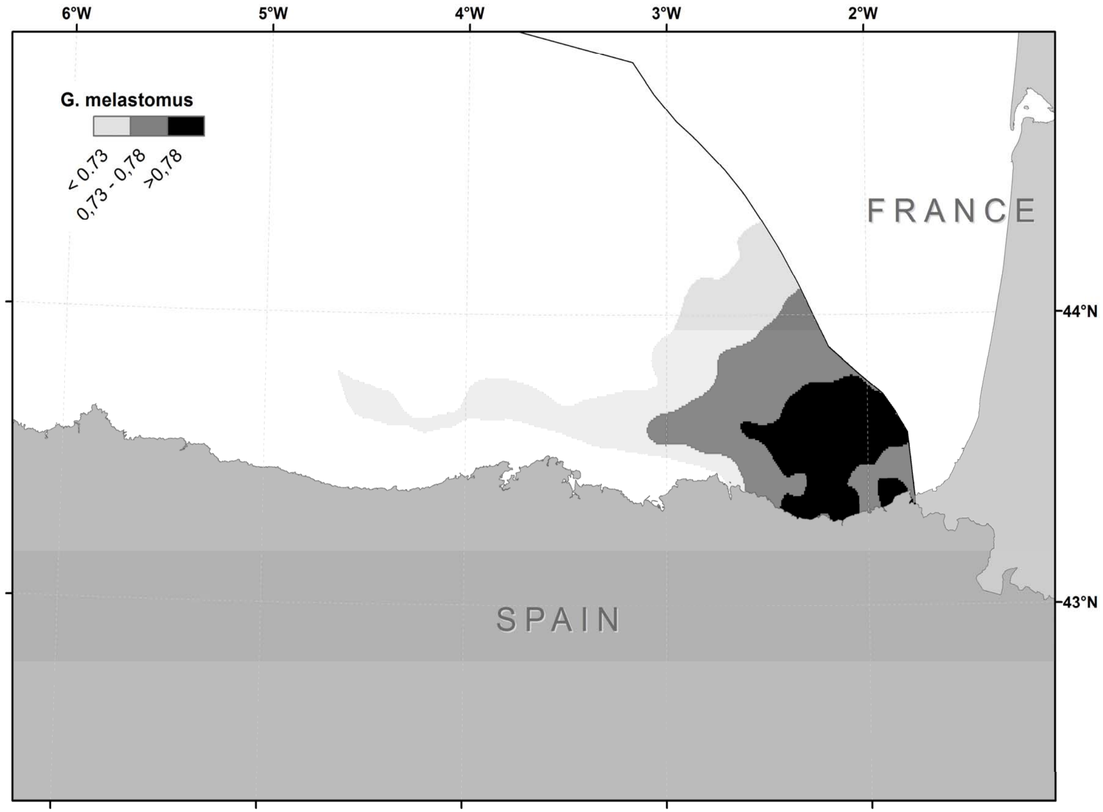
Mathematical model:
Probability of discard = f(explanatory variables)



Modeling results/ representation in the map

- Red → Large probability of finding discards
- Green → Low probability of finding discards

Mathematical model:
Probability of presence = f(explanatory variables)



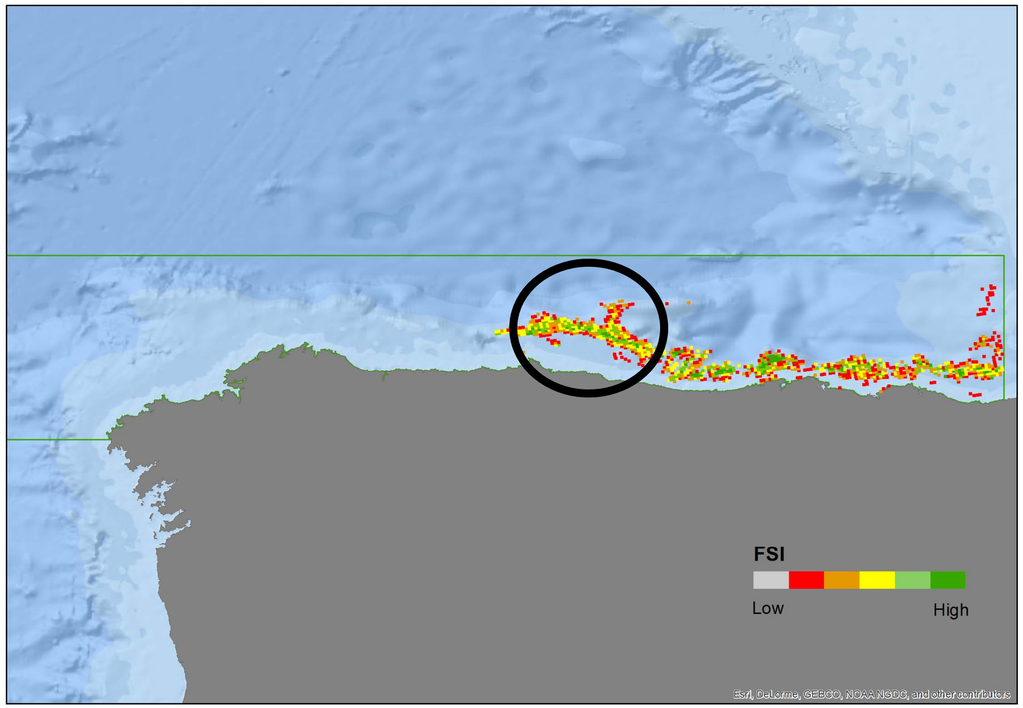
Pobability of presence:

- Forbiden species
- Juvenile individuals

Fuel-saving → Including distance to port

- Fuel cost / consumption

Without distance to port (Bermeo)



With distance to port (Bermeo)