e-shape solutions: Unlocking the potential of Earth Observation data for climate change and urban

14 - 15 February 2023
9.30 – 17.00 CET
Valletta, Malta
Malta Council for Science and Technology

Aida Campos, IPMA
E-shape Pilot "Monitoring fishing activity" –
A web-based tool in support of fisheries management

e-shape

An event co-organised by

Xjenza

The Malta Council for Science & Technology

eurisy
ACTING COLLECTIVELY TO BRIDGE SPACE AND SOCIETY

SC5/Pilot 5.5
A web-based tool in support of fisheries management

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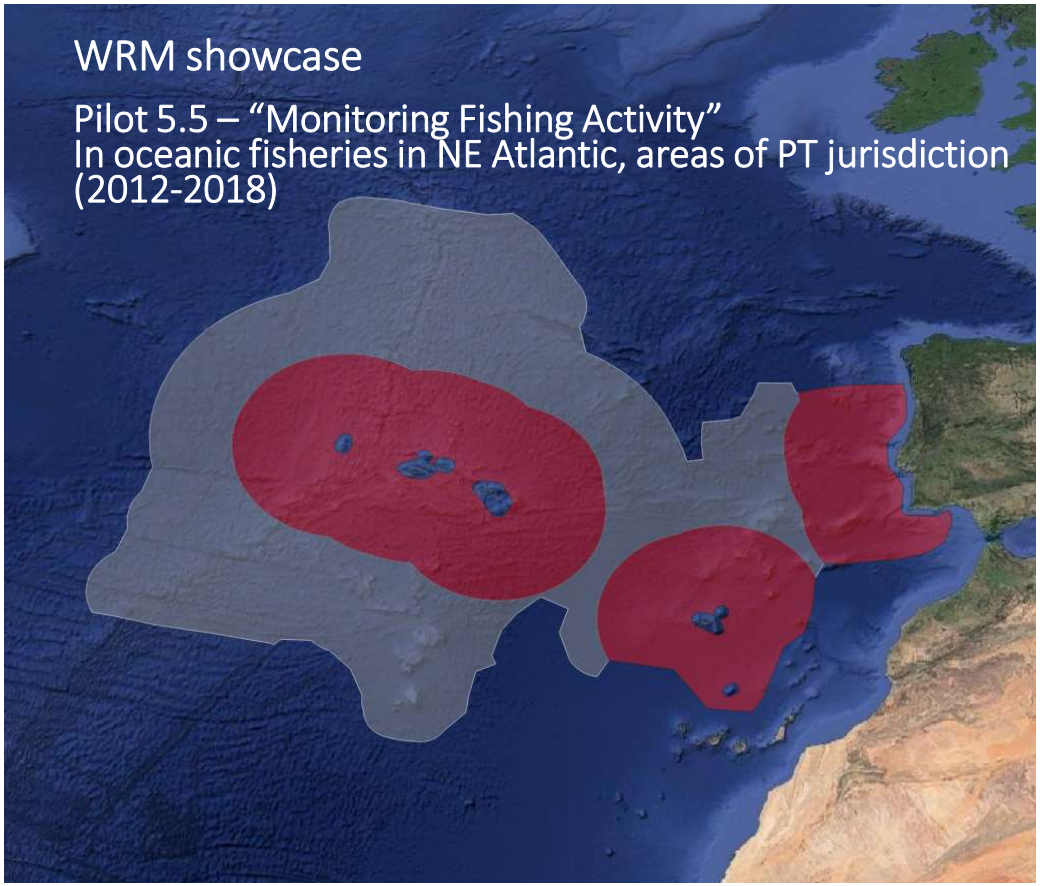
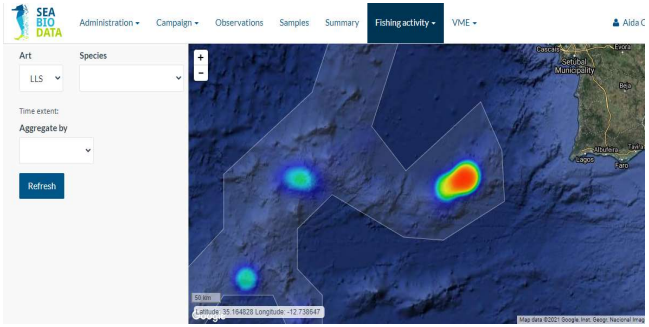


Why Pilot 5.5 ?

- Fishing is the main human activity directly impacting these areas – which fleets, where and how do they operate?;
- Spatial information should be incorporated in conservation planning processes in line with EU policies (**CFP, MSFD**);
- Scientific advice required at a regional level, calling for user-driven demand for R&I and the development of user-oriented applications;
- Data collected through EMS - essential but their potential not fully used in support to scientific advice;
- Previous IPMA experience in other projects.

SC5/Pilot 5.5
A web-based tool in support of fisheries management



Aim

- To develop a web-based tool for exploration and visualisation of spatial fishing information, providing maps of fishing intensity, landings, catch rates and environmental characterization for pelagic fisheries in these areas;
- To raise awareness of key users towards fishing activities and motivate them towards sustainable fishing strategies and practices.

Key-users

- PT fisheries Administration; Regional Governments; Scientific community; Fishing industry; NGO's; International organizations;

Requirements

- Application user-driven - user-structured and user-oriented; **co-designed**; delivering policy, economic and social value;
- Demonstrating effective use of European EO resources;

Key-Datasets 2012-2018

Analysis of fishing activity in areas of PT jurisdiction

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Key datasets

Methodology	Key Datasets P-pressures E-environmental	(P) Vessel Monitoring System (VMS) data from PT vessels from the MONICAP system. (P) Vessel Monitoring System (VMS) data from EU and foreign fishing vessels operating in PT EEZ (P) Vessels technical characteristics for all vessels above. (P) Automatic Identification System (AIS) data from all fishing vessels (terrestrial and SAT_AIS). (P) Fishing e-logbooks data for the PT fishing fleet. (P) Landing declarations for the PT fishing fleet. (P) Fishing e-logbooks data for the EU and foreign fishing fleets. (P) Landing declarations for the EU and foreign fishing fleet (E) in-situ, satellite and model EO data streams (SST, Chlorophyll-a, currents, salinity) available through CMEMS, Argos, ESA CCI. (E) Bathymetric chart (E) Sediment chart

PT fleet – DGRM;
Other fleets- international organizations

Fisheries Dependent Data

Source: PT fleet, DGRM

Landing declarations

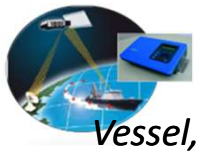
Vessel, Date, Landing port, Species, Catch, Value

Fleet technical characteristics

Vessel, LoA, GRT, Power, Year, Port of register, Fishing licence

(E-logbooks)

Start/End/Position of fishing operation (Lat, long., timestamp), Fishing gear used, Species, Catch



VMS Data

MONICAP System

Vessel, Timestamp, Geographic position, Speed, Heading.

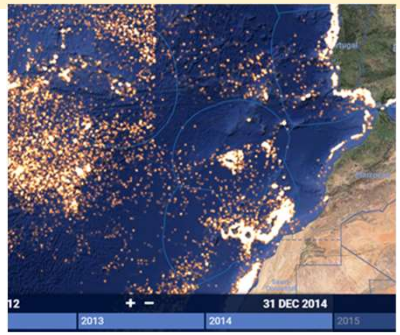
Frequency 2h

EO data

Sat-AIS data

External suppliers MMSI, Timestamp, Geographic position, Speed, Heading.

Frequency variable

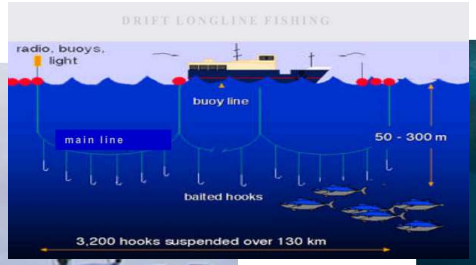


Environmental data, open data

Bathymetric and sediment charts SST, Chlorophyll-a, currents, salinity)

Fleets analysed

Drifting longline



Target species: Swordfish
Study period: 2012-2018
Fleet: 62 vessels (40 with AIS - 91% of swordfish sales);
By-catch : Tuna fish, blue and mako sharks

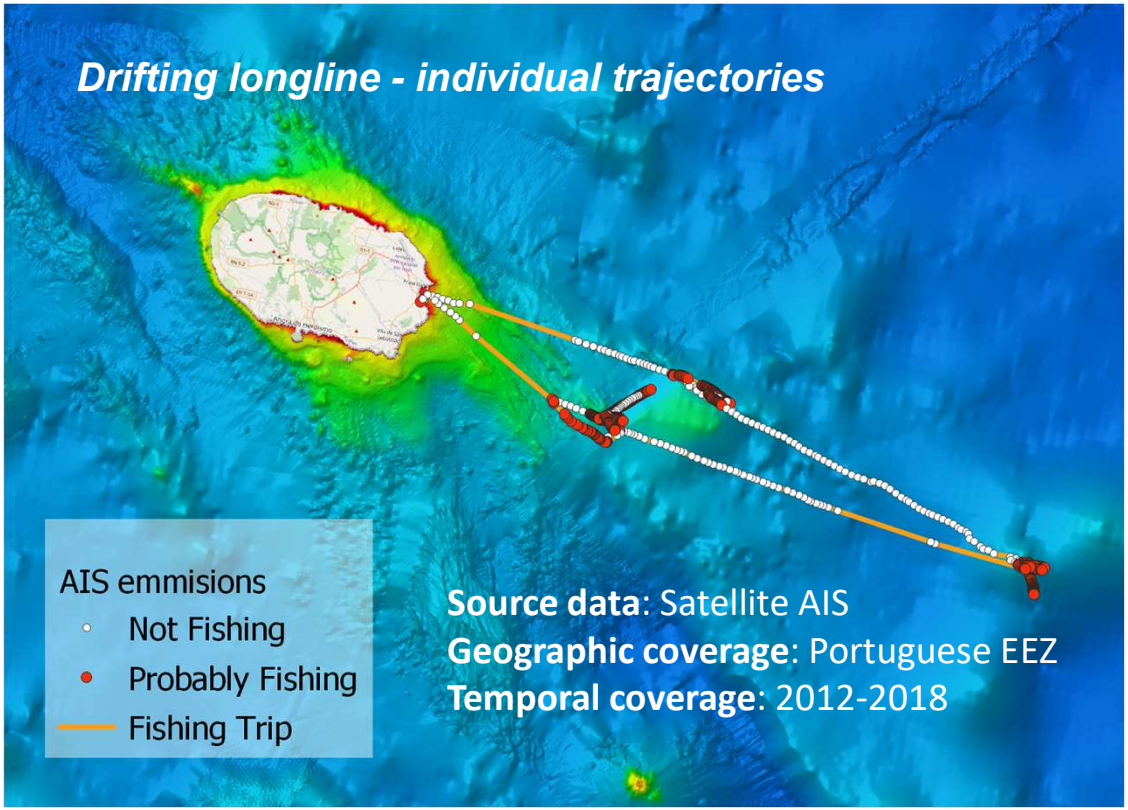
Pole and Line

Target species: Tuna fish (Bigeye, skipjack, albacore)
Study period: 2014-2018
Fleet: 49 vessels (31 with AIS data - 63% of tuna sales);

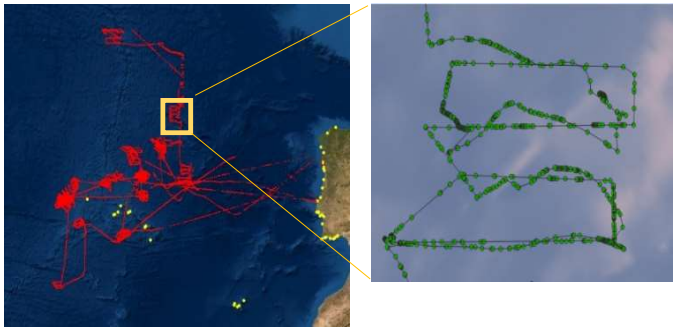
By-catch : None

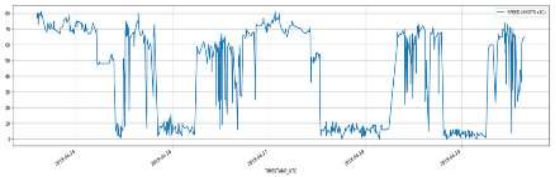
Products/services

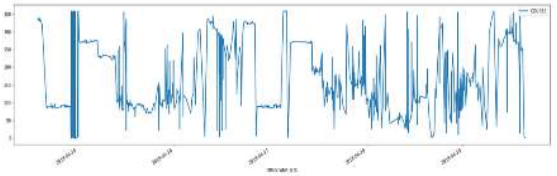
P1 Fishing trip maps



Data analysis based on AIS attributes







Products/services

P2 Fishing footprint maps

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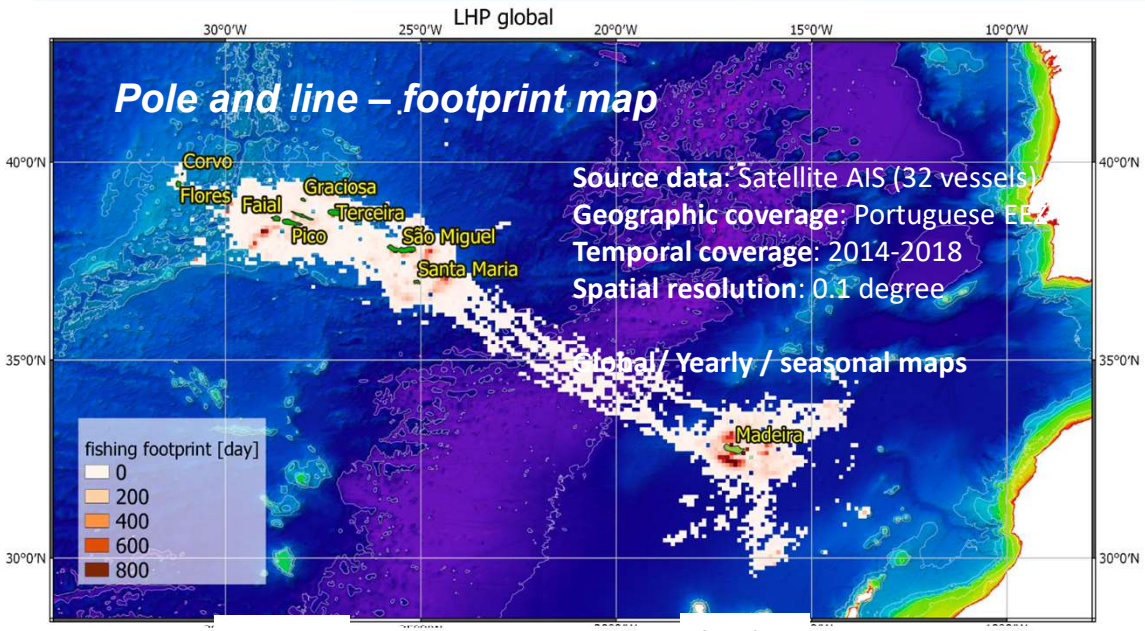
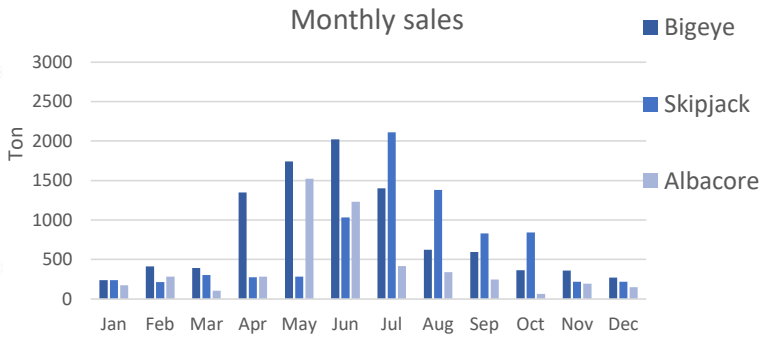
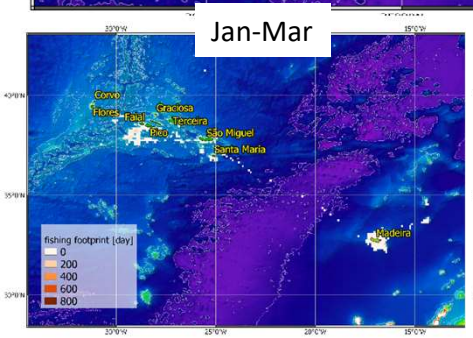
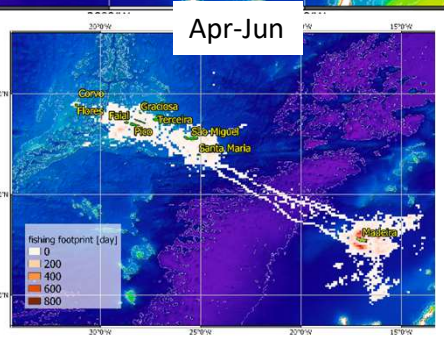
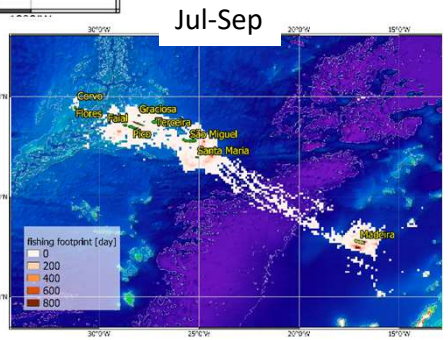
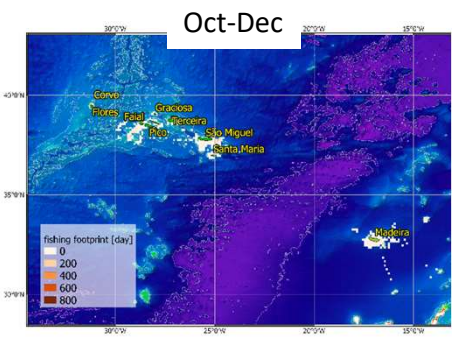










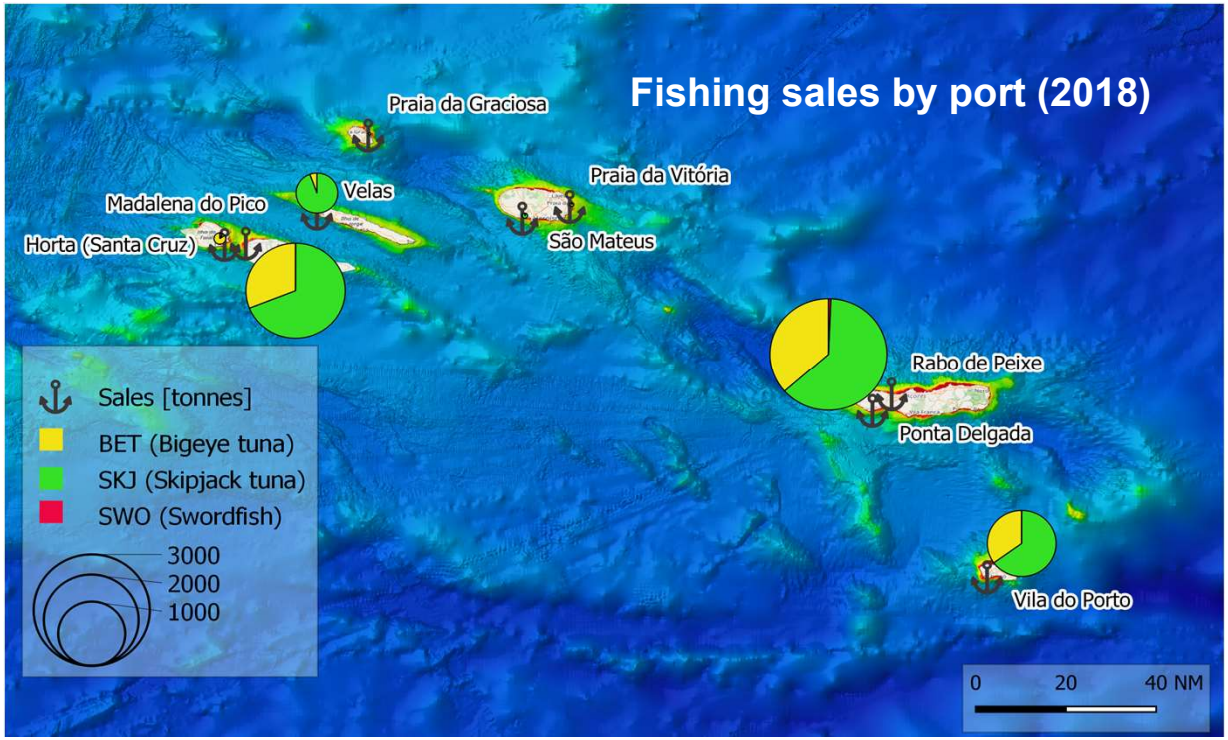


Products/services

P3 Fishing sales of targeted species

Annual sales per port with percentage sold by target species

Source data: Sales dataset
Geographic coverage: Portuguese EEZ
Temporal coverage: yearly (2012-2018)



Tools for exploratory analysis of fishing trips

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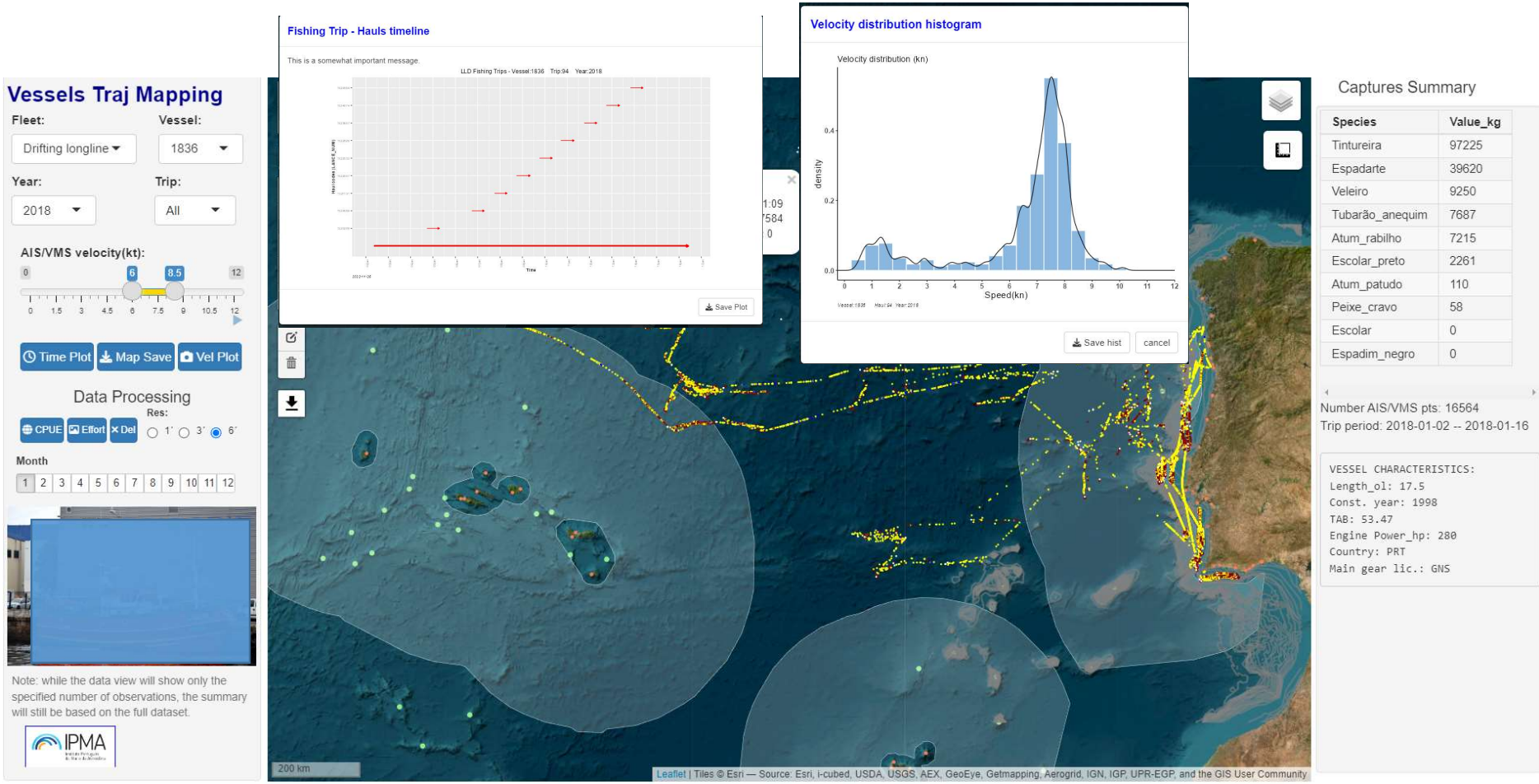

Expected outcome

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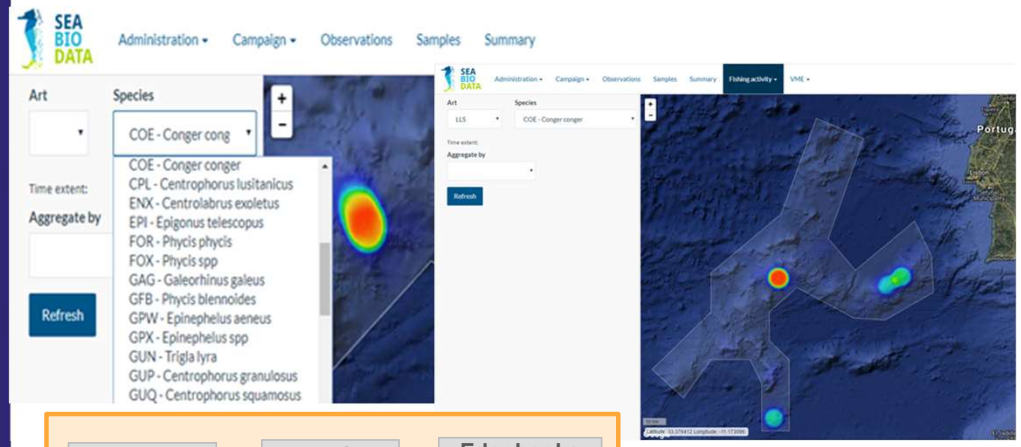
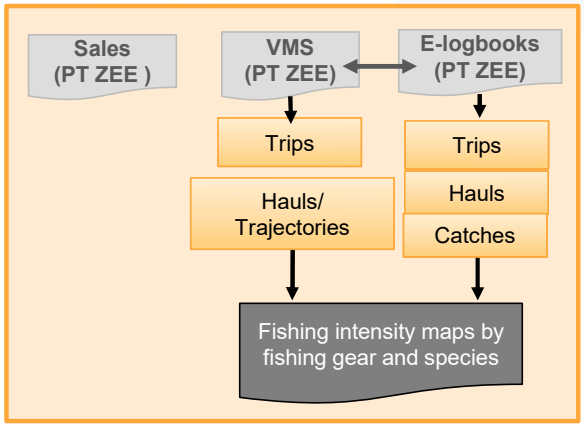
Extending previous application developed for the Madeira-Tore área

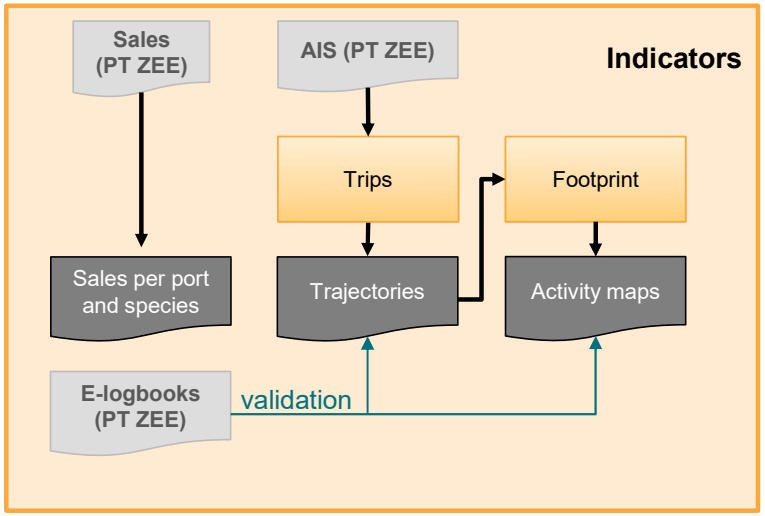
projects Biometore and SeaBiodata (EEA Grants)

Web tool SeaBioData (TRL 4)





Current application (aimed TRL 7)



- **Providing a set of functionalities** - interactive maps on the fishing activity (drifting longline and pole and line) including fishing trips, fishing footprint, sales and environmental characterization;
- **Access to end-users –** criteria to be defined by DGRM and pilot coordinators

Co-design challenges

- Co-design process undertaken with key-users

PT Administration; Regional Governments; Scientific community; Fishing industry; NGO's; International organizations

Assessing users' requirements

On key datasets
(in situ data, models, EO data)

- What are the user requirements in terms of fisheries data ?
- What are the limitations for accessing data or for sharing data with external partners ?

On products/services

- Type of products/services adapted to key user activities;
- Characteristics required (resolution, update interval, accuracy, etc.);
- Added value of products/services;
- Restrictions/limitations for using these services

Decisions made throughout the co-design process incorporated into final products

Improving products

Data quality

Daily sales	Fleet technical characteristics	Sat-AIS data	(E-logbooks)	VMS Data MONICAP System	Environmental data
Vessel, Date, Landing port, Species, Catch, Value	*Vessel, Date, LoA, GRT, Power, Year, Port, Fishing licence*	*MMSI, Timestamp, Position, Speed, Heading, Ping rate: variable*	*Start/End/Position of fishing operation, Fishing gear used, Species, Catch*	*Vessel, Timestamp, Position, Speed, Heading, Ping rate 2h*	*EMODnet, CMEMS, Copernicus in-situ, satellite and model EO data streams (SST, Chlorophyll-a, currents, salinity)*

- Requiring integration for different data sources (VMS/Sat-AIS/E-logbooks/ Environmental data)
- Access to high-quality monitoring data for all fleets (not only PT fleets)
- Data sharing among data providers and product developers

Thank you!

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