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## CASE STUDY:

Representation and  
Analysis of Benthic  
Biodiversity data in the  
Canary Current Large  
Marine Ecosystem using the  
IOC application CCLME  
Data Analytic Viewer

**Hands-on Workshop on “The use  
of the CCLME Eco-GIS Viewer”**

11-13 July 2017



*The main aim of this Case Study is to test the usefulness of the CCLME Data Analytic Viewer as a valid tool for the geographic representation and analysis on biodiversity and distribution data of benthic marine invertebrates*



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# Functionalities, Tools and Datasets used in this Case Study:

## Functionalities:

- 1) Biological data
- 2) Using my own data

## Tools:

- 1) Simbology Tool
- 2) Print Map Tool
- 3) Drag&Drop Tool
- 4) Interpolation Tool
- 5) Graph Tool

## Datasets:

- 1) IEO Surveys
- 2) OBIS biodiversity dataset
- 3) FAO species distribution
- 4) **EcoAfrik datasets (Biodiversity of African benthos)**



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ECOAFRIK

ÁREAS DE ESTUDIO

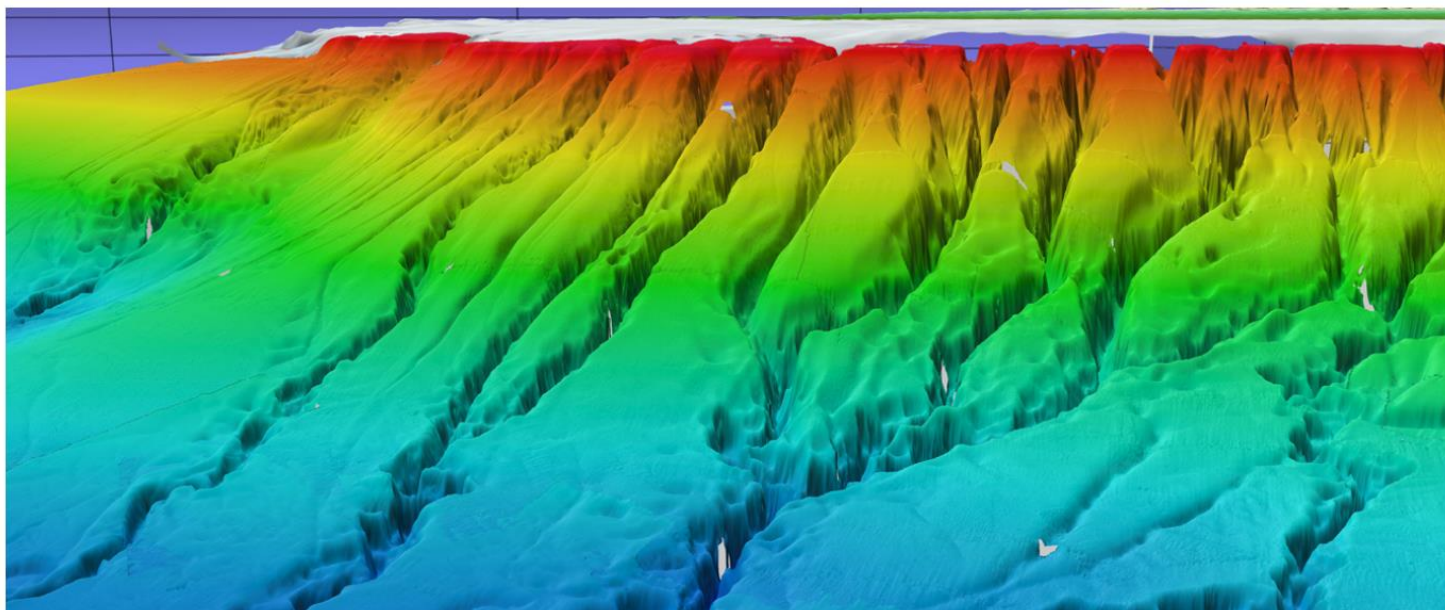
GALERÍAS

ORGANISMOS PARTICIPANTES

PROYECTO

ACTUALIDAD

VÍDEO



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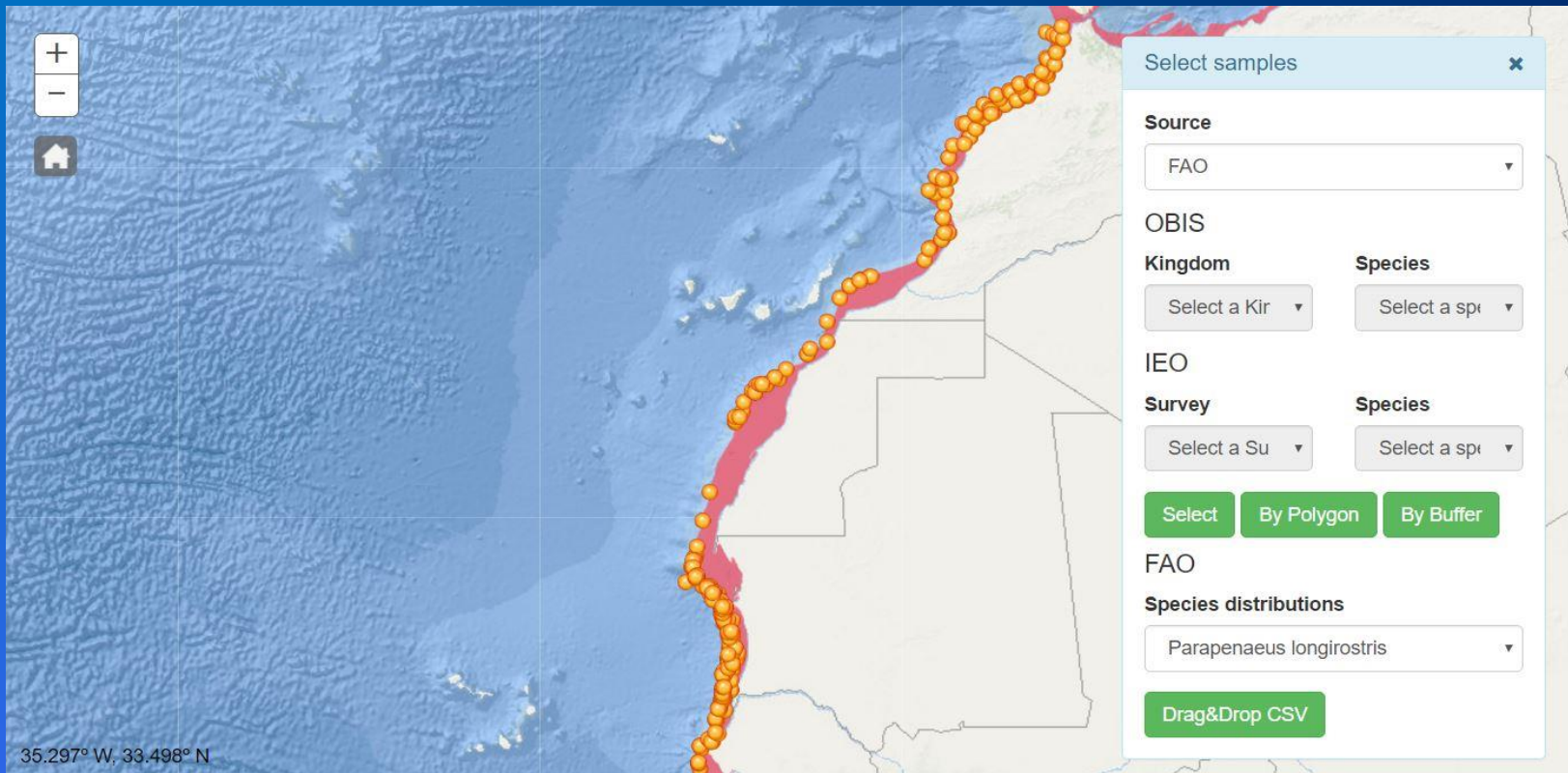


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# PRACTICAL APPLICATIONS

## Application 1)

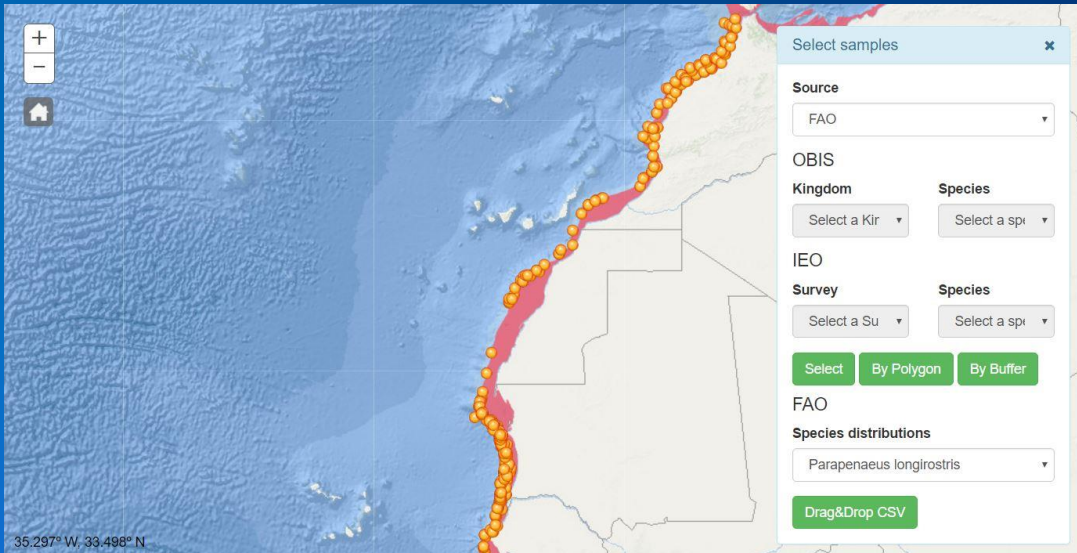
Combining FAO database (species distribution areas) and EcoAfrik biodiversity or other database from Northwest African surveys: Jointly representation of the “rose shrimp” (*Parapenaeus longirostris*).





# PRACTICAL APPLICATIONS

## Application 1)



This interesting and very useful application allow to visualize and to check the distribution of species collecting in own biological surveys and the distribution areas of FAO maps.



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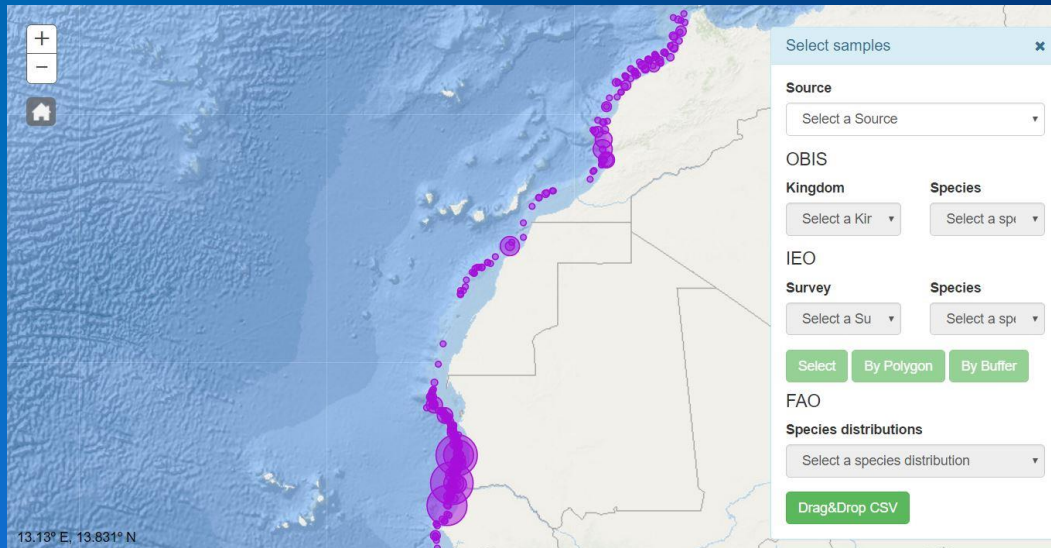
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# PRACTICAL APPLICATIONS

## Application 1)

Maps can be also constructed to analyze the geographical distribution of main abundance areas of particular commercial or non-commercial species, fishes, crustaceans, cephalopods, other invertebrates, larvae and eggs concentrations, etc.



*Parapenaeus longirostris* density (individual's number by 0.1 km<sup>2</sup>) (source EcoAfrik datasets). To render this layer was used proportional symbols representation



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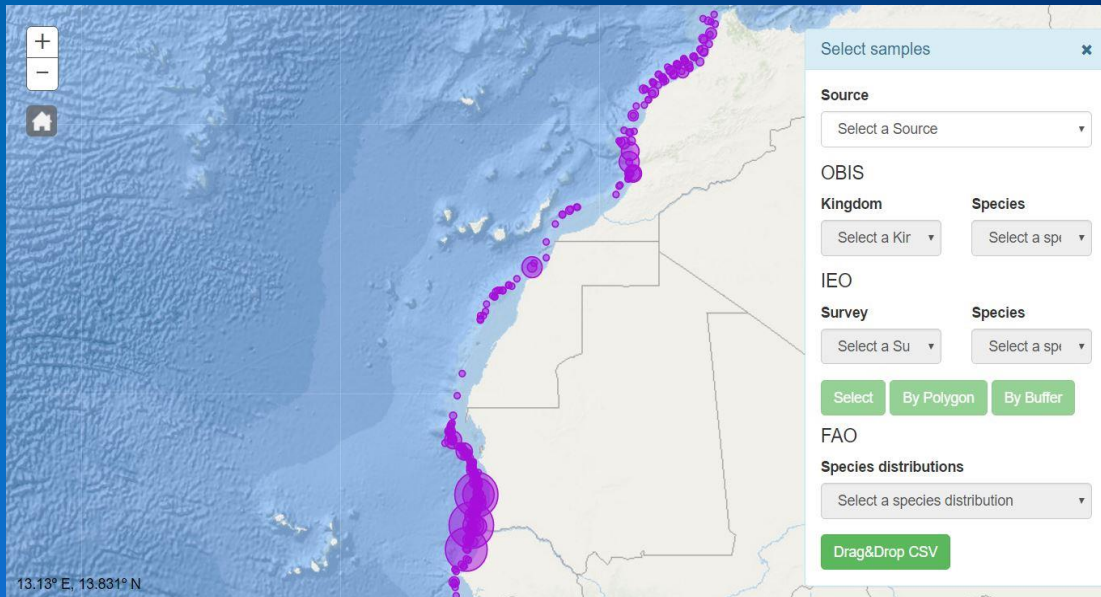


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# PRACTICAL APPLICATIONS

## Application 1)



*Parapenaeus longirostris* biomass (kilograms by 0.1 km<sup>2</sup>) (source EcoAfrik datasets). To render this layer was used proportional symbols representation.



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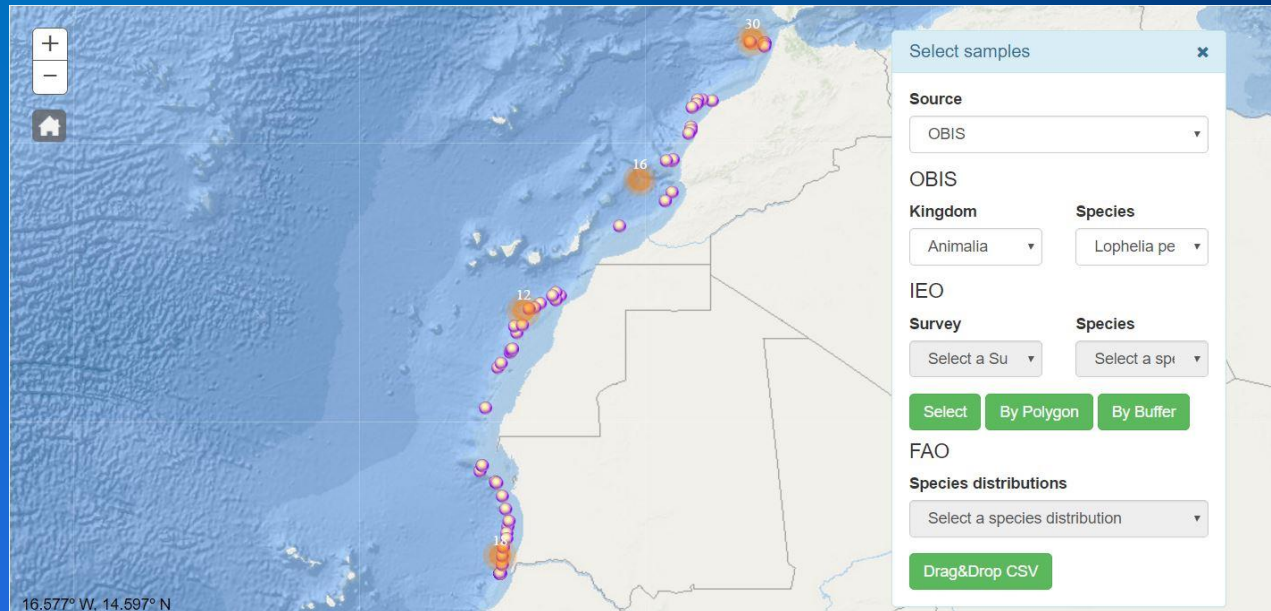




# PRACTICAL APPLICATIONS

## Application 2)

Combining OBIS database geographical record (species presence) and EcoAfrik biodiversity database from Northwest African surveys: Jointly representation of the distribution of cold-water coral *Lophelia pertusa* along Northwest African slope



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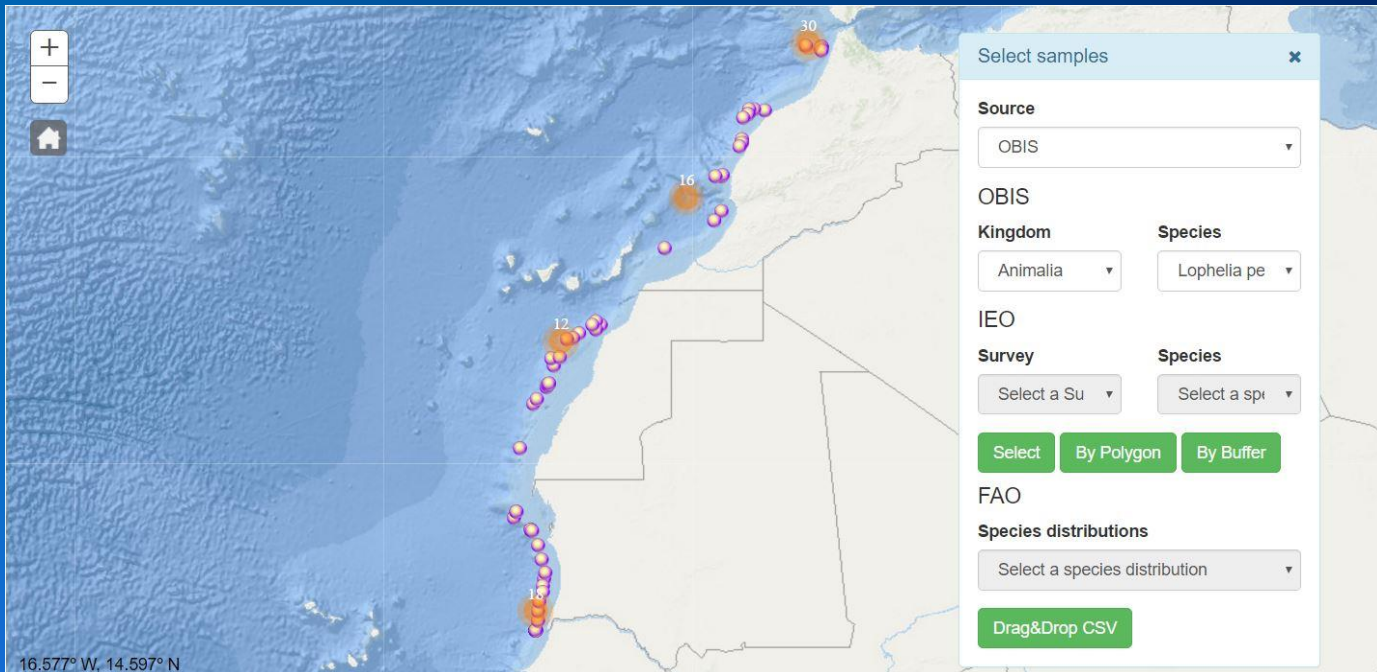


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# PRACTICAL APPLICATIONS

## Application 2)



Purple points - *Lophelia pertusa* presence (source - EcoAfrik datasets).  
Orange points, cluster with the number of samples recorded close to this point  
(source - OBIS)



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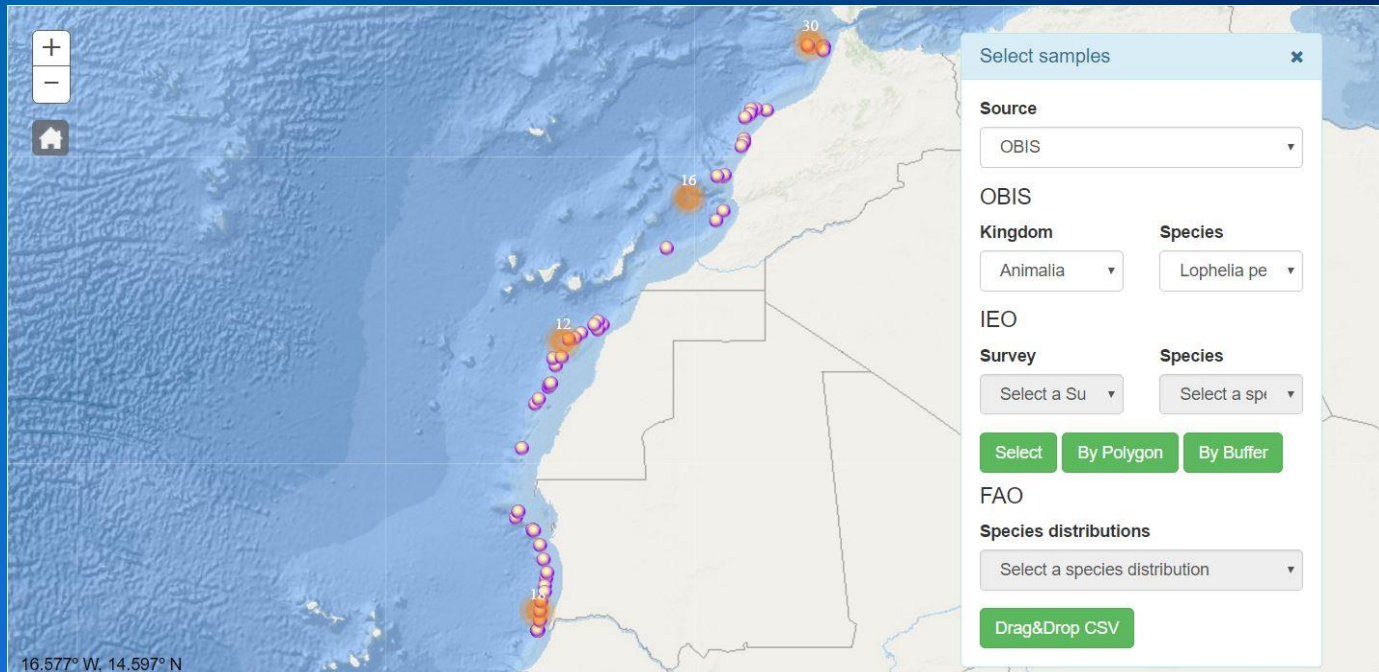


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# PRACTICAL APPLICATIONS

## Application 2)



In this case, the map on *Lophelia pertusa* distribution allow identifying the Mauritanian cold-water coral reef (Ramos et al., 2017b) and to observe as this structure seems to continue northern along Western Sahara and Moroccan coast



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# PRACTICAL APPLICATIONS

## Application 3)

Using Symbology tool with our own data. From EcoAfrik datasets in this case



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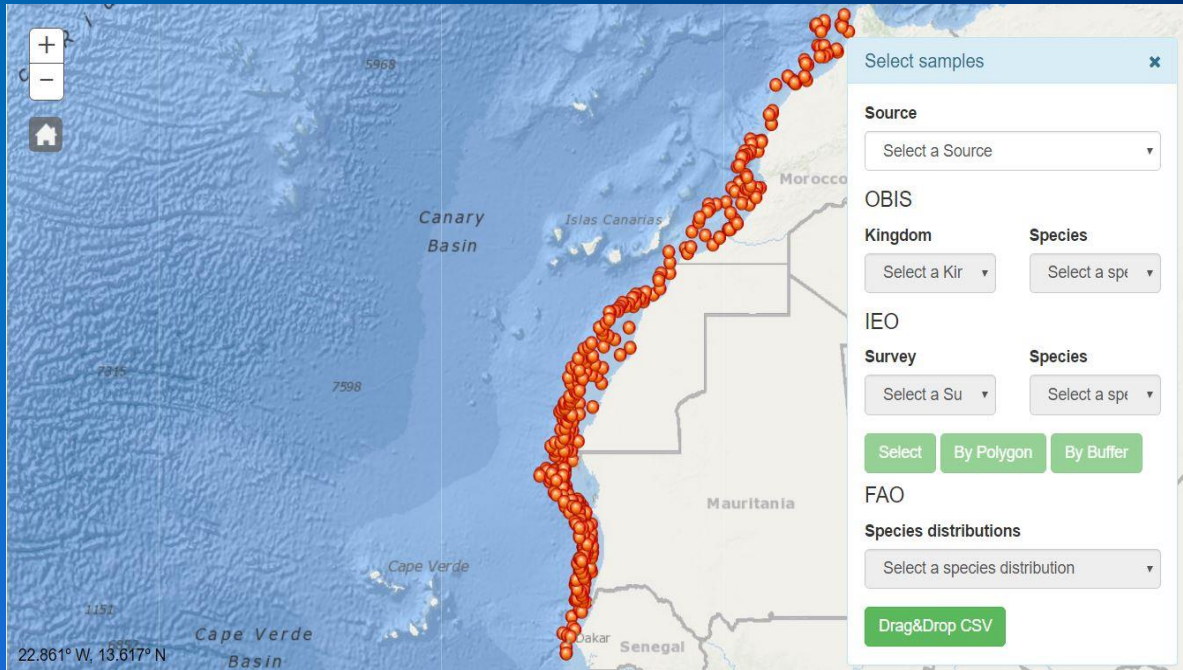


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# PRACTICAL APPLICATIONS

## Application 3)



Orange points - Ophiuroidea presence along Northwest African coast in the 10 Spanish and Norwegian surveys (source - EcoAfrik datasets).



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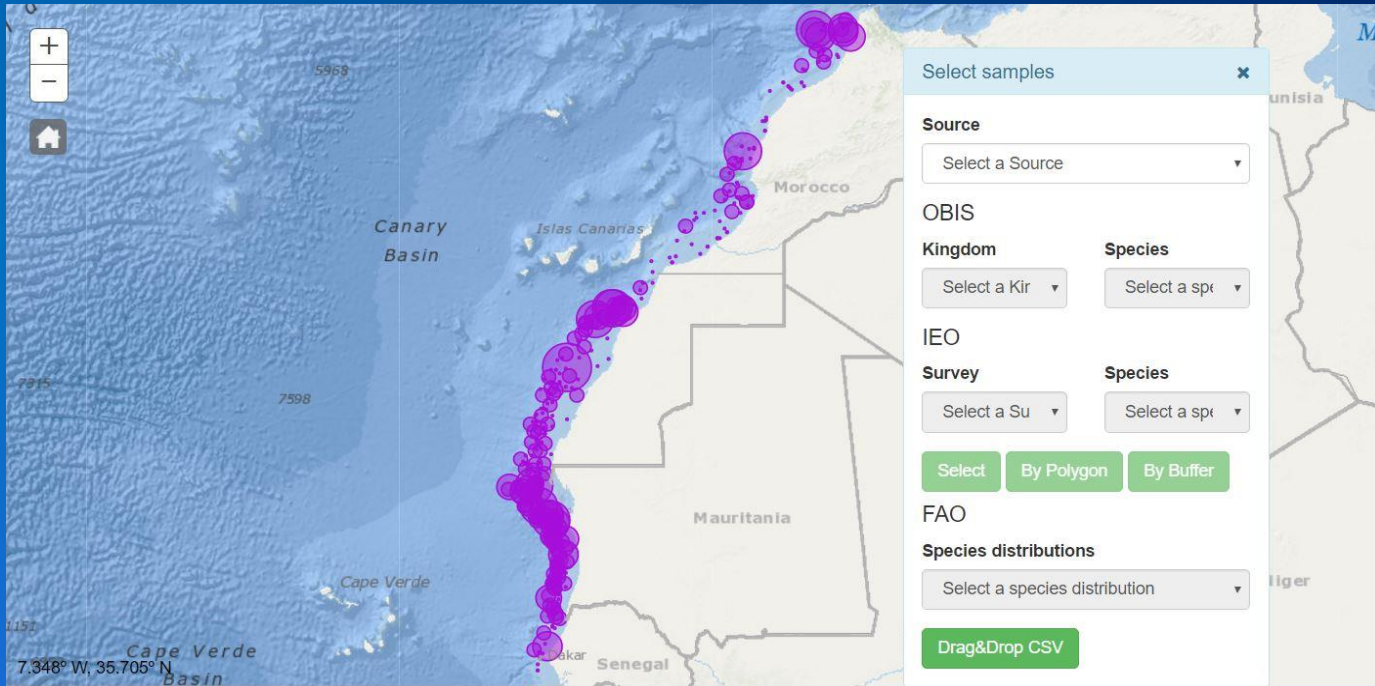


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# PRACTICAL APPLICATIONS

## Application 3)



Purple points - Ophiuroidea Richness (Species number) (source EcoAfrik datasets). To render this layer was used graduated symbols representation using five different classes.



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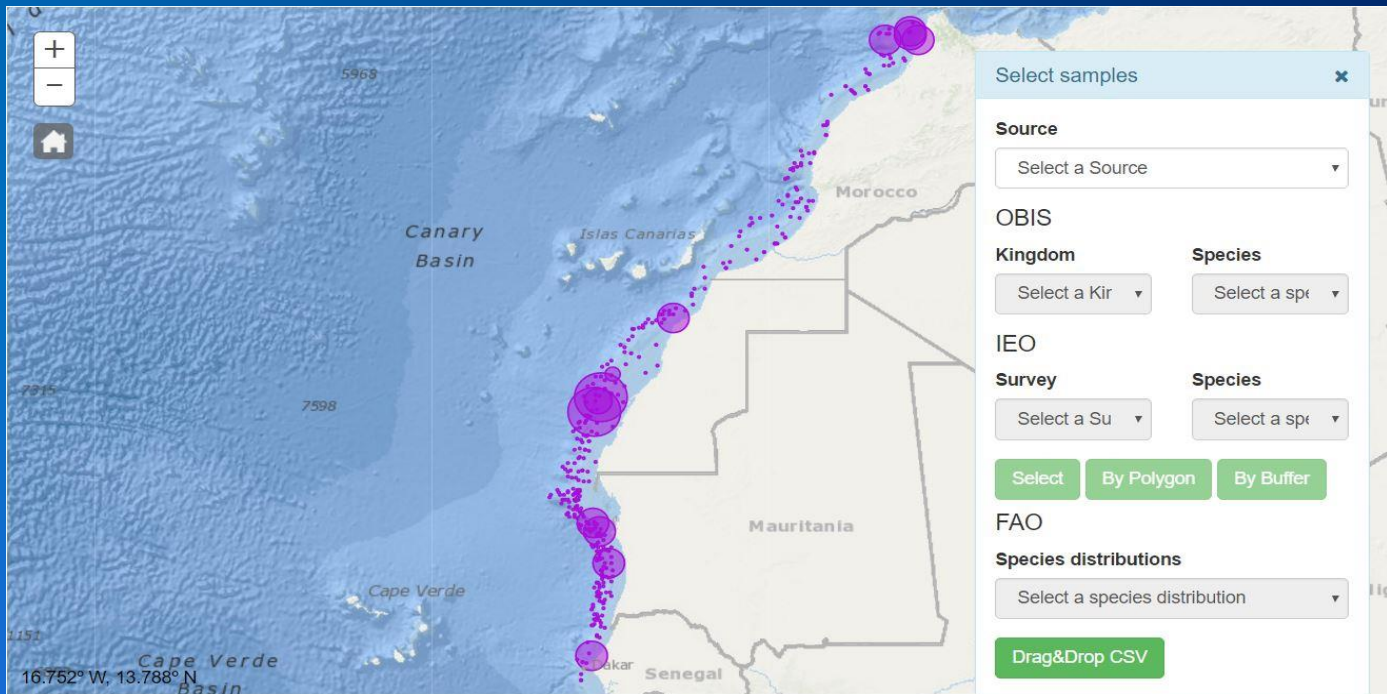
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# PRACTICAL APPLICATIONS

## Application 3)



Purple points - Ophiuroidea Abundance (Individuals number by 0.1 km<sup>2</sup>) (source EcoAfrik datasets). To render this layer was used graduated symbols representation using five different classes.



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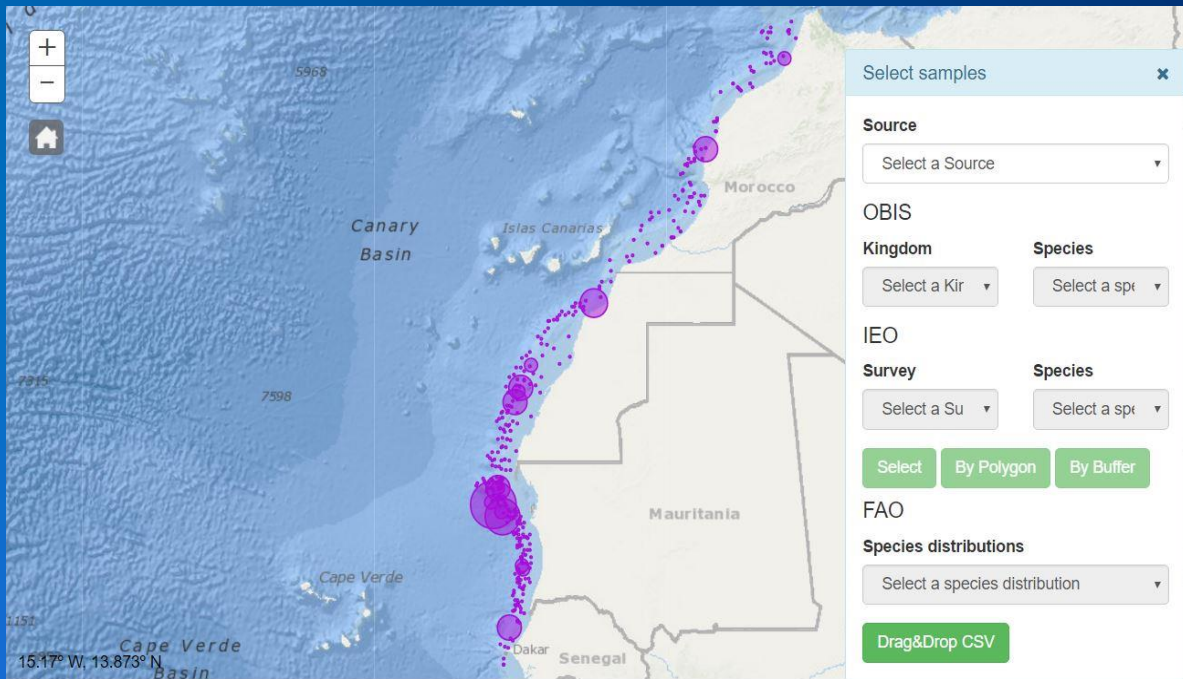


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# PRACTICAL APPLICATIONS

## Application 3)



Purple points - Ophiuroidea Biomass (kilograms by 0.1 km²) (source EcoAfrik datasets). To render this layer was used graduated symbols representation using five different classes.



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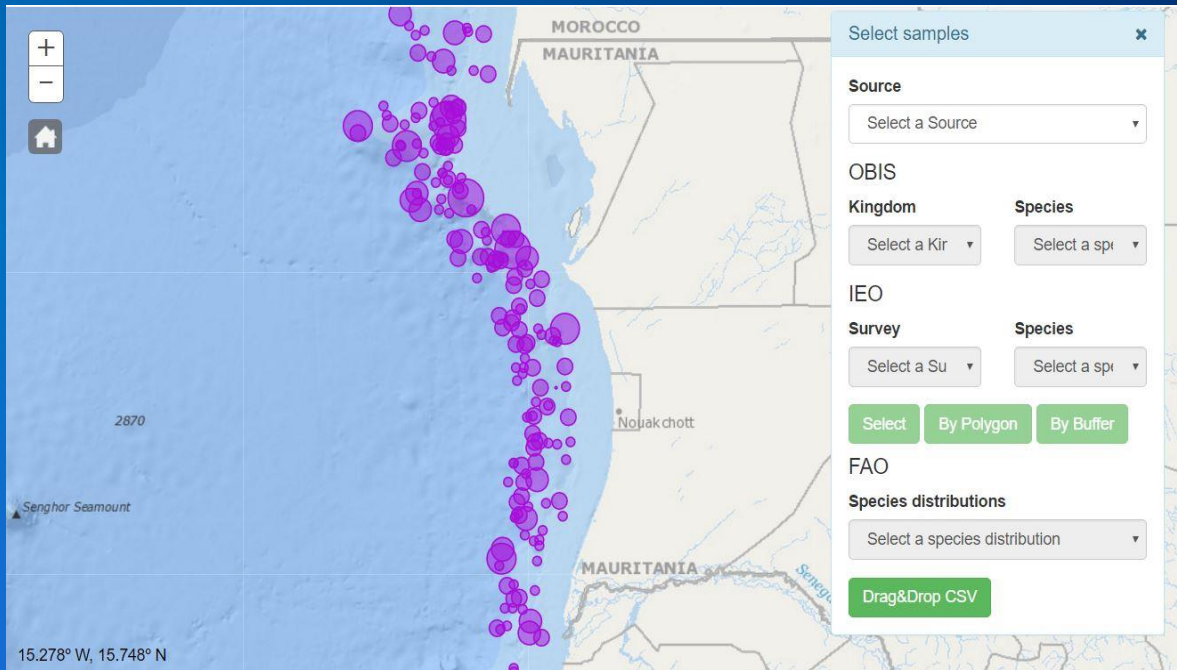


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# PRACTICAL APPLICATIONS

## Application 3)



Detail of Mauritania area. Purple points - Ophiuroidea Biomass (kilograms by 0.1 km<sup>2</sup>) (source EcoAfrik datasets). To render this layer was used proportional symbols representation.



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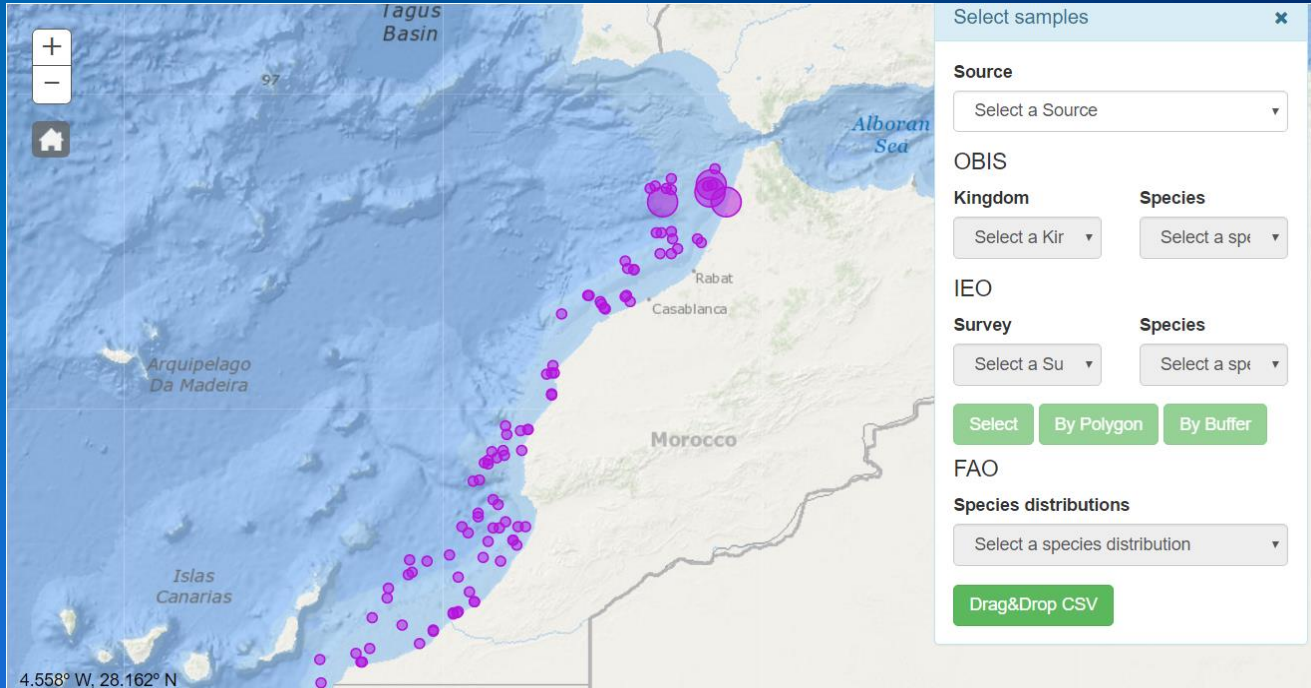
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# PRACTICAL APPLICATIONS

## Application 3)



Detail of Morocco area. Purple points - Ophiuroidea Abundance (Individuals number by 0.1 km<sup>2</sup>) (source EcoAfrik datasets). To render this layer was used graduated symbols representation using five different classes.



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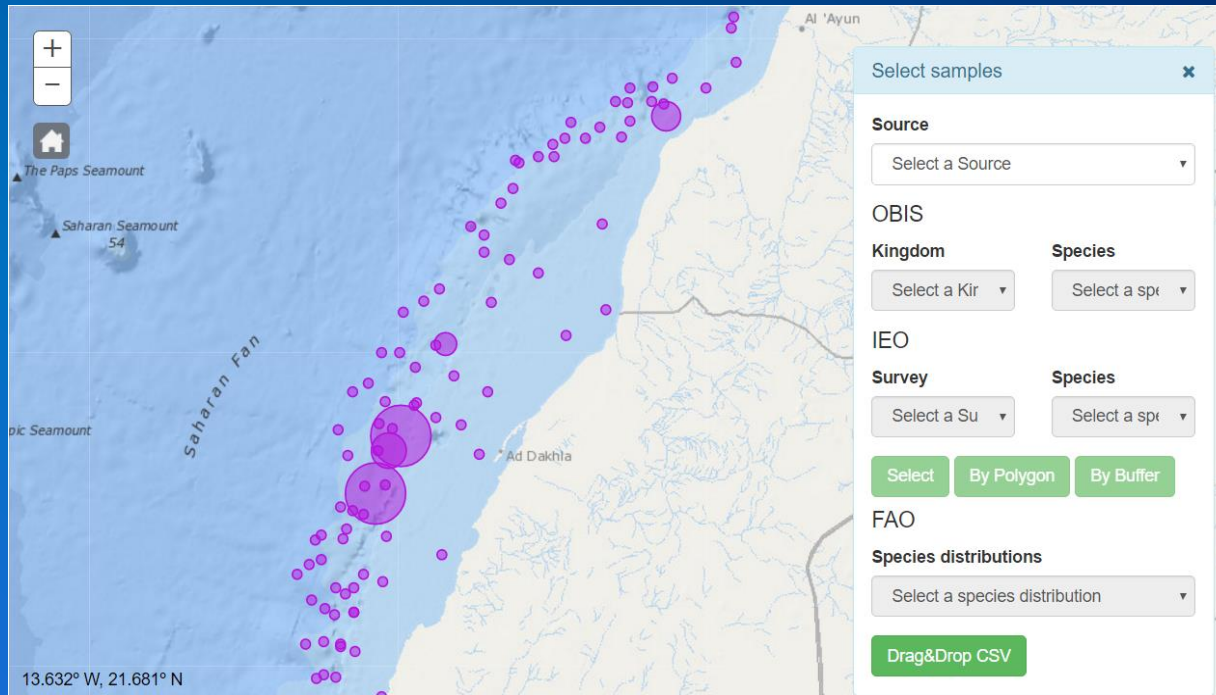


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# PRACTICAL APPLICATIONS

## Application 3)



Detail of Western Sahara area. Purple points - Ophiuroidea Abundance (Individuals number by 0.1 km<sup>2</sup>) (source EcoAfrik datasets). To render this layer was used graduated symbols representation using five different classes.



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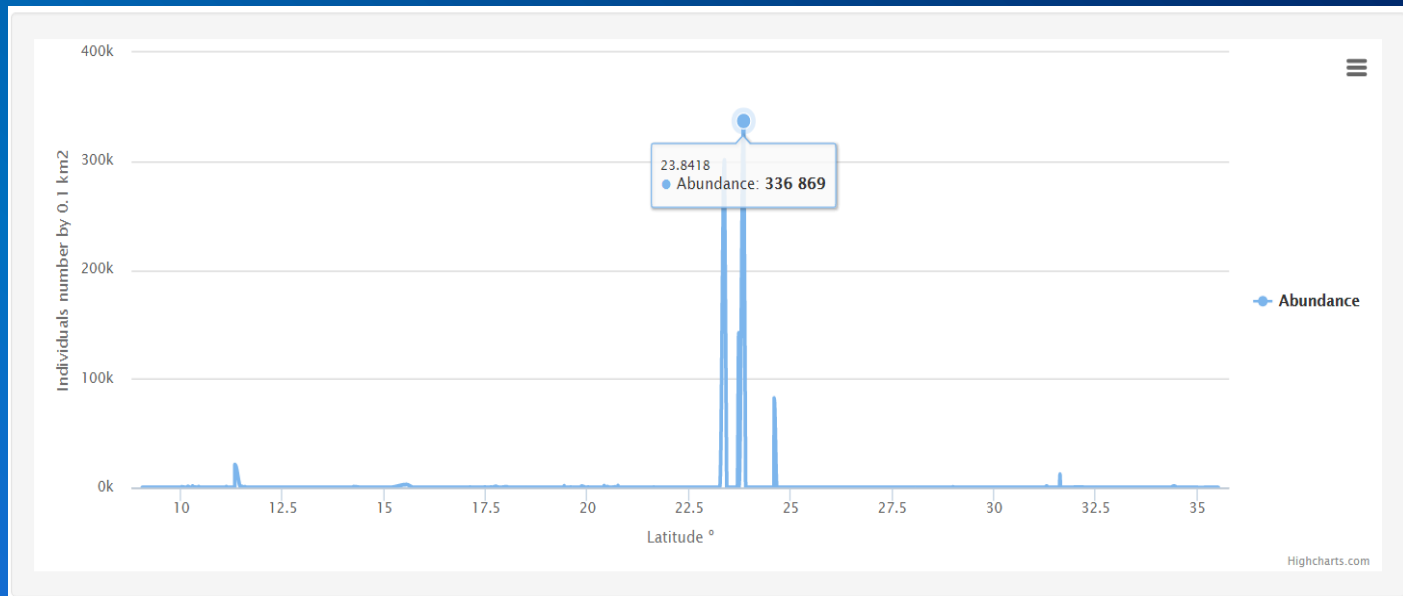


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# PRACTICAL APPLICATIONS

## Application 3)



Graph with the Abundance (Individuals number by 0.1 km<sup>2</sup>) in the Y-axis and longitude in X-axis (source EcoAfrik datasets).



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# PRACTICAL APPLICATIONS

## Application 3)

Is possible to observe an increase of richness, abundance and biomass from north to south. Also is possible to observe small areas with spikes of richness and biomass as for example in the north of Mauritania, north of Morocco and the area in front of Ad Dakhla in Western Sahara. In this last case is very spectacular the increase in abundance.



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García-Isarch, E. Muñoz, I. (2015) Biodiversity and biogeography of decapod crustaceans in the Canary Current Large Marine Ecosystem. In: Valdés, L. and Déniz-González, I. (eds). Oceanographic and biological features in the Canary Current Large Marine Ecosystem. IOC-UNESCO, Paris. IOC Technical Series, No. 115, pp. 257-272

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Ramos, A., Sanz, J.L., Ramil, F. (eds.) (2017a) Deep-sea ecosystems off Mauritania: Research of marine biodiversity and habitats in West African margin. Springer, Heidelberg, 514 pp. (in press)

Ramos, A., Sanz, J. L., Agudo, L. M., Presas, C., Ramil, F. (2017b) The giant cold-water coral mounds barrier off Mauritania. In: Deep-sea ecosystems off Mauritania: Research of marine biodiversity and habitats in the Northwest African margin. Ramos, A., Sanz, J. L. and Ramil, F. (eds.). Springer, Heidelberg (in press).

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