Presentación: sobre el estudio de muestreo de acúmulos dentro del proyecto Clean Atlantic realizado por el INTECMAR

Pero antes de nada quiero hablar de cómo normalmente se hace un muestreo de basuras marinas.

Se escogen varios tramos de costa, por ejemplo, 1 km de playa determinada y se inspecciona cada cierto tiempo, distinguiendo el tipo de basura que llega, colillas, bolsas, artes de pesca.

El objetivo de estos muestreos es conocer que tipo de basuras marinas reciben nuestras costas y en que proporción.
Identificación de fuentes de basuras y así poder reducirlas y eliminarlas

Existen metodologías y aplicaciones para este tipo de muestreo.

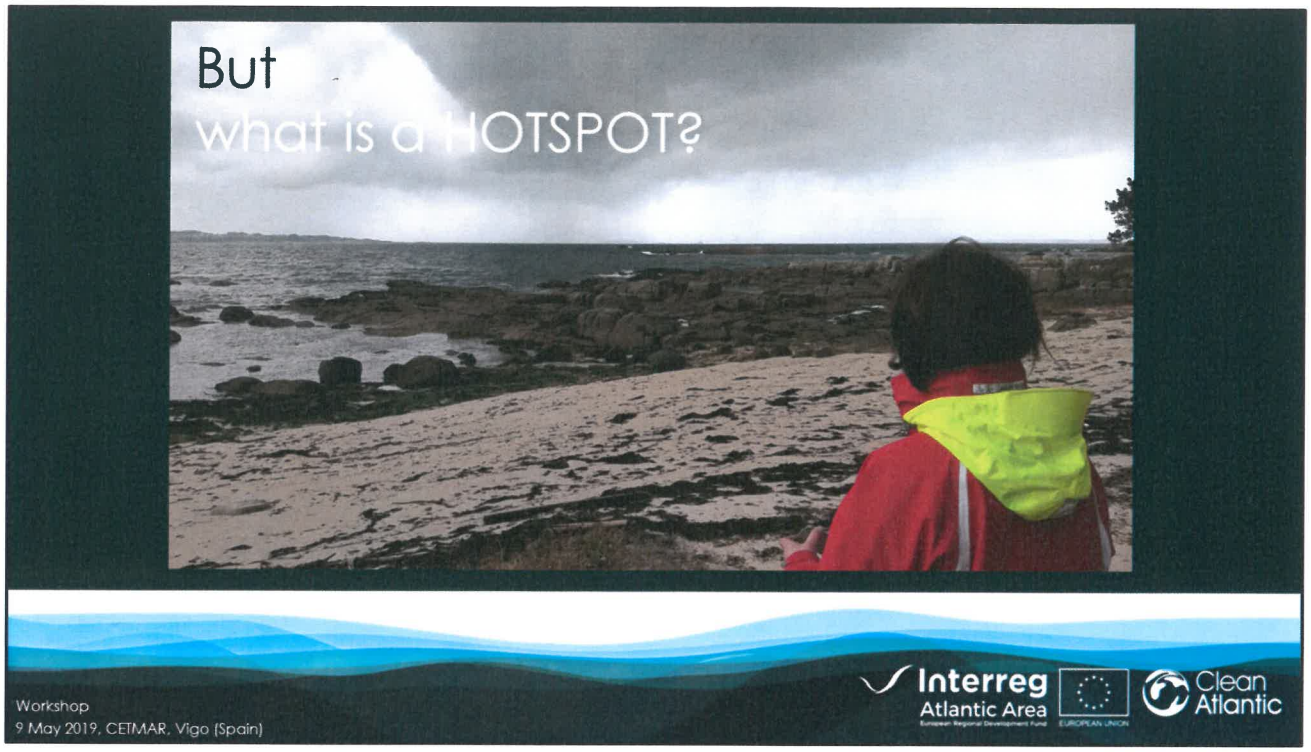
How is usually surveying the marine litter?
Brief explanation of usual litter survey:
Focus on identification of litter object and the amount
Very intensive: routinely survey on selected areas
Objective: Knowing the main litter objects to identify the source of marine litter
Ready methodologies, tools and apps to carry out these surveys.

Sin embargo, nosotros nos centramos en la búsqueda de acúmulos, zonas donde existe una especial predilección a juntarse basuras y otras cosas, como algas, troncos, etc.

Muestreo más extensivo pero menos intensivo en la identificación

Objetivo: conocer la razón por que se acumulan ahí, cuando lo hacen y si existe alguna relación con las observaciones océano-meteorológicas.

Looking for hotspots
On the contrary, we have focused on hotspots.
Hotspot is that place in the coast where marine litter usually pills up.
But not only litter but vegetation, weeds and so on.
Find out why some places are hotspots. Are it related to any met and ocean conditions?
Focus on developing methodologies to survey hotspots and use models to research about their behaviour.

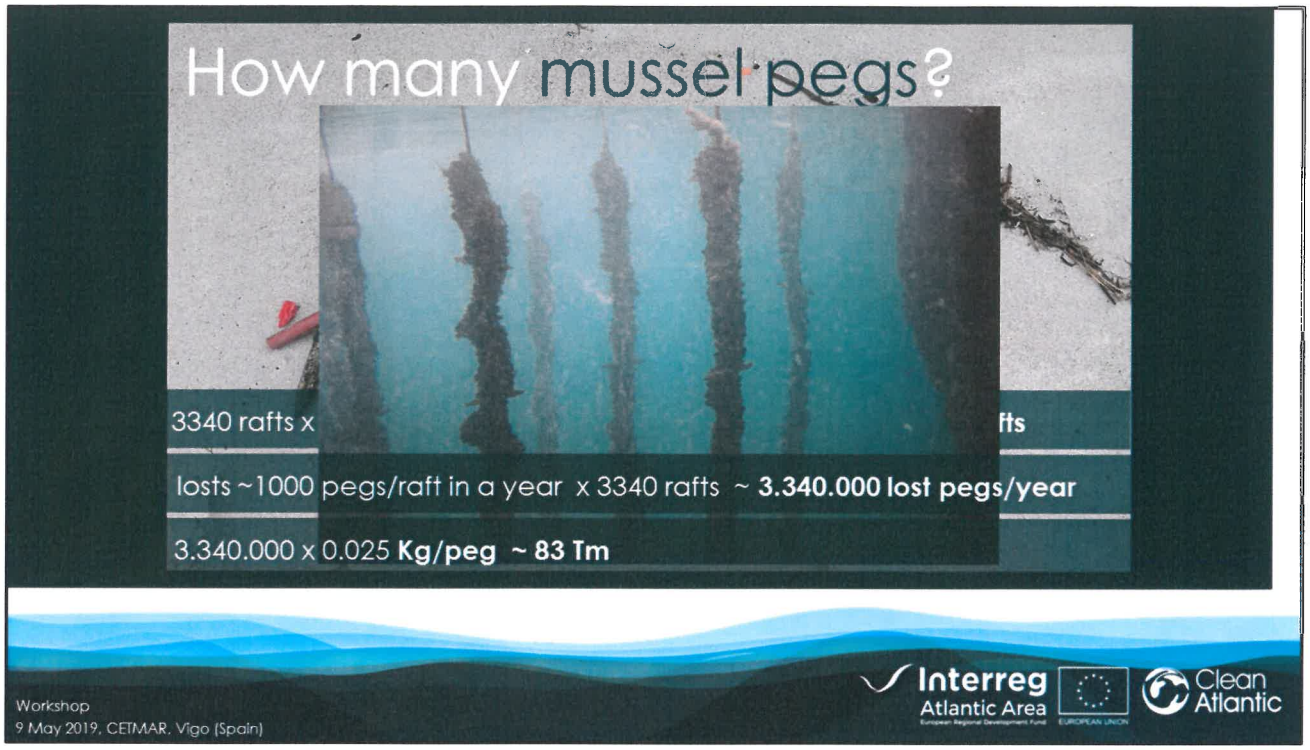


But what is a hotspot?

How to obtain a objective definition of hotspot.

Difficulties by size, or material, even extension.

Subjective definition is used but after visiting beaches some ubiquitous object could be a quantitative proxy of hotspots



Mussel pegs

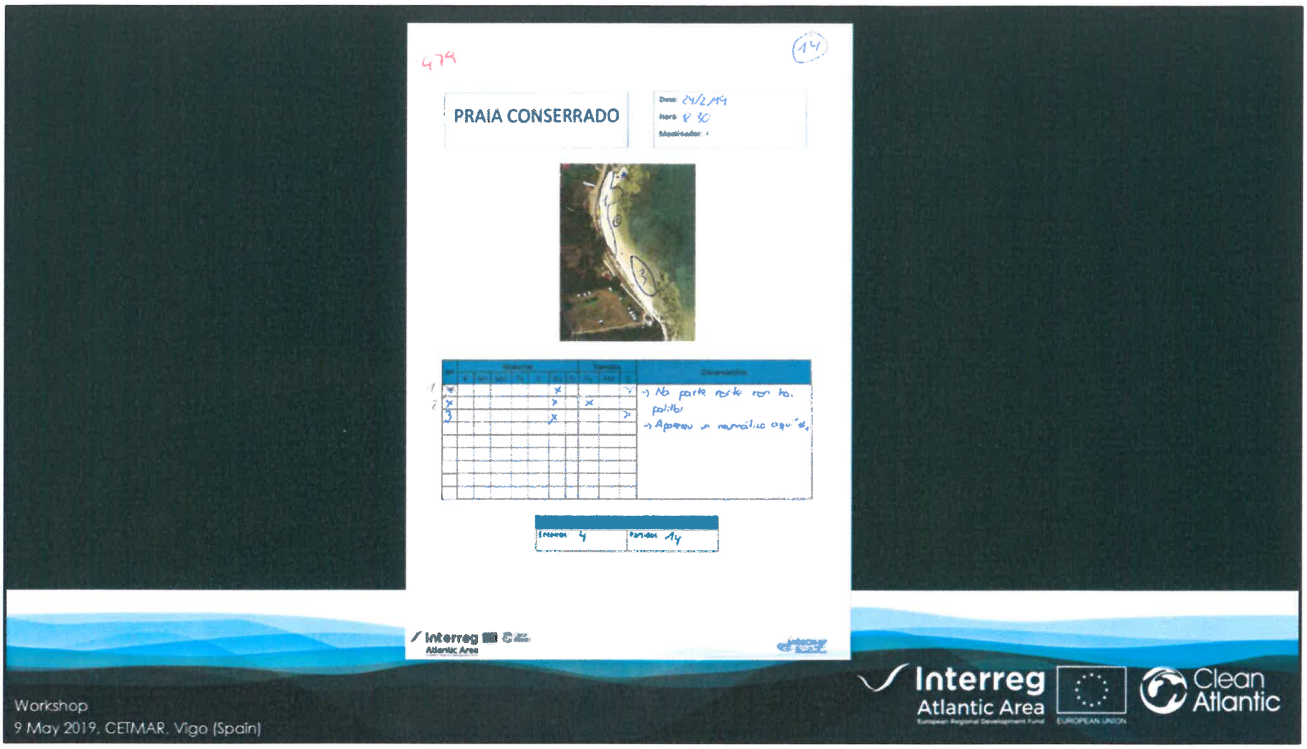
Explanation about what is a mussel peg.

Mussel producers lose them in labour processor. Around 1000 pegs per raft in a year.

Enough amount of pegs to be a tracer.

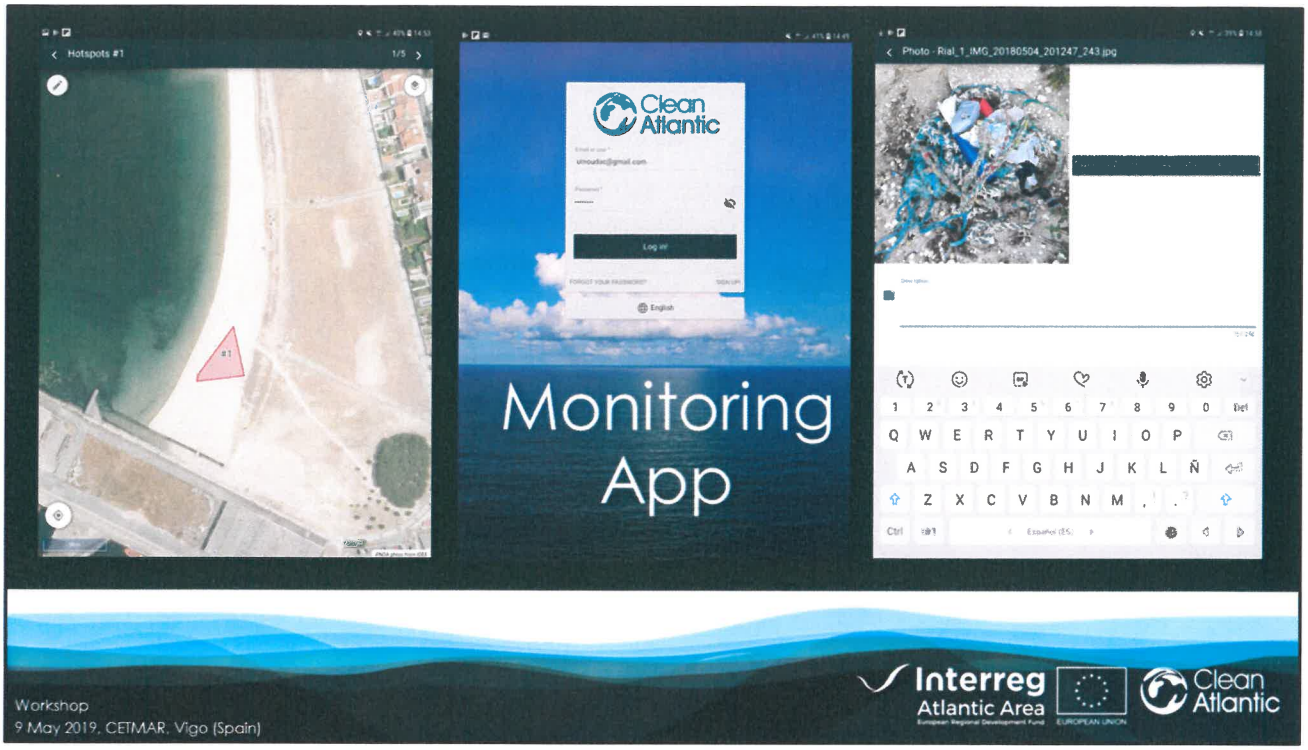
Citizen Science

Test of methodology in a limited area: Arousa Island. More than 50 beaches. Students of a High School are using the survey around the Island as part of their classes.



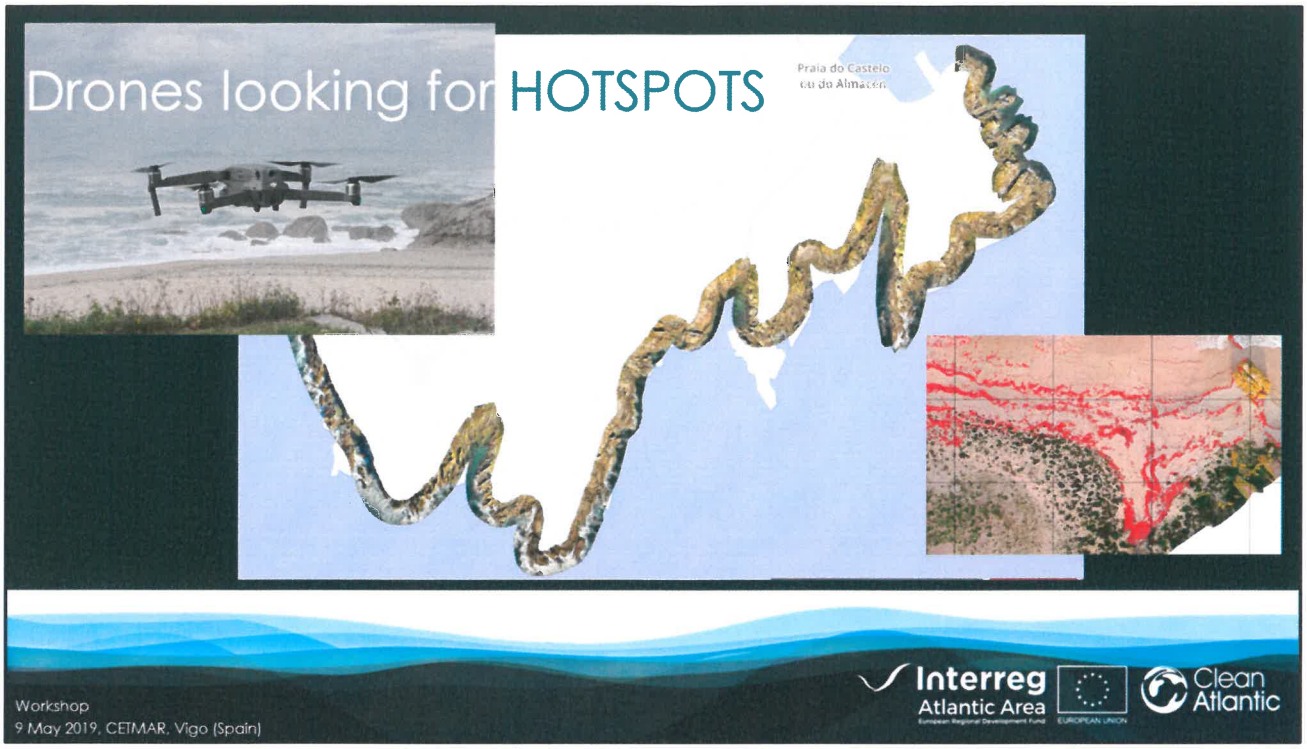
Form

High school students explain how they survey hotspots in 50 beaches on Arousa Island. They survey them every week, draw hotspots in a map, take pictures and upload to Instagram and count mussel pegs.



CleanAtlantic Hotspot app

App is finished and presented. It is an Android app to be used as the paper form. Students can include hotspots using the mobile GPS, include pictures and comments. It will be used in the next surveys.

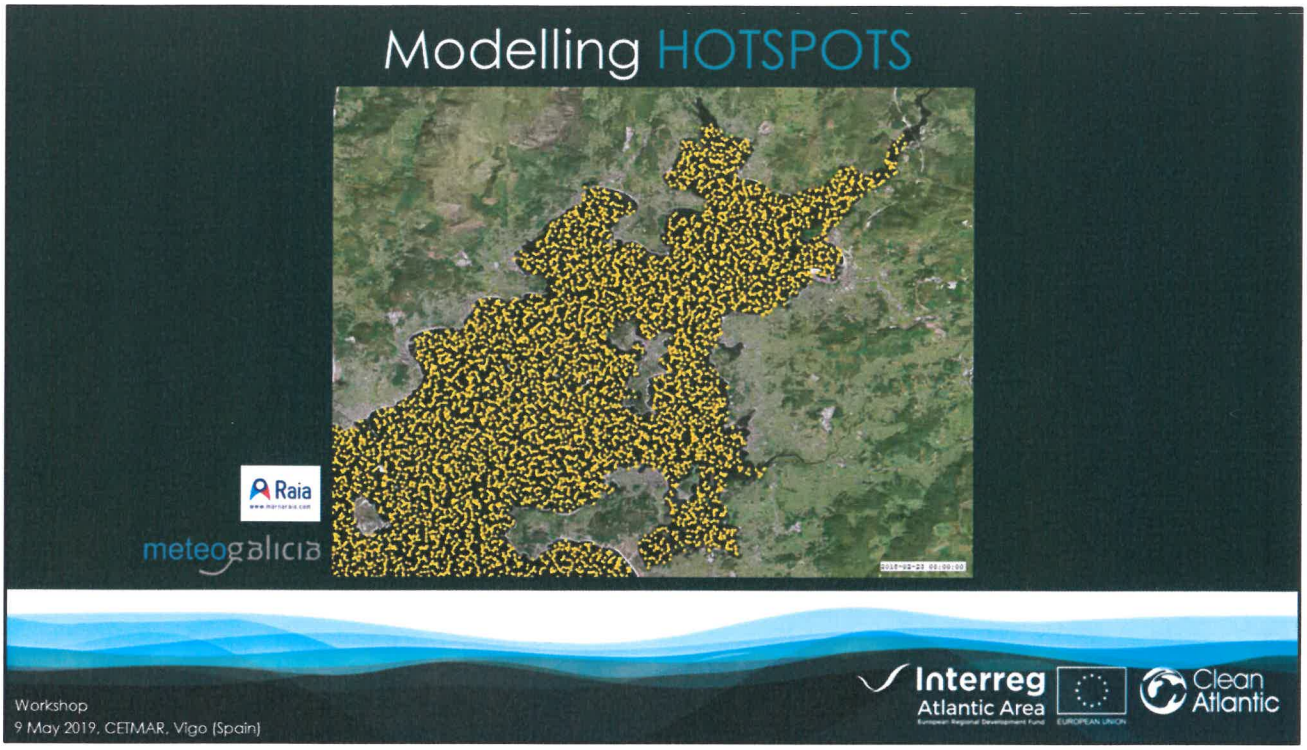


Drones looking for hotspots

Another methodology: Use drones for inaccessible sites. Useful because they can quickly survey big areas.

It is needed a postprocessing of images.

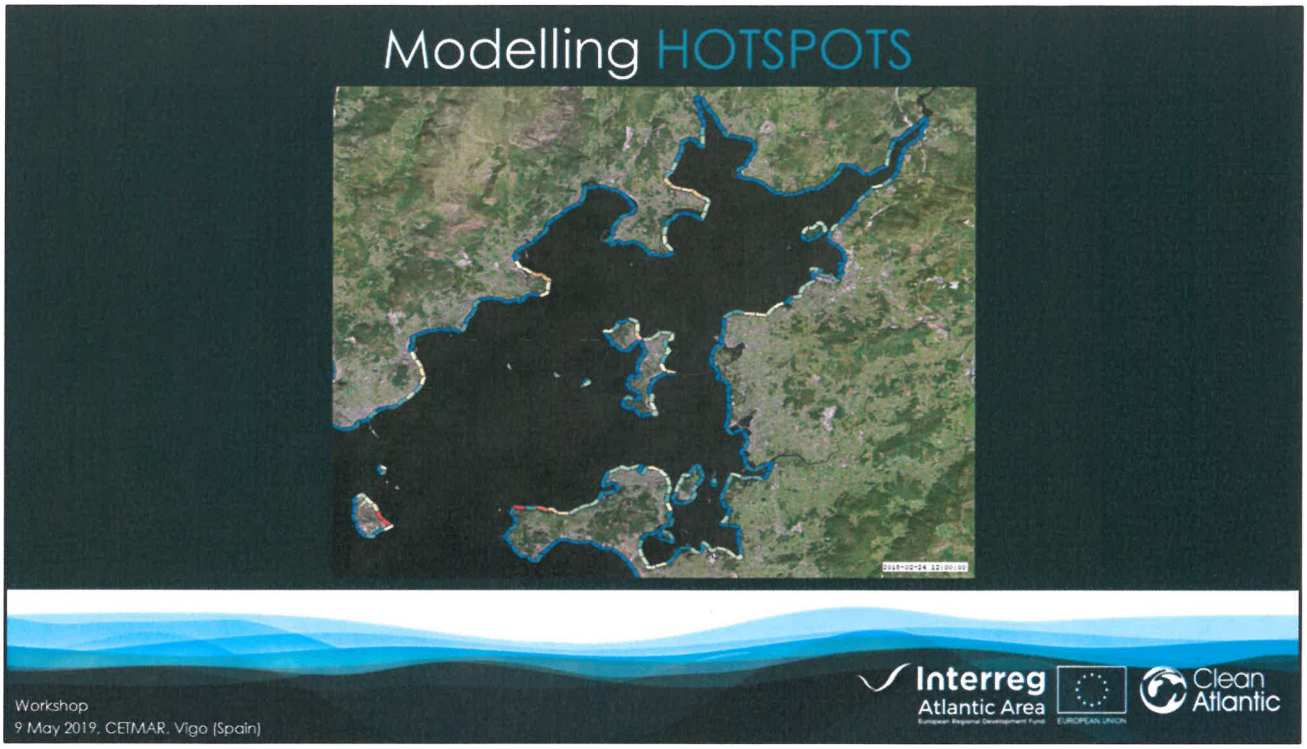
The methodology is tested in Sálvora Island (National Park)



Modelling hotspots

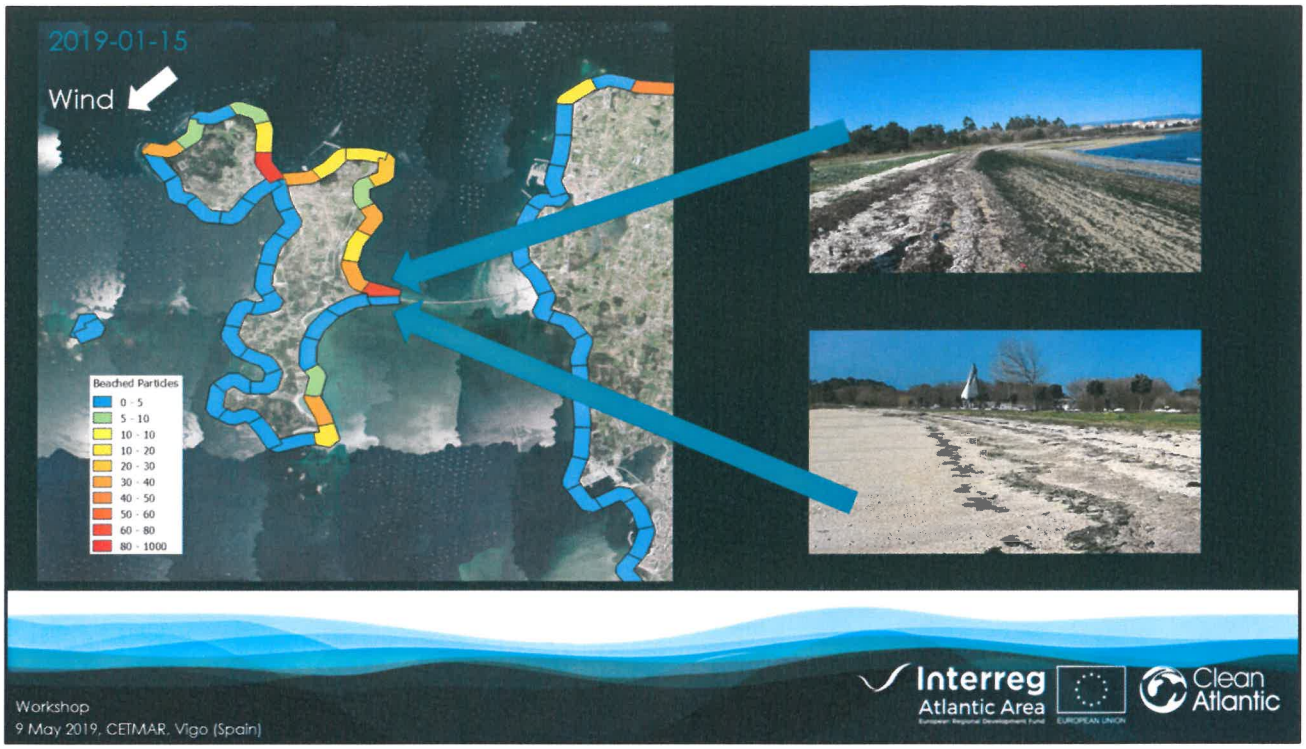
Use the models to find out the causes and the met-ocean conditions that produce a hotspot.

Thanks MeteoGalicia through RAIA Observatory, winds and currents forecast are using every day. The ría de Arousa is filled with lagrangian particles and the model is run to obtain a map of likeliness of hotspots.



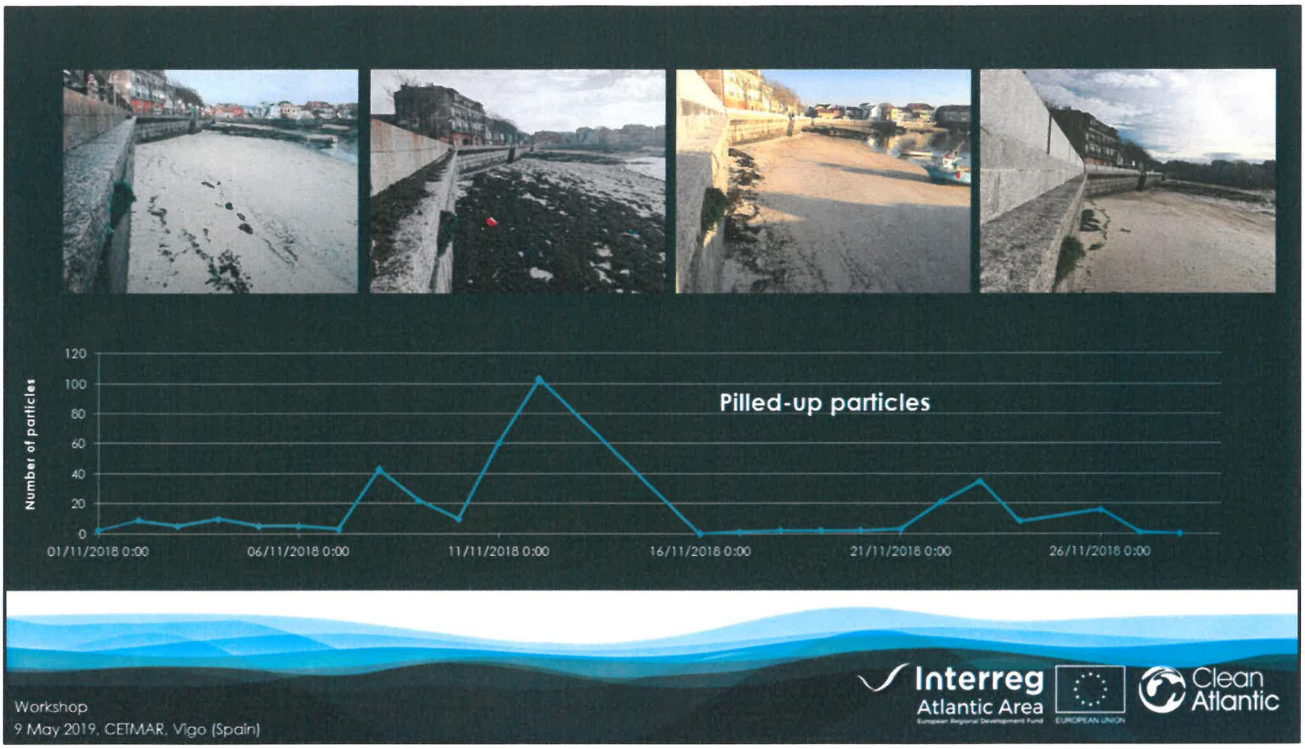
Daily hotspot map

Coastline is breaking in pieces. Colour indicates the amount of beached particles after 4 hours. There is one map for each day.



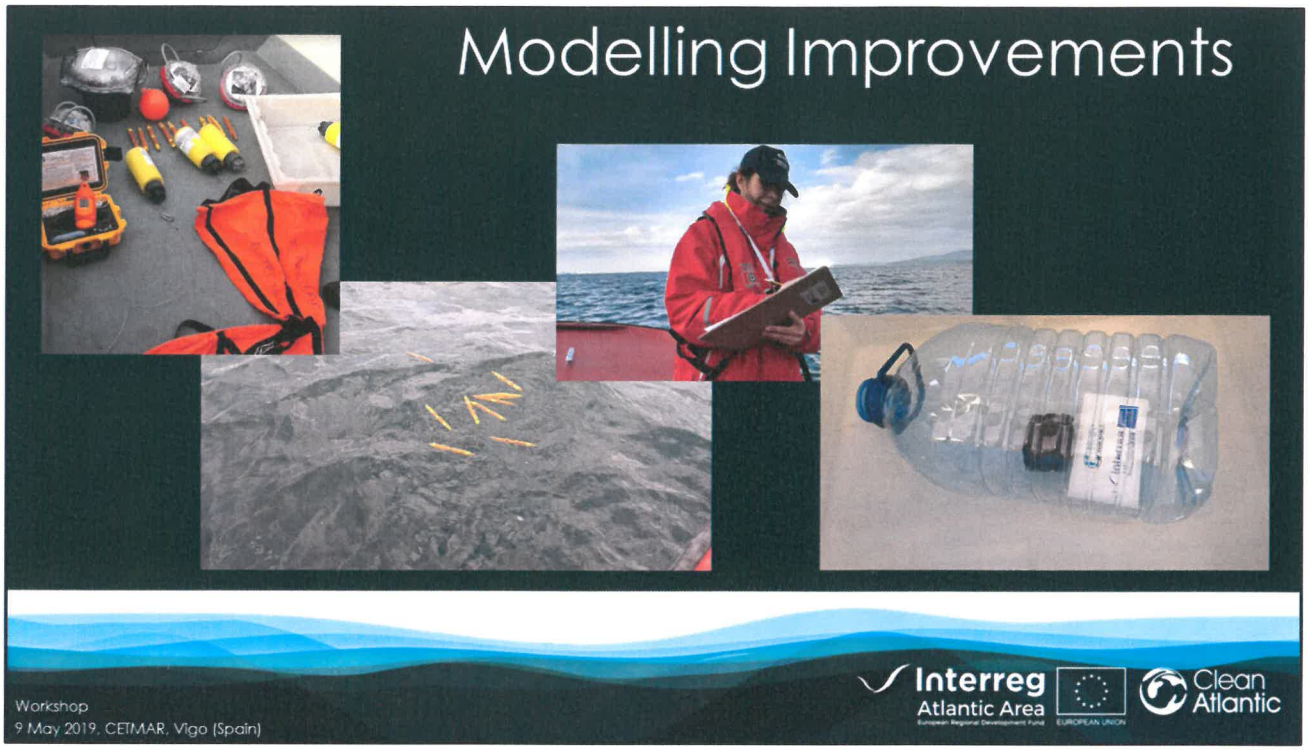
Arousa Island map

For example, zooming Arousa Island, the hotspots areas for a NE wind day is shown. Differences can be seen between two beaches, one oriented to wind direction and the other in a lee wind area.



First results:

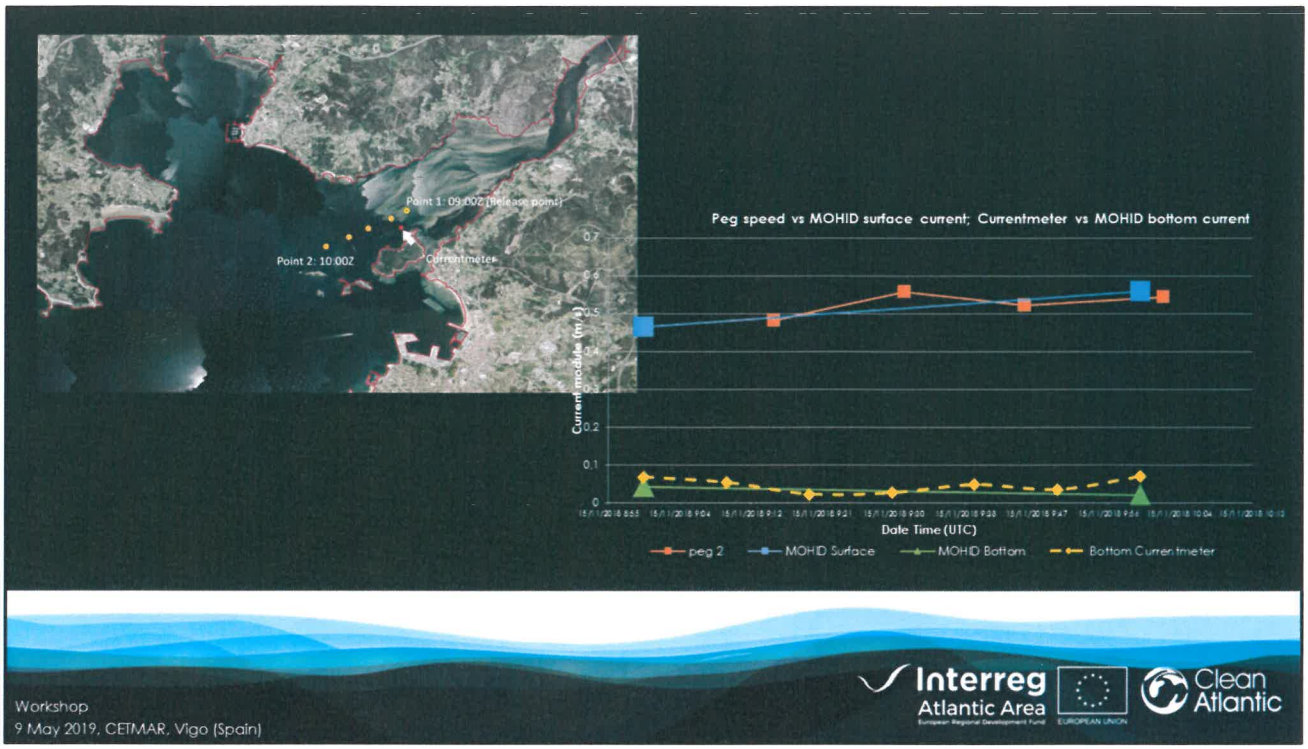
Results are hopefuls. Comparison between weekly pictures of a beach token by a student and the timeseries of model output in the same beach agree quite well



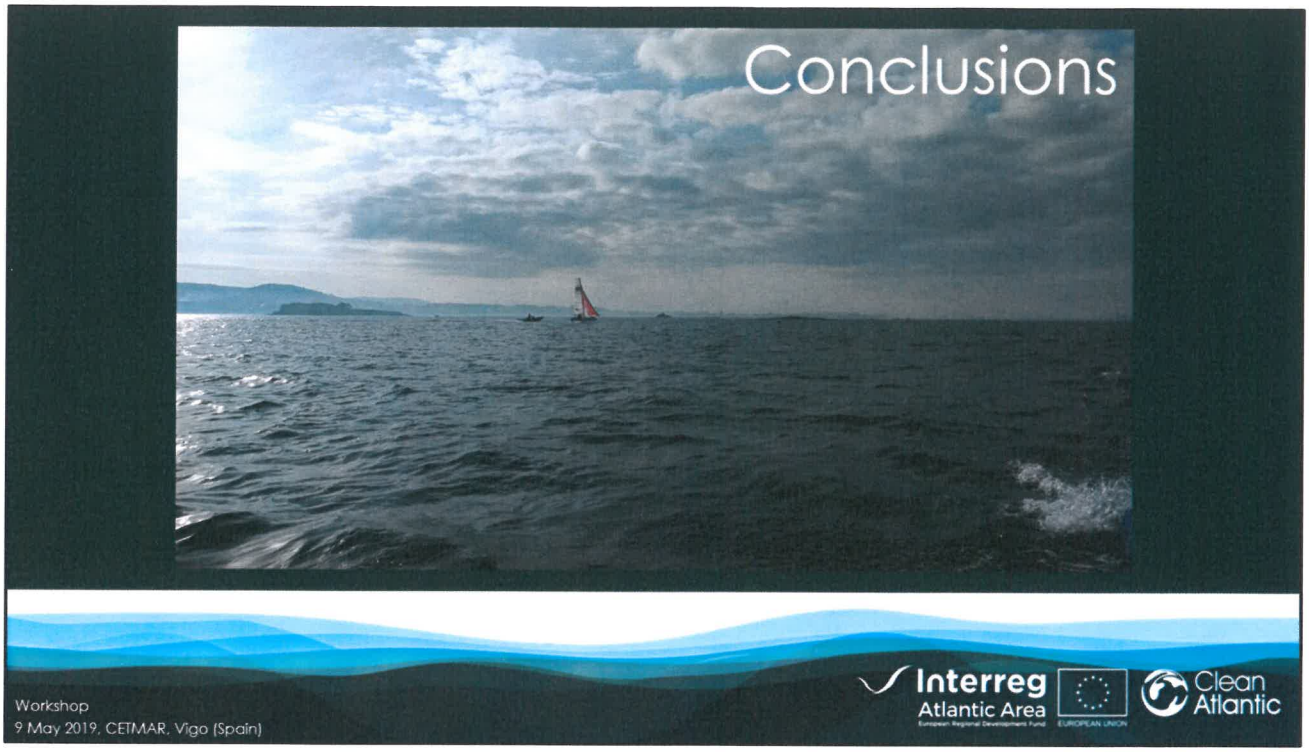
Modelling Improvements

Several improvements of the model will be done. One of them it is the calculation of realistic drift coefficients.

To do it, some items are following during their drift into the sea in order to find out the contribution of each forcement: wind, currents and waves.



For examples, some pegs were released and the velocity of pegs and surface current forecasted by the model nicely agree. At the same time the model bottom current matches with a measured current.



Conclusions:

Focus on hotspots.

Two methodologies are tested: Citizen Science and Drones

Modelling is used to find out relationship between the location of hotspots and the met-ocean conditions

Thank you

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INSTITUTO TECNOLOXICO PARA O CONTROL DO MEDIO MARIÑO DE GALICIA

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Interreg Atlantic Area

Clean Atlantic