CLEANATLANTIC CONFERENCE

Vigo, 21st June

09.00 – 16.30 h
(UTC+2h00, Madrid, Bruselas)

Relationship between meteorological situations and the marine litter distribution using computational technics

Silvia Allen-Perkins, Silvia Calvo, Garbiñe Ayensa, Pedro Montero (Intecmar)
Sara Cloux, José Antonio Moares, Vicente Pérez-Muñuzuri (USC)
Hilda de Pablo, Ramiro Neves (IST)

Interreg Atlantic Area
European Regional Development Fund
EUROPEAN UNION
Clean Atlantic

Intecmar
INSTITUTO TECNOLOXICO PARA O CONTROL DO MEDIO MARIÑO DE GALICIA

USC
UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

TÉCNICO LISBOA

Looking for Pilled-Up Zones

Several approaches

Citizen Science

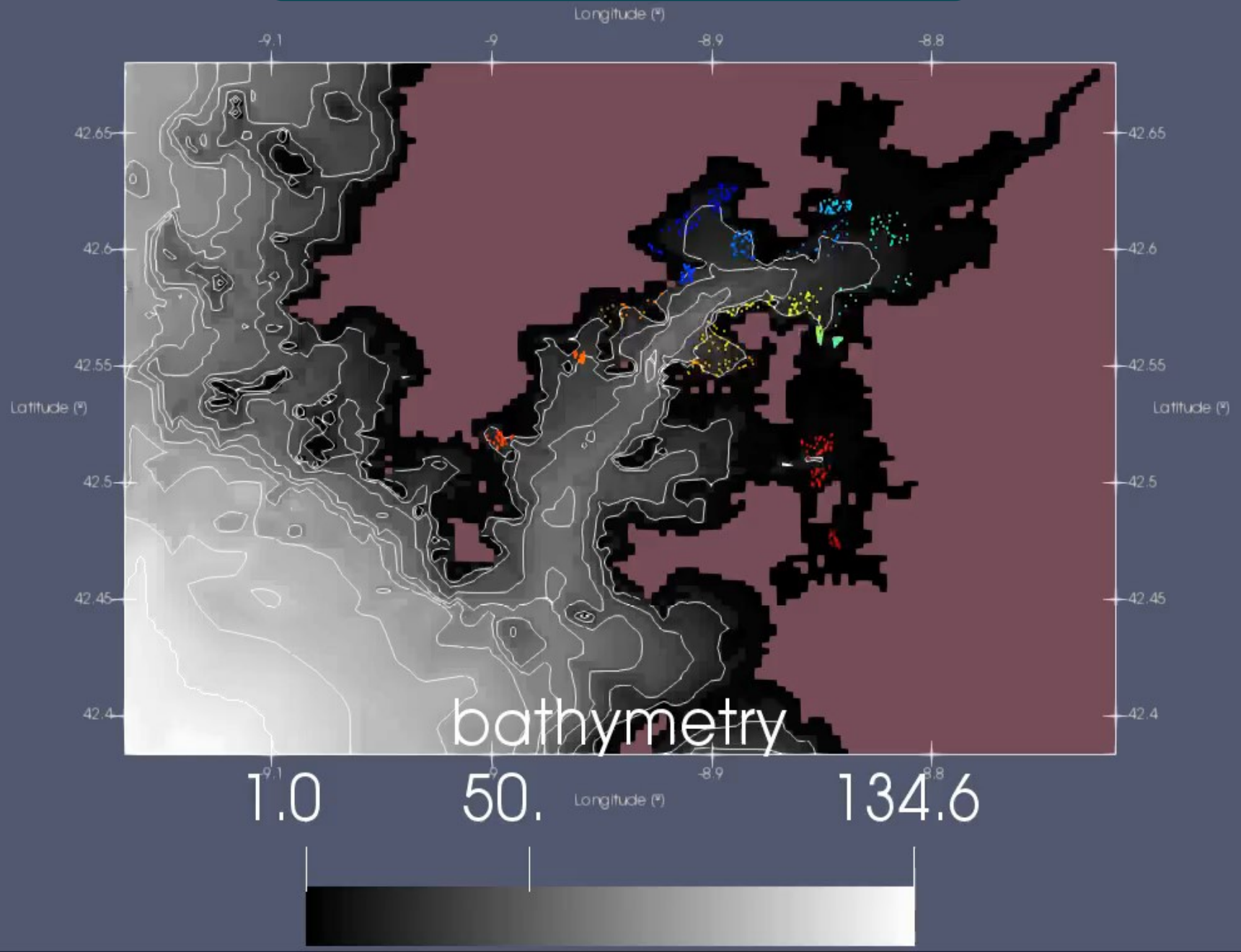
Professional surveyors

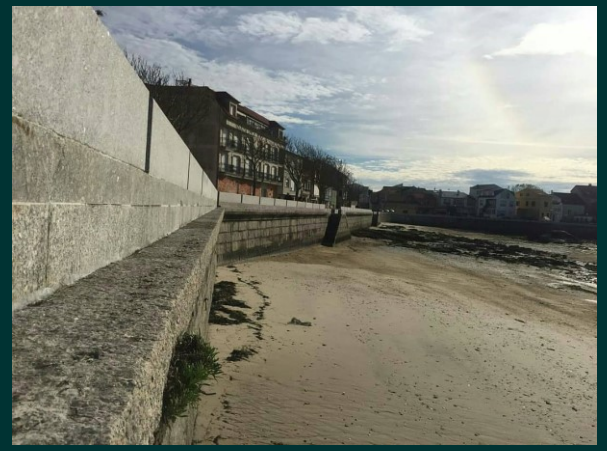
Numerical Models

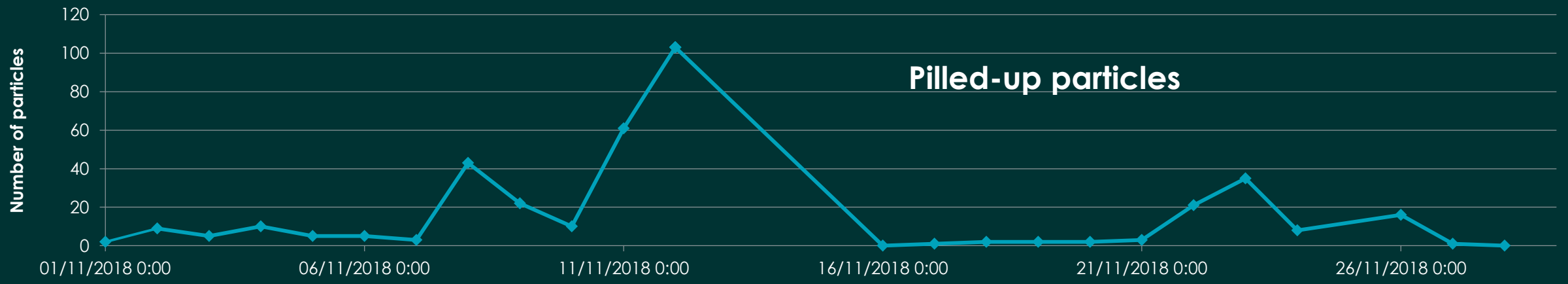
Drones

Day: 0.00

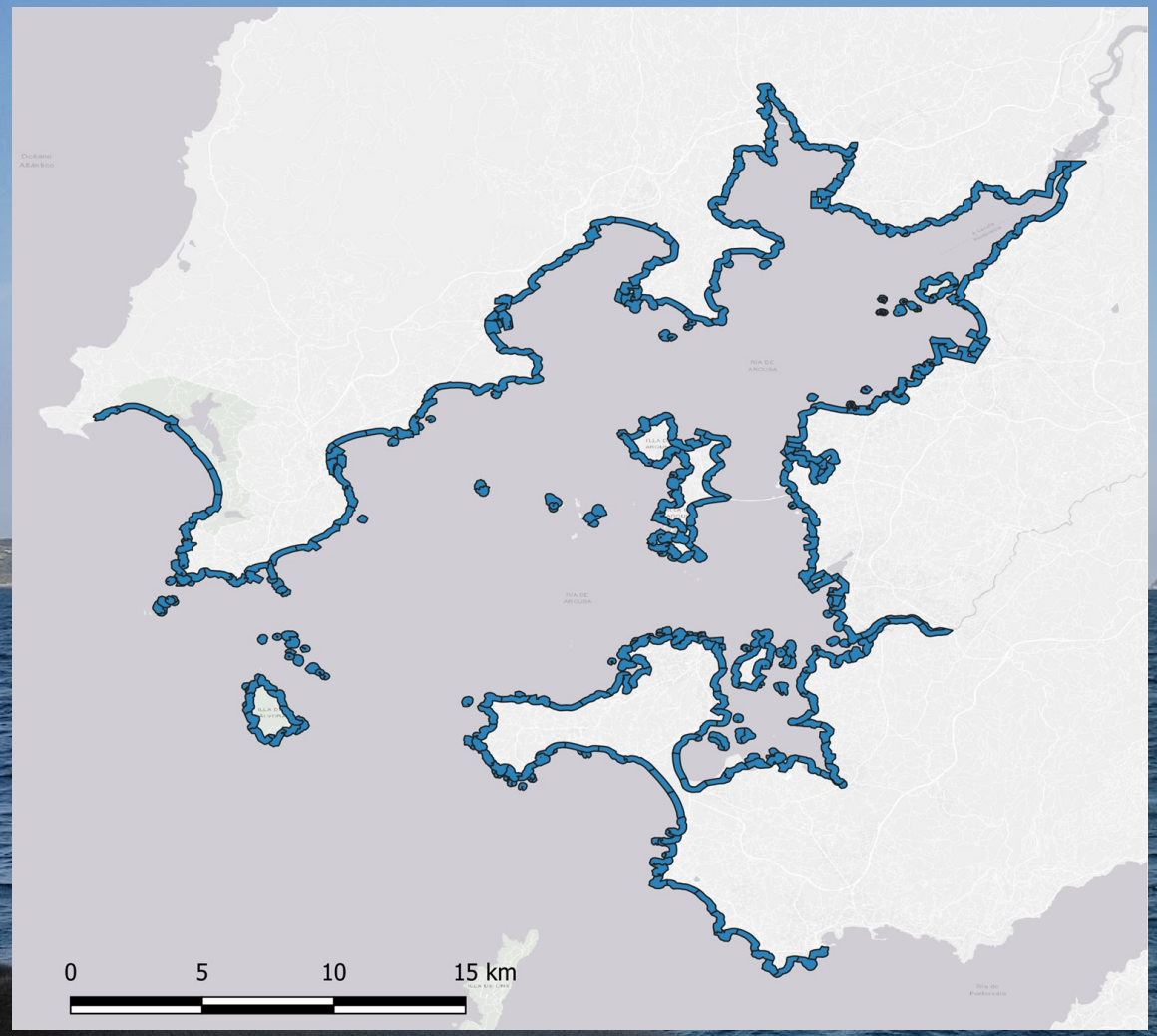
Numerical Models

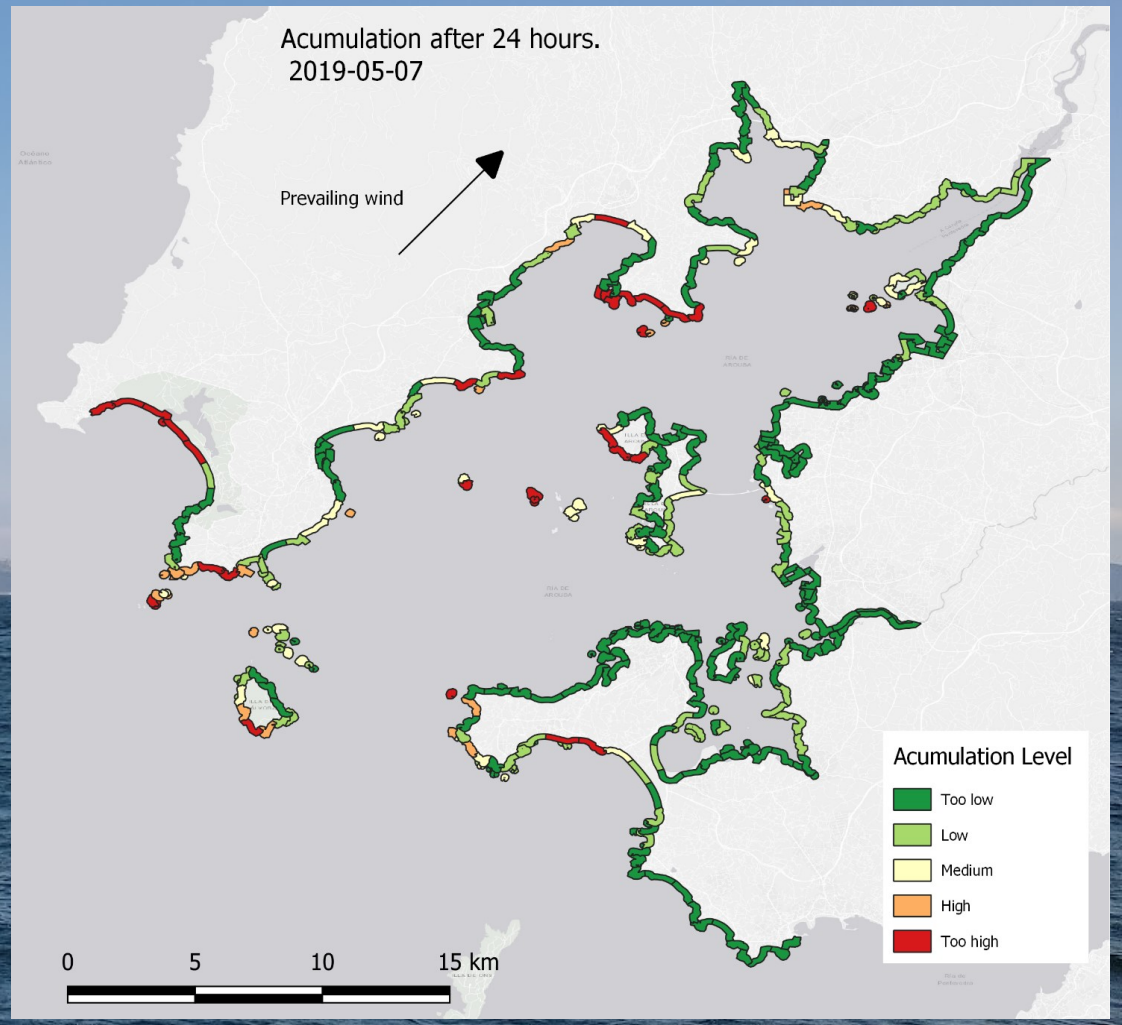





Pilled-up particles
Number of particles
120
100
80
60
40
20
0
01/11/2018 0:00
06/11/2018 0:00
11/11/2018 0:00
16/11/2018 0:00
21/11/2018 0:00
26/11/2018 0:00

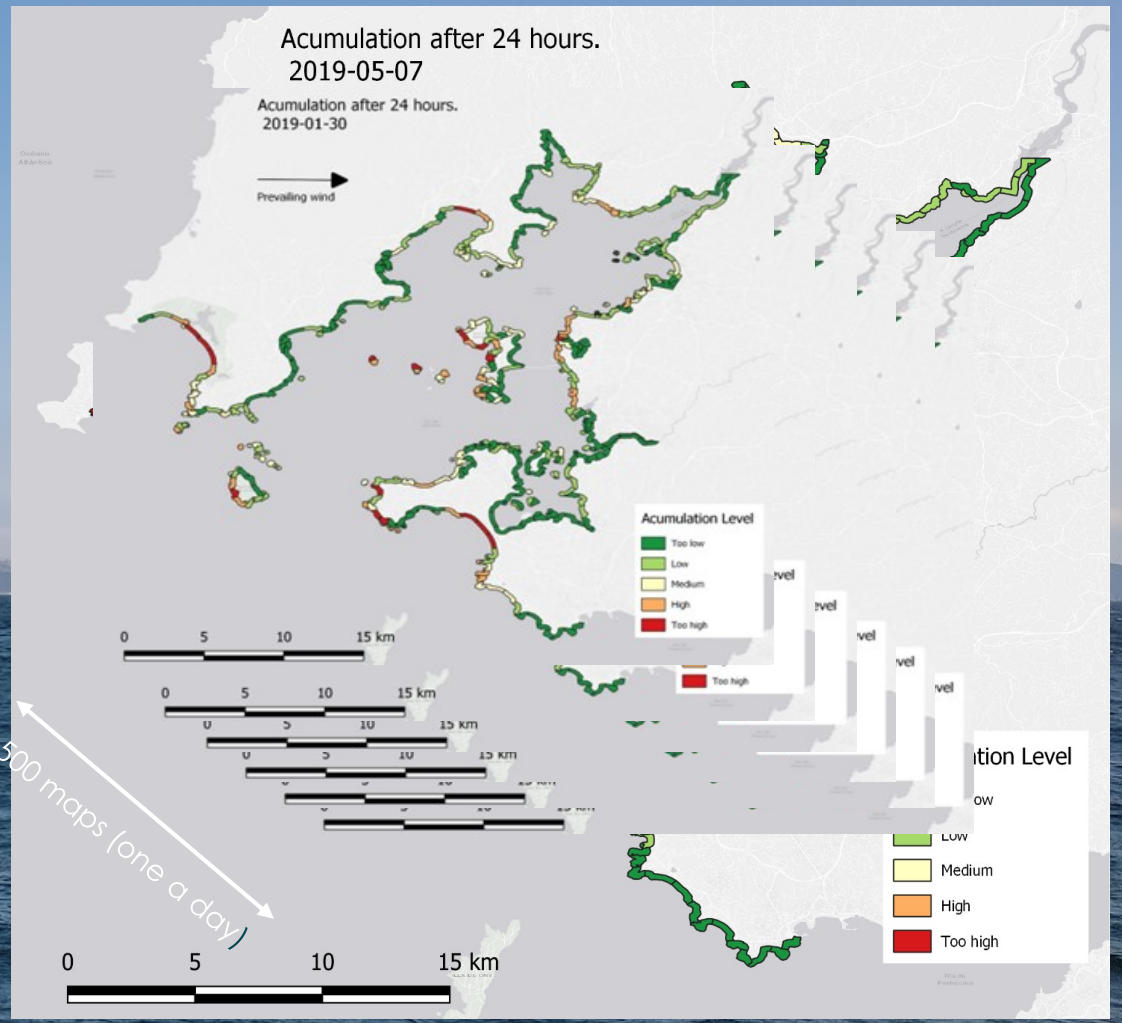
From model to coastline





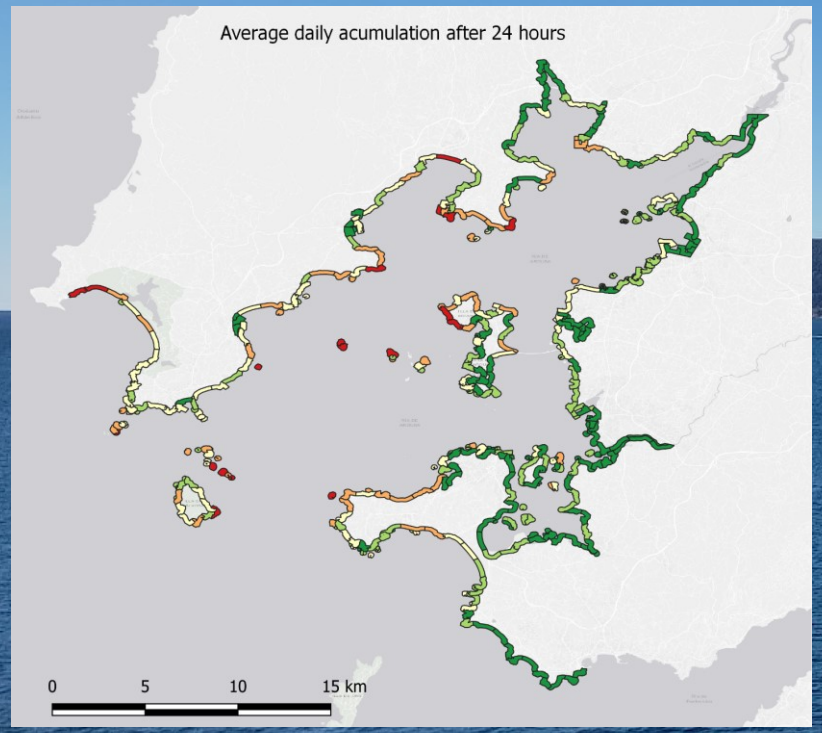
Model output

From model to coastline

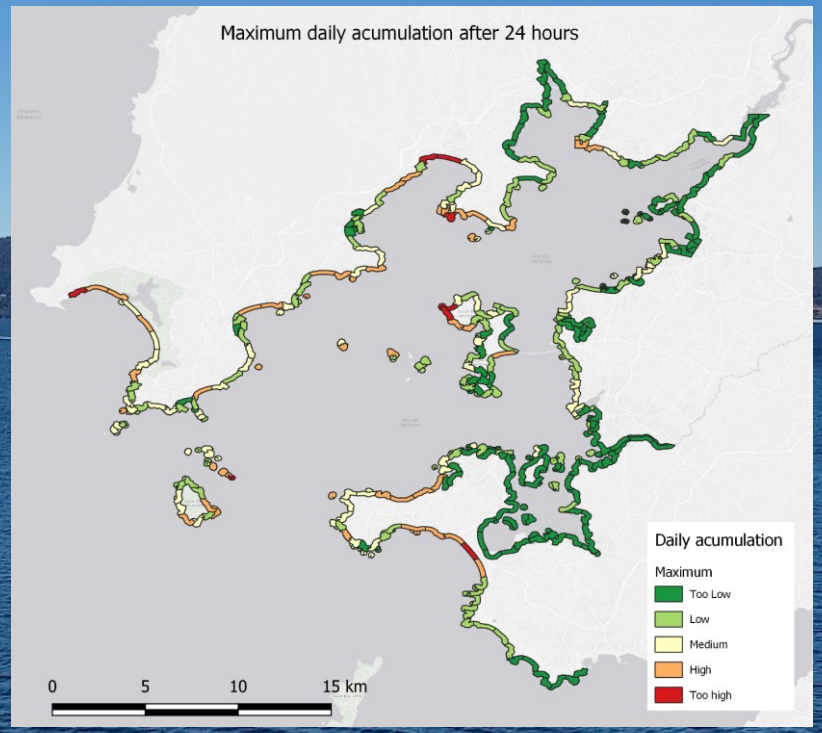


Model output

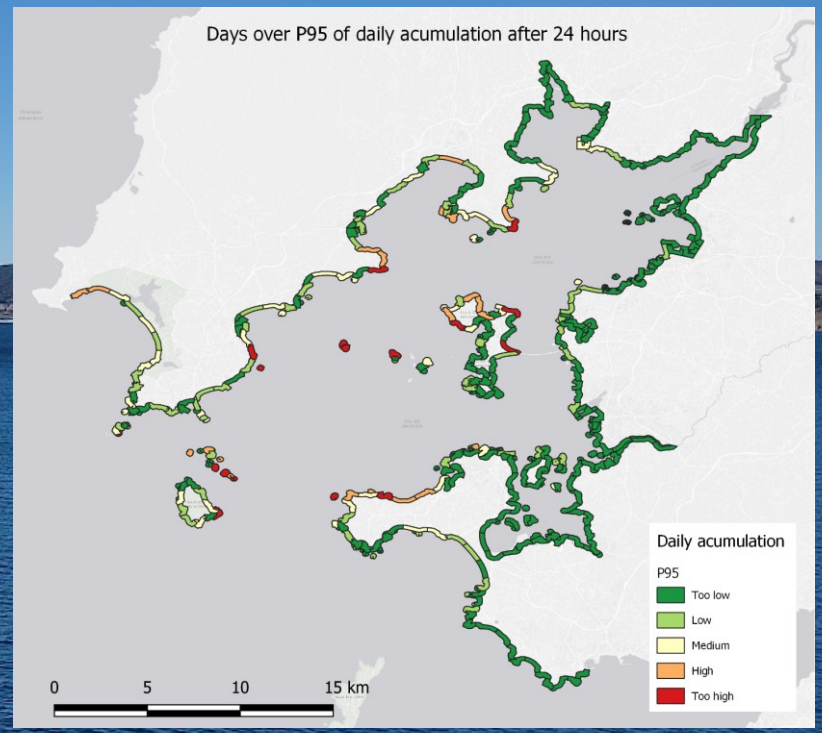
From models to information



Average



Maximum



Days over P95

2019-01-15

Wind

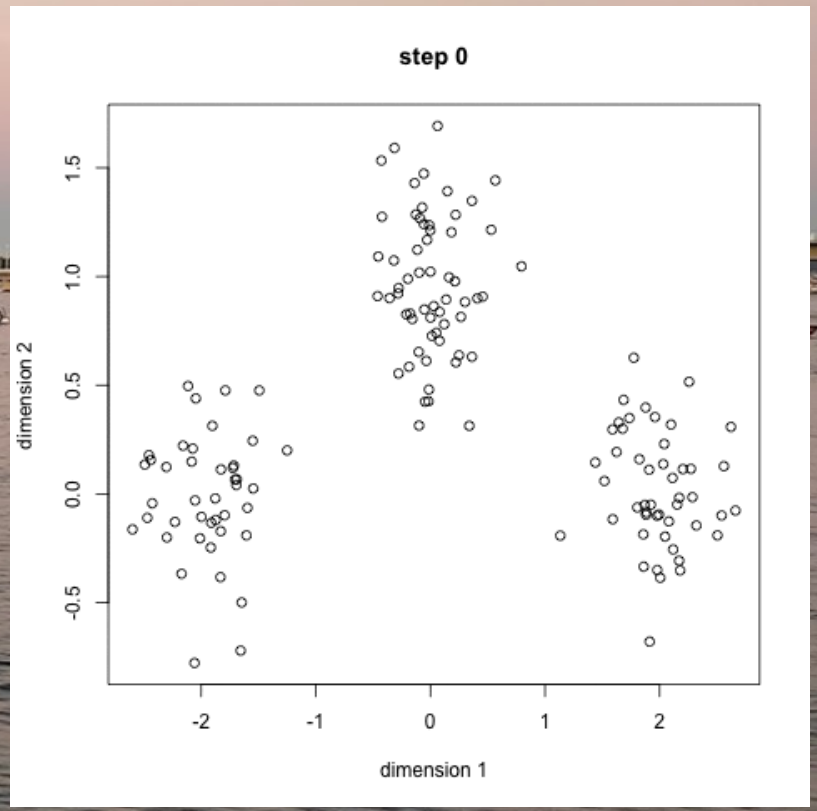
Beached Particles

- 0 - 5
- 5 - 10
- 10 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 80
- 80 - 1000

Clustering

K-means algorithm: method to automatically cluster similar data together.

Training set: Daily accumulation maps

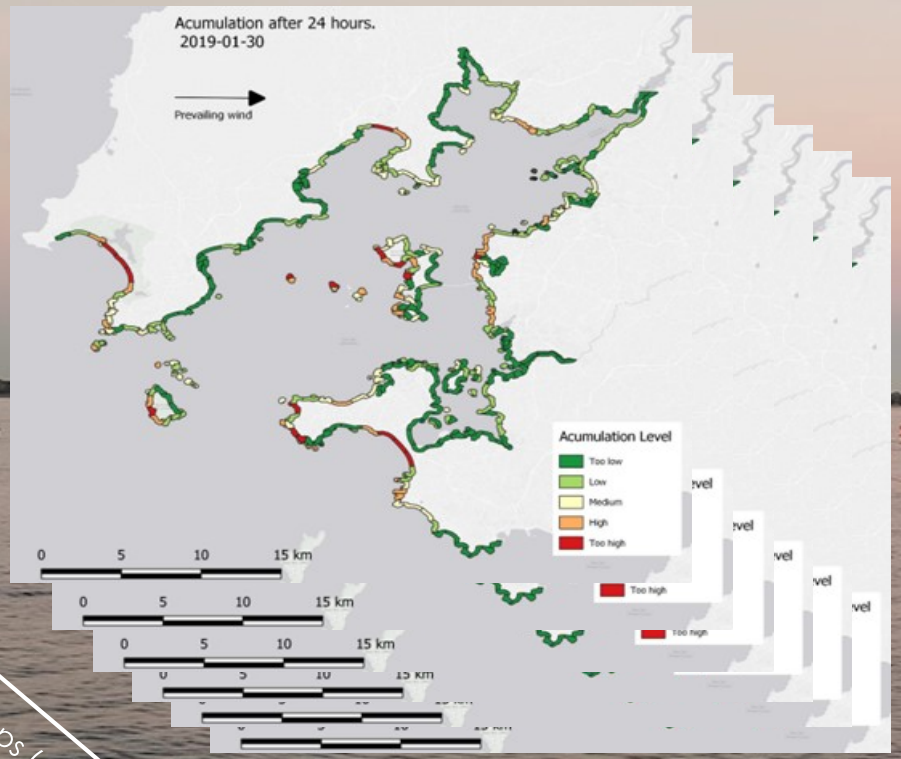


Steps:

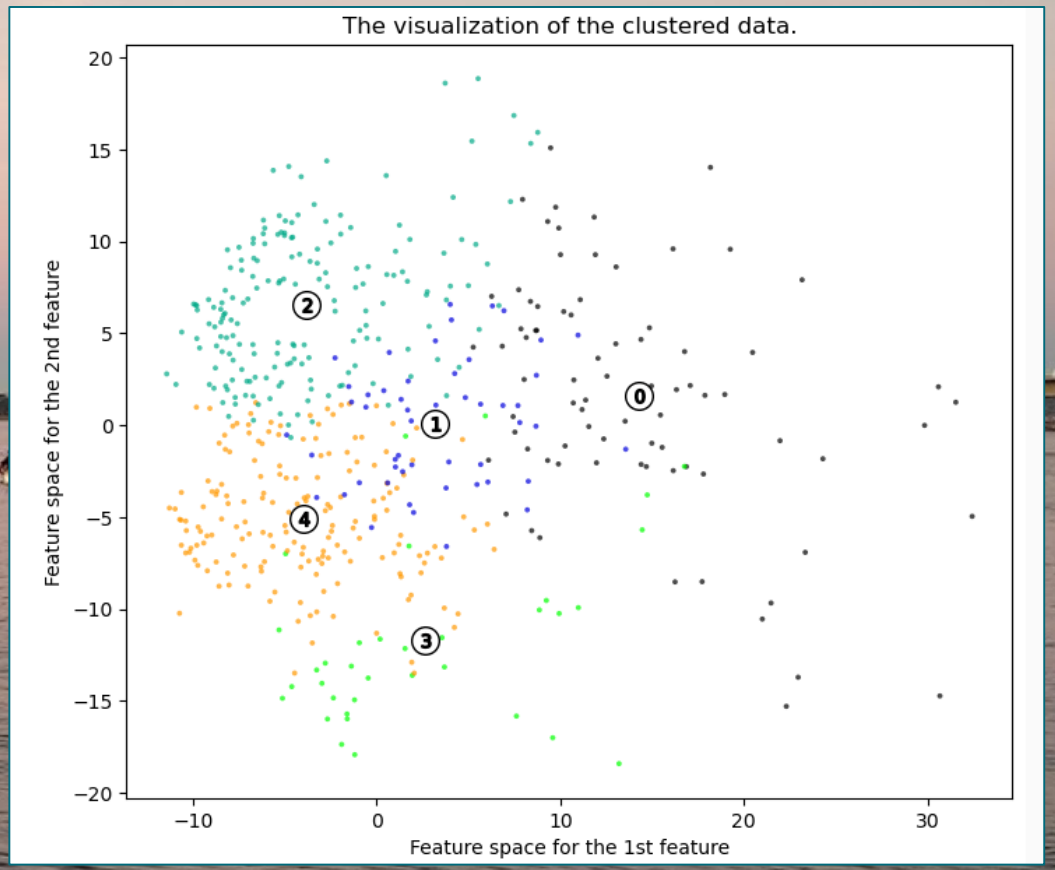
1) Chose number of clusters (K)
2) Seed initial centroids
3) Iterative computing:
    1) Assigning elements to the closest centroid
    2) Recomputing the new centroids

Clustering

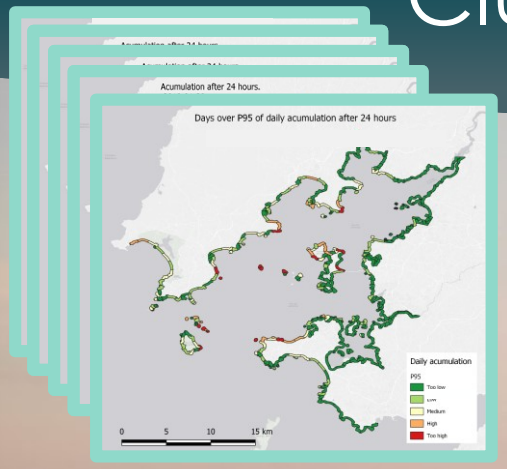
K-means algorithm:



5 Clusters



Clustering



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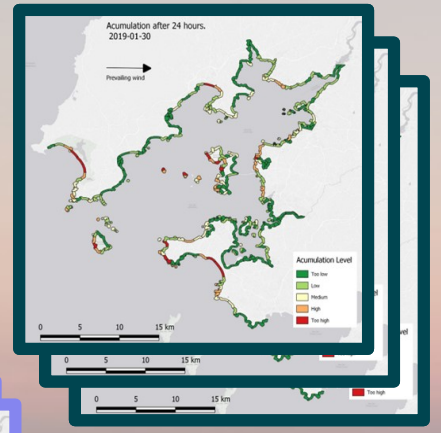
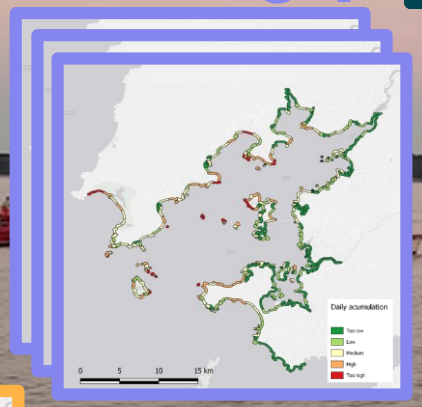


79

54



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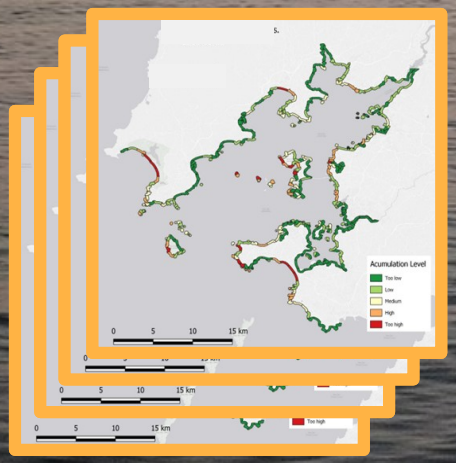

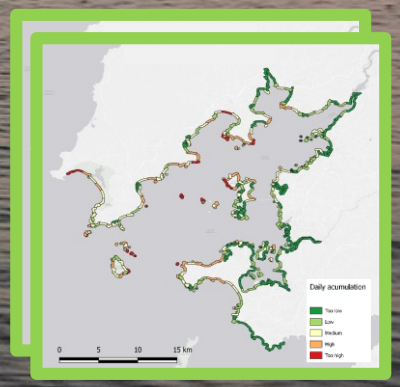

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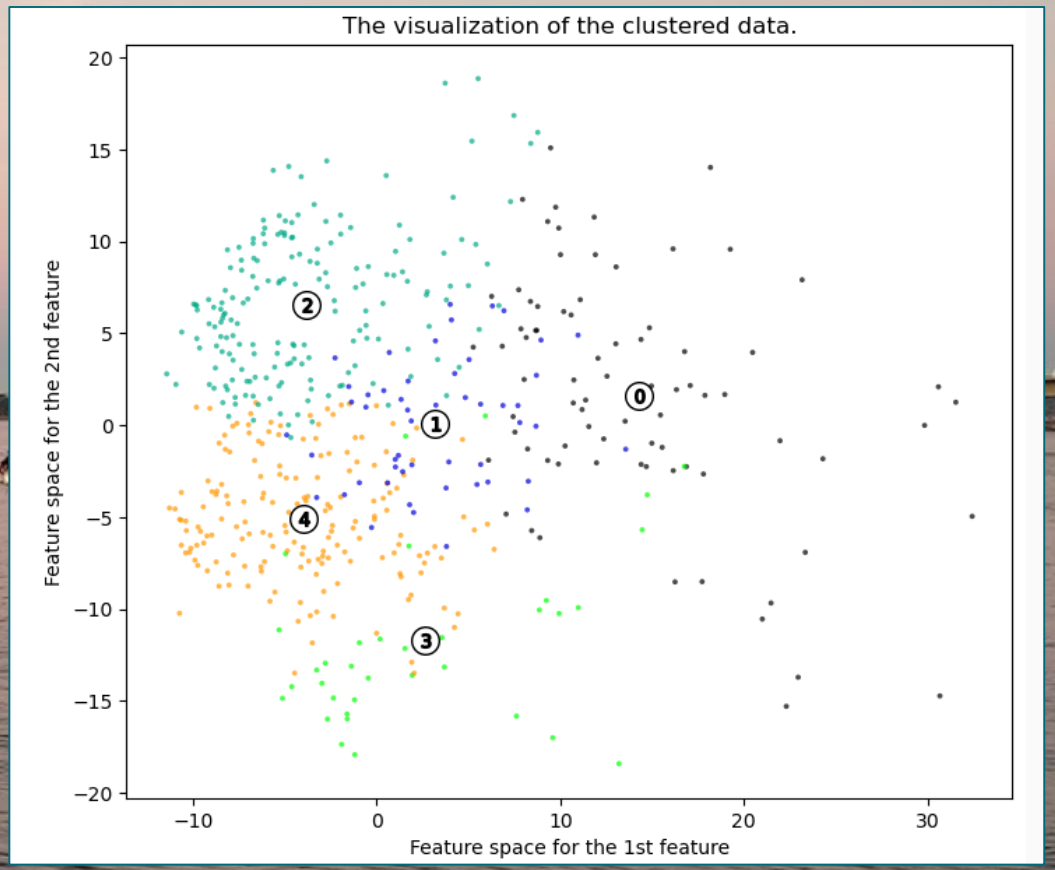
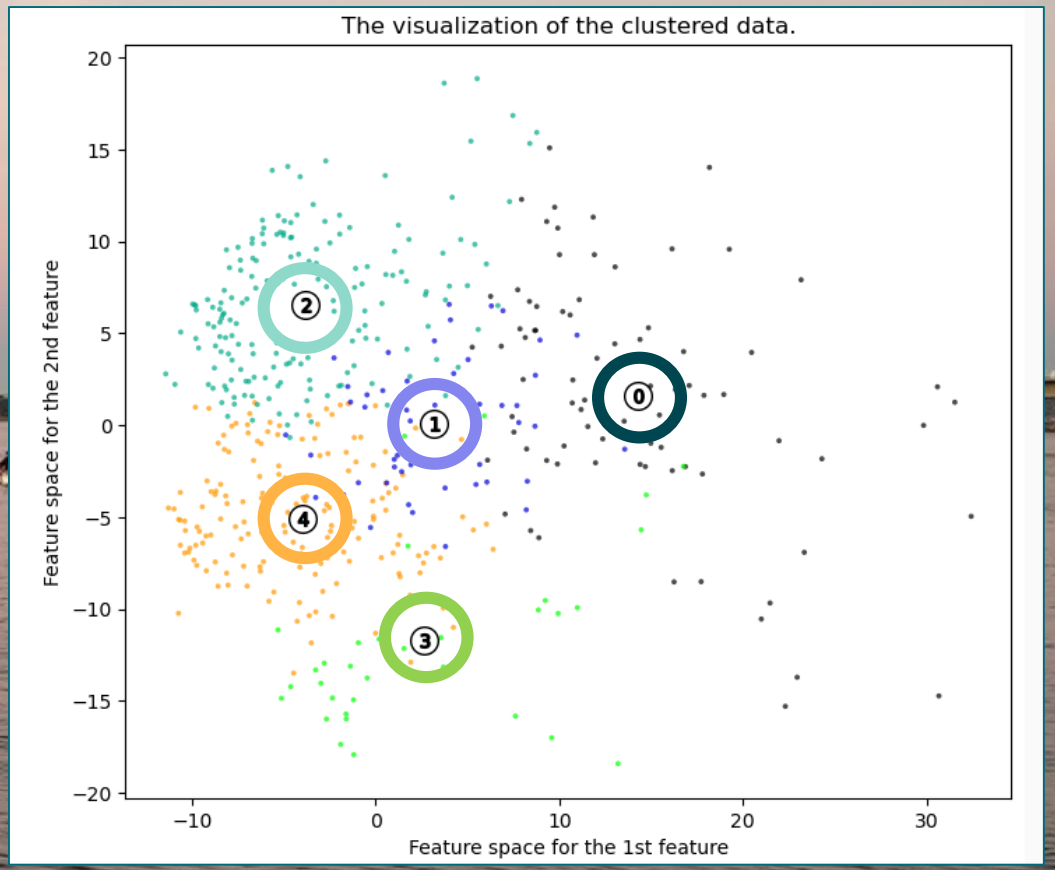
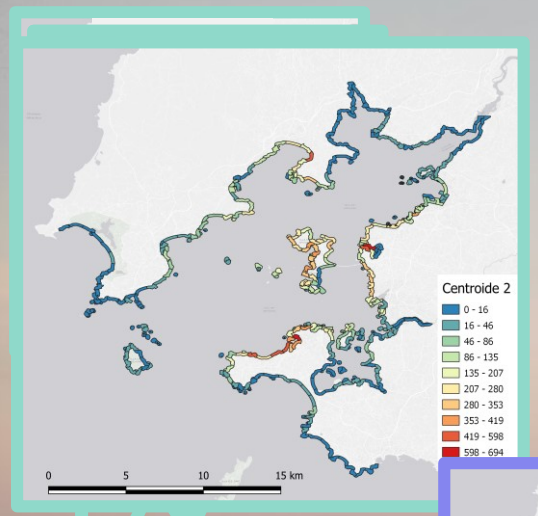
5 Clusters

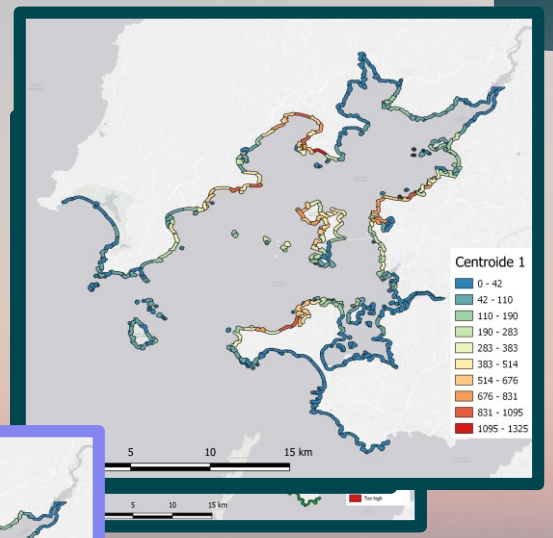


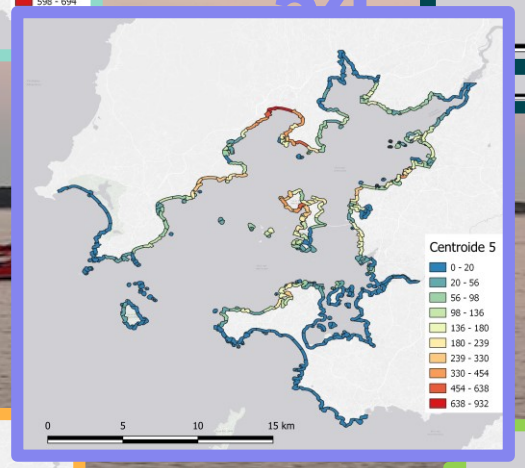
Typical situations:

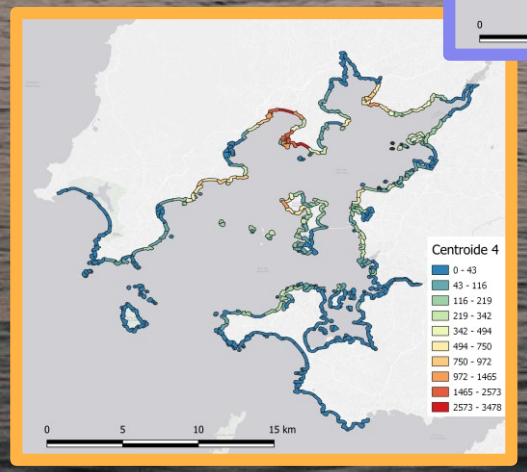
Centroids are represantives of each group

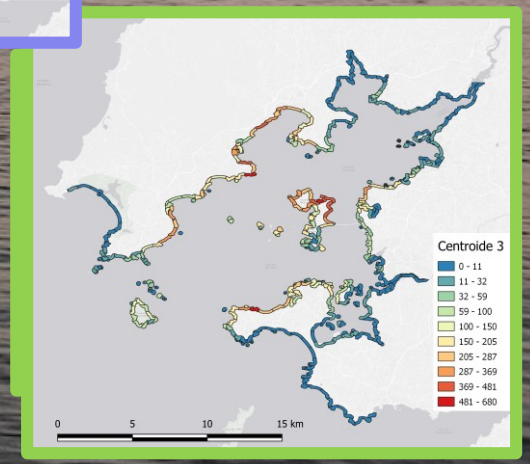




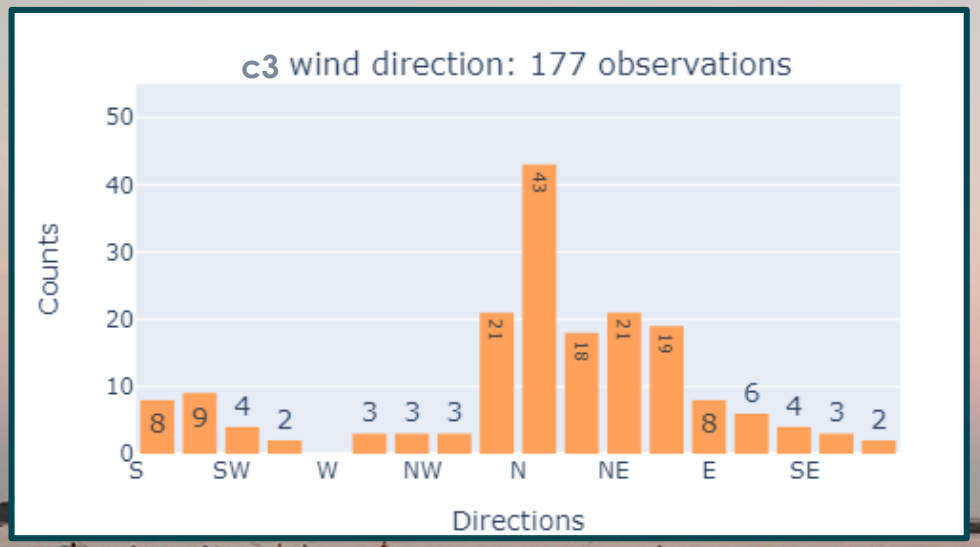


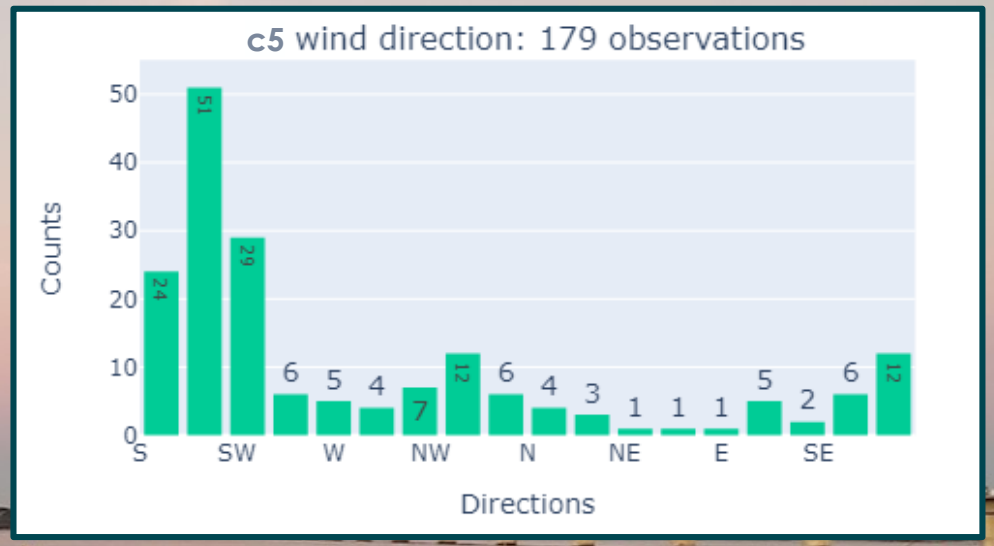


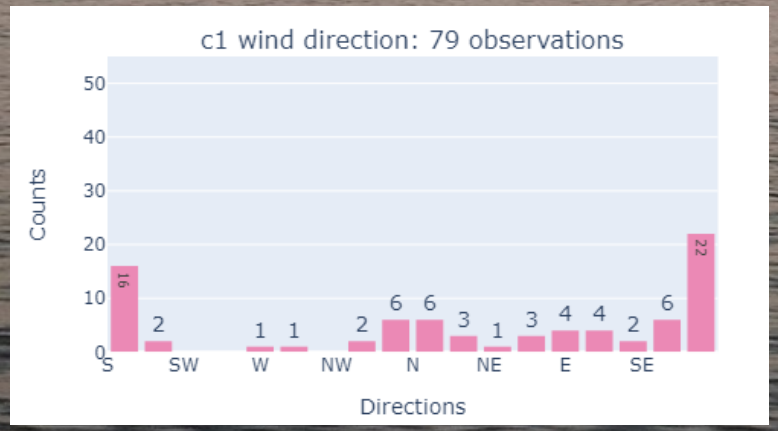


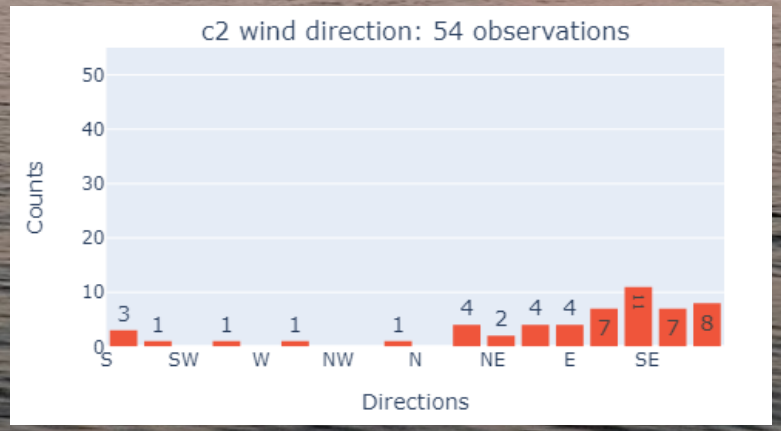


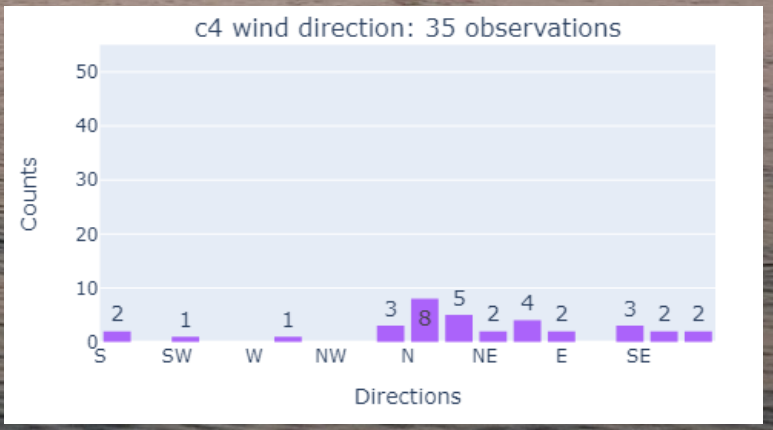
Relationship between wind directions and groups



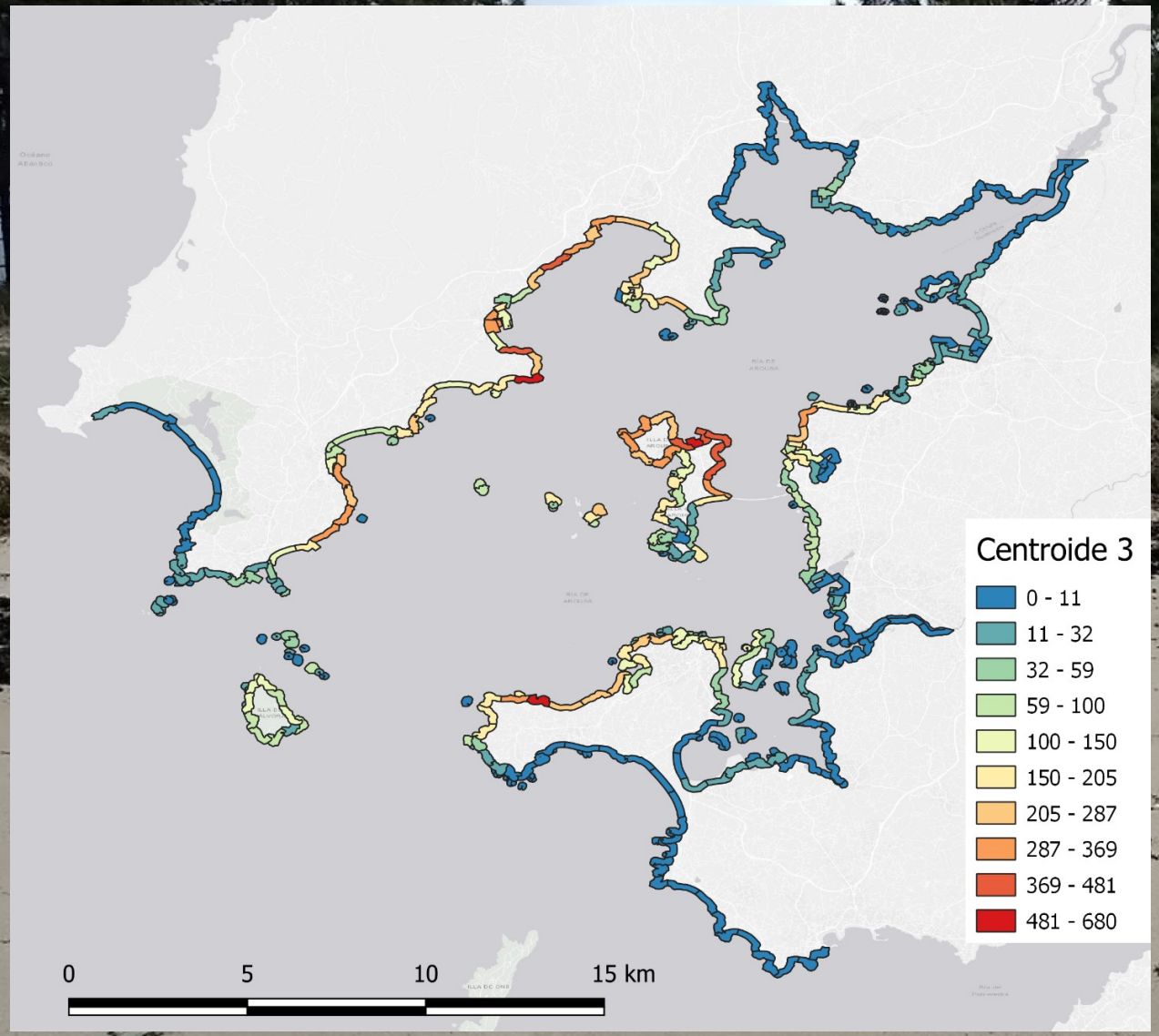


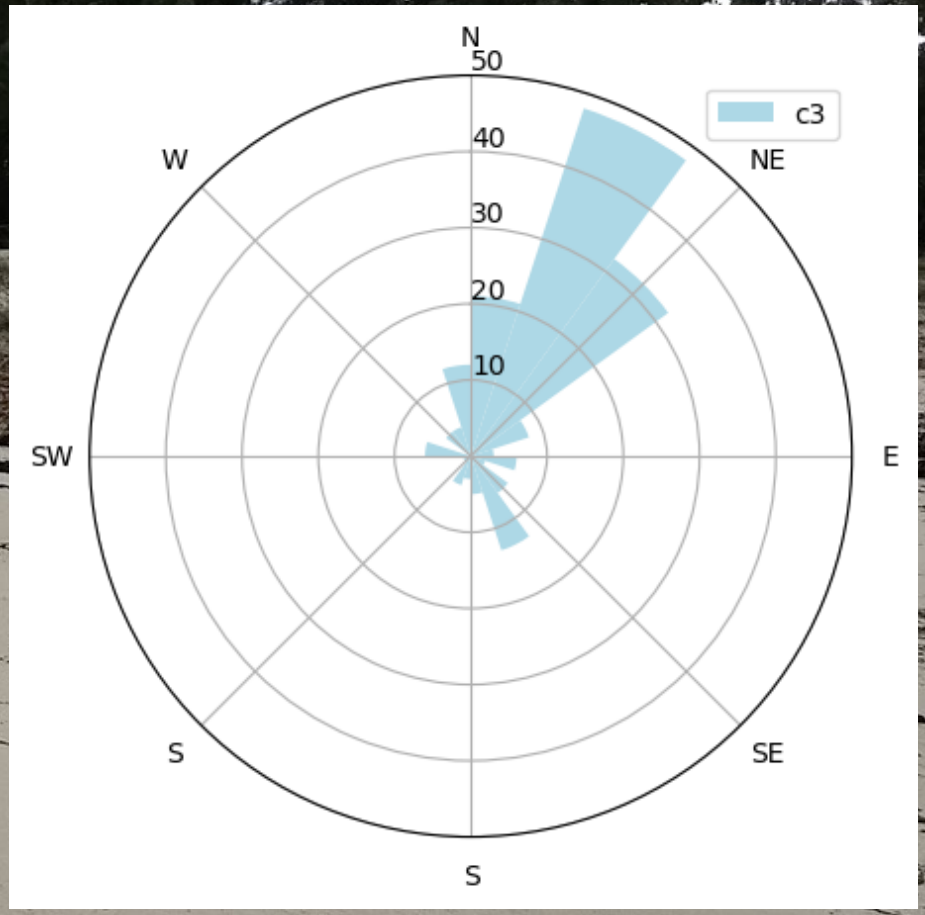




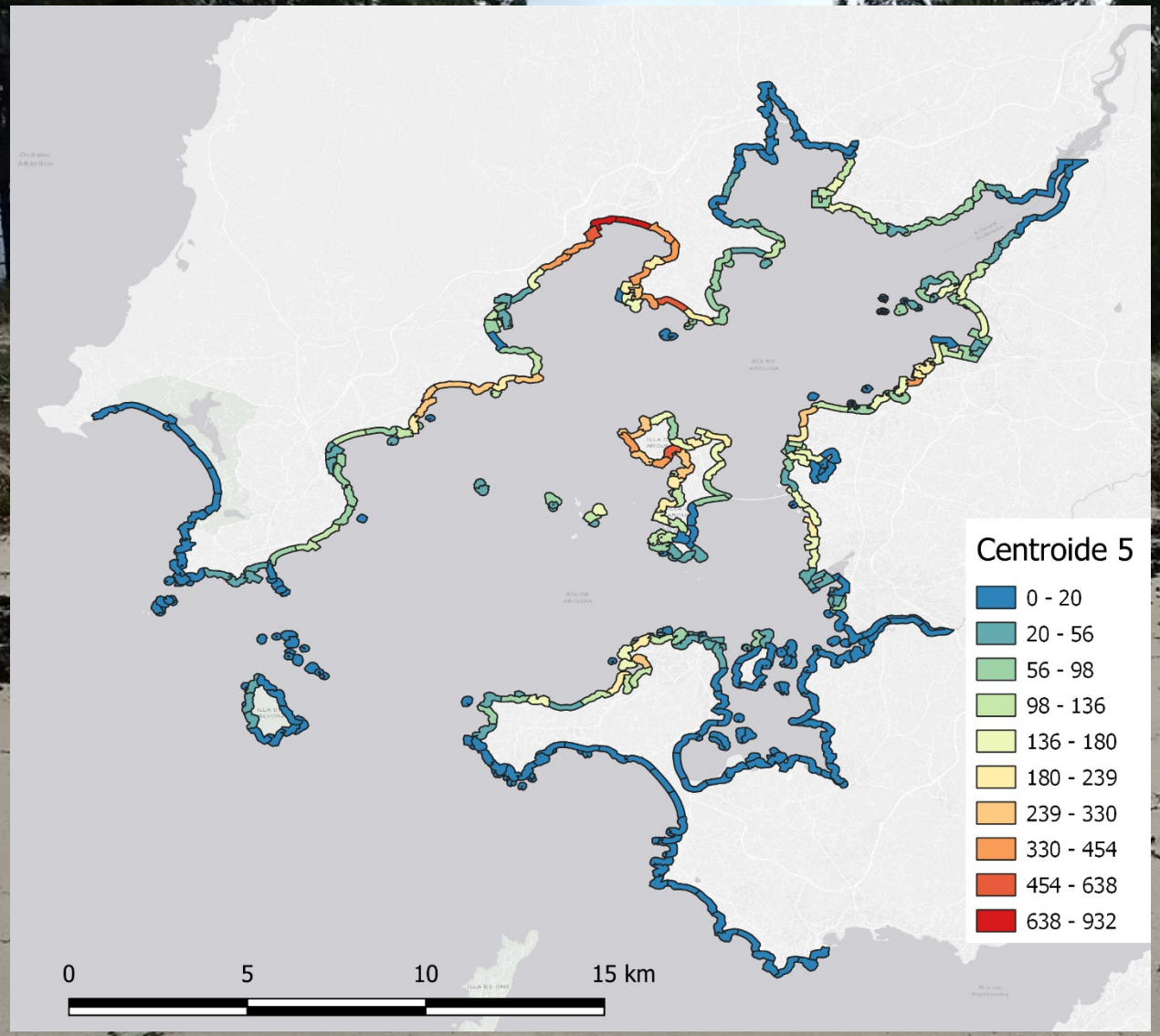


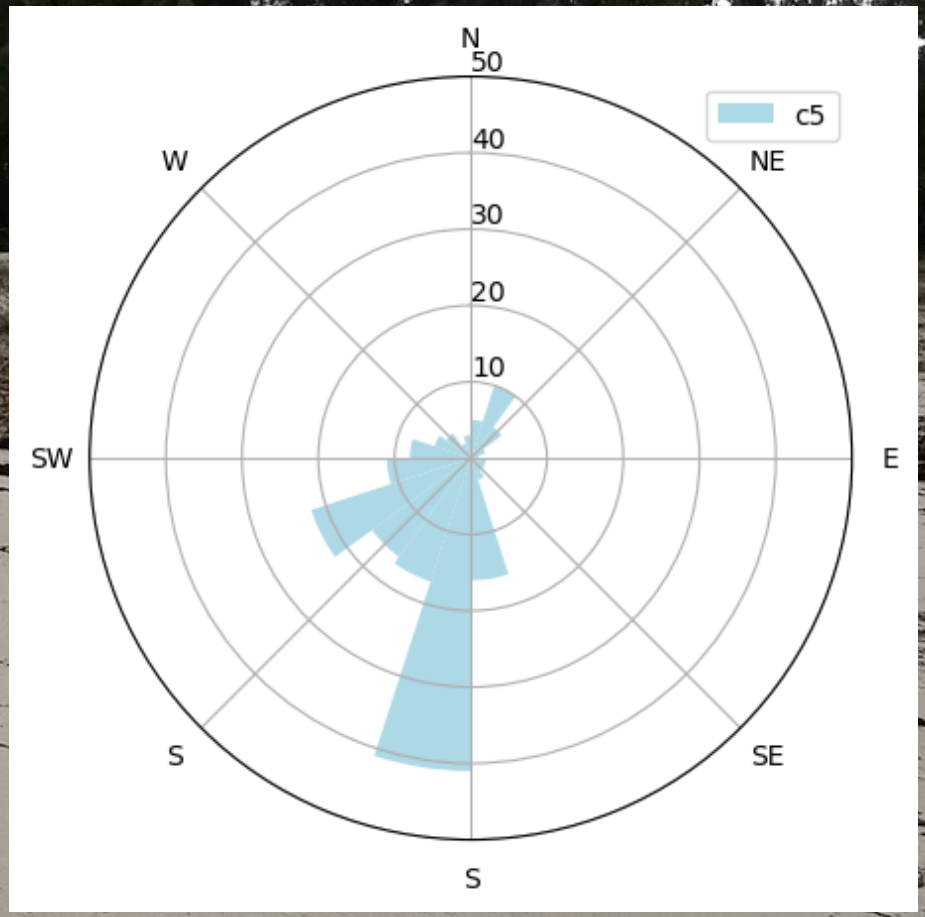
Typical situation with wind from N-NE



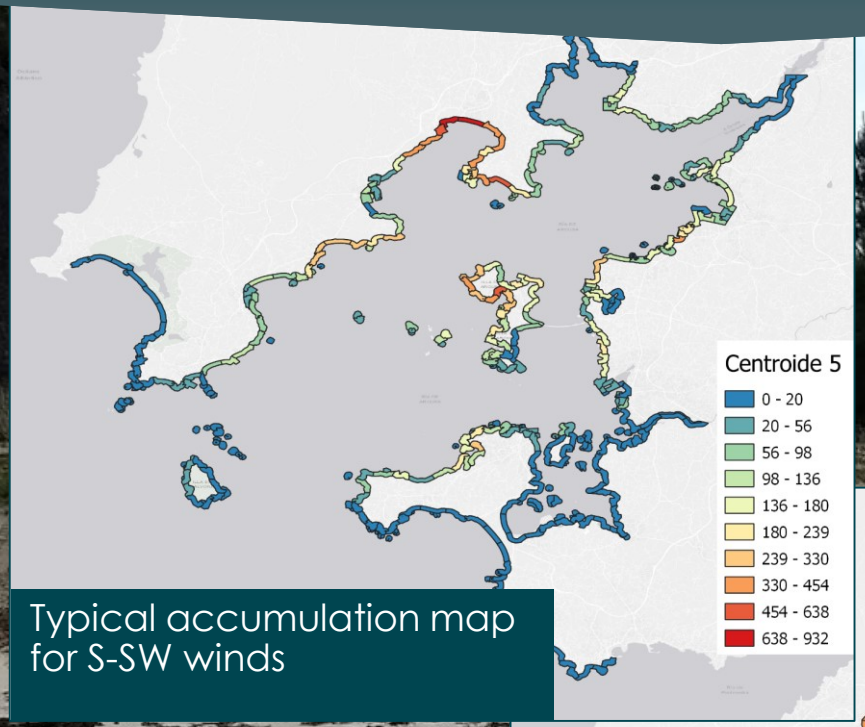


Typical situation with wind from S-SW

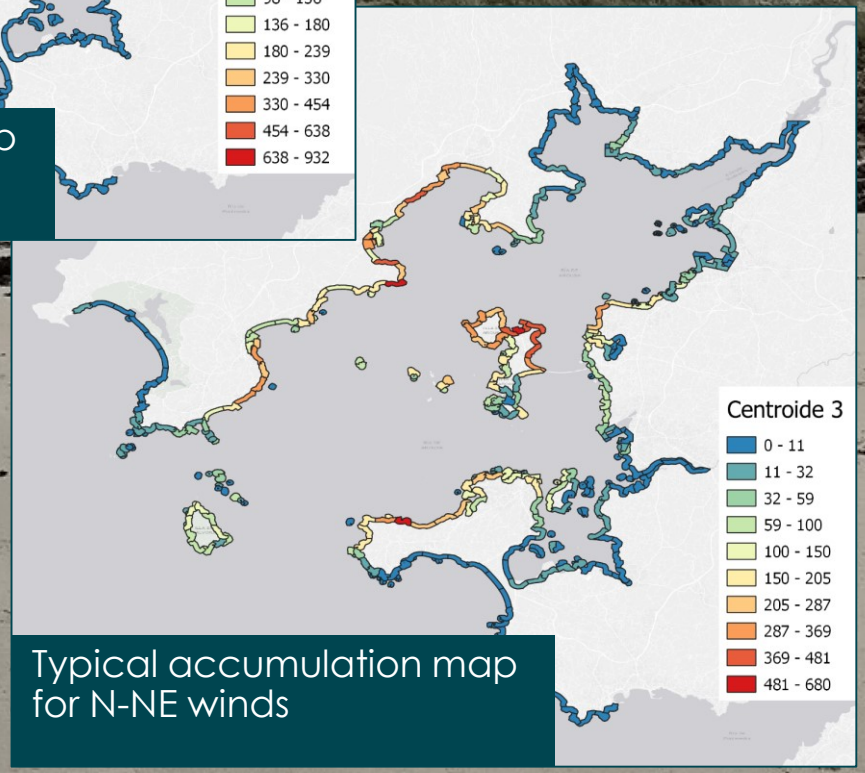




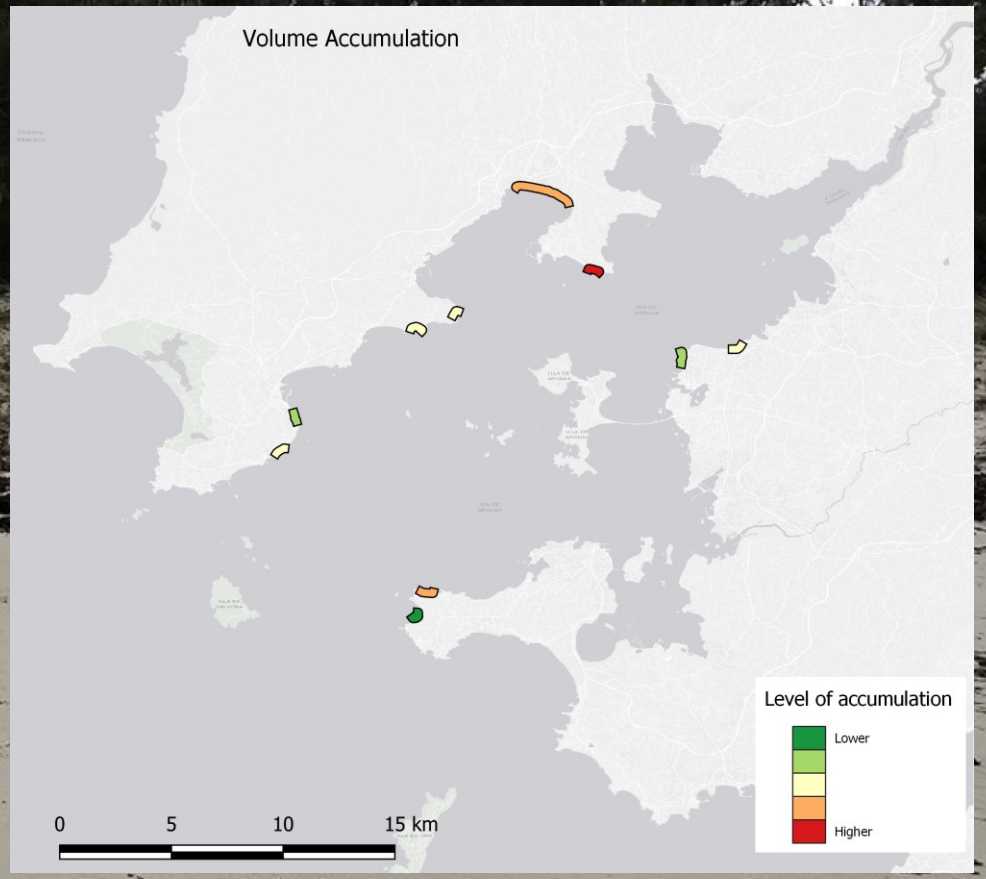
Typical situations vs Observations



Typical accumulation map for S-SW winds



Typical accumulation map for N-NE winds



Accumulation average in the surveyed beaches

Helping to the management

Investigan a un buque en Vigo por el sentinazo que esparció chapapote por A Illa

Faro de Vigo: 13-12-2022

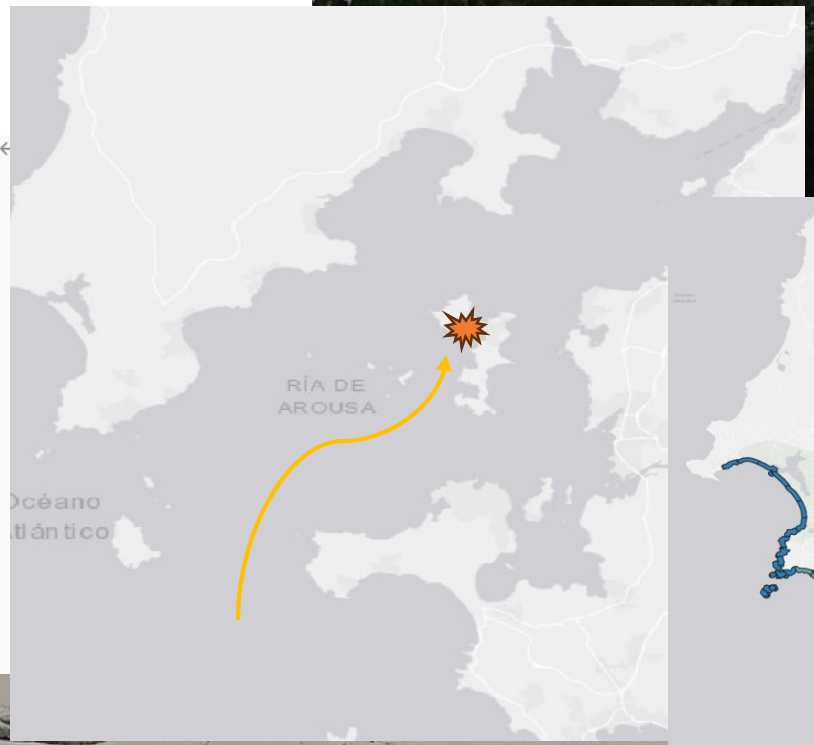
El buque permanece retenido por Capitanía Marítima

R. A. / A. O.

A Illa | 13·12·22 | 12:07 | Actualizado a las 20:14

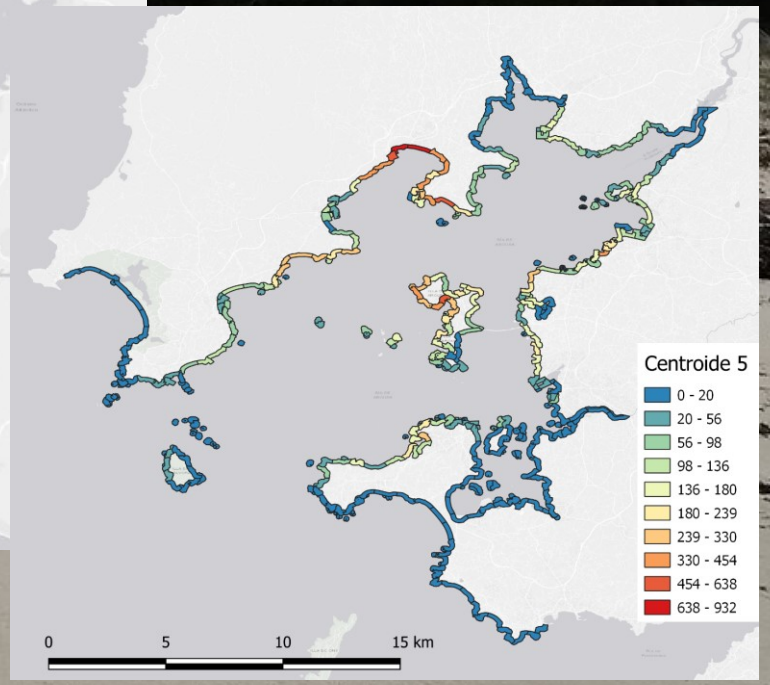
El fuel llegó mezclado con algas a la playa de O Campo. / NOÉ PARGA

On 12th December 2022, an illegal oil spill was happened in the mouth of the rias



First impact on coast: Praia do Campo

Current wind: S-SW



Typical accumulation map for S-SW winds

THANK YOU!!!

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