EurOCEAN
ONE OCEAN ONE VOICE 2023

Session 1: Enabling ecosystem-based management for fisheries and conservation

Monitoring of the Good Environmental Status and Sea Floor Integrity under the scope of the Marine Strategy Framework Directive

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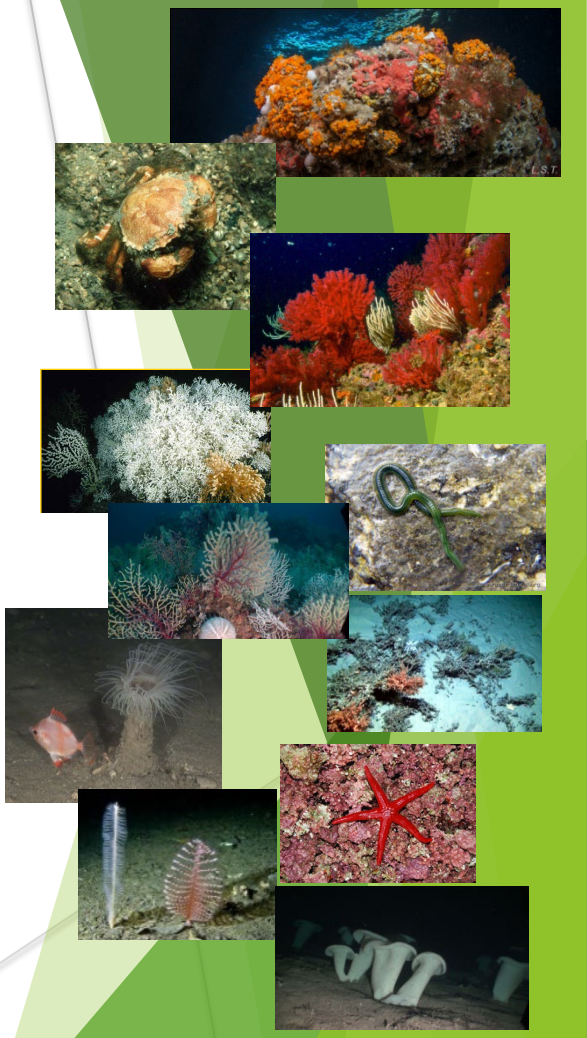
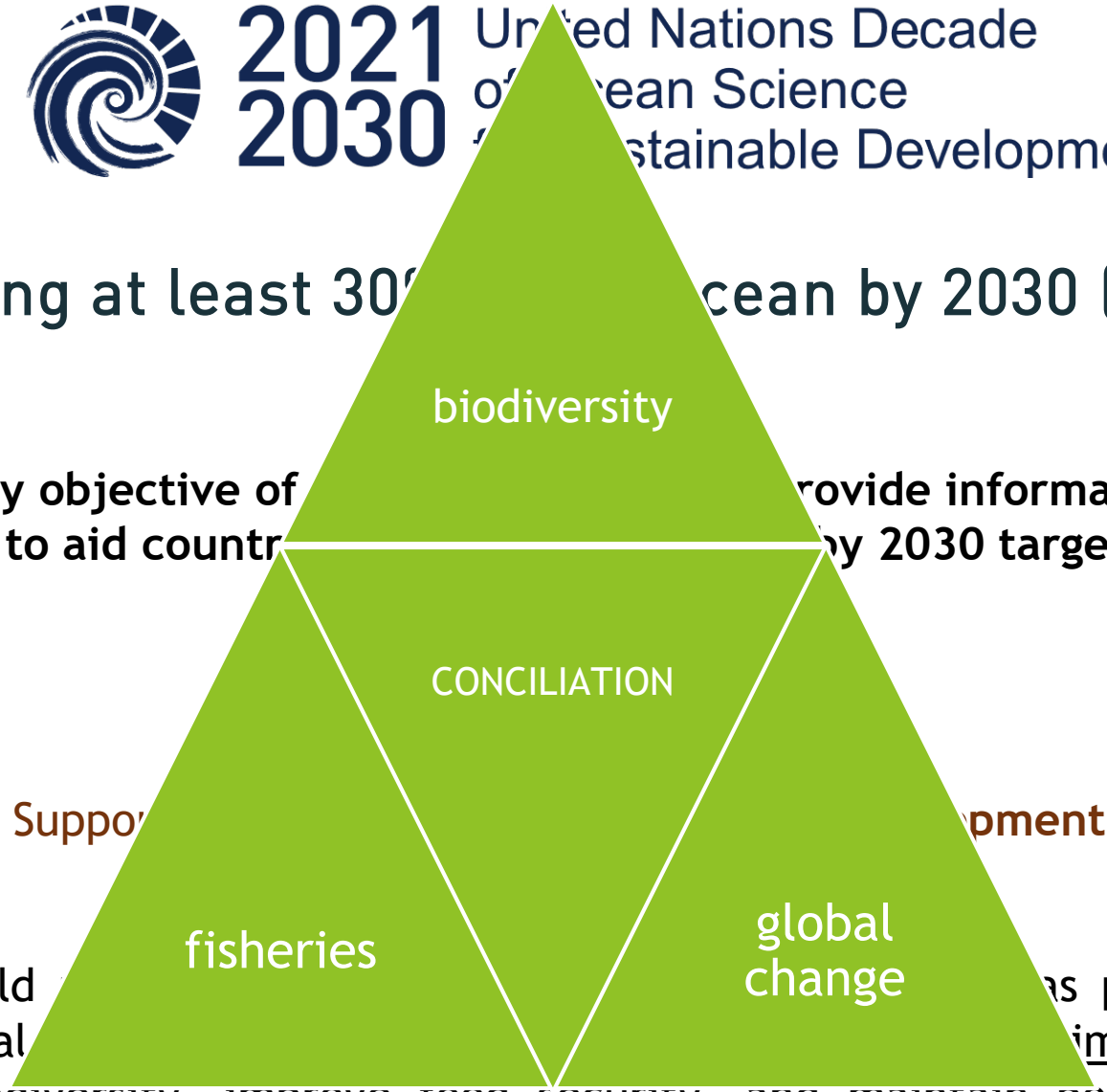


2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Protecting at least 30% of the ocean by 2030 (MPA 2030)

The primary objective of [illegible] provide information and knowledge to aid countr[illegible]y 2030 targets.



Suppo[illegible]pment

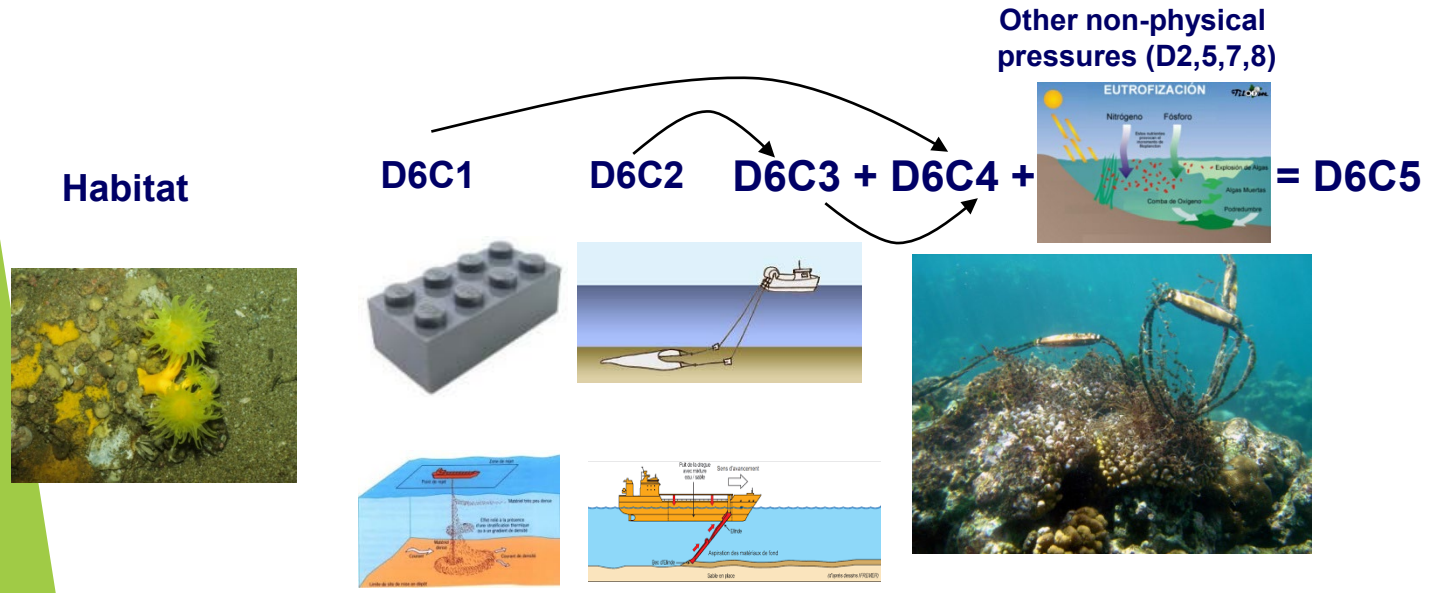
As the world [illegible]s part of new international [illegible]imultaneously protect biodiversity, improve food security, and maintain both of these benefits under the background of global change including **climate change**.

Marine Strategy Framework Directive (MSFD - EU)

Assessment of the Good Environmental Status (GES)

BENTHIC SENSITIVE HABITATS

Descriptor 6 – Sea Floor Integrity



PHYSICAL PRESSURES & ITS DISTURBANCES

D6C1
SPATIAL EXTENT AND DISTRIBUTION OF PRESSURE PRODUCING *PHYSICAL LOSS* OF THE NATURAL SEABED (permanente change)

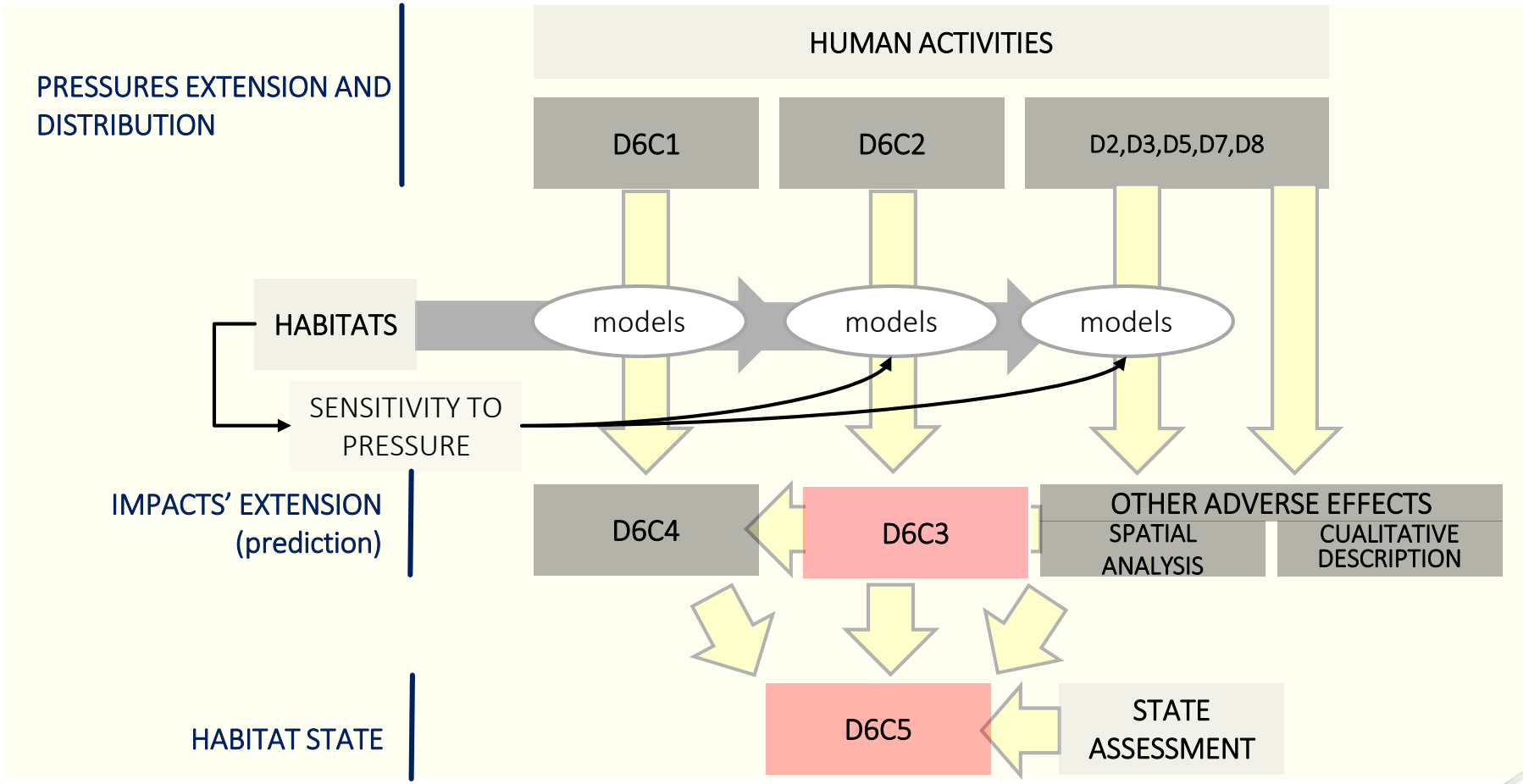
D6C2
SPATIAL EXTENT AND DISTRIBUTION OF PRESSURE PRODUCING *PHYSICAL DISTURBANCE*

D6C3
SPATIAL EXTENT OF EACH HABITAT TYPE ADVERSELY AFFECTED BY EACH PRESSURE

GLOBAL ASSESSMENT

D6C4
EXTENT OF LOSS OF THE HABITAT TYPE

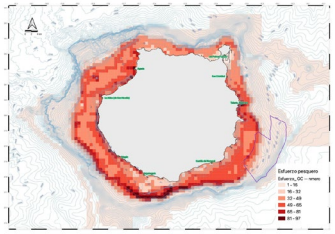
D6C5
AREA OF HABITAT TYPE ADVERSELY AFFECTED IN ITS CONDITION BY ACCUMULATED ANTHROPOGENIC PRESSURES


PRESSURES EXTENSION AND DISTRIBUTION
HUMAN ACTIVITIES
D6C1
D6C2
D2,D3,D5,D7,D8
HABITATS
models
models
models
SENSITIVITY TO PRESSURE
IMPACTS' EXTENSION (prediction)
D6C4
D6C3
OTHER ADVERSE EFFECTS
SPATIAL ANALYSIS
CUALITATIVE DESCRIPTION
HABITAT STATE
D6C5
STATE ASSESSMENT

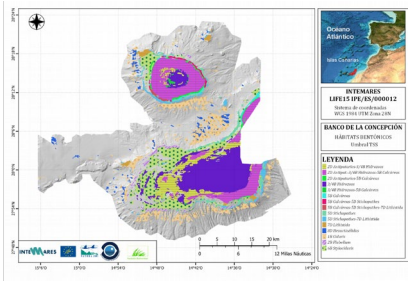
INPUTS?

1. AREA AND DISTRIBUTION OF **PHYSICAL PERTURBANCES** ON HABITATS

FISHING

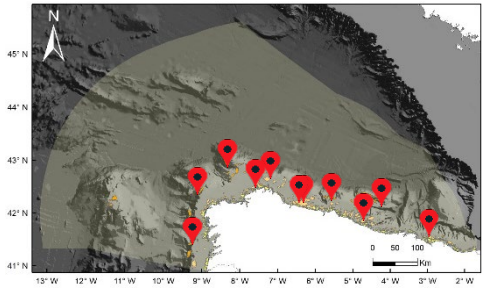


2. AREA AND DISTRIBUTION OF **HABITATS**



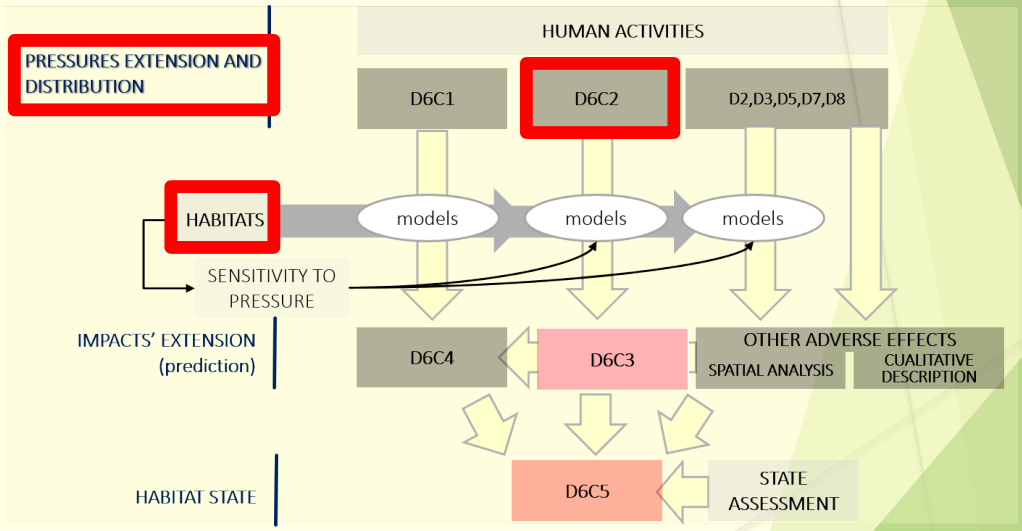
3. CHARACTERIZATION OF **HABITATS**

(TIME SERIES MONITORING ALONG A PRESSURE GRADIENT)

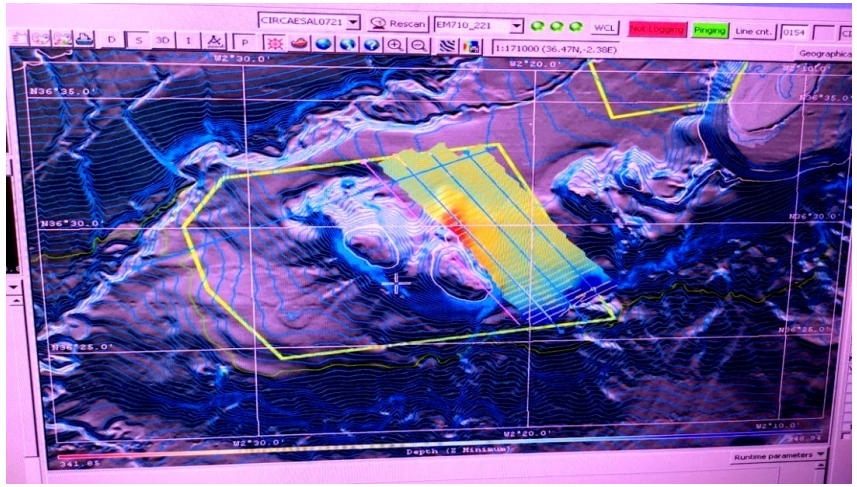


RESPONSE TO D6C3

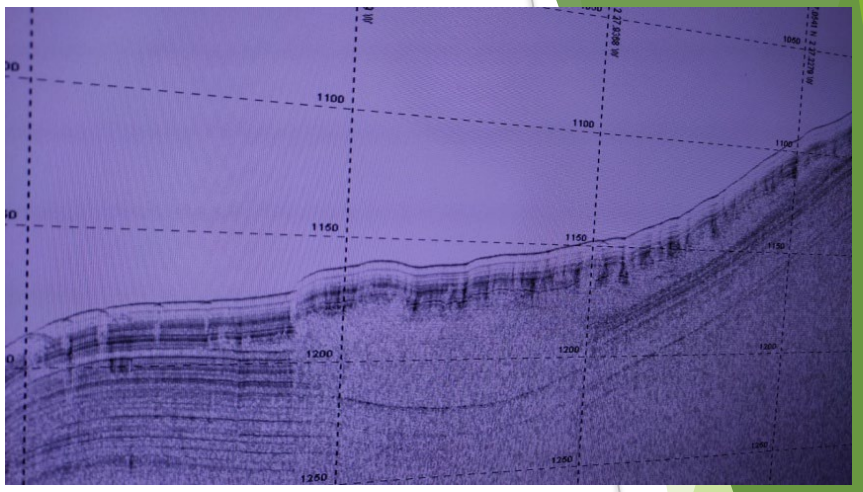
D6C5



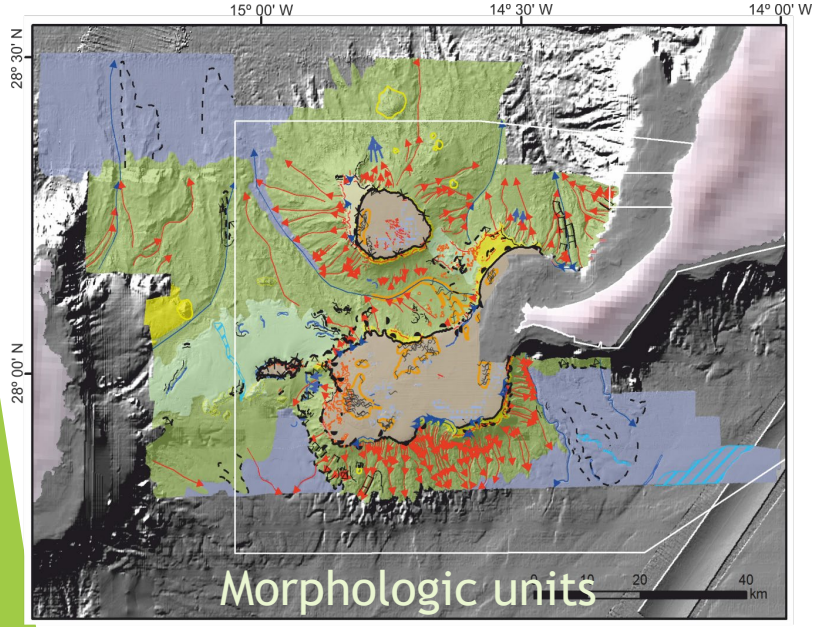
GEOMORPHOLOGIC INTERPRETATION



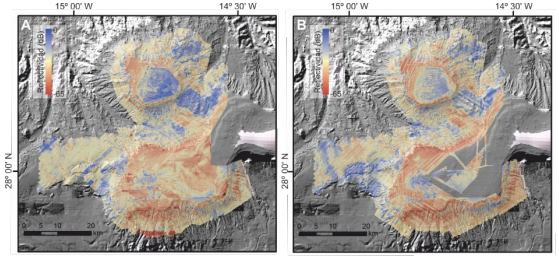
Multibeam echo sounder

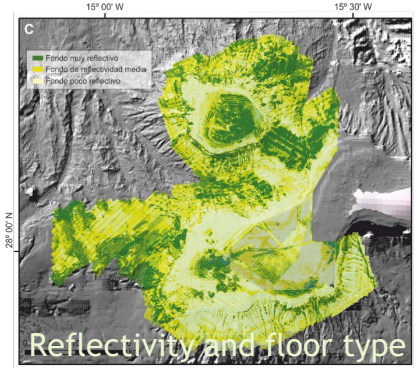


TOPAS – Topographic parametric sonar

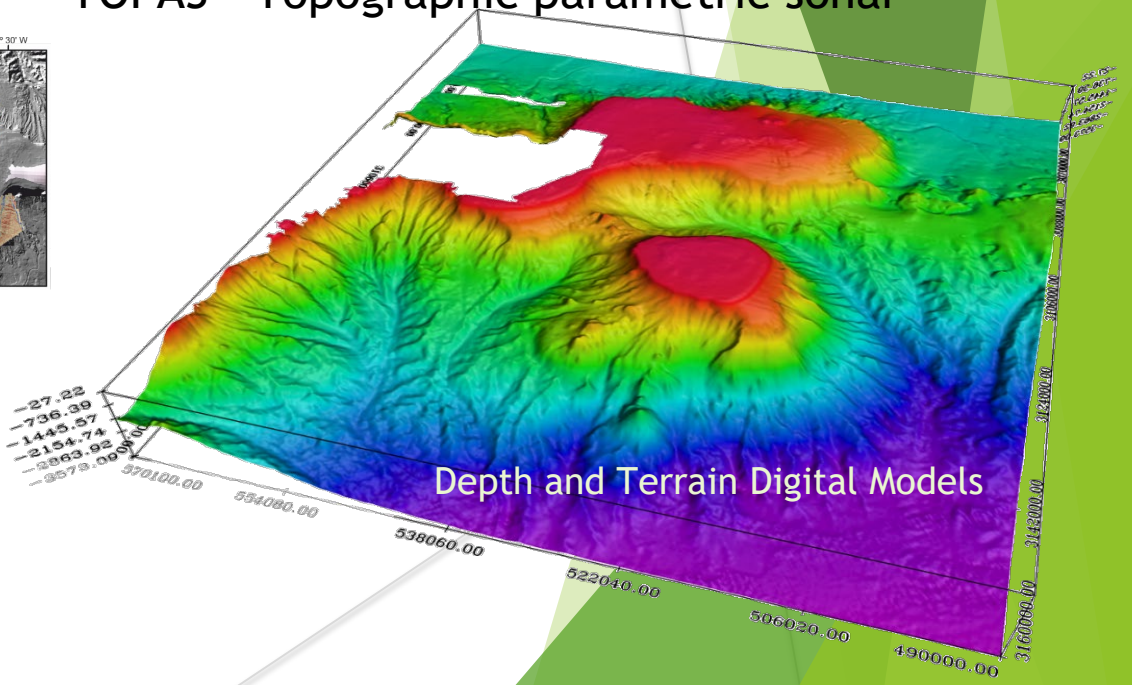


Morphologic units



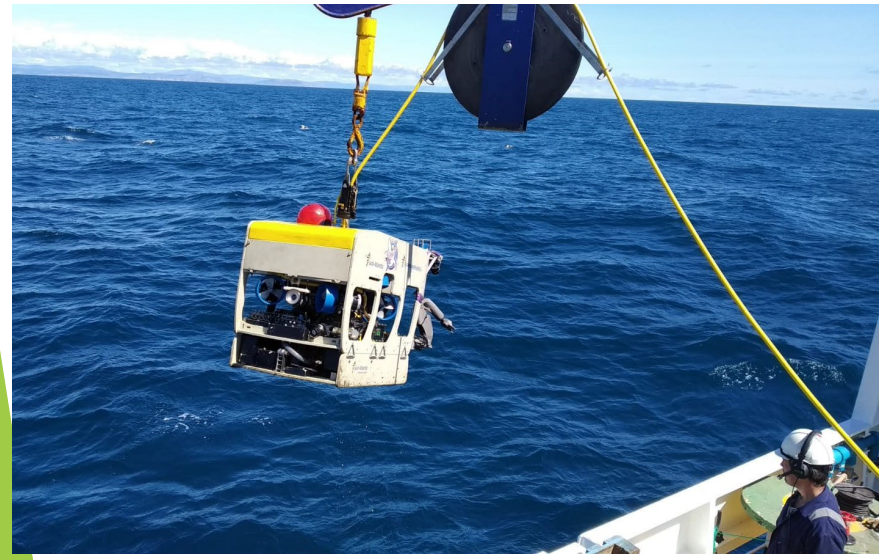


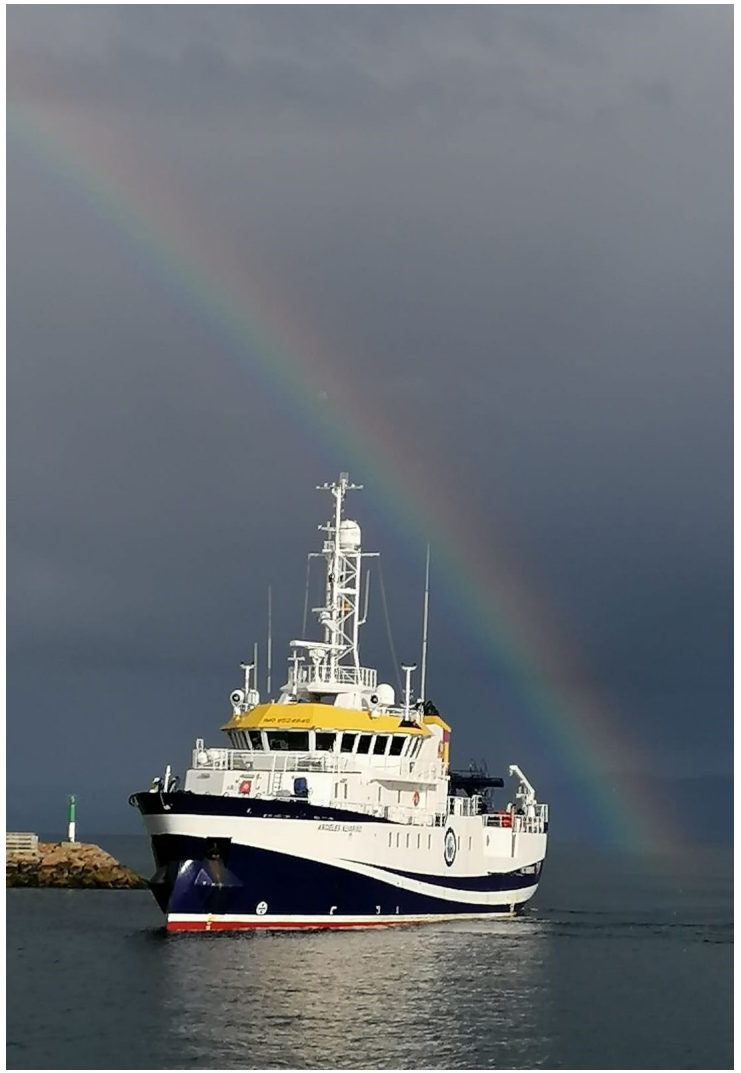
Reflectivity and floor type

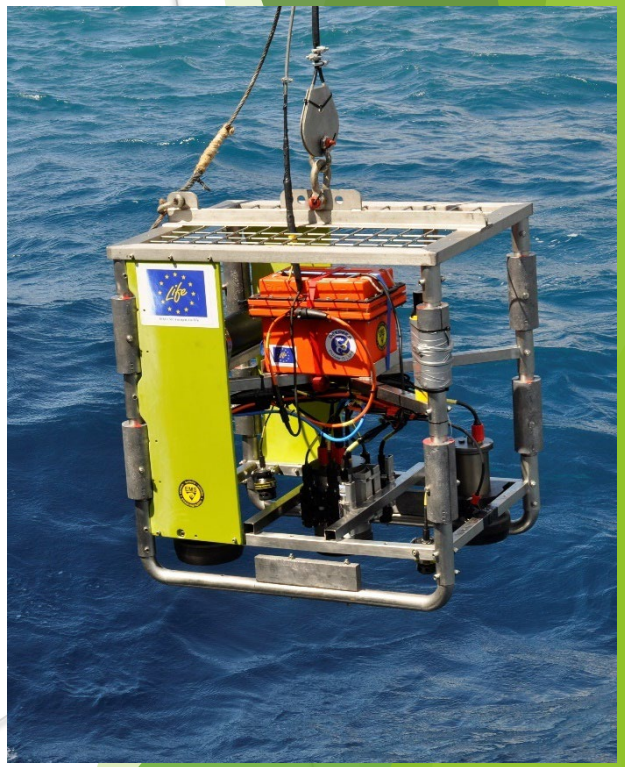


Depth and Terrain Digital Models

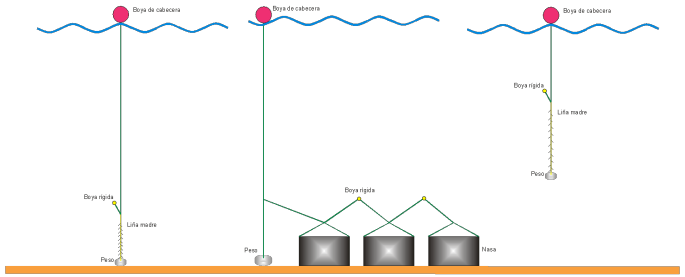
VISUAL SAMPLING METHODS

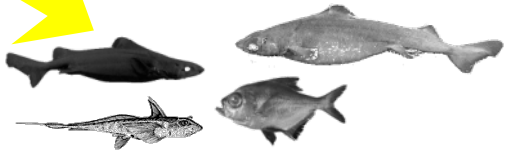


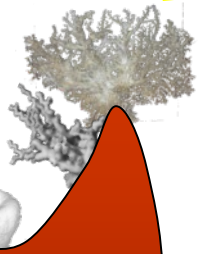




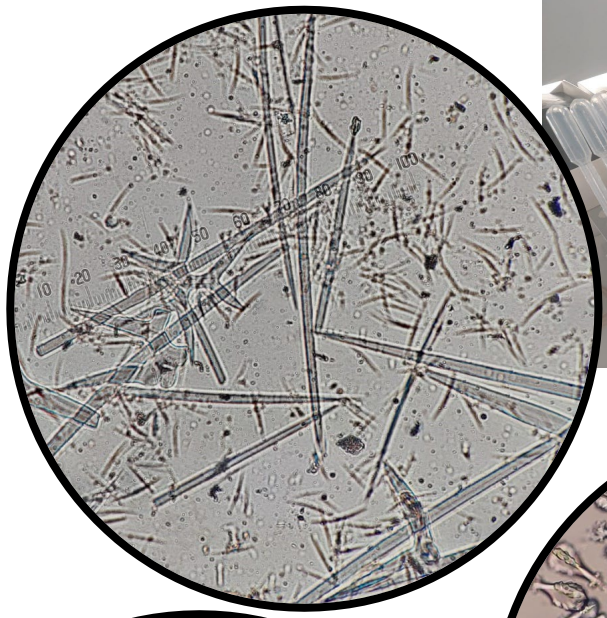
DIRECT SAMPLING METHODS

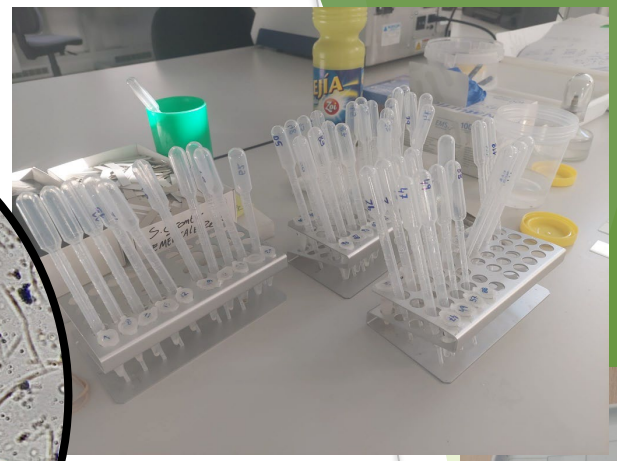


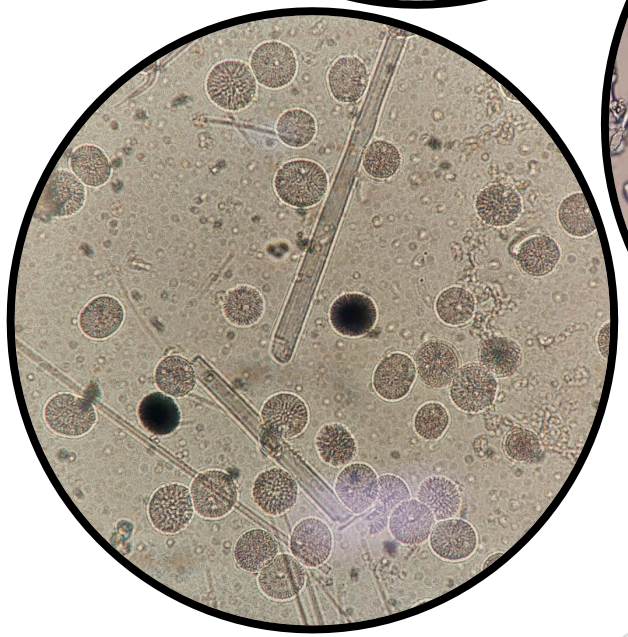


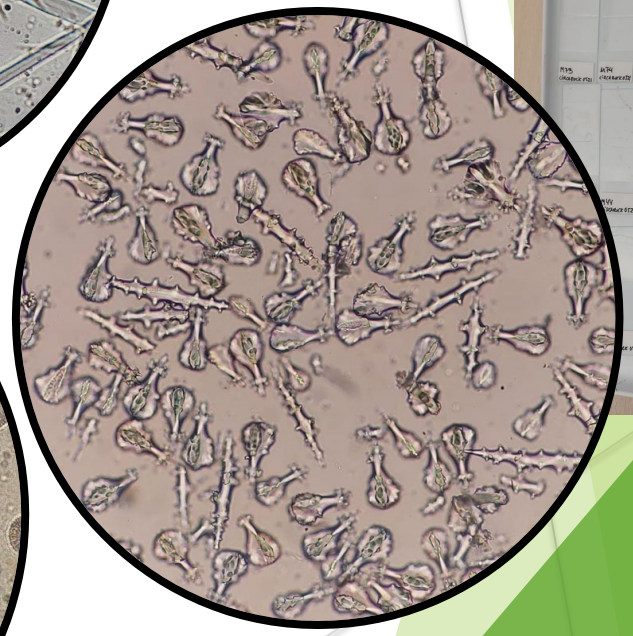


SPECIES IDENTIFICATION









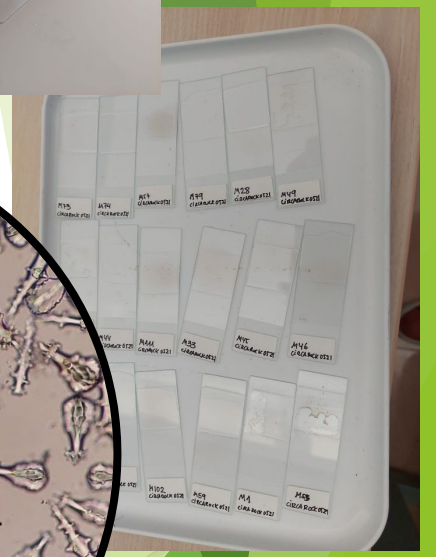
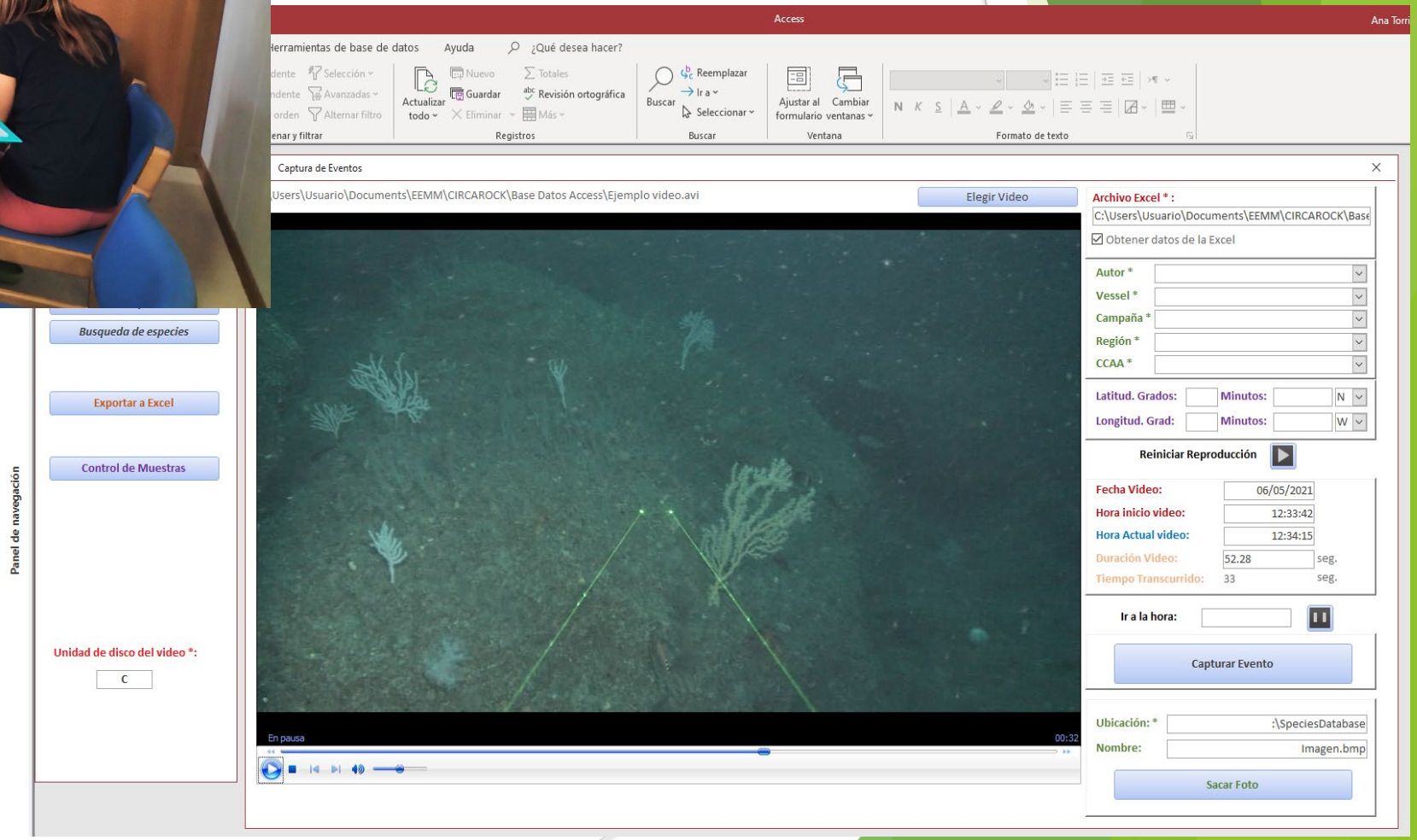
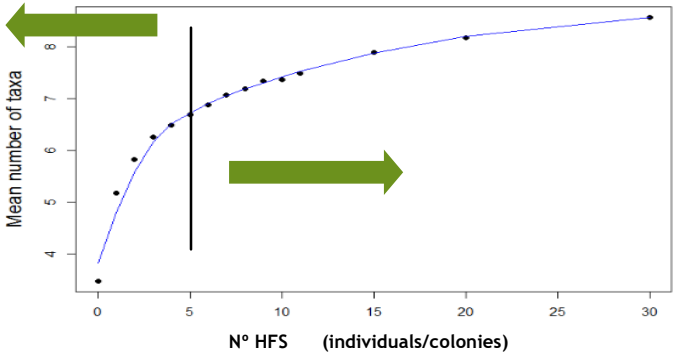
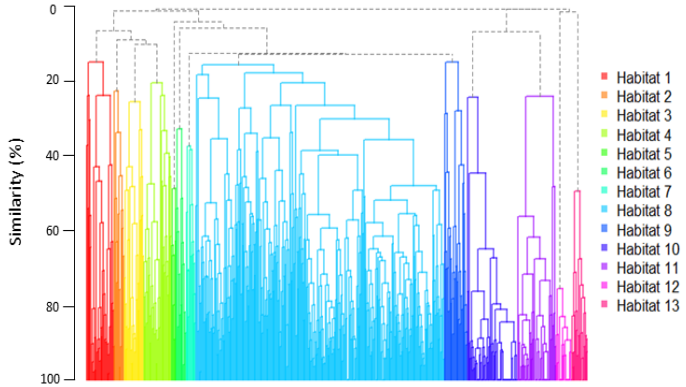


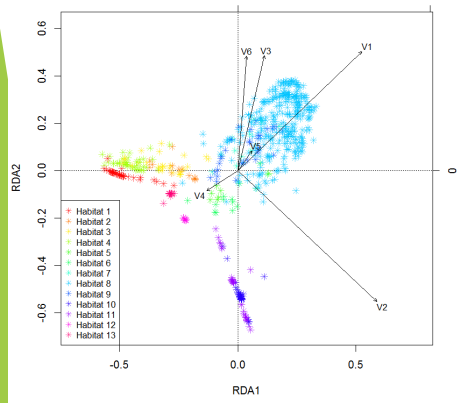
IMAGE ANALYSIS



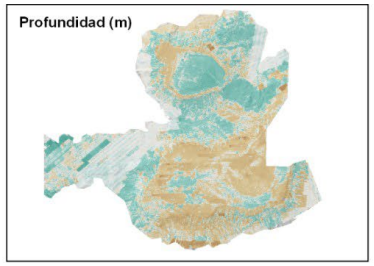
MODELLING & MAPPING

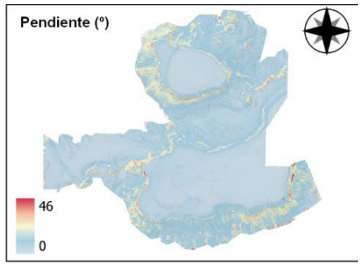


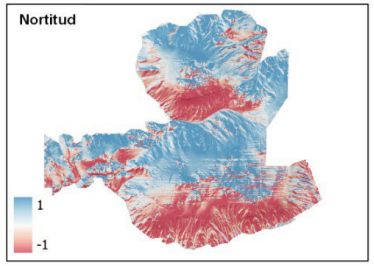


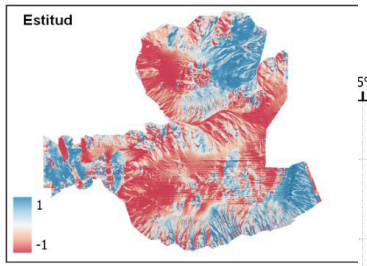


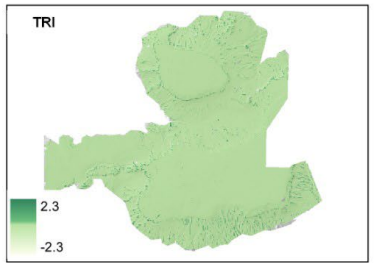
MULTIVARIATE ANALYSIS

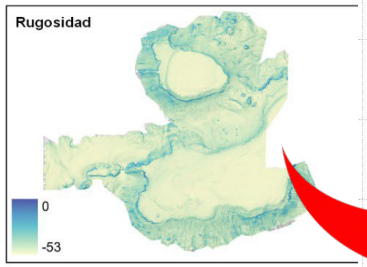


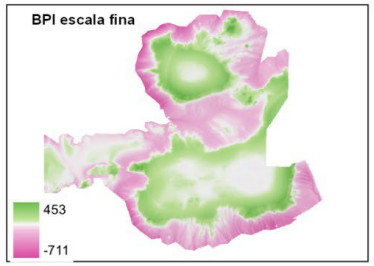


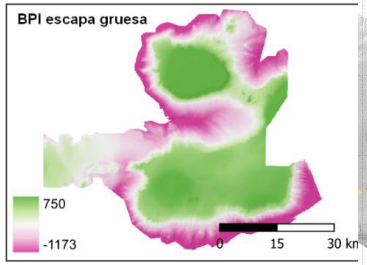


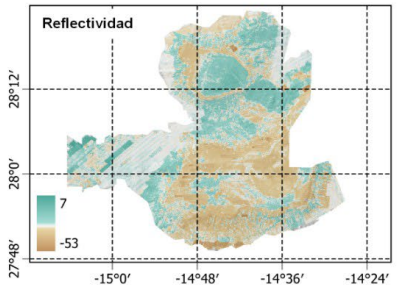


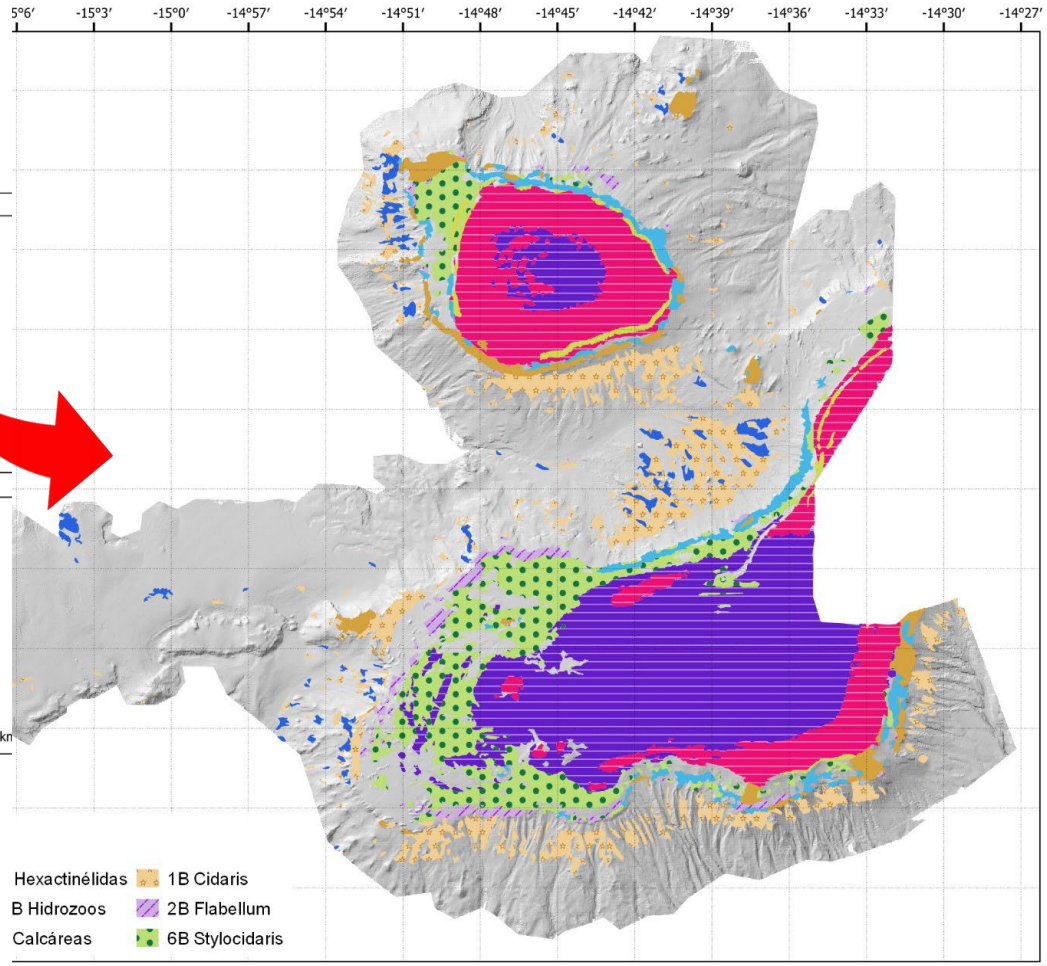












ANTROPOGENIC PRESSURES MAPPING

Logbooks

First-sale

Vessel, Species Data of Landing

Logbooks & First-sale price

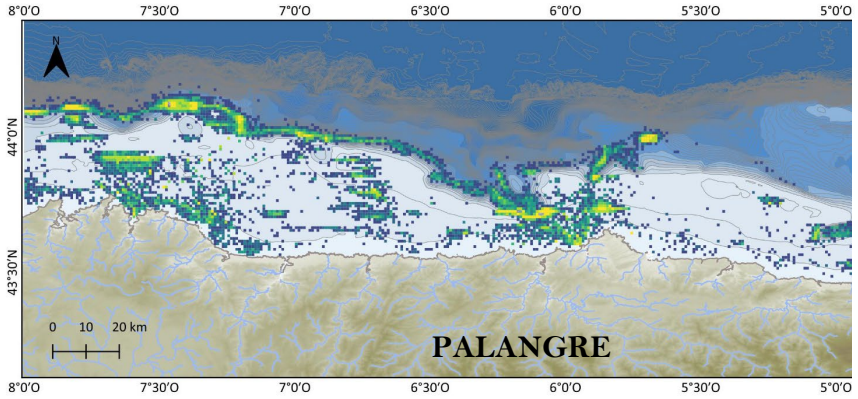
Vessel Monitoring System (VMS)

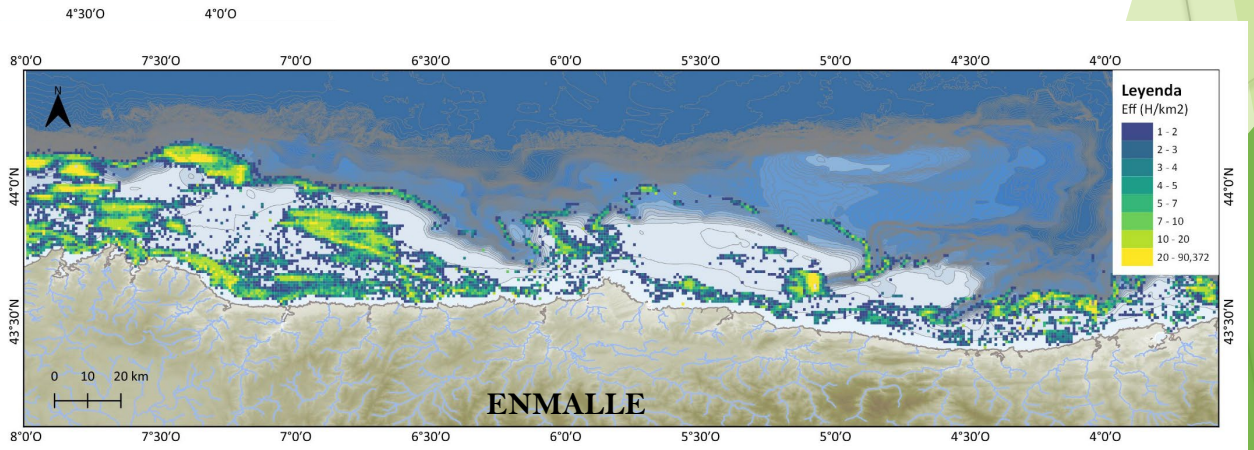
Vessel Data of recording

Spatio-temporal distribution of:

- Fishing effort
- Catches/Landings
- CPUE
- Economic performance (euros and euros/kg)

Fishing vessels ≥ 15 m
Resolution ~ 2 hours



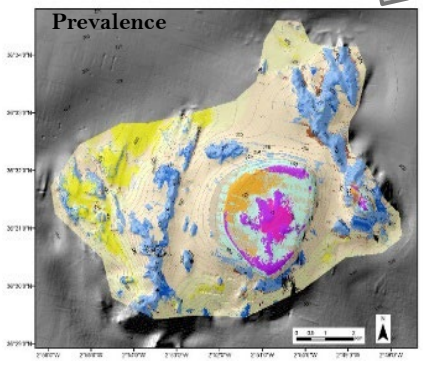


D6C2
PHYSICAL DISTURBANCE

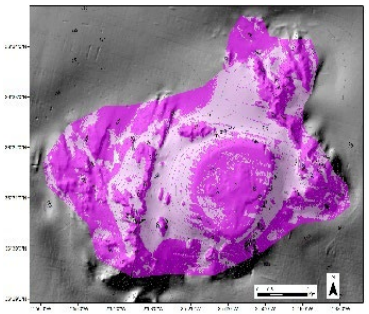
HUMAN PRESSURES & HABITATS OVERLAPPING

D6C3
AREA OF HABITAT TYPE ADVERSELY AFFECTED BY PHYSICAL PRESSURE

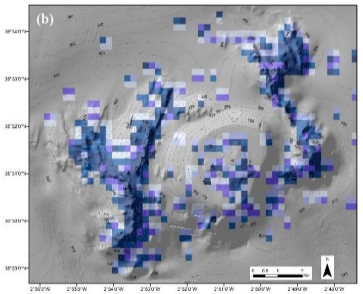
HABITATS



SENSITIVITY



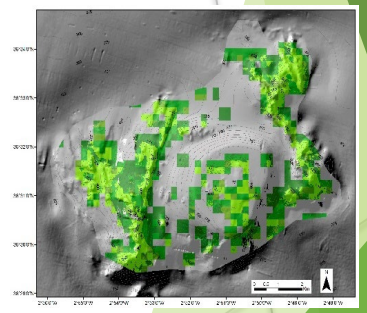
FISHING EFFORT

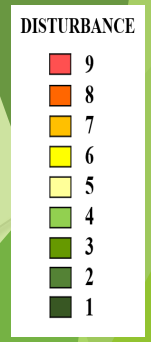


Habitat Sensitivity

Intensity of pressure	1	2	3	4	5
0	24.4%	28.1%	0.0%		
1	3.7%	5.6%	0.0%		
2	2.8%	4.2%	0.0%		
3	2.7%	4.1%	0.0%		
4	3.2%	7.1%	0.0%		
5	3.9%	10.0%	0.0%		

DISTURBANCE





HABITATS COMPOSITION, STRUCTURE AND FUNCTIONALITY INDICATORS

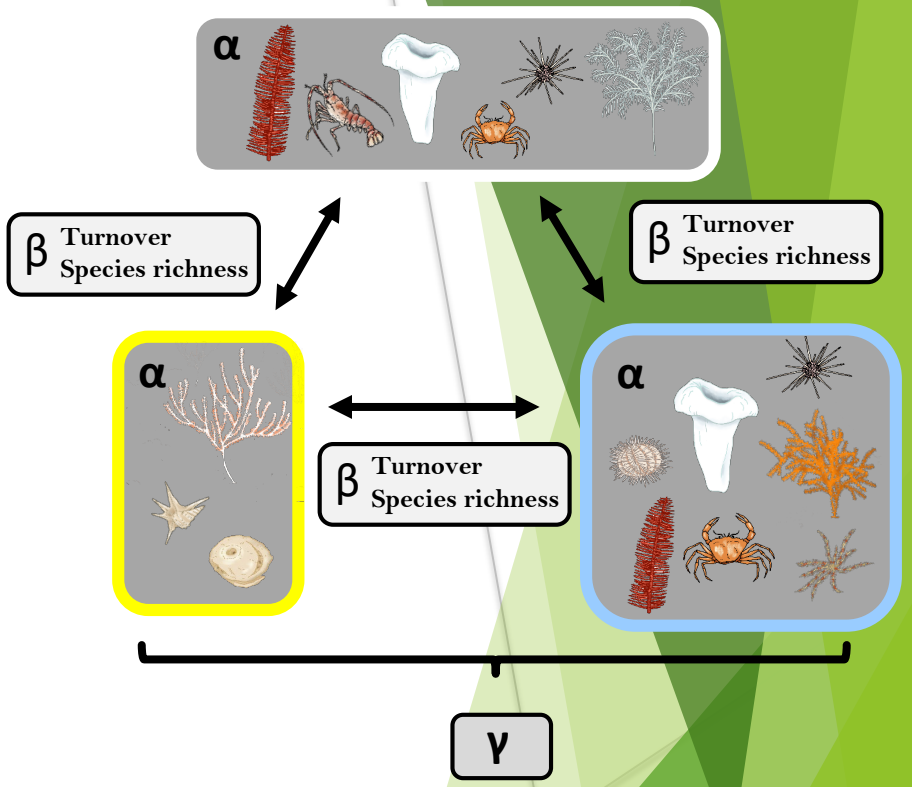
Accumulated pressures

TAXONOMIC

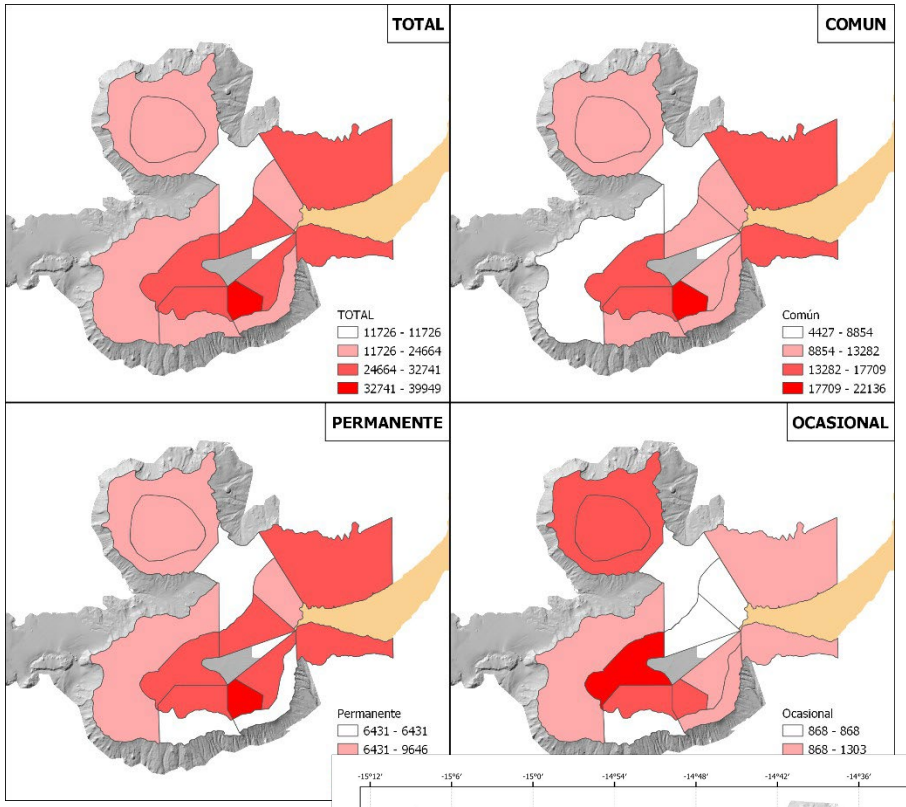
- Species richness
- Shannon- Wiener Diversity
- Margalef Diversity

FUNCTIONAL

- Biological traits composition per habitat
- Rao's quadratic entropy (RQE)
- Functional Redundancy (FD/H')
- Richness/Fairness/Divergence/Specialization

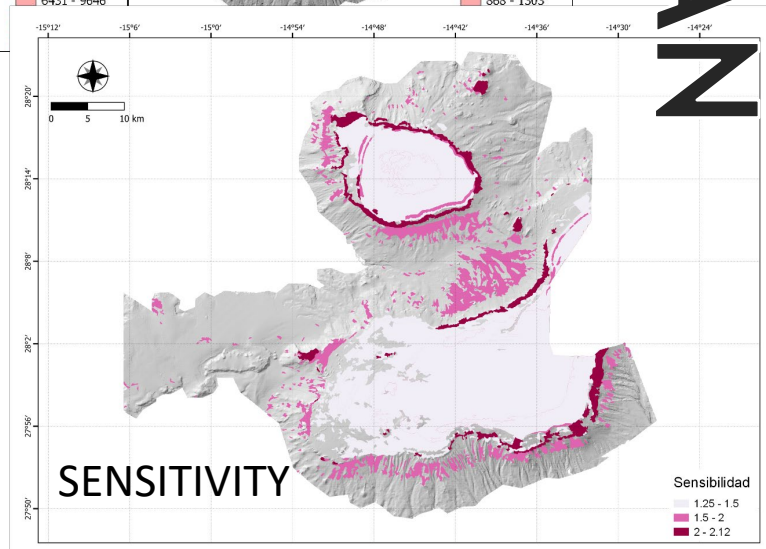


D6C5
AREA OF HABITAT TYPE ADVERSELY AFFECTED BY ACCUMULATED ANTHROPOGENIC PRESSURES



FISHERIES ECONOMIC GAIN

MARXAN



Cost per area

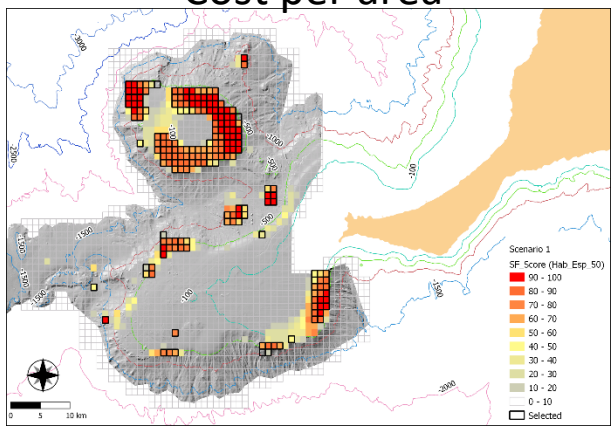
Cost per total fleet

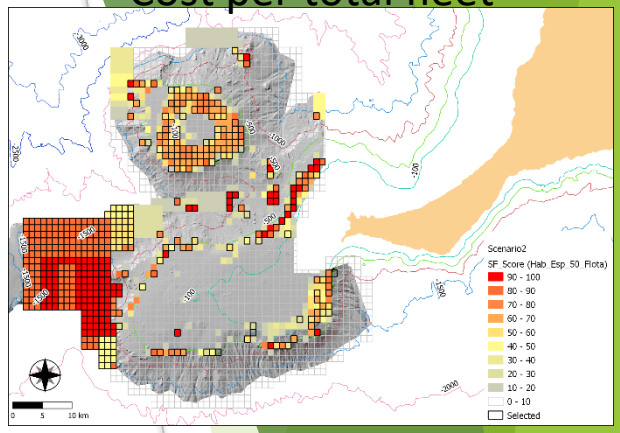
Conservation goals – Habitats/species %

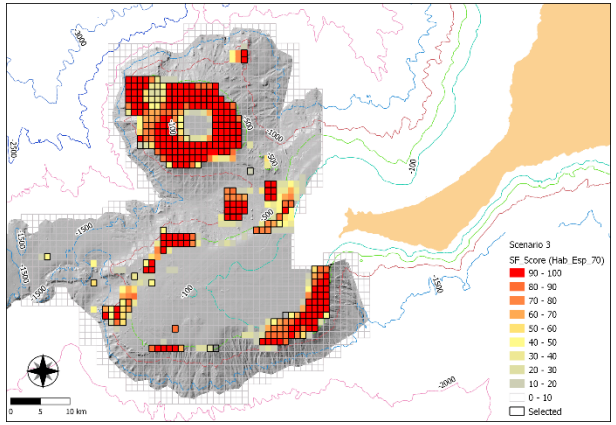
50%

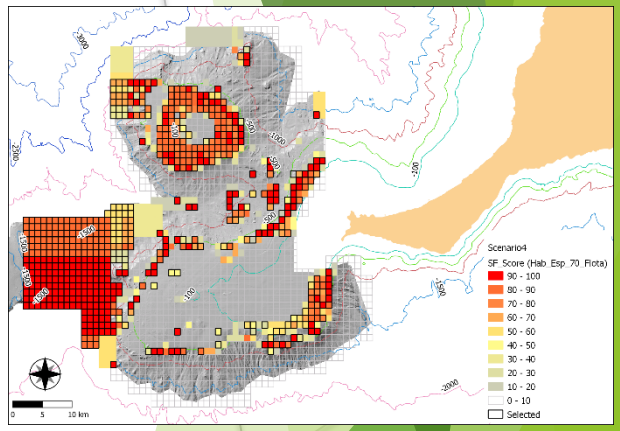
70%

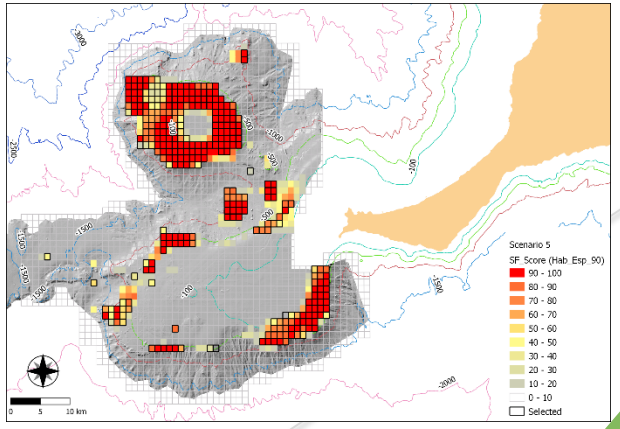
90%

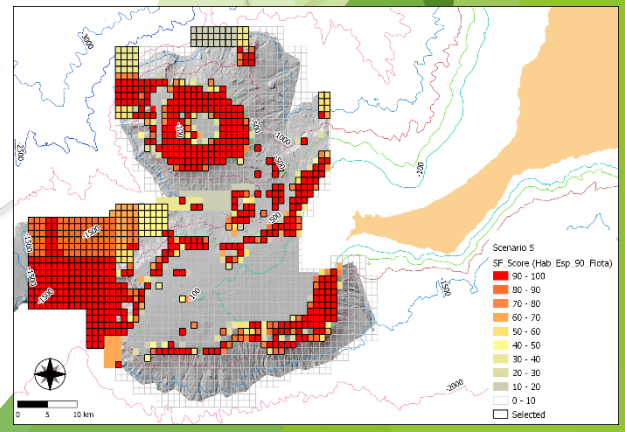








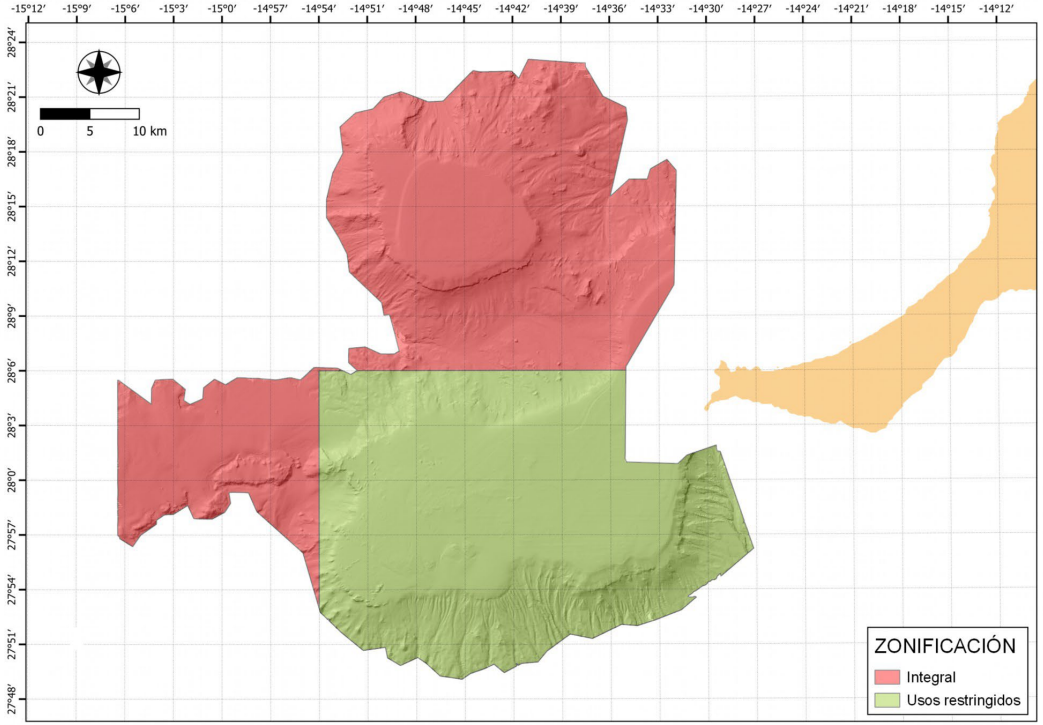




ZONIFICATION/USES PROPOSALS TO ENVIRONMENTAL ADMINISTRATION

PROJECT IP INTEMARES (EU)

SOUTH OF FUERTEVENTURA (NATURA 2000 SCI ESZZ15002)



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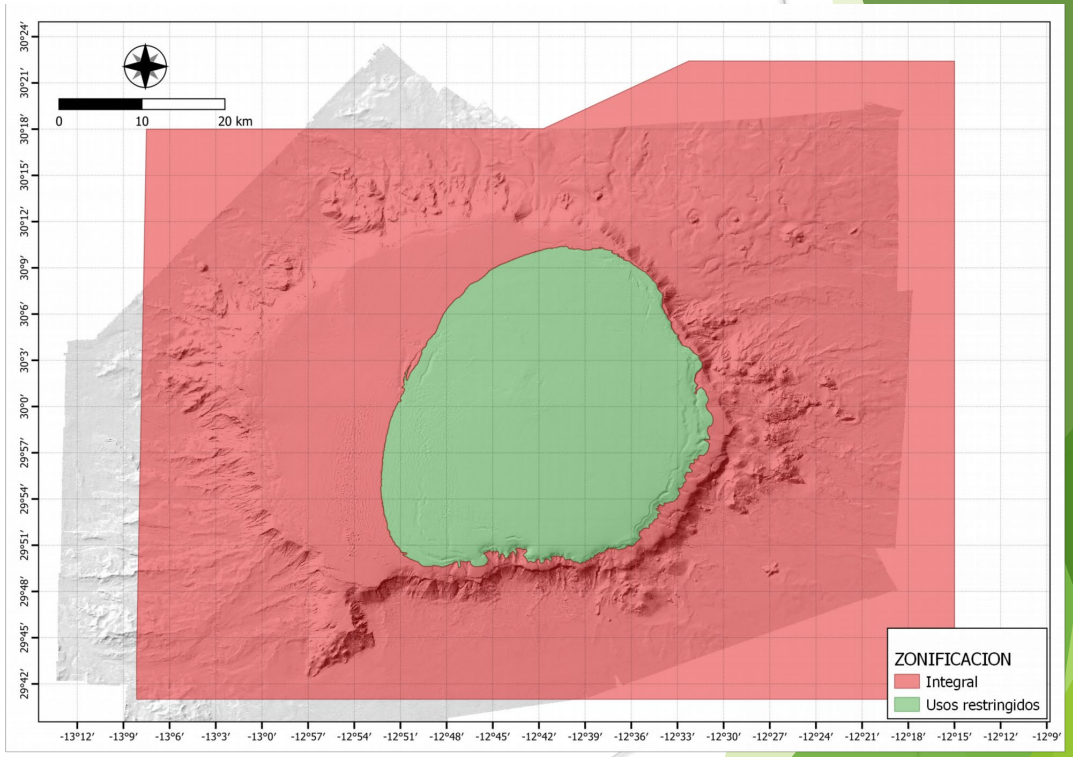

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