



Benthic habitats of the Madeira-Tore and Great-Meteor seamount complexes

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Direção Regional dos Assuntos do Mar



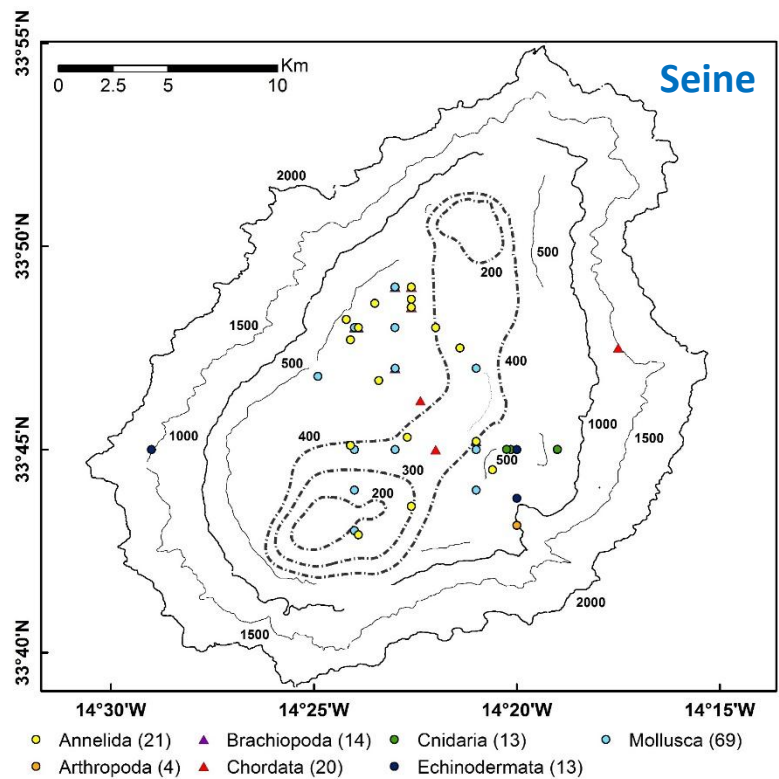
28th of April, 2017



ACTIVITIES AND RESULTS ACHIEVED

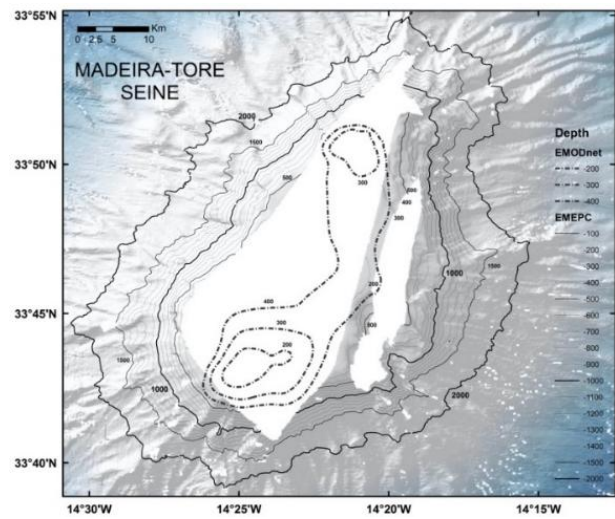
Task 2.1. Compilation of existing information

BIODIVERSITY AND VME DISTRIBUTION MAPS

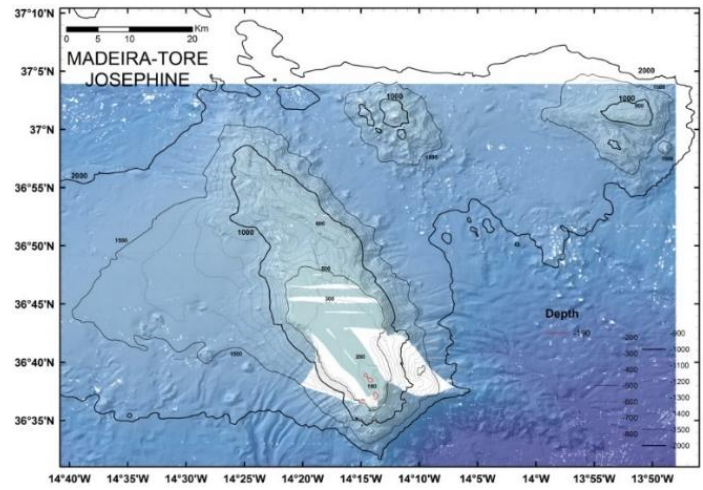
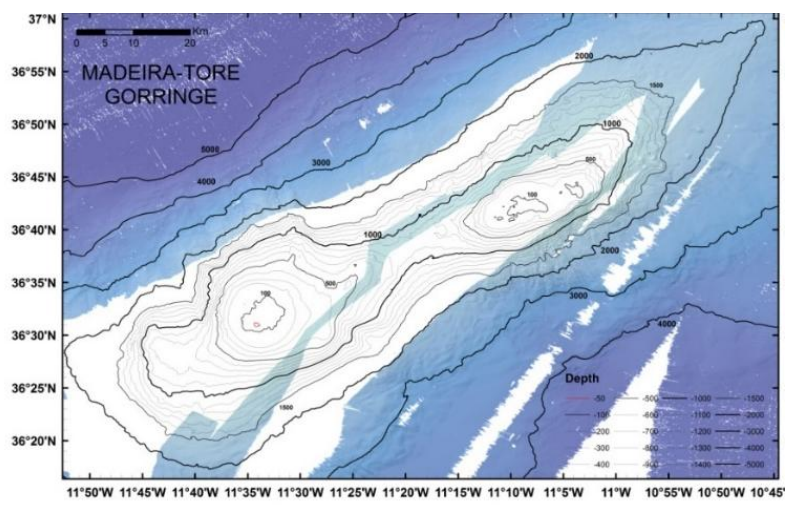


Georeferenced points: 249
Depth range: 135-4335 m

Websites, grey and peer reviewed literature, institutional datasets (# 90).



BATHYMETRY MAPS



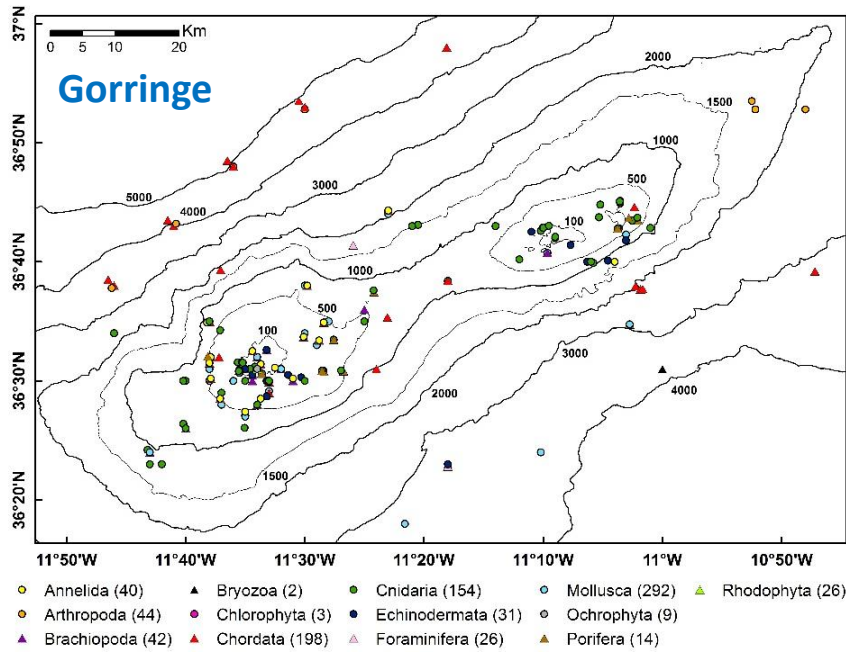
EMEPC datasets (grids 30-50 m resolution).

EMODNET datasets (grids ~250 m resolution)

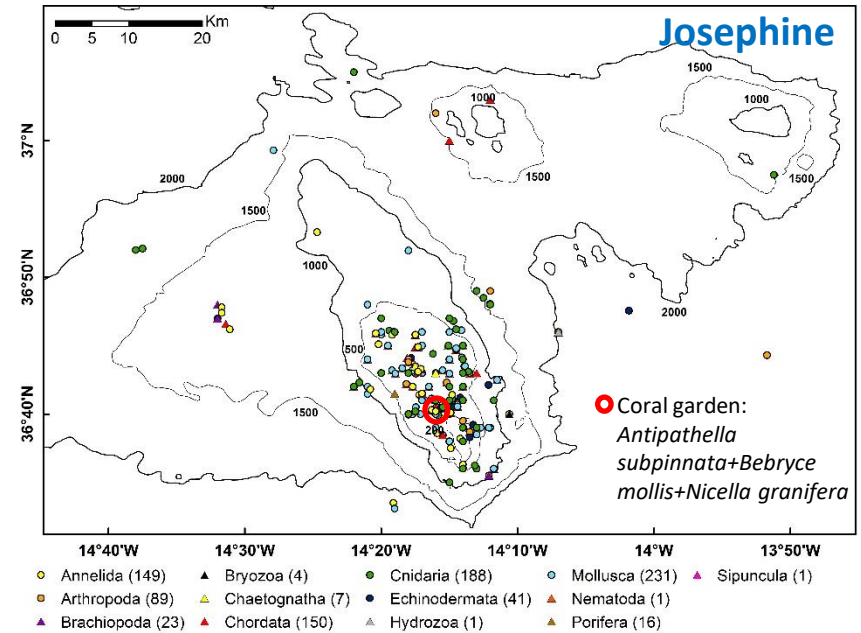
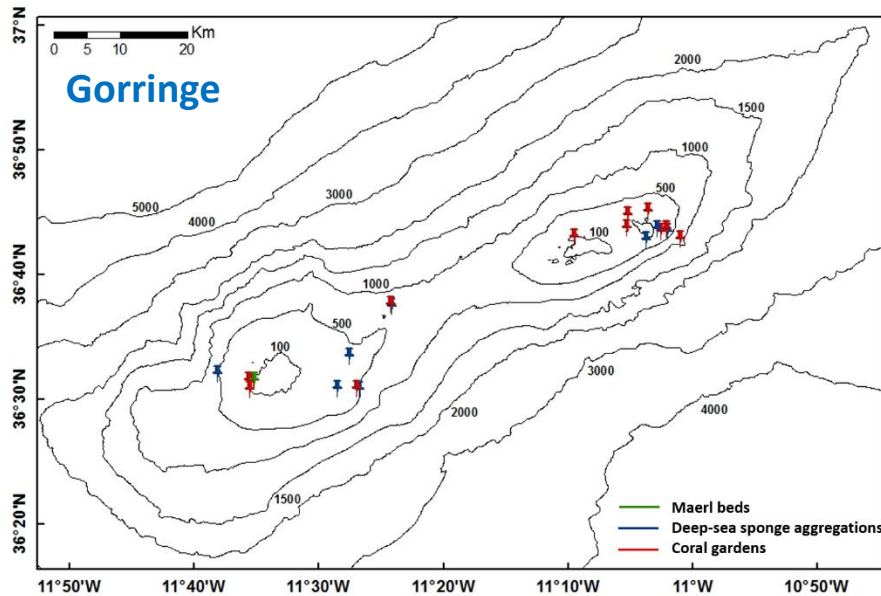


BIODIVERSITY AND VME DISTRIBUTION MAPS

Websites, grey and peer reviewed literature, institutional datasets (# 90).



Georeferenced points: 905
Depth range: 54-5104 m



Georeferenced points: 922
Depth range: 54-5104 m



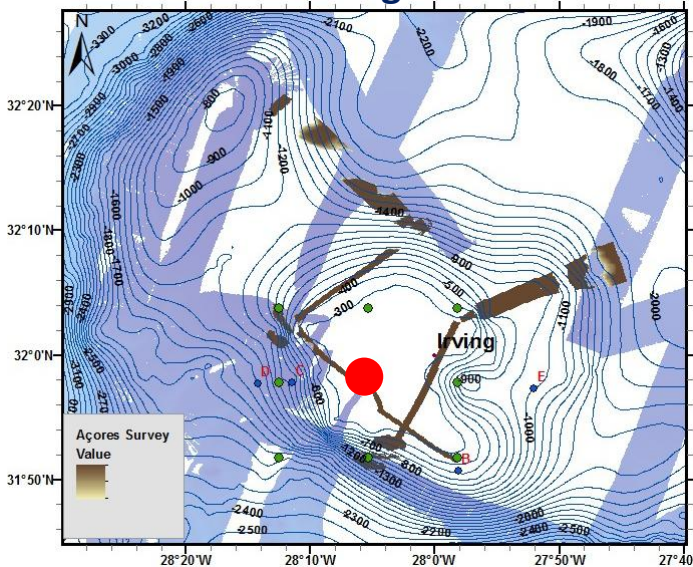
ACTIVITIES AND RESULTS ACHIEVED

**Task 2.2. Habitats physical and chemical
characterization**

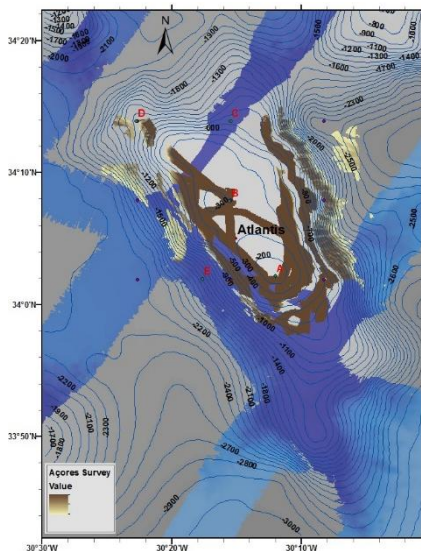
Task 2.3. Benthic assemblages characterization

■ Multibeam bathymetry

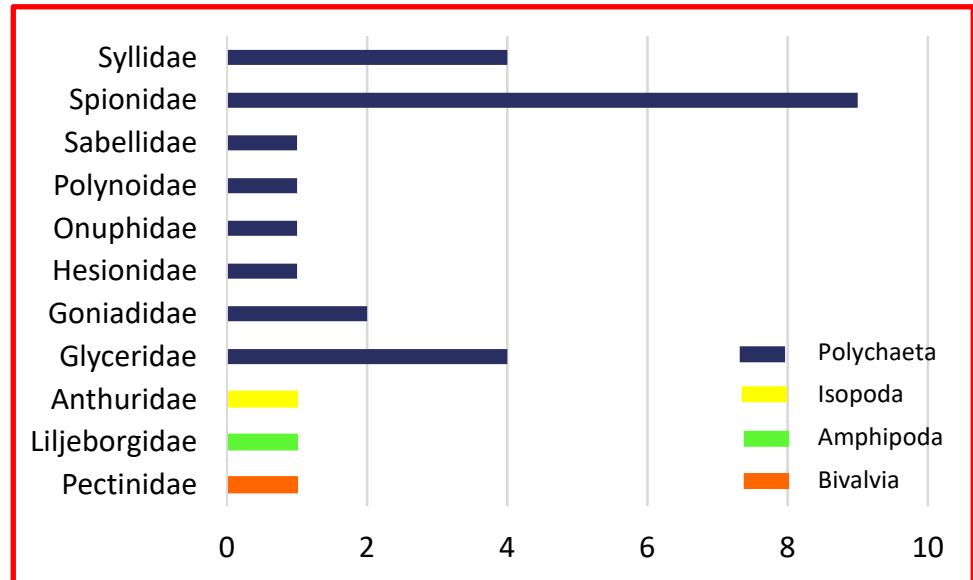
Irving



Atlantis



■ Benthic fauna



Macrofauna total abundance (2 samples; 0.1 m²)

■ Physical



Cirripedia
Genus *Heteralepas*
Gettysburg (Gorringe bank)



Biogenic poorly sorted
medium sand
Low TOM (1.5%)

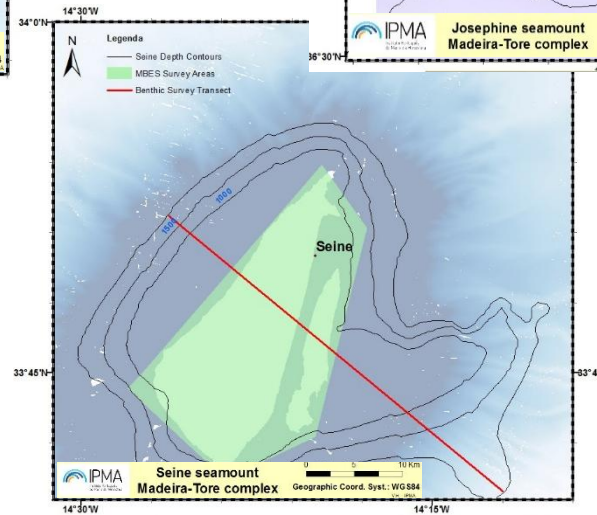
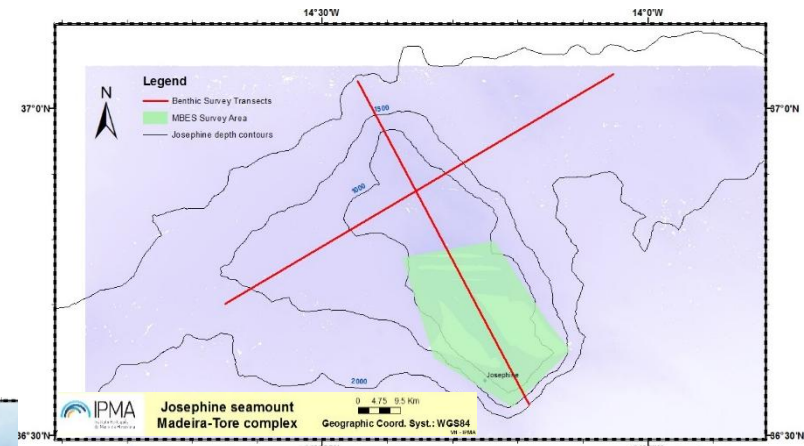
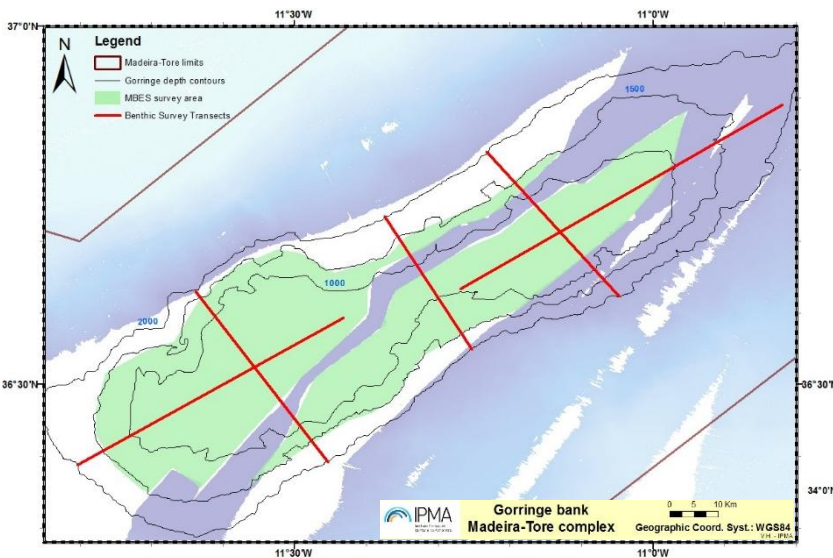
MADEIRA-TORE - BENTHIC SURVEY PLANNING

Cooperation IPMA - IMR

- Portuguese team onboard GO Sars (contact with MAREANO working methodologies).
- Workshop at IMR - Introduction to software Campod Logger for on board data recording. Introduction to software Video Navigator for image analyses.



Survey guide transects (summit - ~1500 m)



Protocols for onboard work

- Collection and processing of sediment samples
- Bathymetry data acquisition
- Underwater video assessment

Bathymetry data collation - Gorringe, Josephine and Seine seamounts

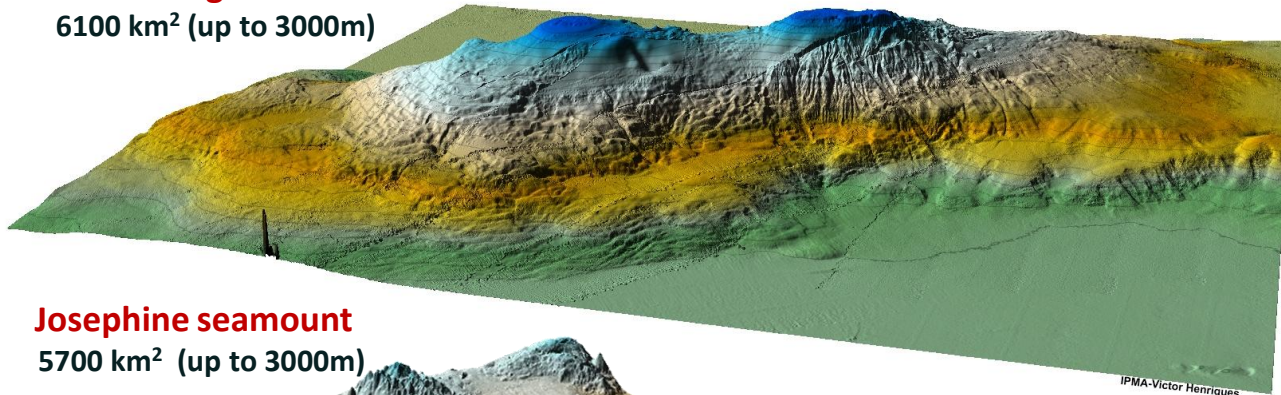
Merging of bathymetry data aiming to obtain seamless Digital maps (DTMs) of the seamounts

Datasets processed:

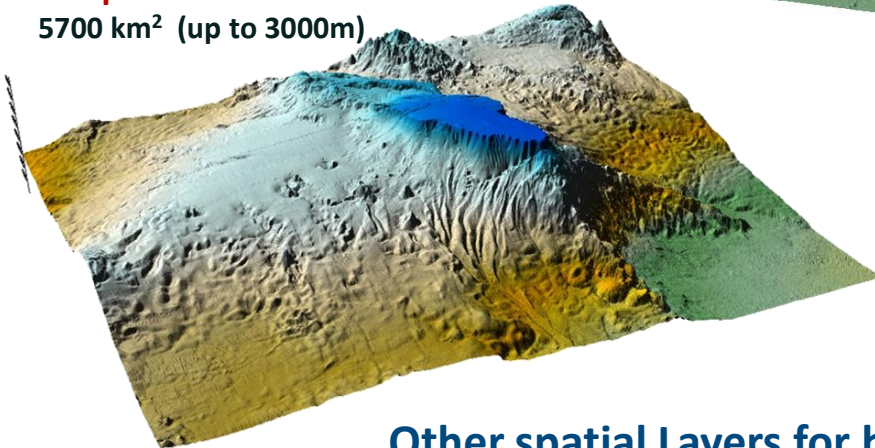
- Task group for the Extension of the Continental shelf (EMEPC) - (depth gaps)
- Emodnet bathymetry data - (lower resolution)

R and ArcGIS spatial tools and developed algorithms

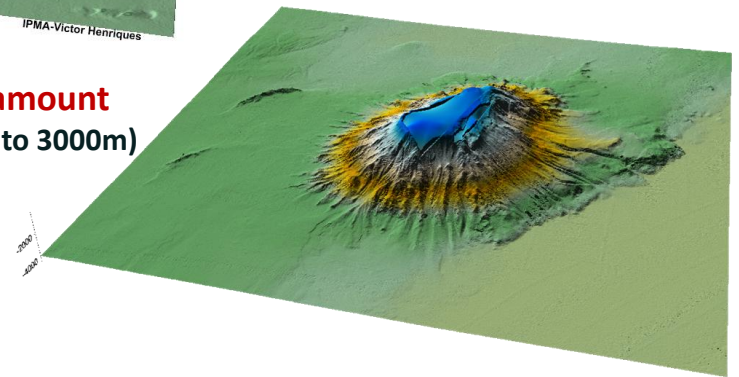
Gorringe bank
6100 km² (up to 3000m)



Josephine seamount
5700 km² (up to 3000m)



Seine seamount
790 km² (up to 3000m)

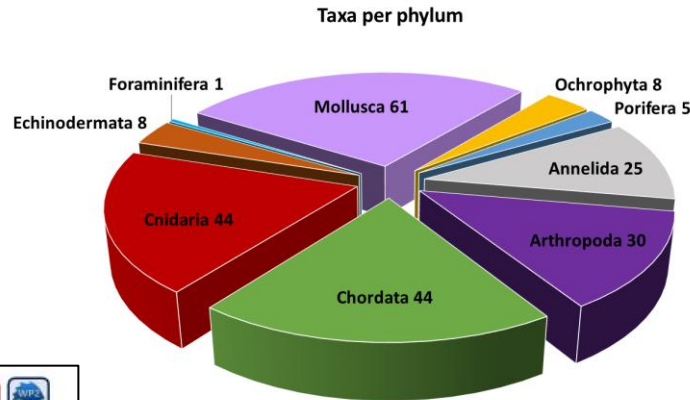


Other spatial Layers for benthic habitat classification

Landscape index layers such as slope and TPI or environmental layers on seabed such as temperature extracted from Copernicus datasets and using spatial interpolation.

Onboard identification guide of megabenthos

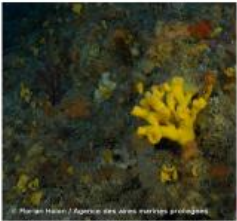
- 9 phyla
- 226 taxa



CNIDARIA

Dendrophyllia cornigera (Lamarck, 1816)

Class: Anthozoa
Order: Scleractinia
Family: Dendrophylliidae



Description: forms colonies 15 cm high with large polyps 2 to 4 cm in diameter.
Habitat: from circalittoral and bathyal zones.
Depth range: 80 – 815 m

CHORDATA

Diazona violacea Savigny, 1816

Class: Ascidiacea
Order: Phlebobranchia
Family: Diazonidae



Gilles CAVIGNAUX



Shotton, J.T.



Description: A large colonial ascidian, forming globular colonies. Smaller colonies are spherical, larger ones squat, with a small basal attachment. The test is transparent, with a greenish tinge when out of water. The zooids are large, with white markings similar to *Clovelina lepadiformis*. This marking consists of a white line along the endostyle, dorsal lamina and around the top of the branchial sac, and six small white spots around the atrial siphon. 50-400mm diameter colonies.
Habitat: Typically a deep water form with a preference for clear offshore water. Usually on rock ledges or stable boulders in current-swept areas.
Depth range: 20 – 200 m
Notes: Only *Clovelina lepadiformis* has similarly marked zooids, but that species does not have a massive common test, the zooids are only joined at their bases. *Diazona* is larger and the six small white spots around the atrial siphon are diagnostic.

ARTHROPODA

Calappa granulata (Linnaeus, 1758)

Class: Malacostraca
Order: Decapoda
Family: Calappidae



Mamiko, BMBIC / G1



Description: About 12 cm. Body chubby, almost oval, wider than long, rounded in the front section and rectangular at the rear. Lateral border with small teeth sharper than those in the posterior part. Carapace with grooves and lobes covered with carmine-colored nodules. Flattened and highly developed chela, with crests, four teeth and several granules; the other legs are thin. Body orange or yellowish with red spots on the posterior part of the carapace and on the chela.

Habitat: Sandy and muddy areas. Burrows in sand.

Depth range: 13 – 400 m (usually 30 - 150 m)

Notes: Difficult to see since it is almost always buried. Easier to see during the night when it leaves its hiding place. Infaunal feeder preying on bivalves and foraminiferans.

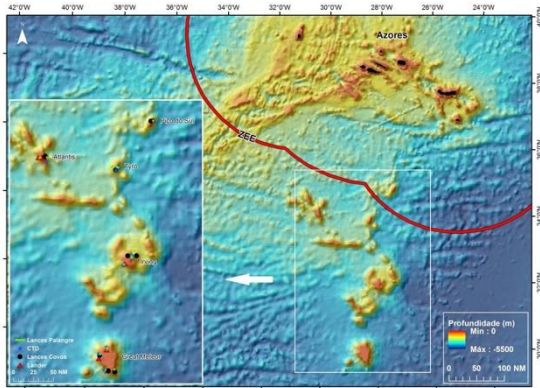


ACTIVITIES AND RESULTS ACHIEVED

Task 2.4. Benthopelagic species characterization

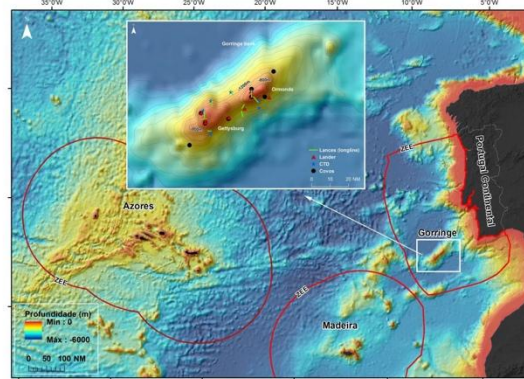
Benthopelagic Surveys

2015



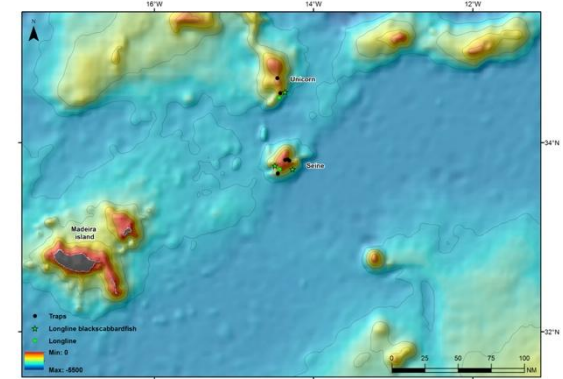
BIOMETORE 1
Great Meteor

2015



BIOMETORE 4
Madeira-Tore

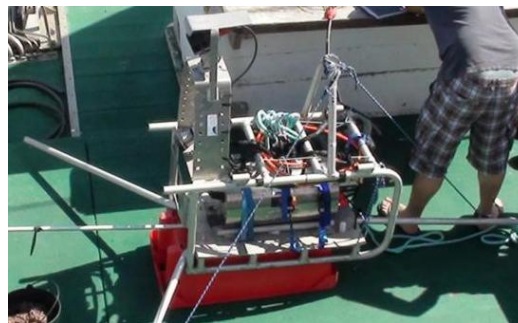
2017



BIOMETORE 5
Madeira-Tore



Longline



Baited Image Video Lander



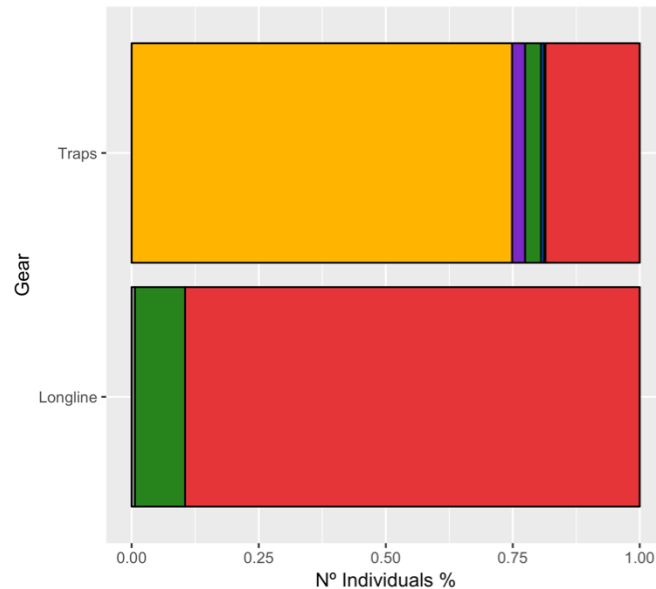
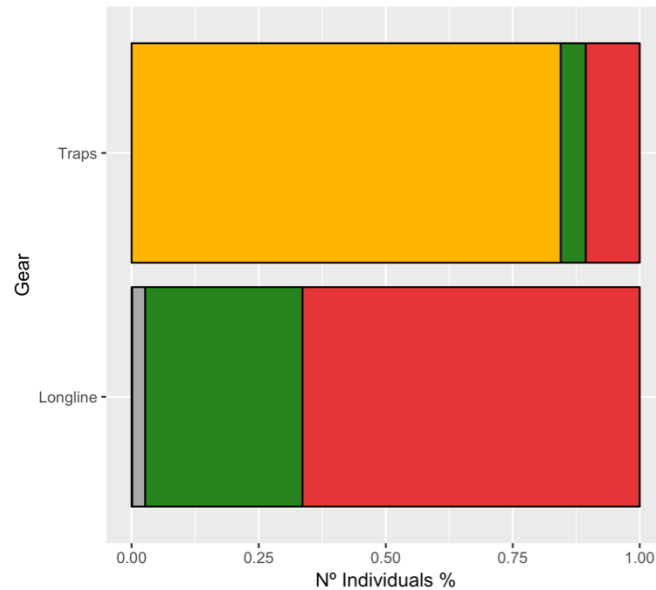
Traps

BIOMETORE 1 Great Meteor

Class



BIOMETORE 4 Madeira-Tore



Families

Class	Traps	Longline
Actinopterygii	6	23
Asteroidea	0	0
Echinoidea	0	0
Elasmobranchii	3	8
Gastropoda	0	0
Holocephali	0	1
Malacostraca	9	1

Class	Traps	Longline
Actinopterygii	7	24
Asteroidea	1	0
Echinoidea	1	0
Elasmobranchii	2	7
Gastropoda	1	0
Holocephali	0	1
Malacostraca	10	0



ACTIVITIES AND RESULTS ACHIEVED

Task 2.5. Molecular identification of benthic and benthopelagic organisms

Sample collection for museums



Crustacea

Great Meteor: 8 species, 19 samples

Gorringe: 17 species, 262 samples



Echinodermata

Great Meteor: 3 species, 9 samples

Gorringe: 2 species, 3 samples



Elasmobranchii

Great Meteor: 17 species, 136 samples

Gorringe: 14 species, 49 samples



Holocephali

Great Meteor: 2 species, 14 samples

Gorringe: 2 species, 10 samples

Actinopterii

Great Meteor: 37 species, 178 samples

Gorringe: 33 species, 131 samples



Mollusca

Gorringe: 1 species, 1 sample





ACTIVITIES AND RESULTS ACHIEVED

Concluding remarks

- ❖ Mapping of the seamounts benthic habitats of the Madeira-Tore and Great Meteor is critical to support their evidence-based environmental planning and management.
- ❖ Big knowledge gaps persist regarding communities structure and distribution, and abiotic parameters influencing it, that need to be addressed, namely in the Madeira-Tore seamounts.
- ❖ Proceeding with sampling and data analysis is a fundamental step forward in order to support these areas as oceanic MPA in the framework of the MSFD implementation.

CONTRIBUTORS TO THIS PRESENTATION

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Teresa Drago (IPMA)

Teresa Moura (IPMA)

Victor Henriques (IPMA)

THANK YOU

