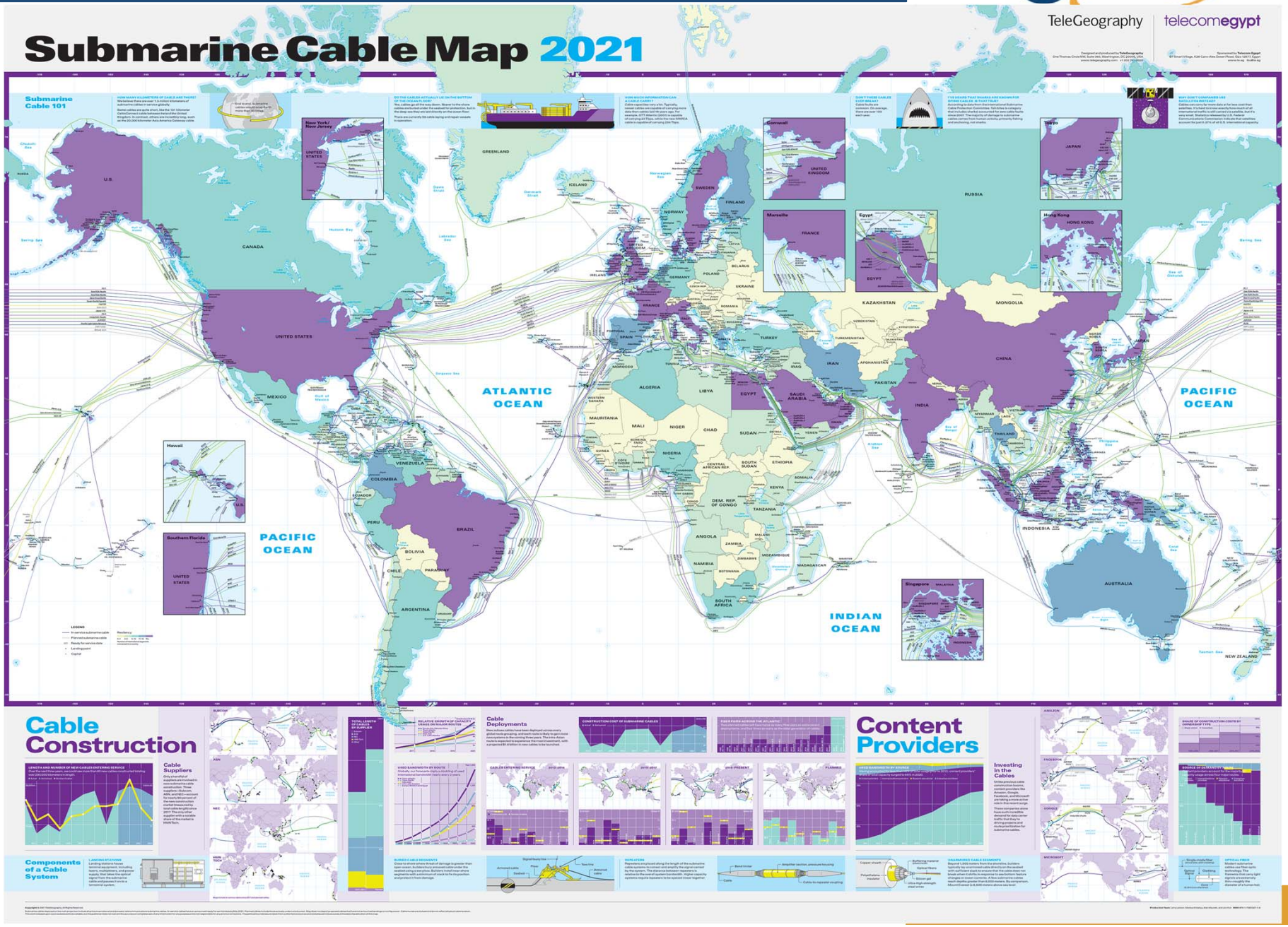
GEOMORPHOMETRY 2021
PERUGIA, ITALY

Marine geophysical investigations for offshore wind farms and submarine interconnection cables

Perugia (Italy), 13-17 September 2021

Contents

1. Introduction



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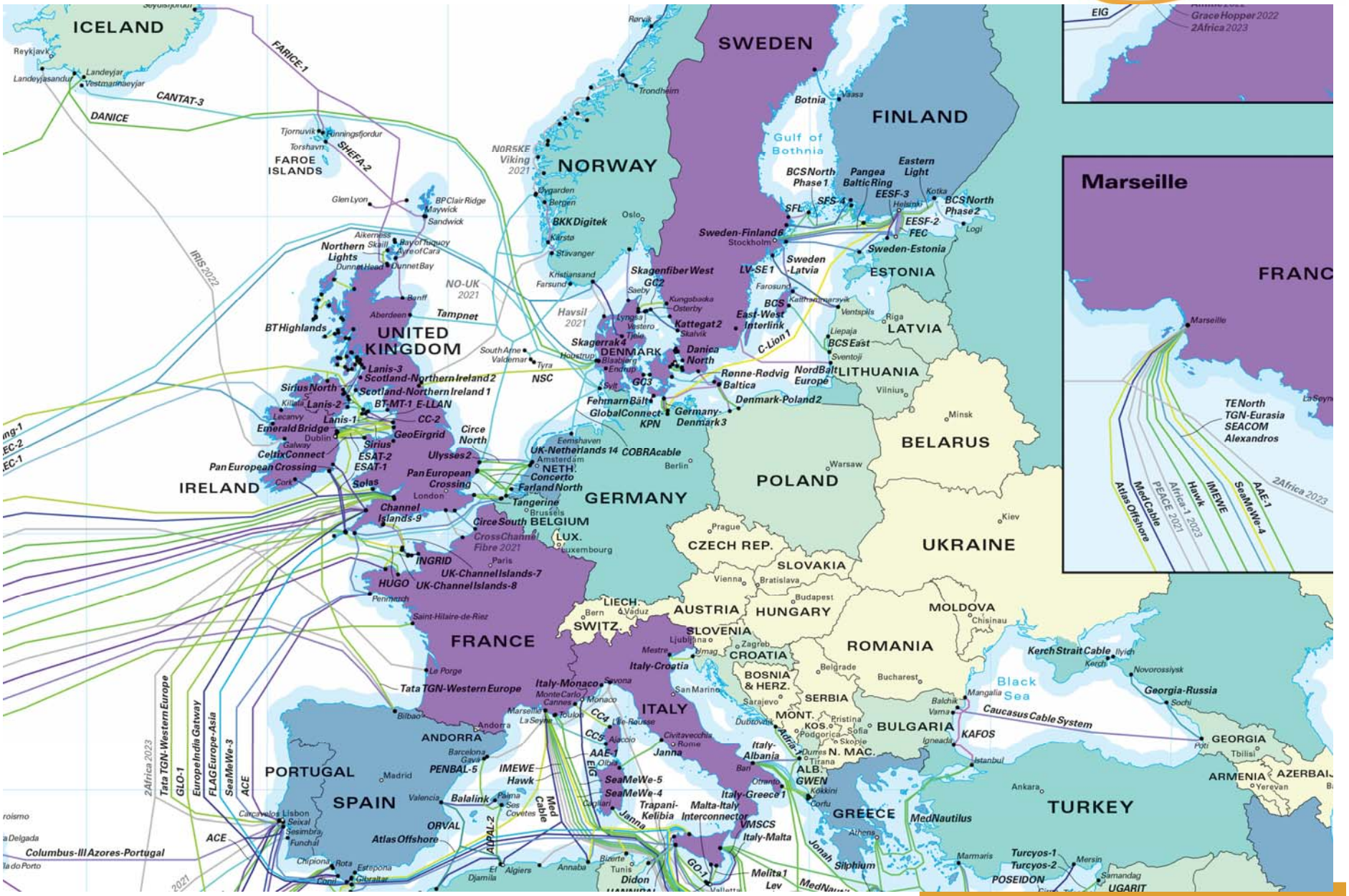

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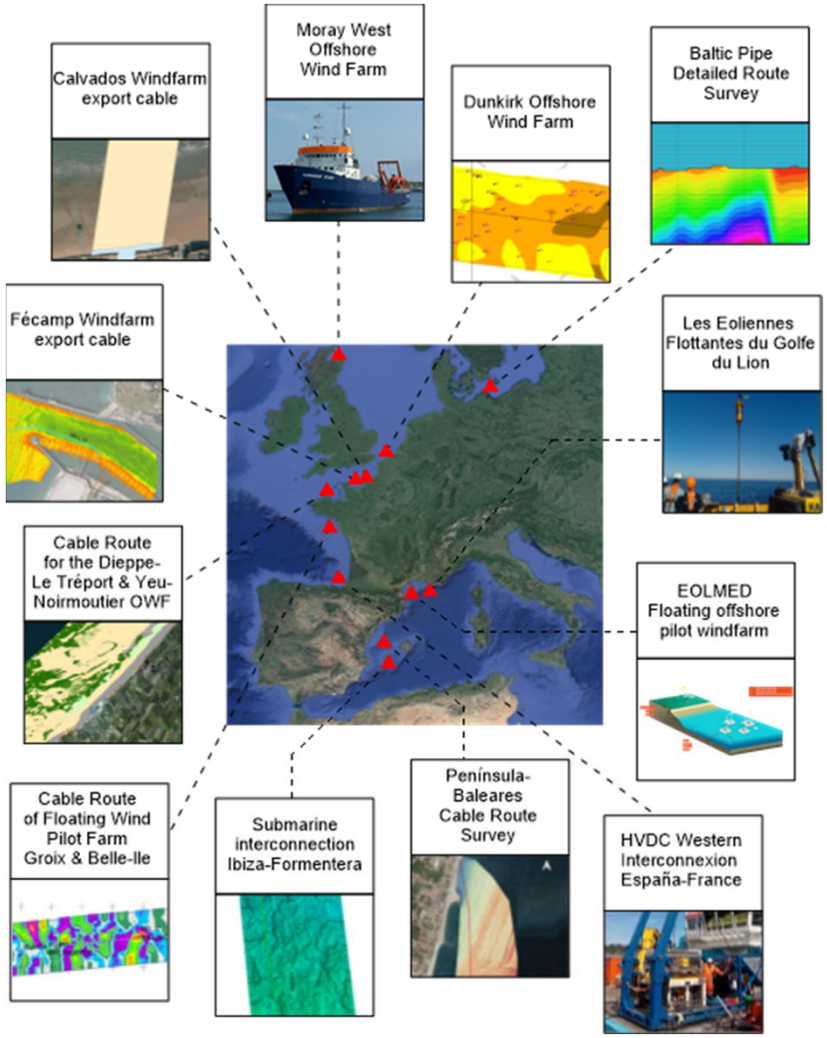
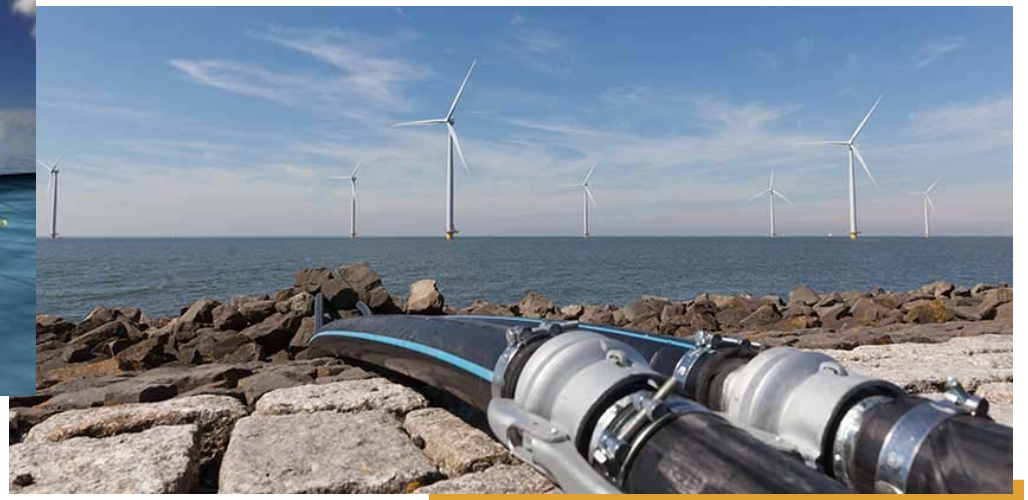


1. Introduction

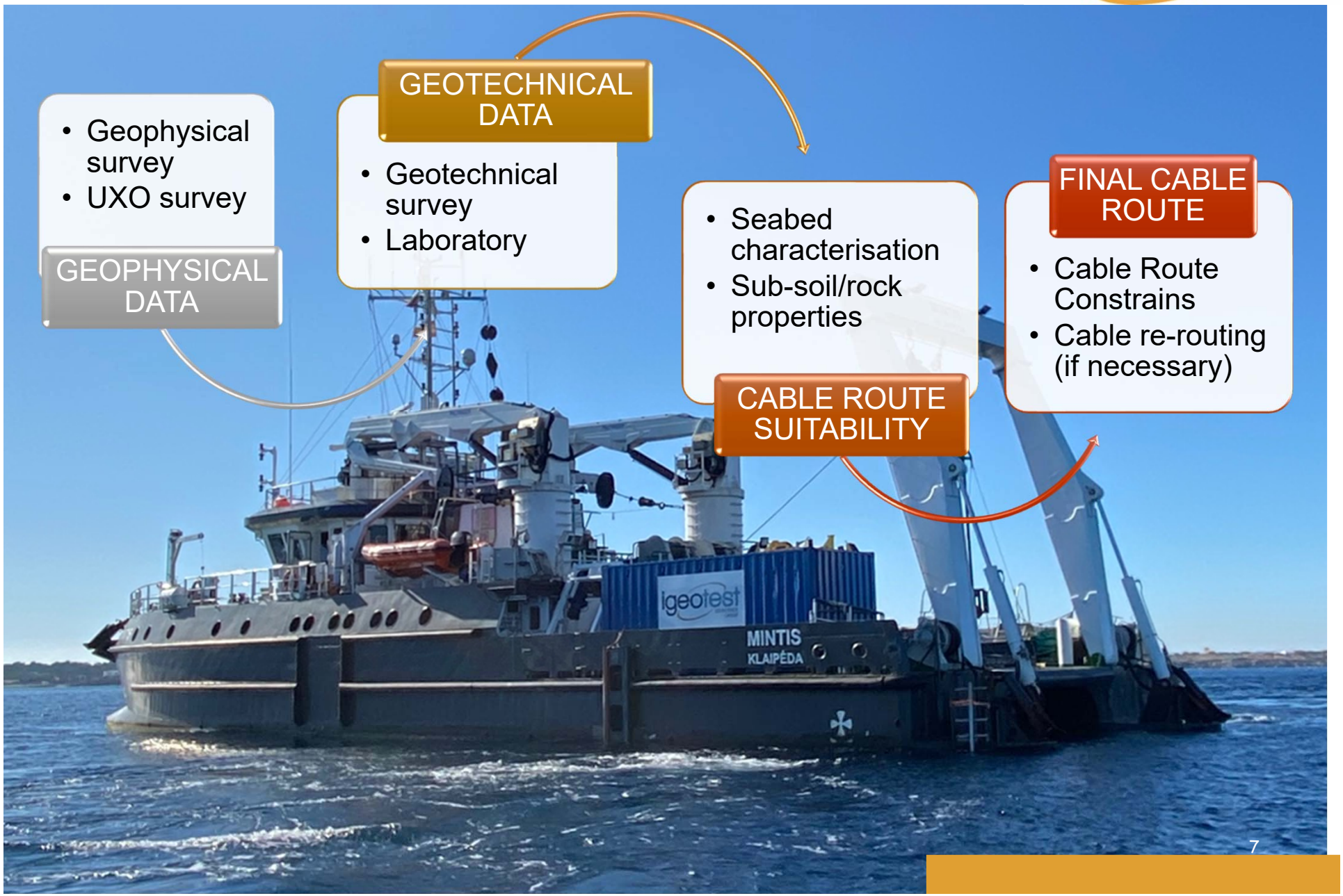
Interconnections:
- Island-Island
- Continent-Island

Inter-array cables

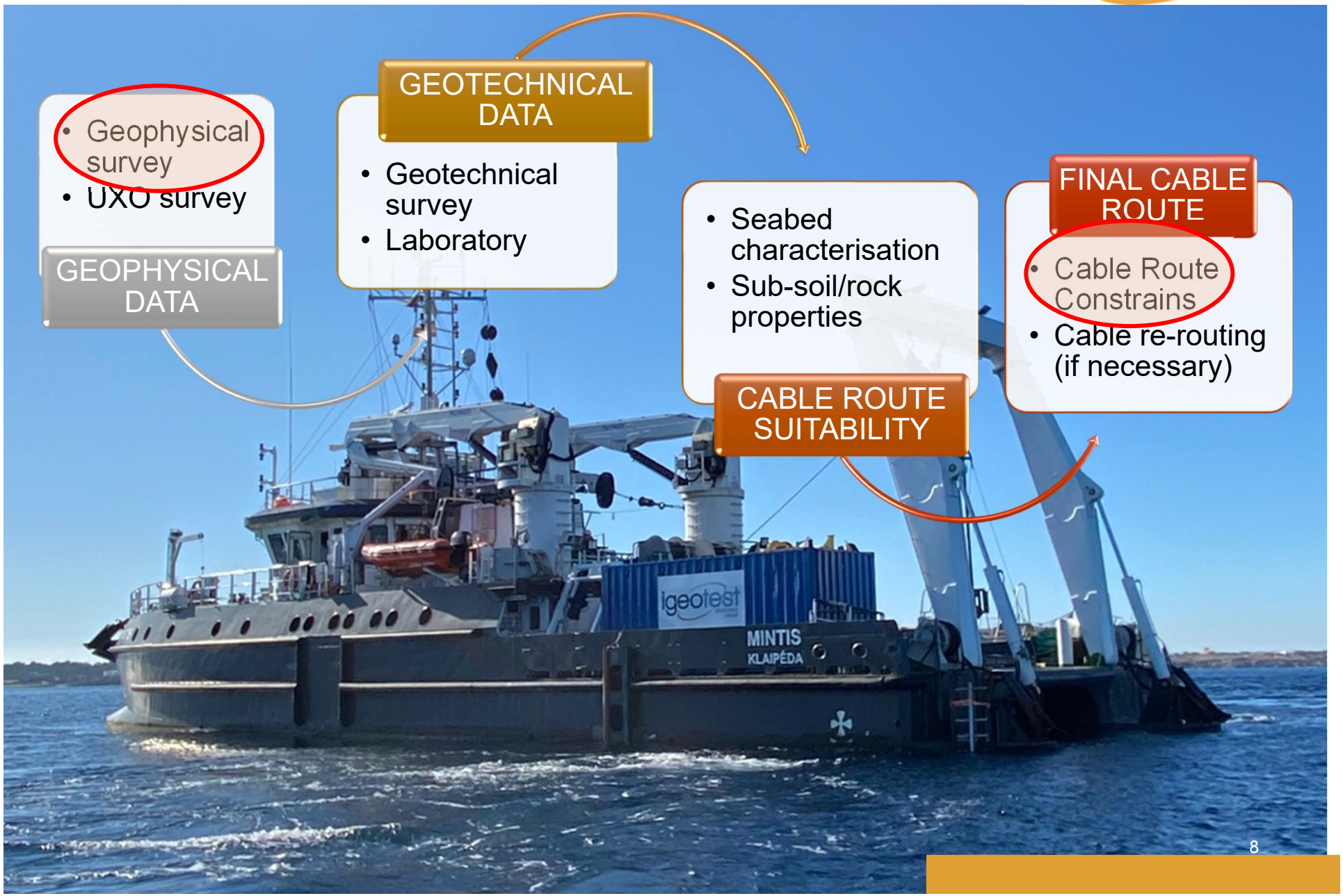
Link between wind farm and shore



2. Methods


GEOPHYSICAL DATA
• Geophysical survey
• UXO survey
GEOTECHNICAL DATA
• Geotechnical survey
• Laboratory
CABLE ROUTE SUITABILITY
• Seabed characterisation
• Sub-soil/rock properties
FINAL CABLE ROUTE
• Cable Route Constrains
• Cable re-routing (if necessary)
igeotest
MINTIS
KLAIPĖDA

2. Methods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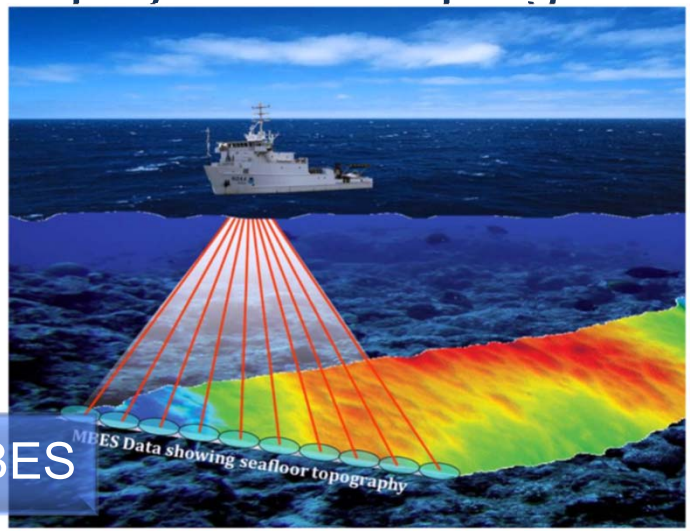
2. Methods

Geophysical campaign

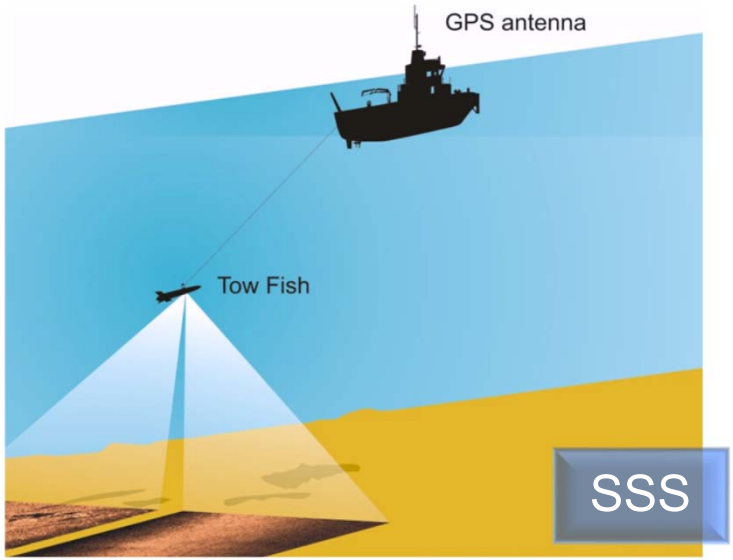
1. Corridor of the cable route
2. Onshore, Nearshore and Offshore surveys

2. Methods

Geophysical campaign



MBES



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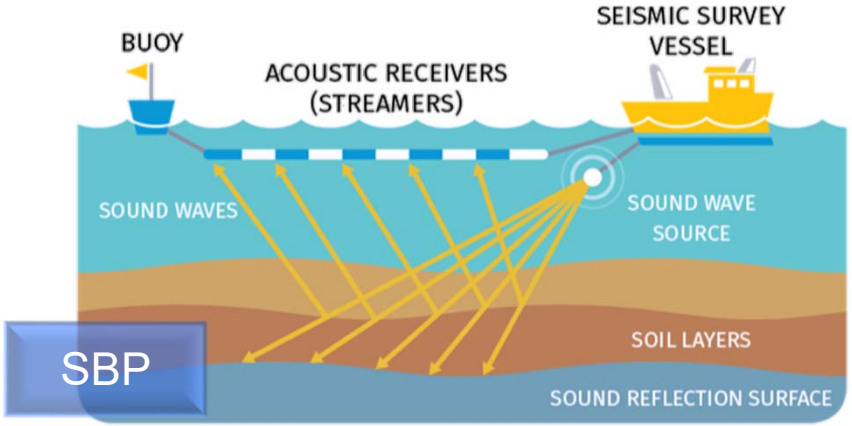

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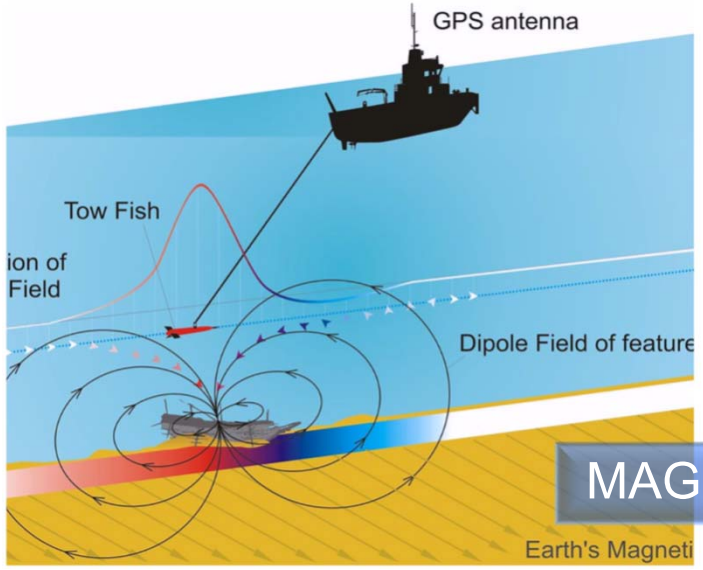


MAG

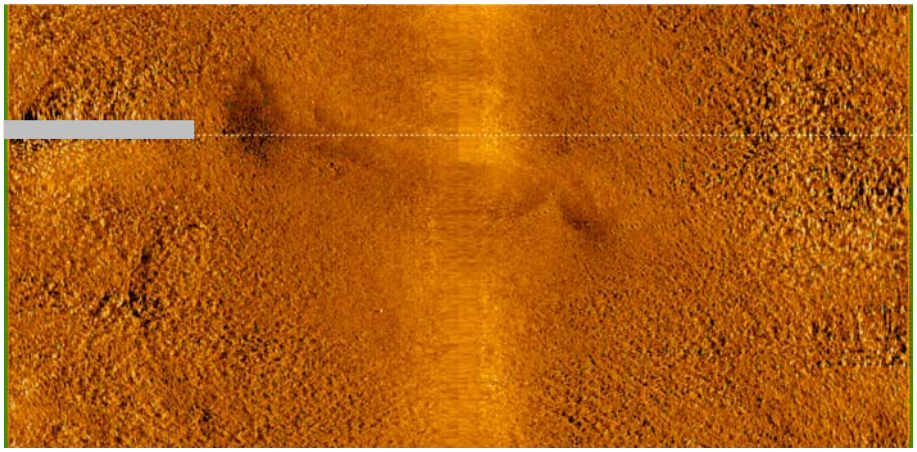
3. Results and Discussion

POTENTIAL CONSTRAINS TO CABLE INSTALLATION AND MAINTENANCE

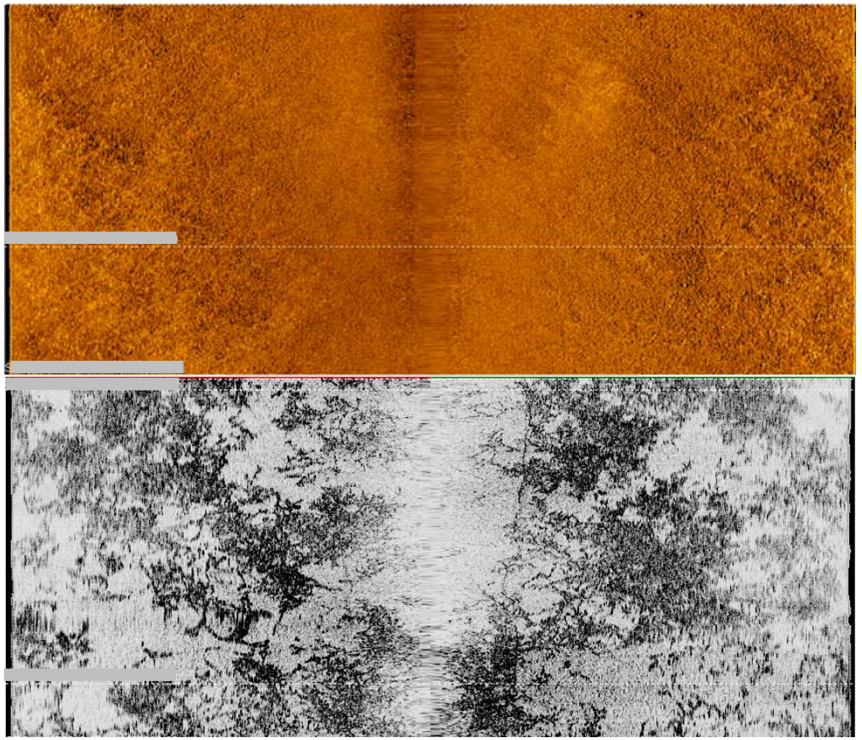
1. Protected areas or species
2. Seabed gradients
3. Boulders, wrecks and anthropogenic debris
4. Mobile sediments
5. Stiff/hard sediments
6. Other cables and pipelines crossings
7. Fishing activity

3. Results and Discussion

- Protected areas or species



Posidonia meadows



Cymodocea Nodosa

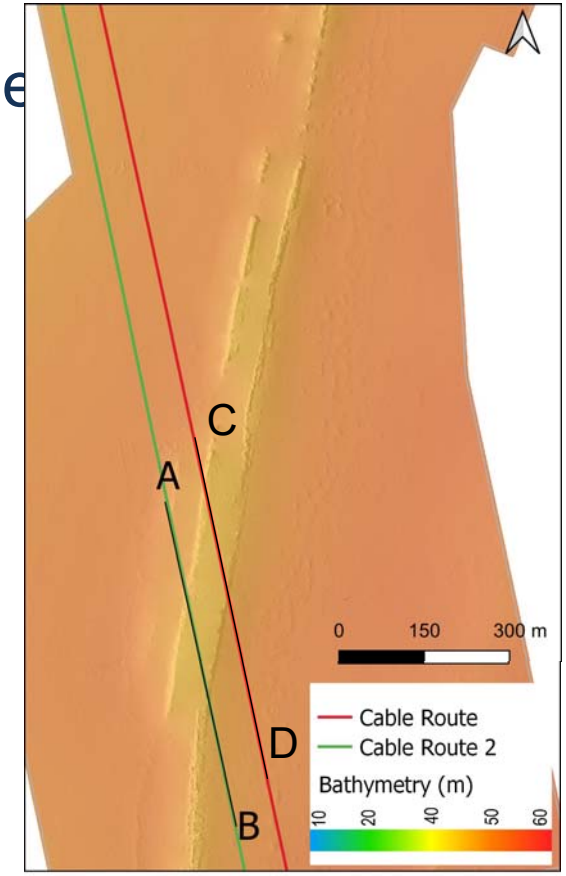
3. Results and Discussion

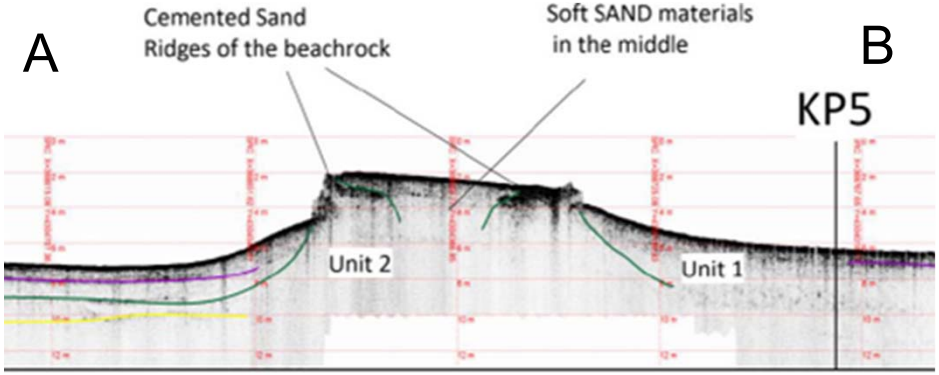
- Seabed gradients

Slope classification	Gradients
Very Gentle	<1°
Gentle	1° - 4.9°
Moderate	5° - 9.9°
Steep	10° - 14.9°
Very Steep	>15°

3. Results and Discussion

- Se





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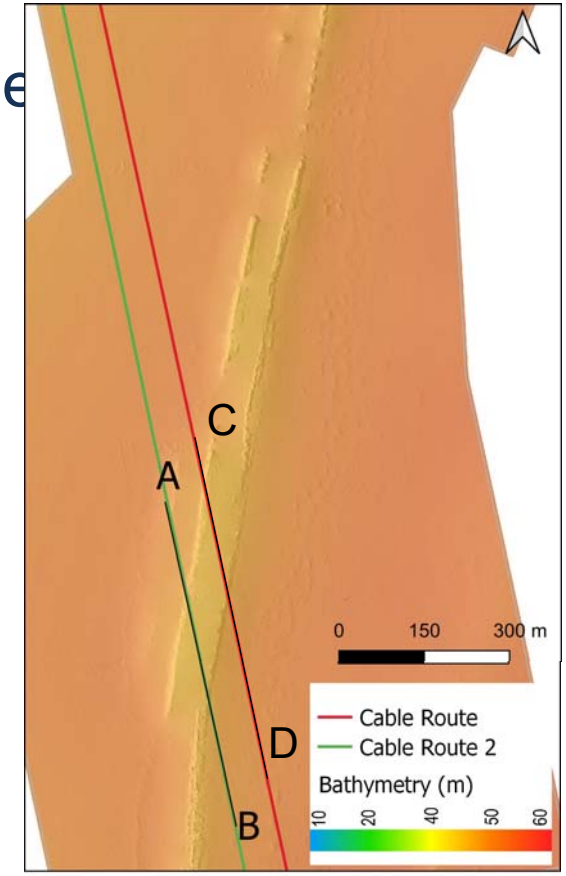
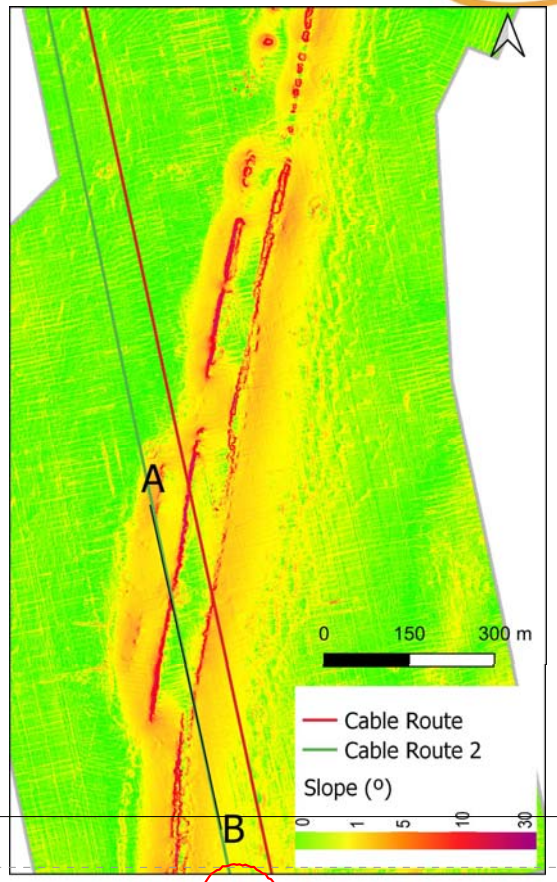
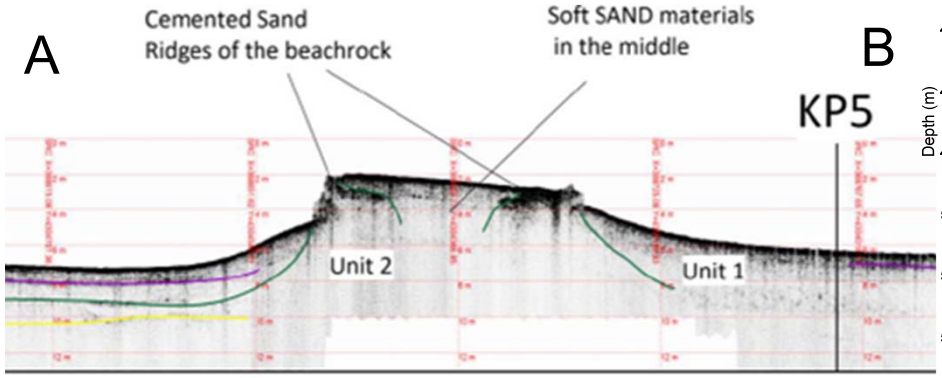
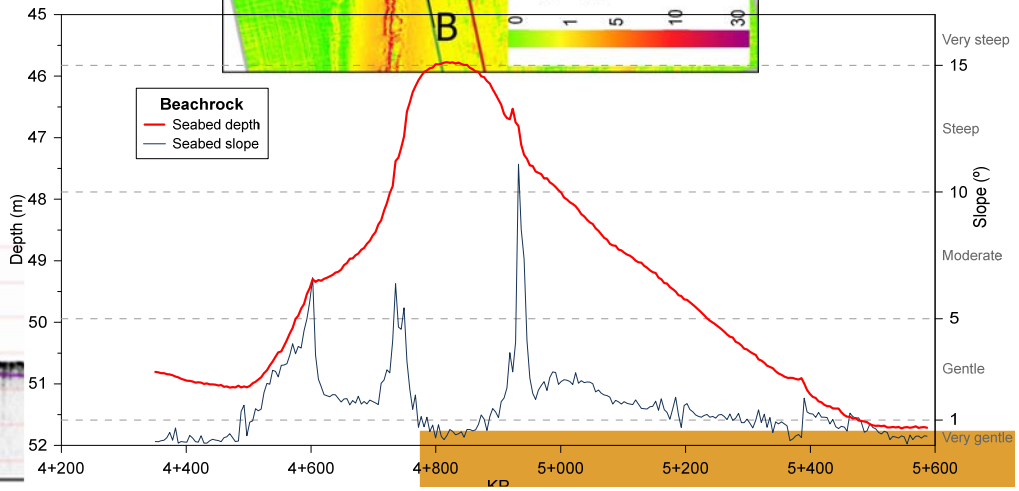
- Se









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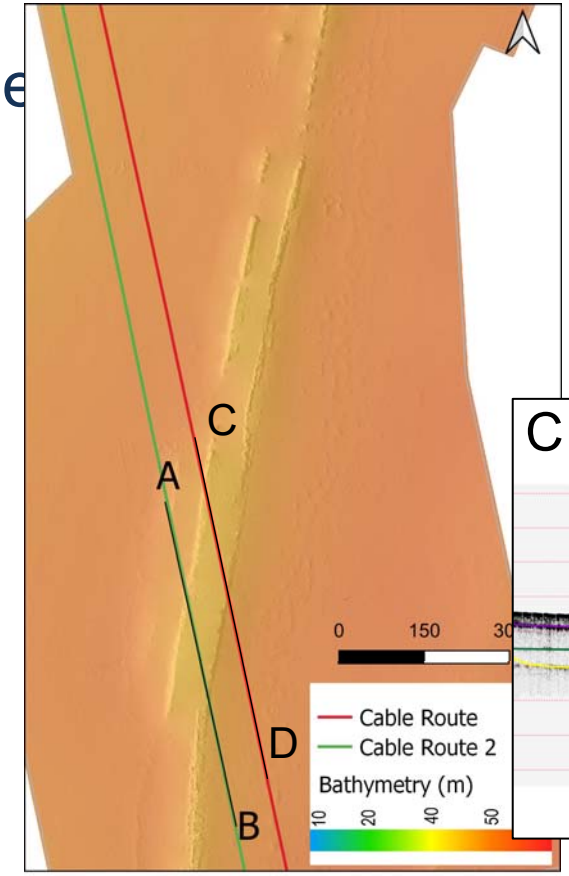
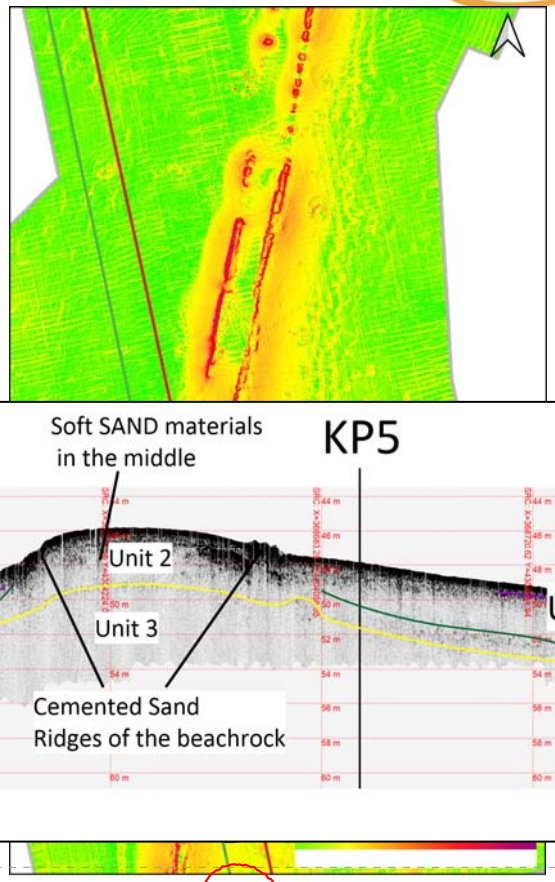
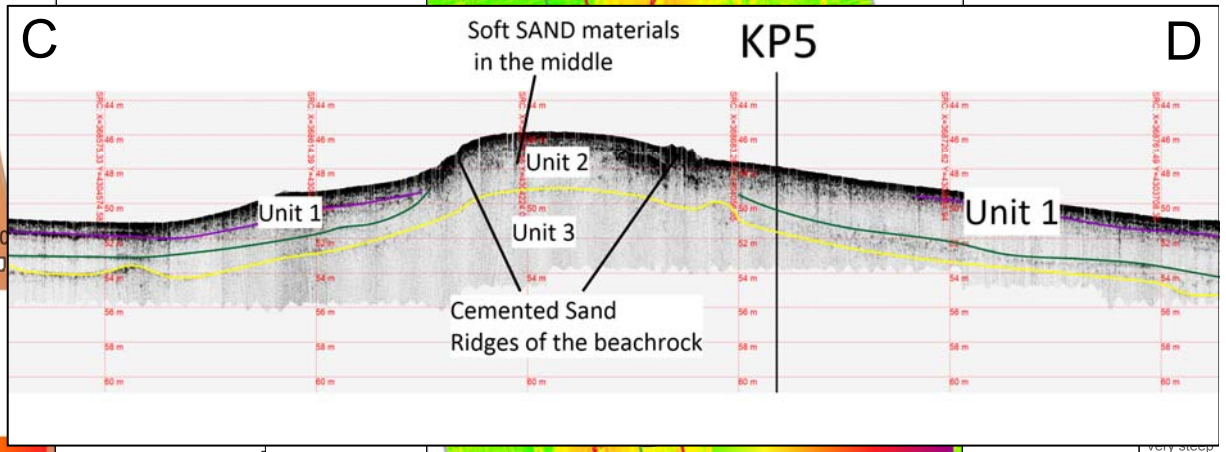
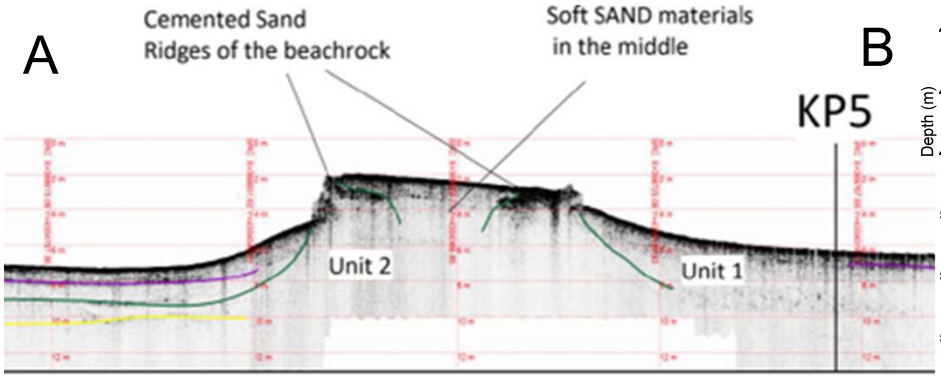
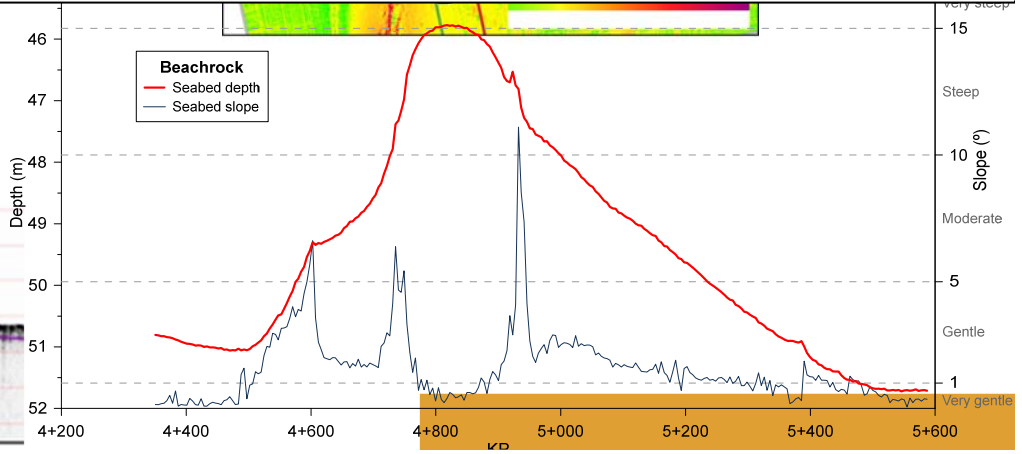




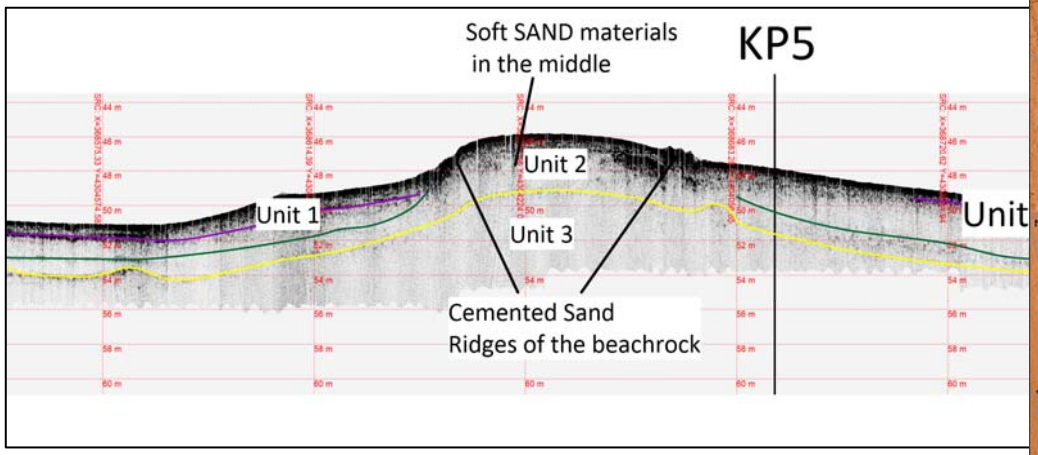


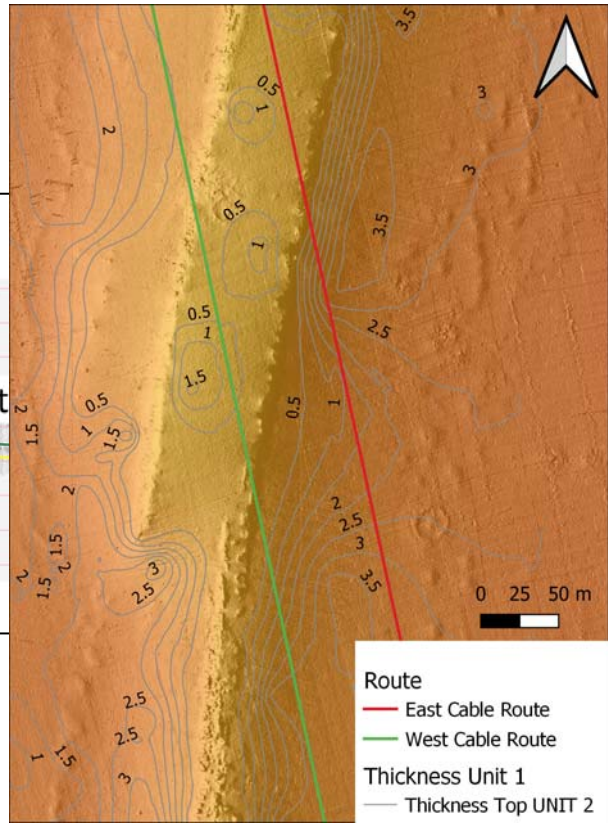




3. Results and Discussion

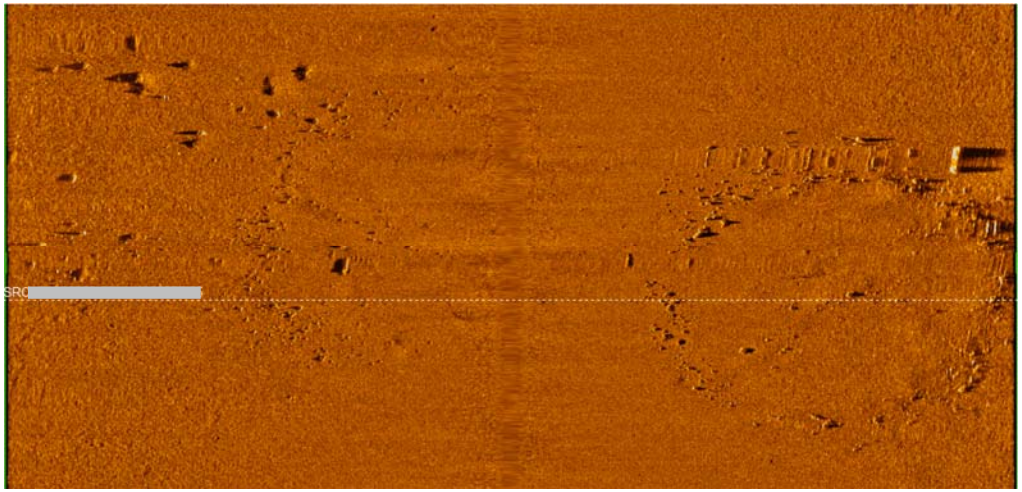
- Stiff/hard sediments



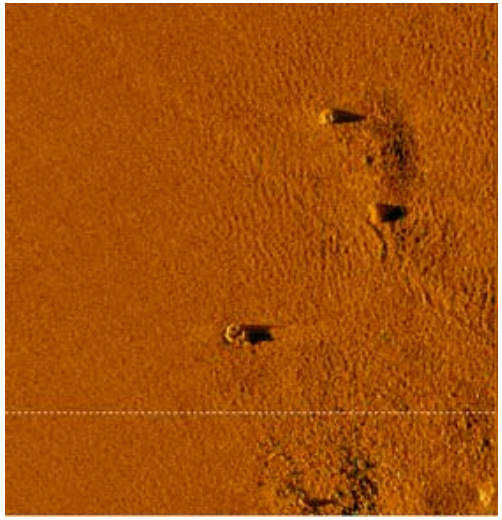


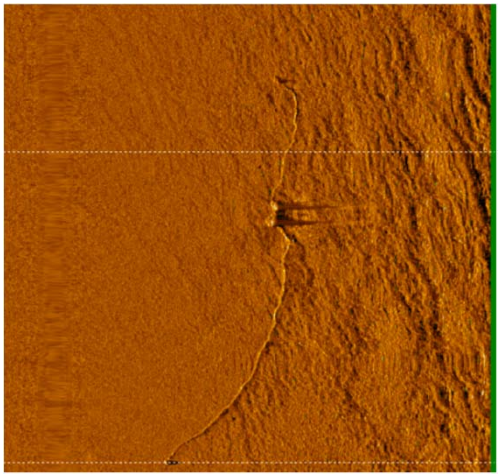
3. Results and Discussion

- Boulder, Wrecks and Anthropogenic debris



Isolated Boulders and boulder-field

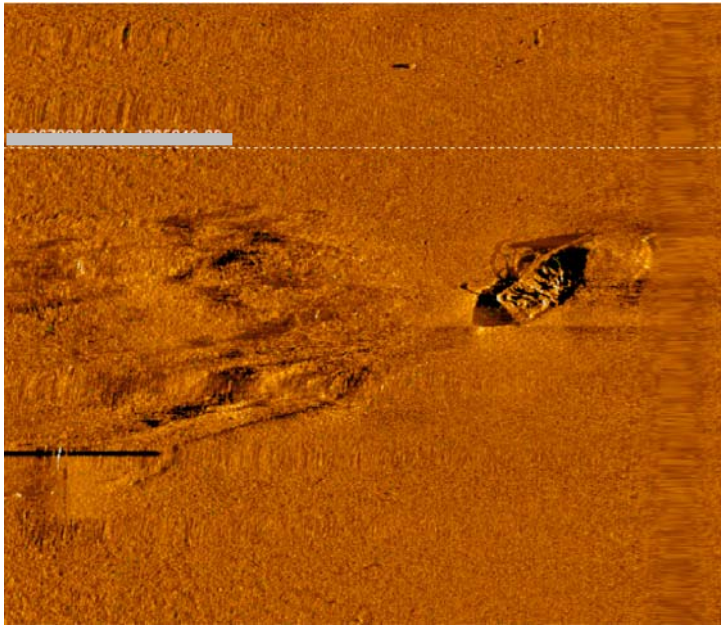




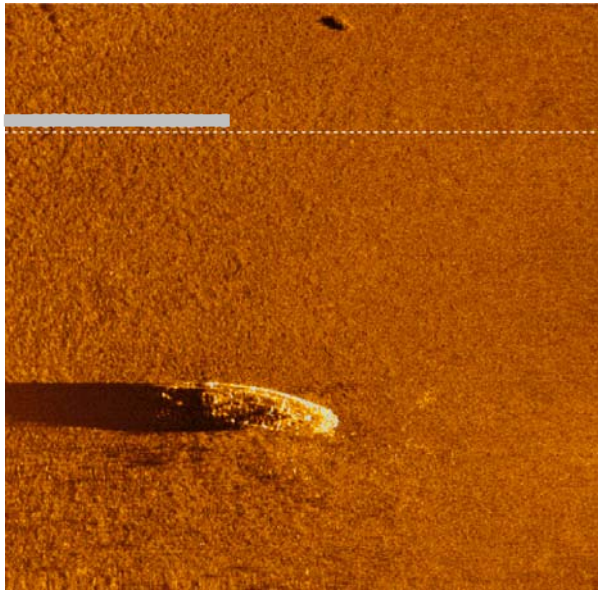
Rope

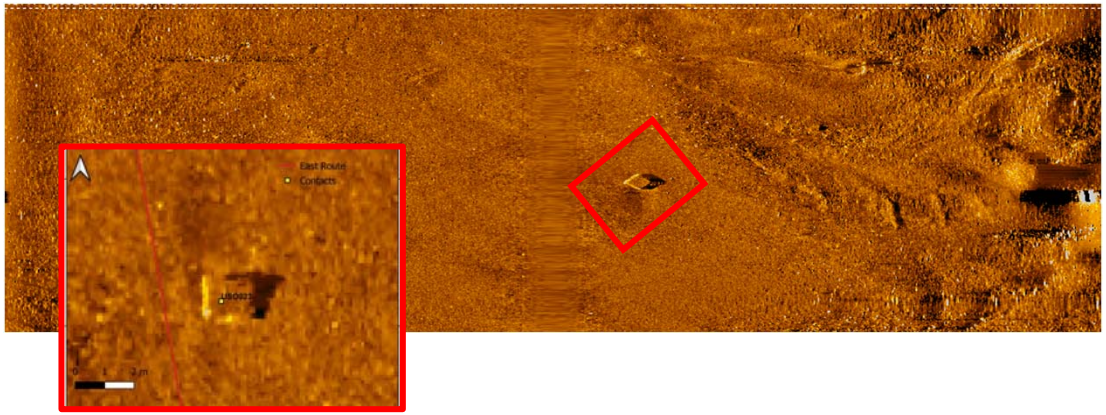
3. Results and Discussion

- Boulder, Wrecks and Anthropogenic debris



Wrecks





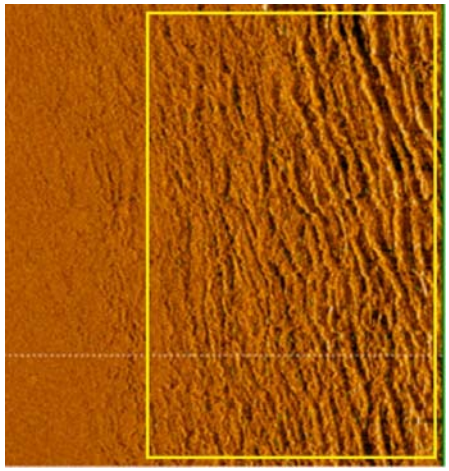
USO

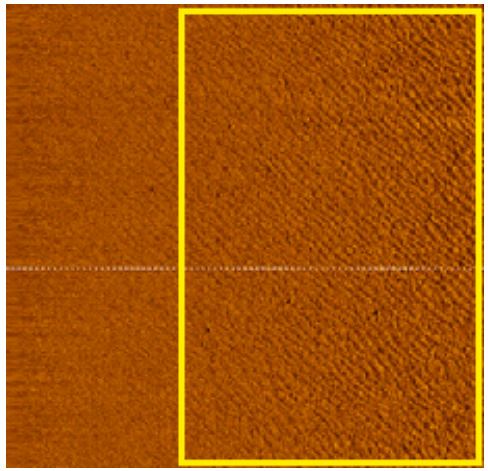
3. Results and Discussion

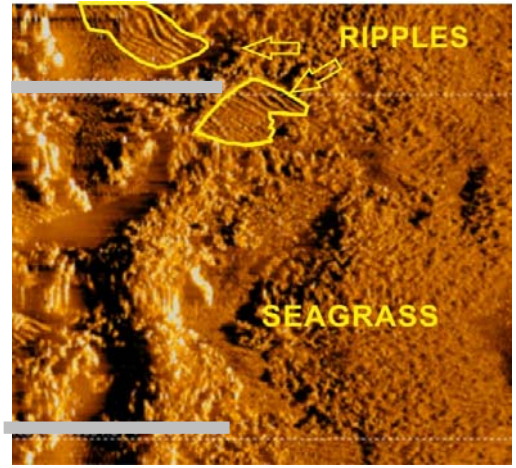
- Mobile Sediments
  - Cable buried
  - Cable left exposed

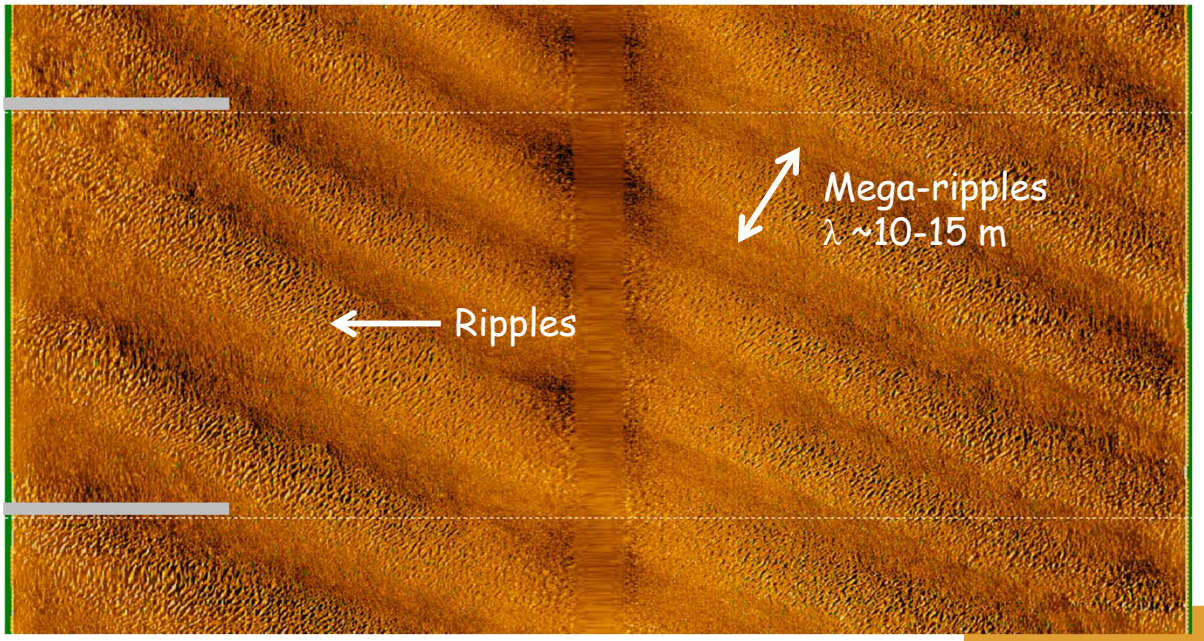
3. Results and Discussion

- Mobile Sediments





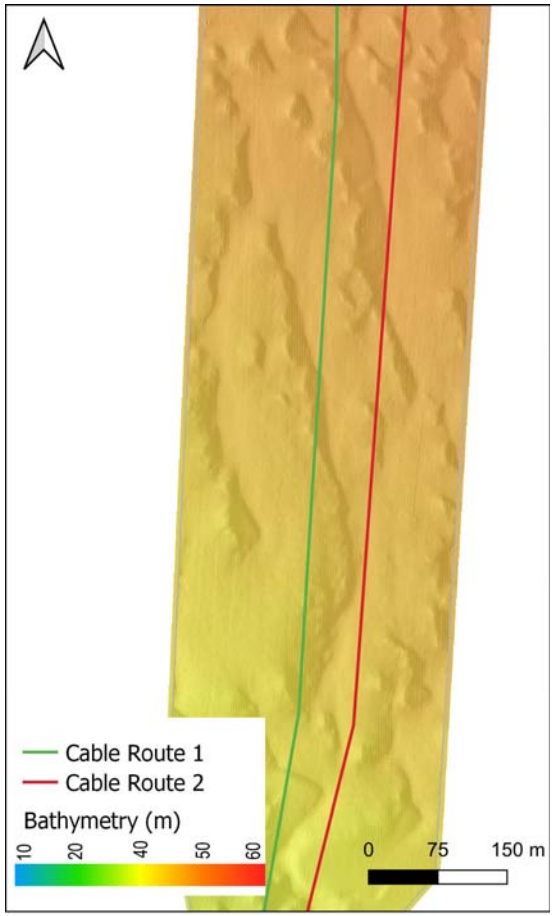




Ripples
η ~ cm
λ ~ cm

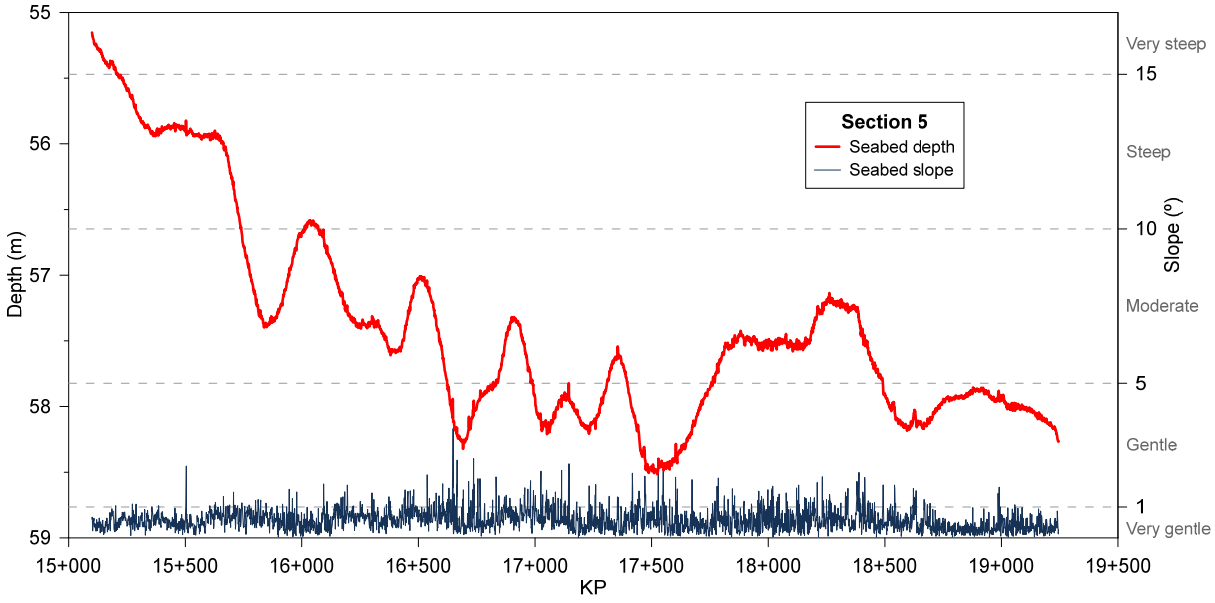
3. Results and Discussion

- Mobile Sediments



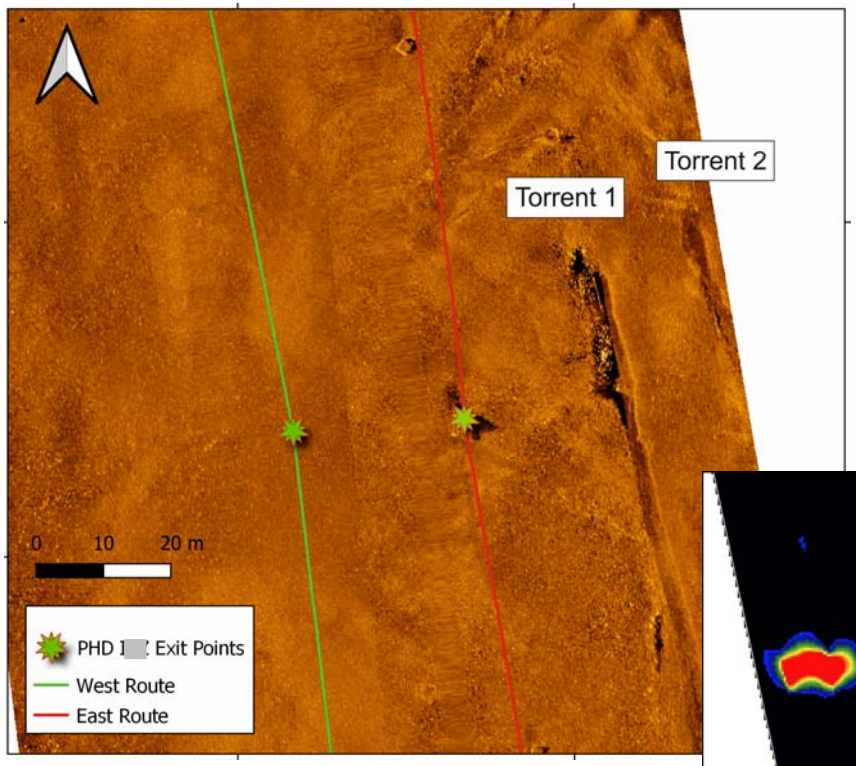
Mega-Ripples
η ~ 1 m
λ ~ 20-60 m

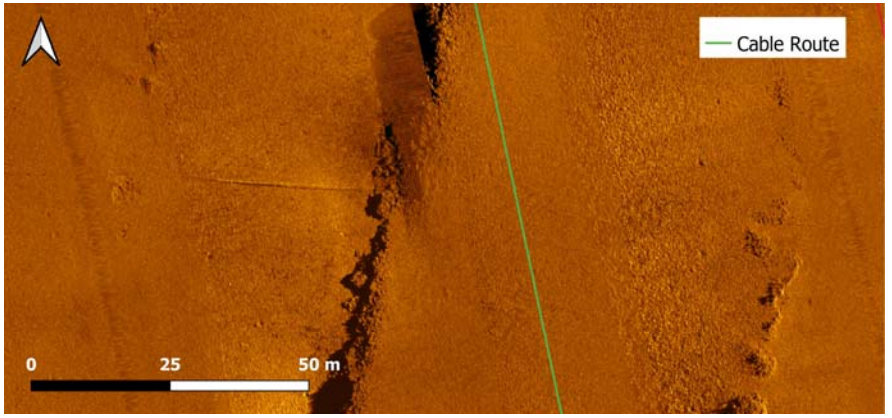
Dunes
η ~ 1-3 m
λ ~ 1 km

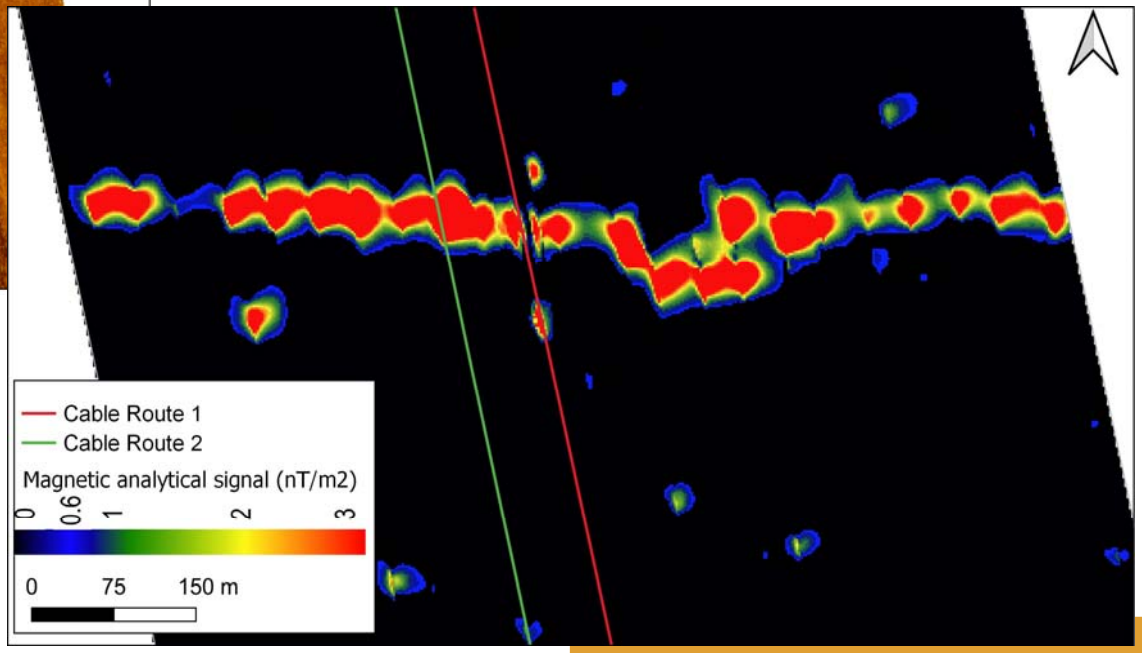


3. Results and Discussion

- Other cables and pipelines crossings

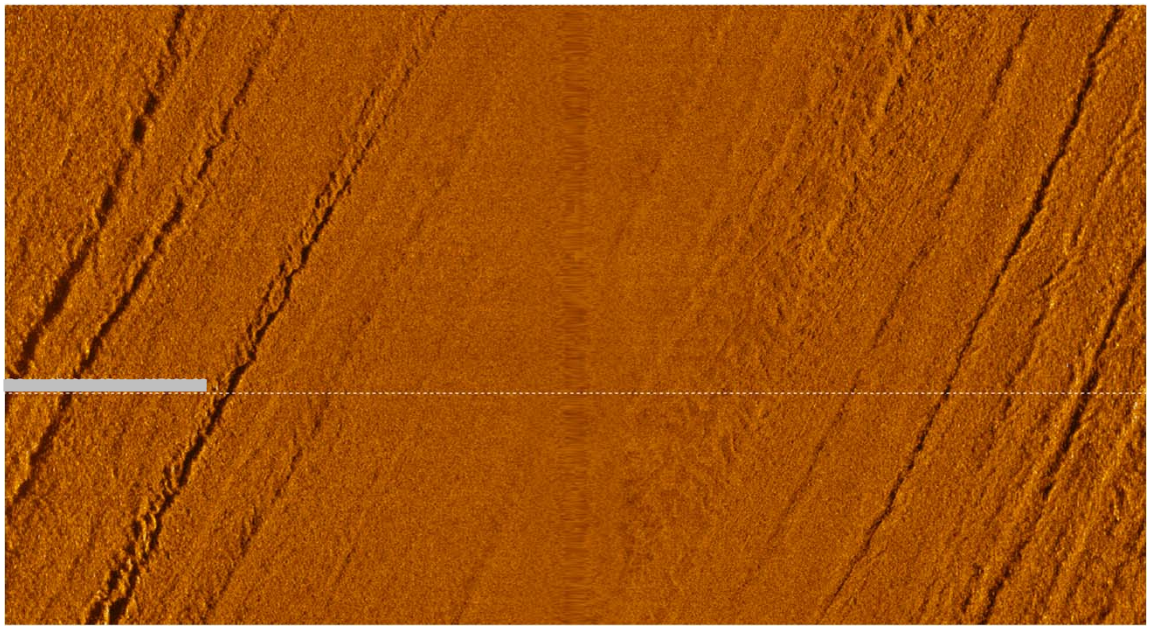






3. Results and Discussion

- Fishing activity



4. Summary

- The integration of geophysical and geotechnical data is the base of submarine cable projects
- MBES, SSS, SBP and MAG to identify potential cable constrains and guarantee the security
- Potential constrains lead the cable vulnerable to be damaged or make difficult or impossible the cable installation
- Examples are steep gradients, boulders, manmade objects, stiff sediments, fishing activities, sediment mobility

Thanks for your attention

Contact details:

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