



A Coastal Zone Survey Project as a Tool for CZM Authorities in Rhodes Island

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Coastal Zone (CZ)

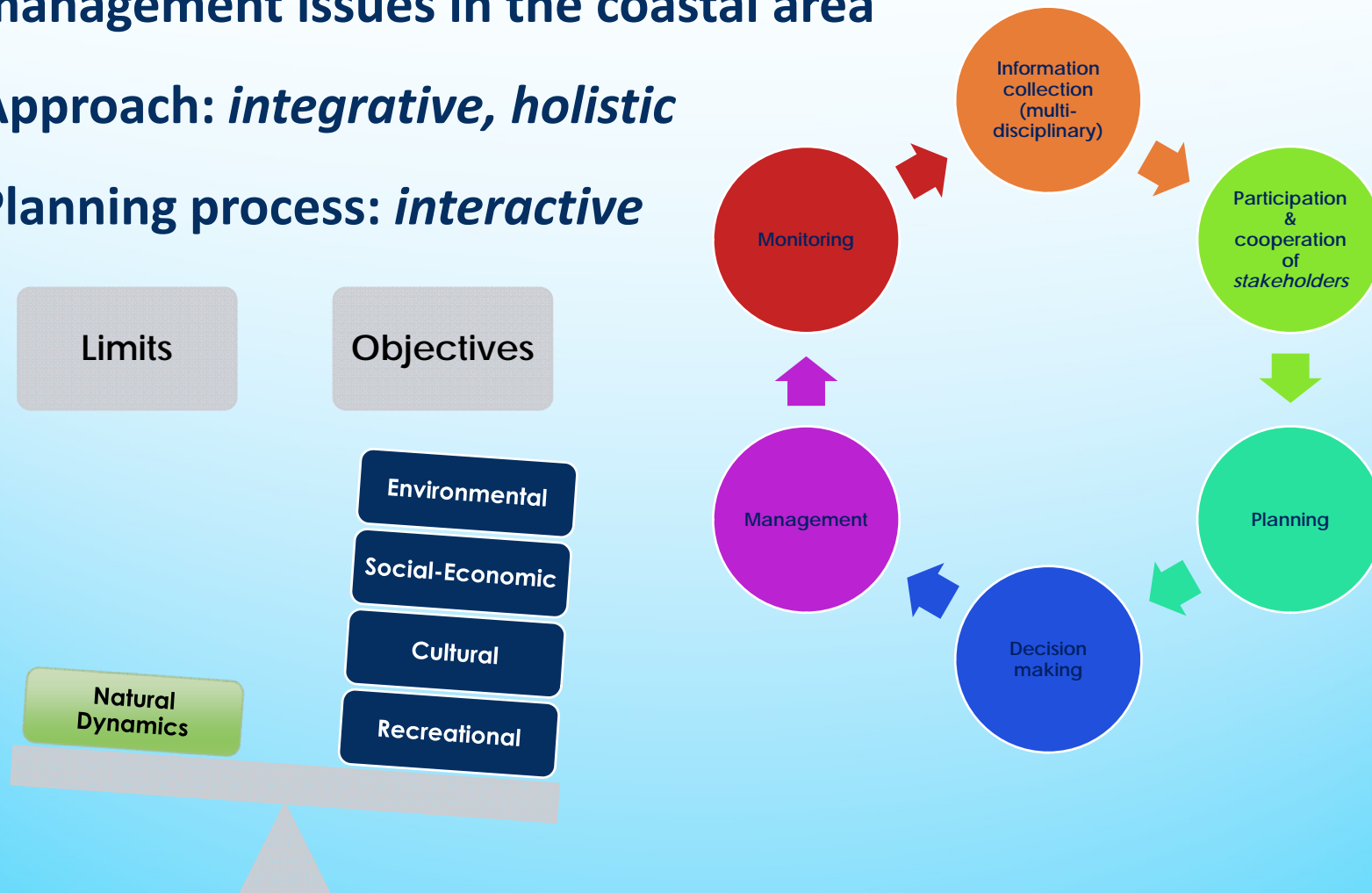
- ✓ The geomorphological area comprising the part of the land affected by marine processes and the part of the sea affected by terrestrial processes.

OR

- ✓ The geomorphological area bordering the coastline where marine and terrestrial processes, biotic and abiotic factors and human activities interact.

Integrated Coastal Zone Management (ICZM)

- ✓ It is a resource management system for addressing the complex management issues in the coastal area
- ✓ Approach: *integrative, holistic*
- ✓ Planning process: *interactive*



AKTI: Survey in Rhodes Island CZ

- **Terrestrial and marine geomorphological features (variety & dynamics)**
- **Marine sediments**
- **Marine biodiversity**
- **Marine ecological status**
- **Weather and wave clima**
- **Human interventions**
- **Coastal Vulnerability Index**

AKTI: Deliverables

- **Bathymetric maps (Multibeam echosounding)**
- **Benthic habitats maps**
- **Technical Reports**
- **ICZM suggestions**

Coastal Vulnerability Index (CVI) for Erosion - Inundation

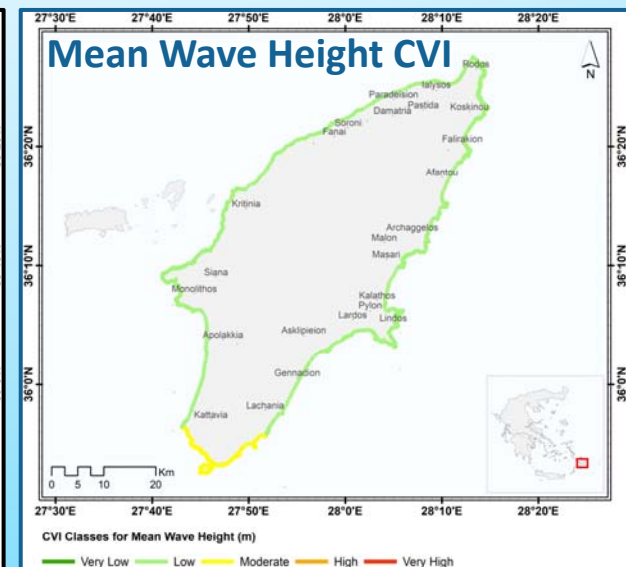
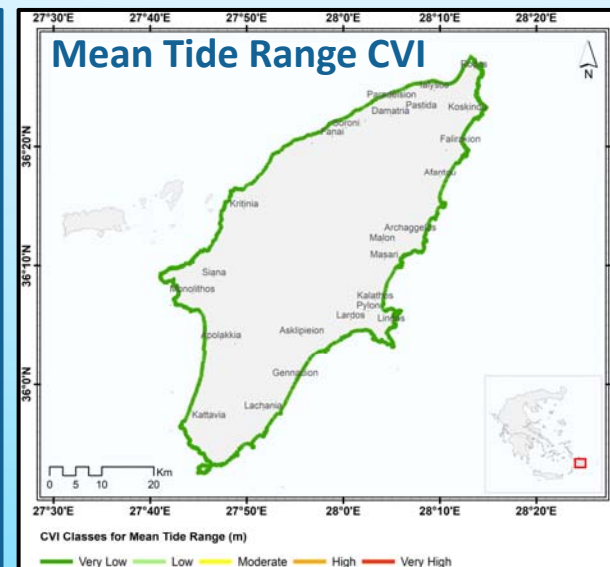
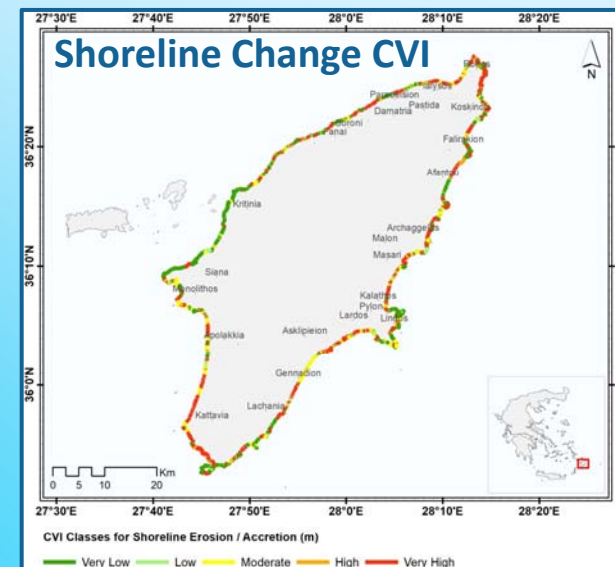
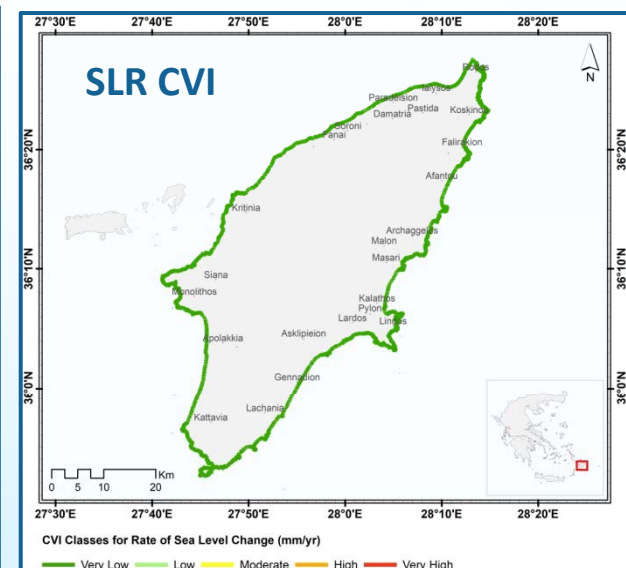
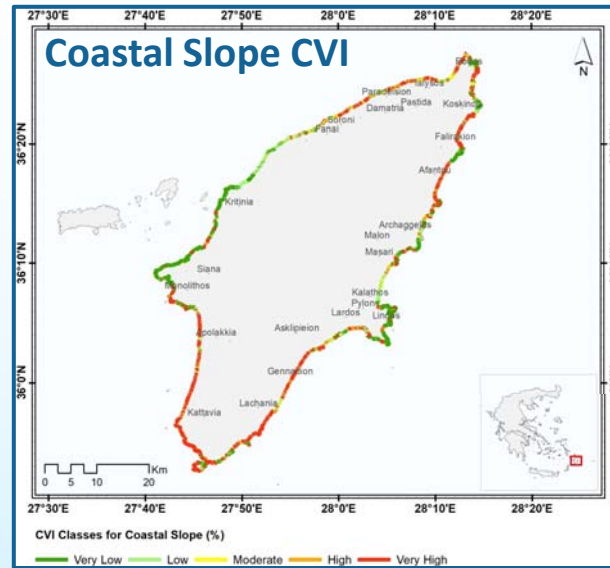
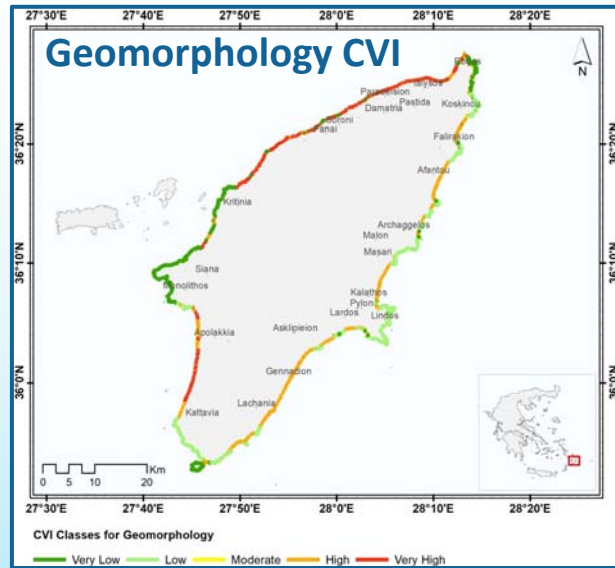
- ✓ **Around 41% of Europe's population is situated near or at the coastal zone (Collet & Engelbert, 2013), plus the visitors-tourists**
- ✓ **Coastal environments are most sensitive to changes and pressures but also of great importance for the tourism business**
- ✓ **The physical impact of the erosion-inundation due to sea-level rise is one of the most important issues in coastal management**
- ✓ **Recent estimations of the future sea-level rise based on climate model output (IPCC, 2013) suggest an increase of the sea level rise of 0,60m until 2100**

AKTI: Assessment of Coastal Vulnerability Index (CVI) for Erosion – Inundation in Rhodes Island

- ✓ **Data: coastal geomorphology, coastal slope, shoreline accretion-erosion rate, sea level change rate, mean tide, mean significant wave height**
- ✓ **Data sources: field work, lab analyses, references, remote sensing, monitoring stations**

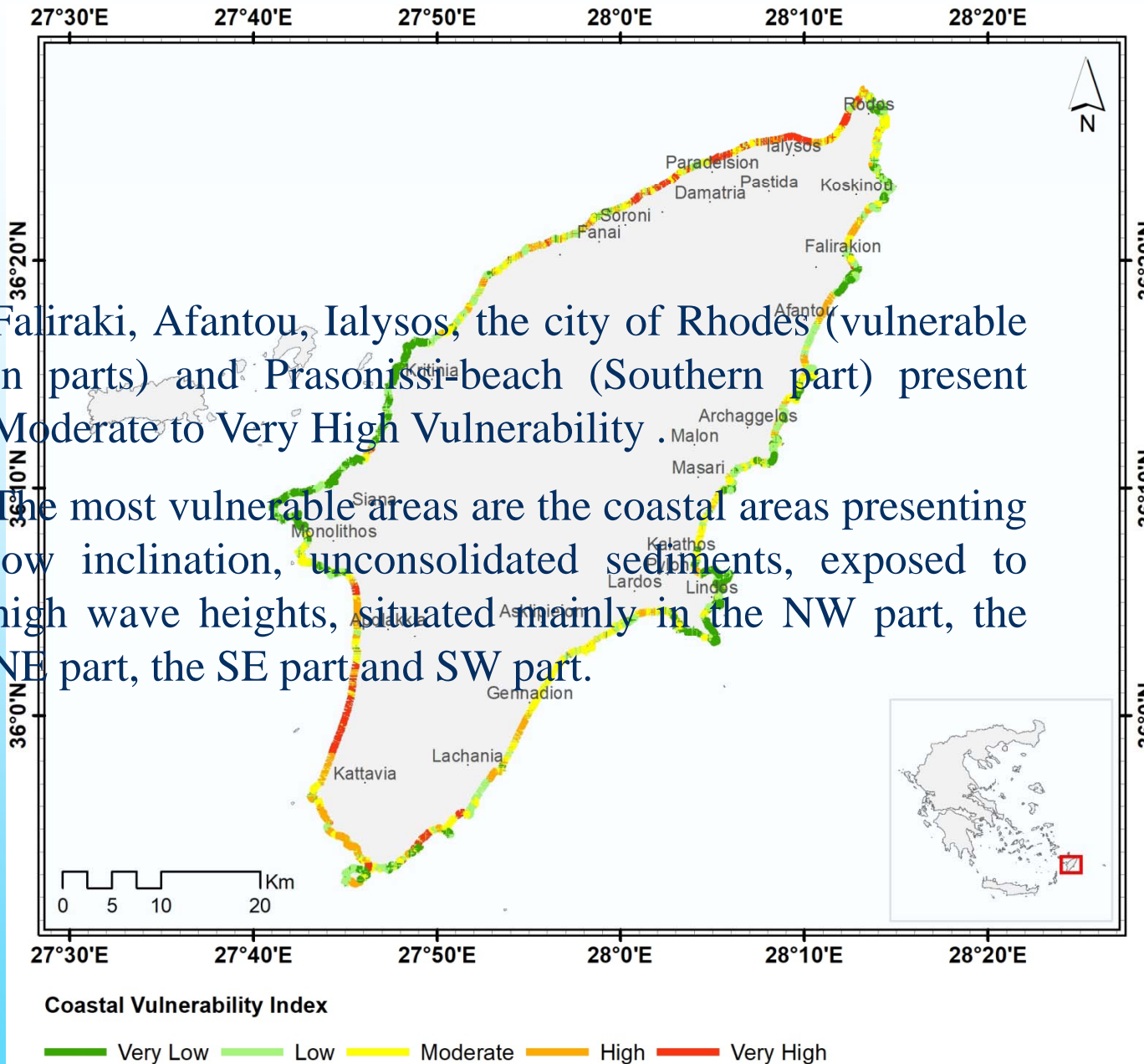
CVI Variables	Very Low 1	Low 2	Moderate 3	High 4	Very high 5
Geomorphology	Rocky cliffed, alpine and post-alpine substrate, concrete retaining walls, Port facilities, rip raps	Medium cliffs, indented coasts, Fluvial-alluvial sediment beaches	Low cliffs, alluvial plains	Cobble beaches, lagoons	Sandy beaches, deltas, Sandy beaches under erosion
Coastal Slope (%)	>20	7 - 20	4 - 7	2.5 - 4	<2.5
Shoreline accretion/erosion (m/y)	>2	1 - 2	-1 - +1	-1 - -2	< -2
Rate of Sea Level Change (mm/y)	<1.8	1.8 - 2.5	2.5 - 3	3 - 3.2	>3.2
Mean Tide Range (m)	<1	1 - 2	2 - 4	4 - 6	>6
Mean Significant Wave Height (m)	<0.55	0.55 - 0.85	0.85 - 1.05	1.05 - 1.25	>1.25

AKTI: CVI Maps for Rhodes Island CZ

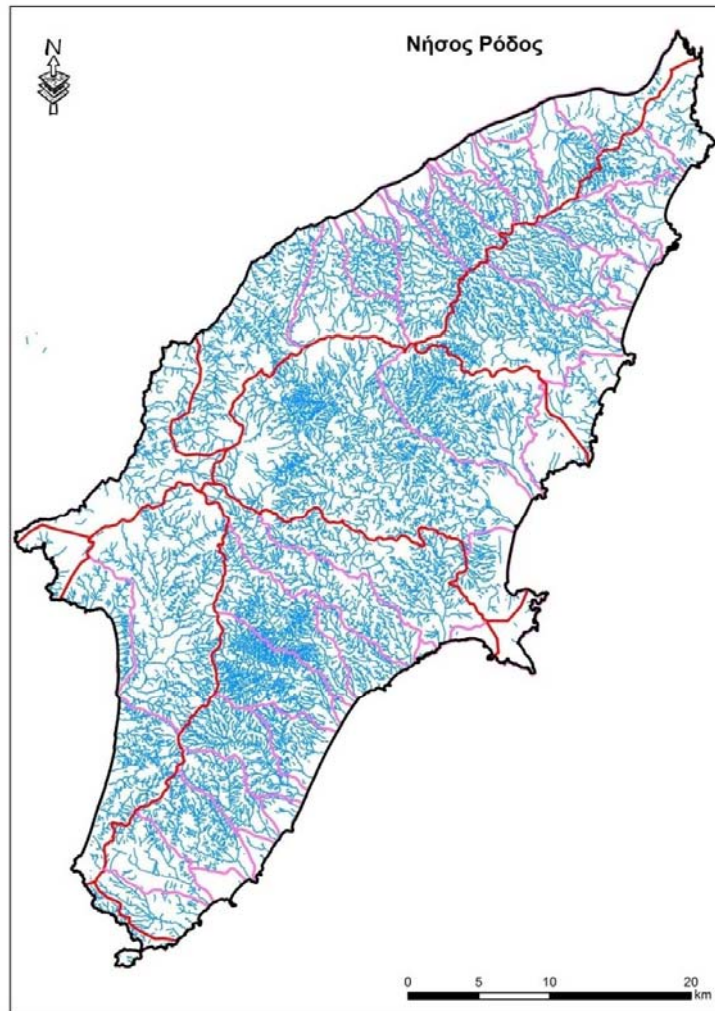


Results-CVI Map for the island of Rhodes

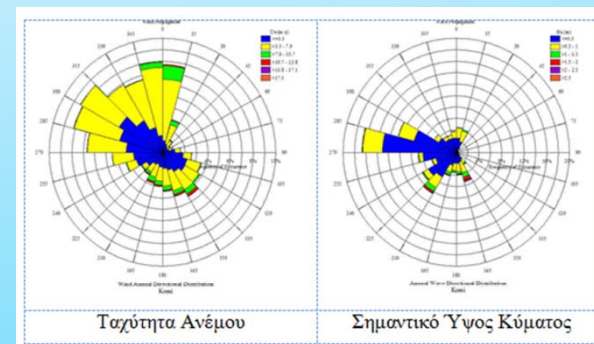
1. Faliraki, Afantou, Ialysos, the city of Rhodes (vulnerable in parts) and Prasonissi-beach (Southern part) present Moderate to Very High Vulnerability.
2. The most vulnerable areas are the coastal areas presenting low inclination, unconsolidated sediments, exposed to high wave heights, situated mainly in the NW part, the NE part, the SE part and SW part.



AKTI: Terrestrial and marine CZ of Rhodes Island



- Geodynamics
- Geology
- Geomorphology
- Hydrographic networks
- Human interventions
- Wave and weather clima

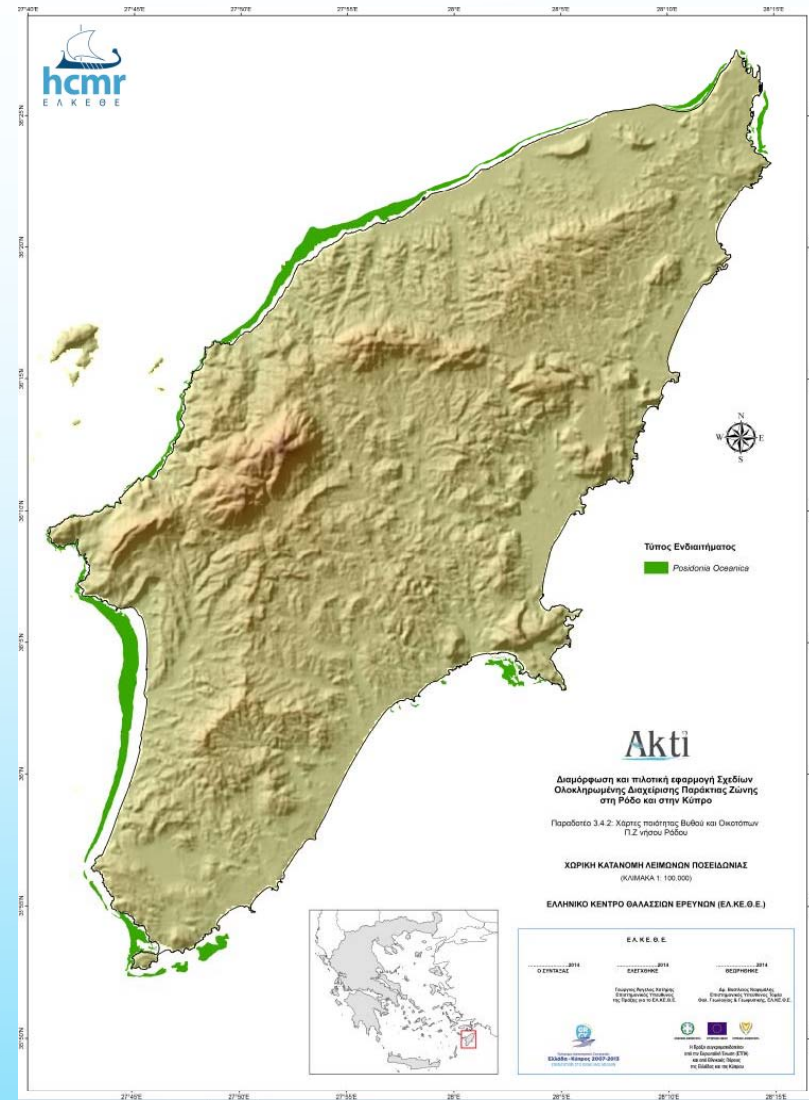
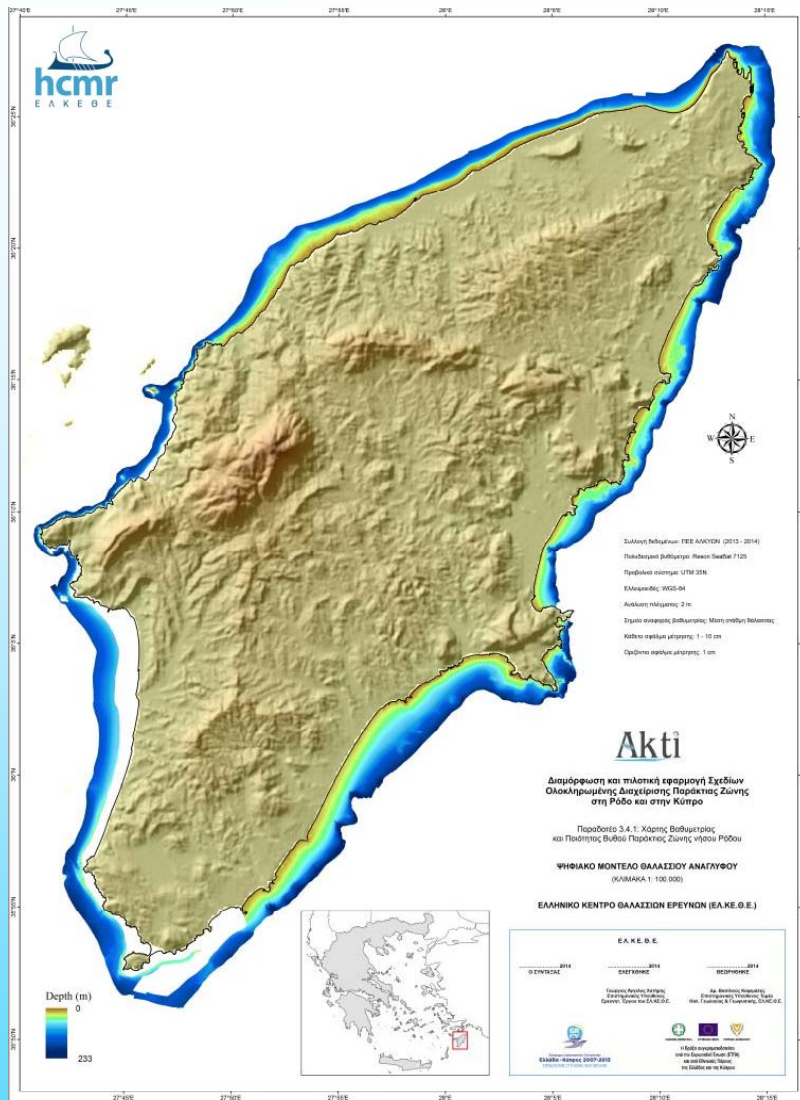


AKTI: Marine research infrastructure

S/V Alcyone of HCMR



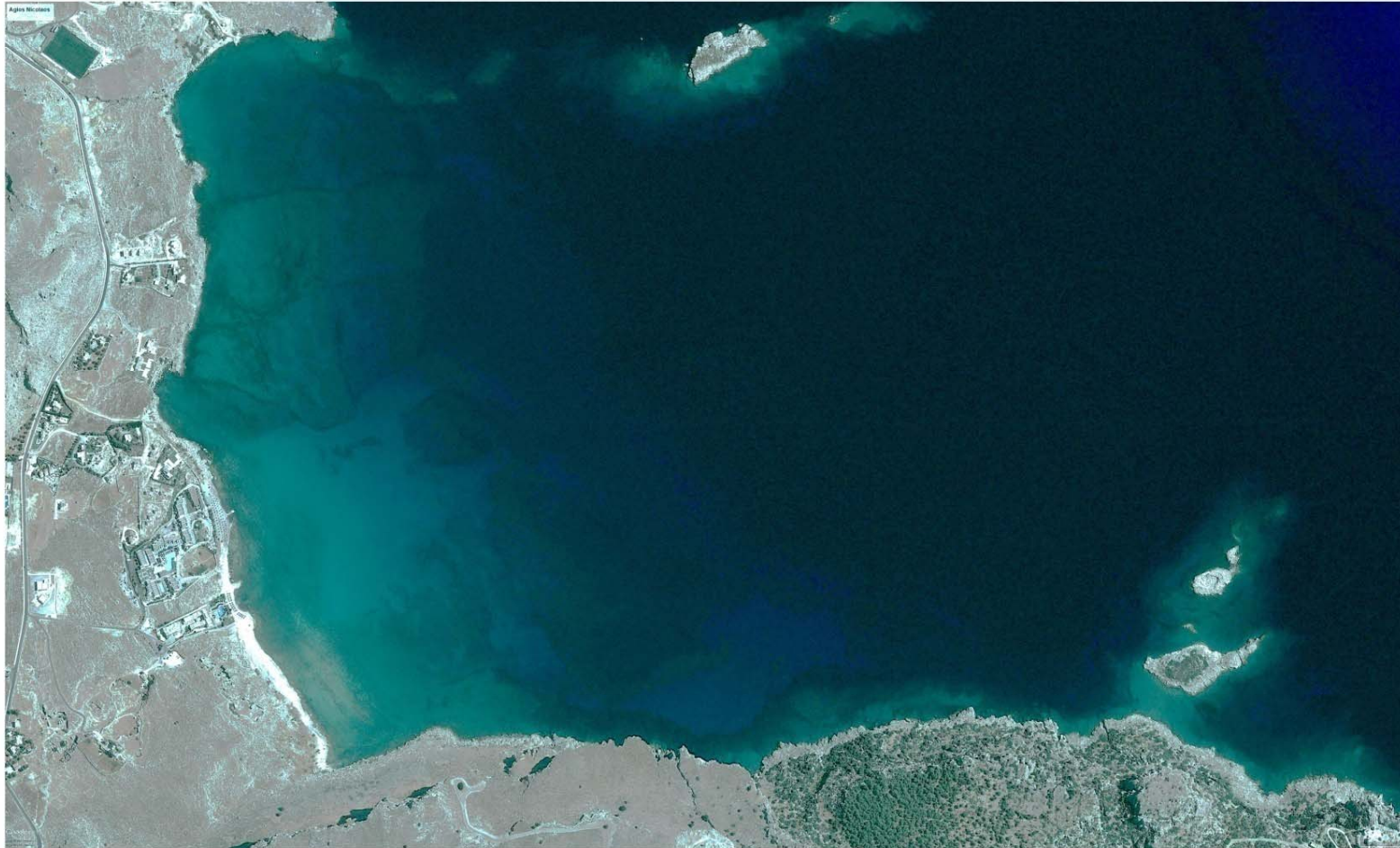
Akti: bathymetric and benthic habitat maps



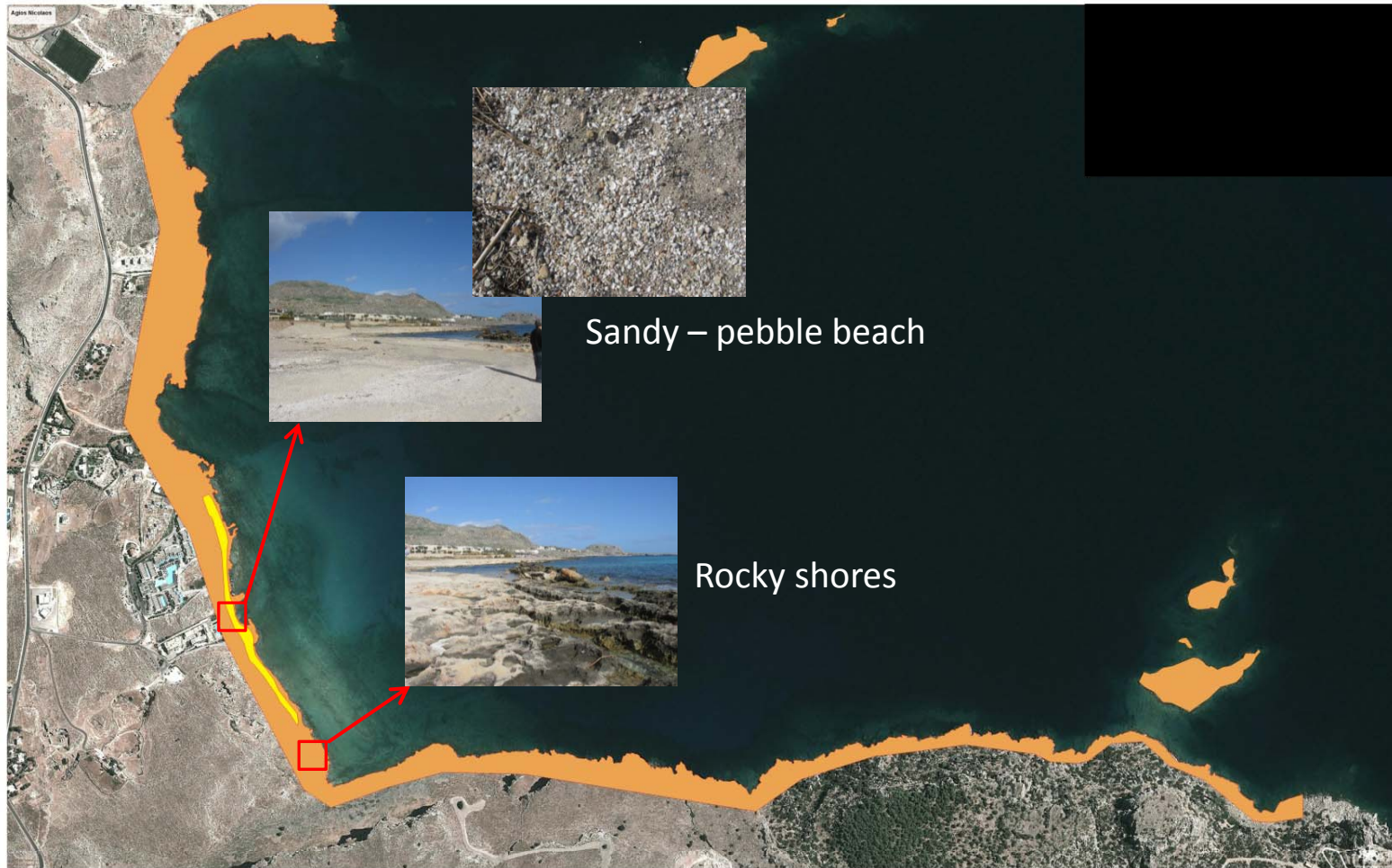
AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes



AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes > Remote sensing reconnaissance



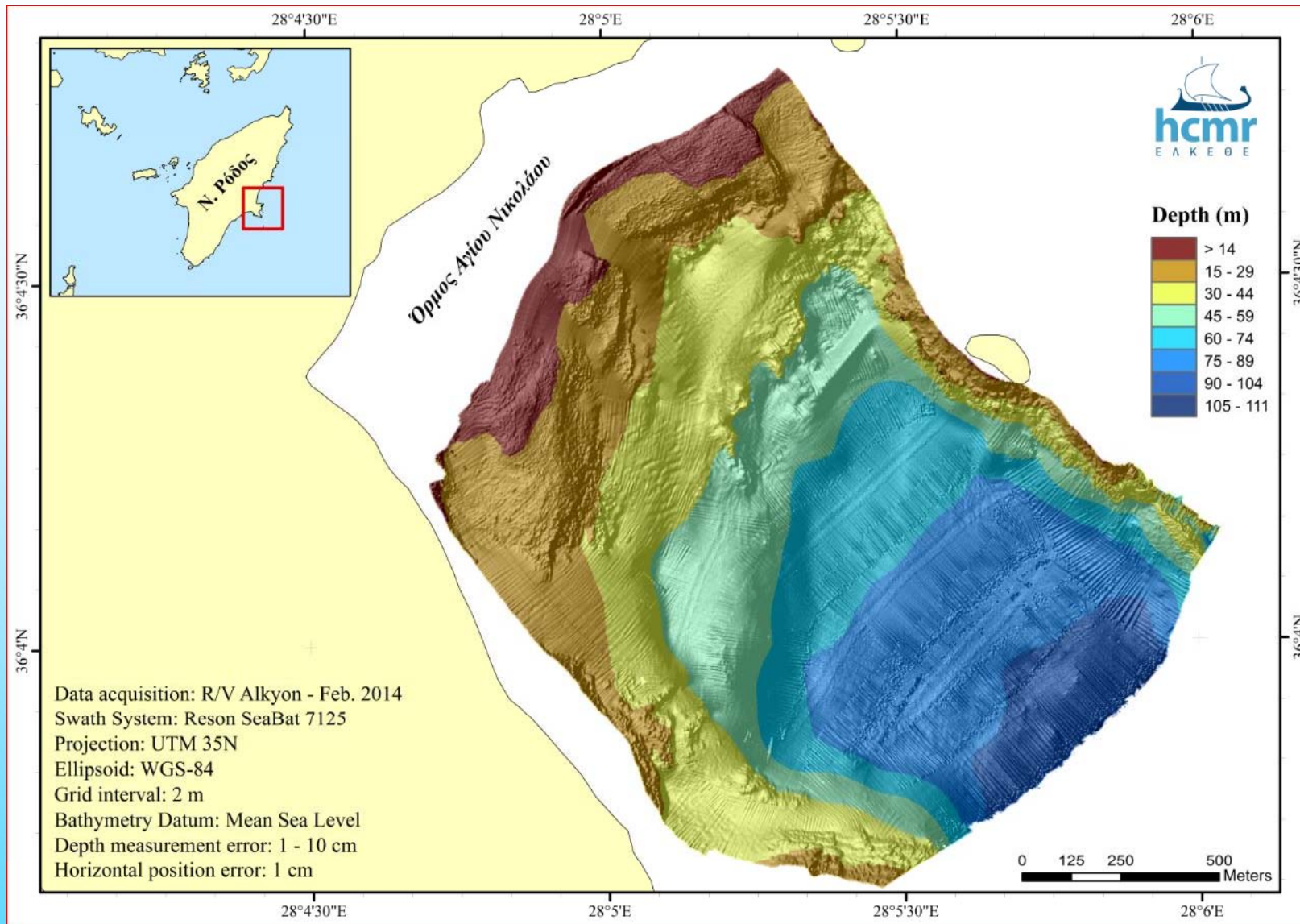
AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes > Coastal sediments' composition and dynamics



AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes > Land use and pollution sources



AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes > Multi-beam Bathymetry > Bathymetric Maps



AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes > Side-scan sonar survey and sediment sampling



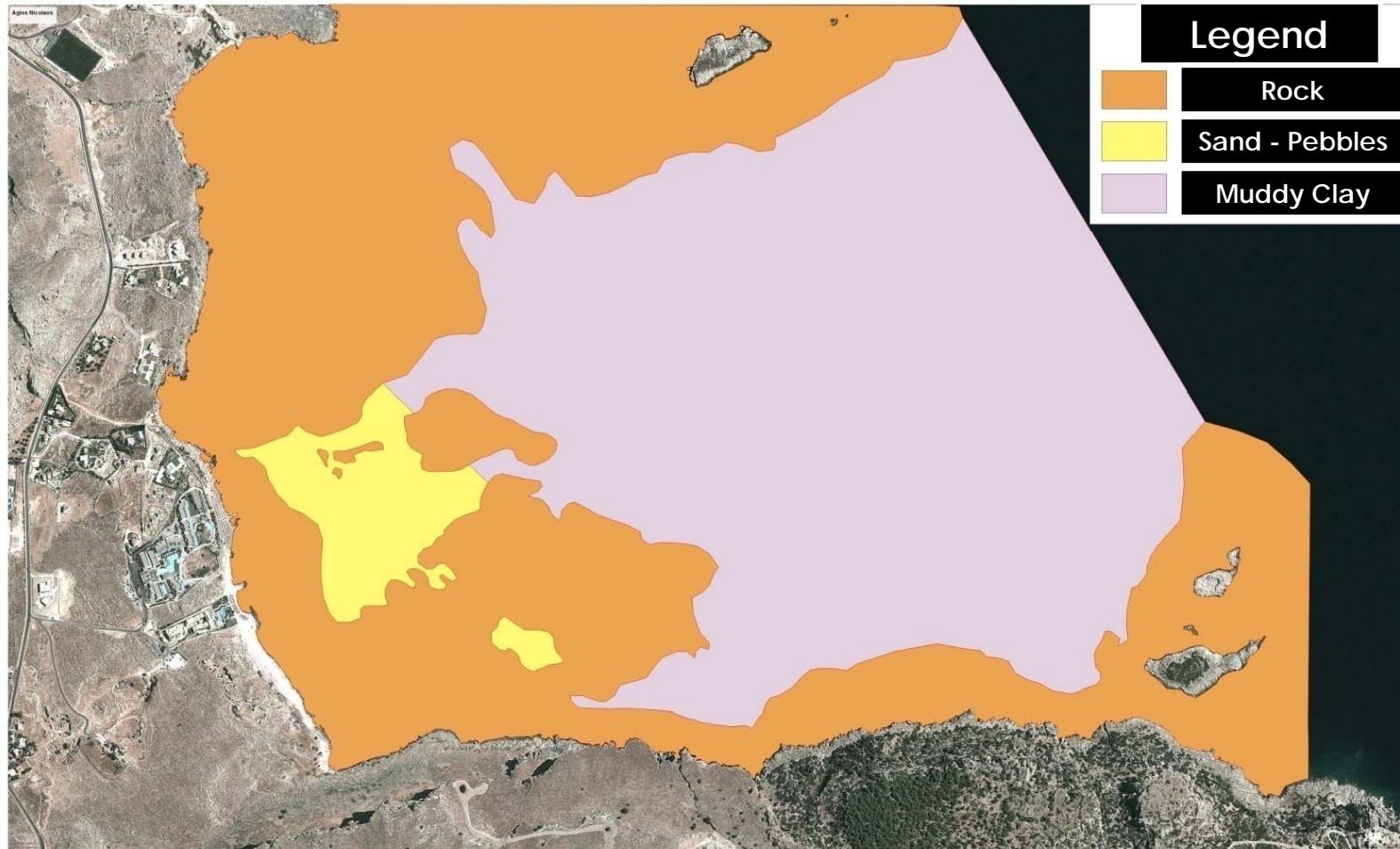
Muddy clay

Sand

Rocks



AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes > Benthic habitat maps



AKTI: Case study for a diving park > Agios Nikolaos Bay, Rhodes > Management proposal



**Thank you for your attention –
Ευχαριστούμε για την προσοχή σας**