



# Maritime Endangered Archaeology



<https://visibleearth.nasa.gov/images/65114/middle-east>



# MarEA (2019-2024)



- MarEA adopts the principles of the EAMENA project with respect to the methodology of documentation and data storage but with a focus on the dynamic coastal and near-shore underwater zone.
- The maritime zone across the MENA region is under huge threat from natural and human impacts.
- MarEA will document the coastal zone in a comprehensive manner, noting all coastal, near-shore and underwater sites visible from satellite images and recorded in extant documentation.



# Team



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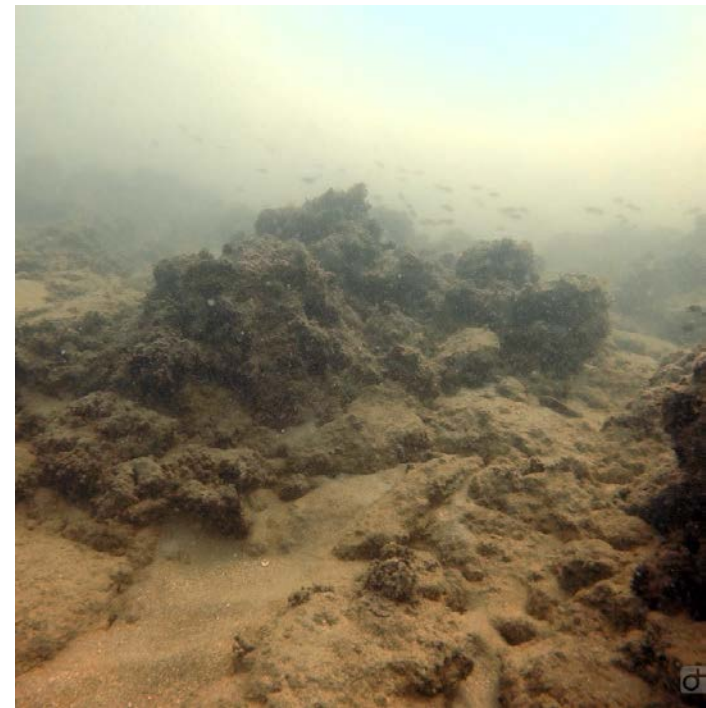
## Partners

- EAMENA team (Universities of Oxford, Leicester, Durham)
- Government bodies in the MENA region
- NGOs & academics in the MENA region





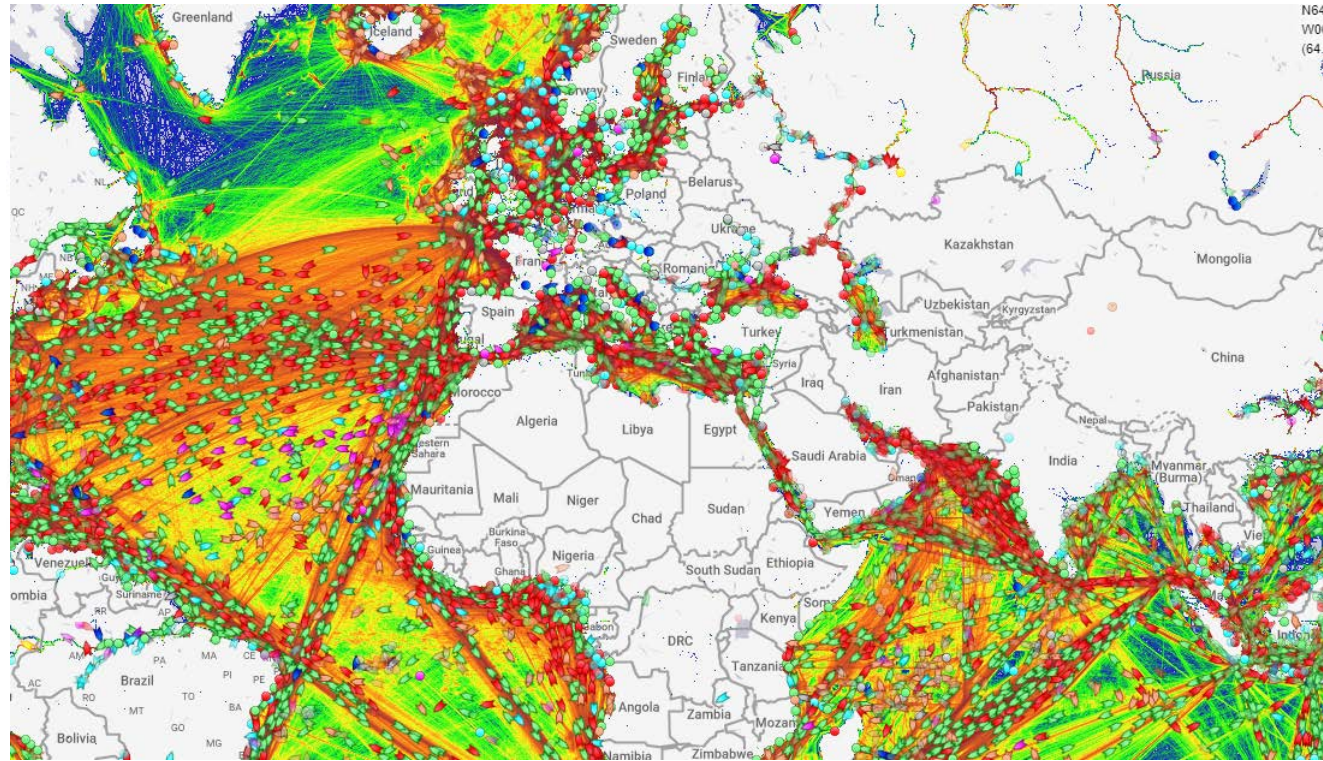
## Maritime/coastal environments and significance





# The maritime & coastal environment

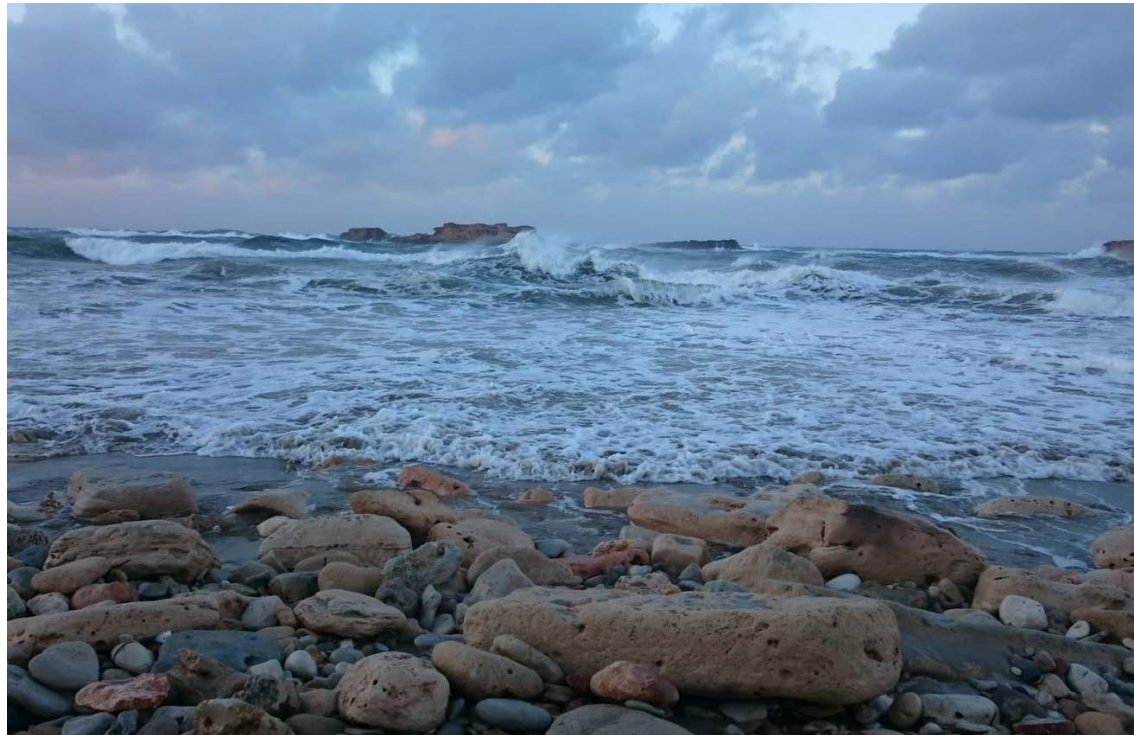
- Nearly half of the global population live within an hour of a coast (UNAO 2010)
  - 53% of the population in the MENA region live in coastal areas (World Bank Report, 2007)
- 95% of trade is still transported by sea (Lavery, 2005)
- More than 3 billion people rely on the oceans for their livelihood (UNCTAD)



Marinetraffic.com 2019

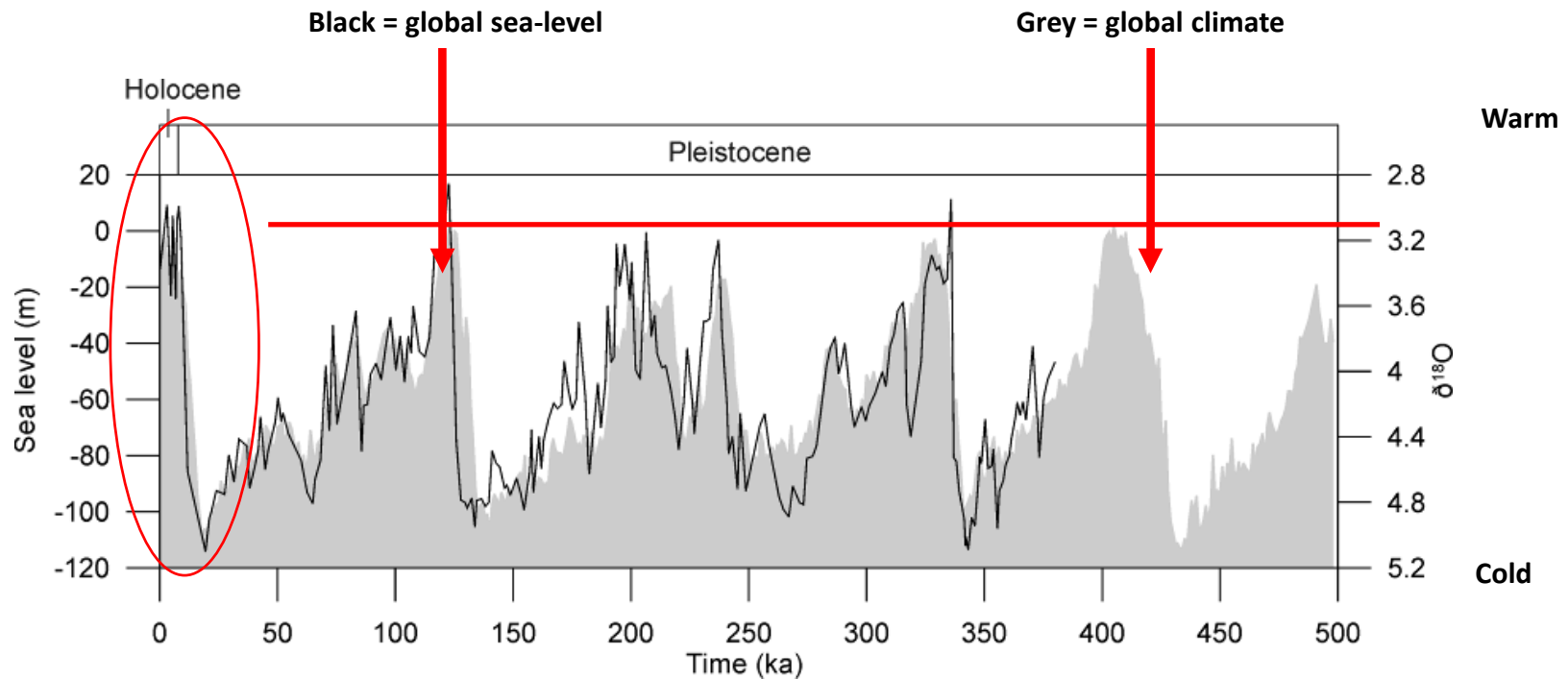
# The maritime & coastal environment

- Maritime resources (both terrestrial and aquatic)
  - Fish / shellfish
  - Salt
  - Coastal flora/fauna
- Accessibility, mobility, connectivity
  - Movement across the coast
  - Movement across the sea
  - With the hinterland
  - With other coastal locales
- Maritime traditions and practices
  - Boat-building
  - Navigation
  - Technology
  - infrastructure



# Sea-level changes over 500,000 years

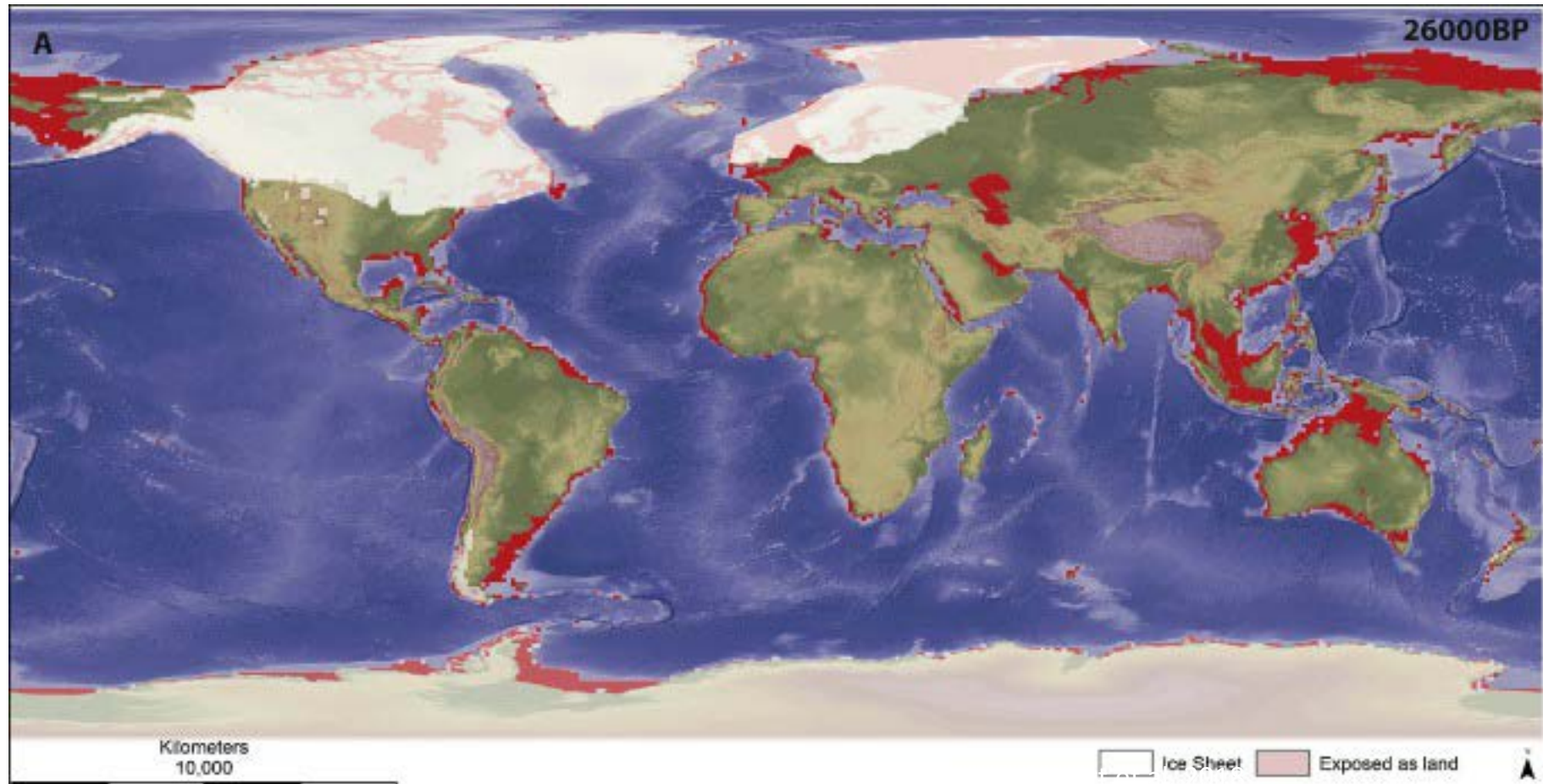
- Global sea-level changed together with climate change
- Evidence from the last 500k years shows global sea-level was much lower than present for most of the time



$\delta^{18}O$  data from Lisiecki & Raymo (2005)

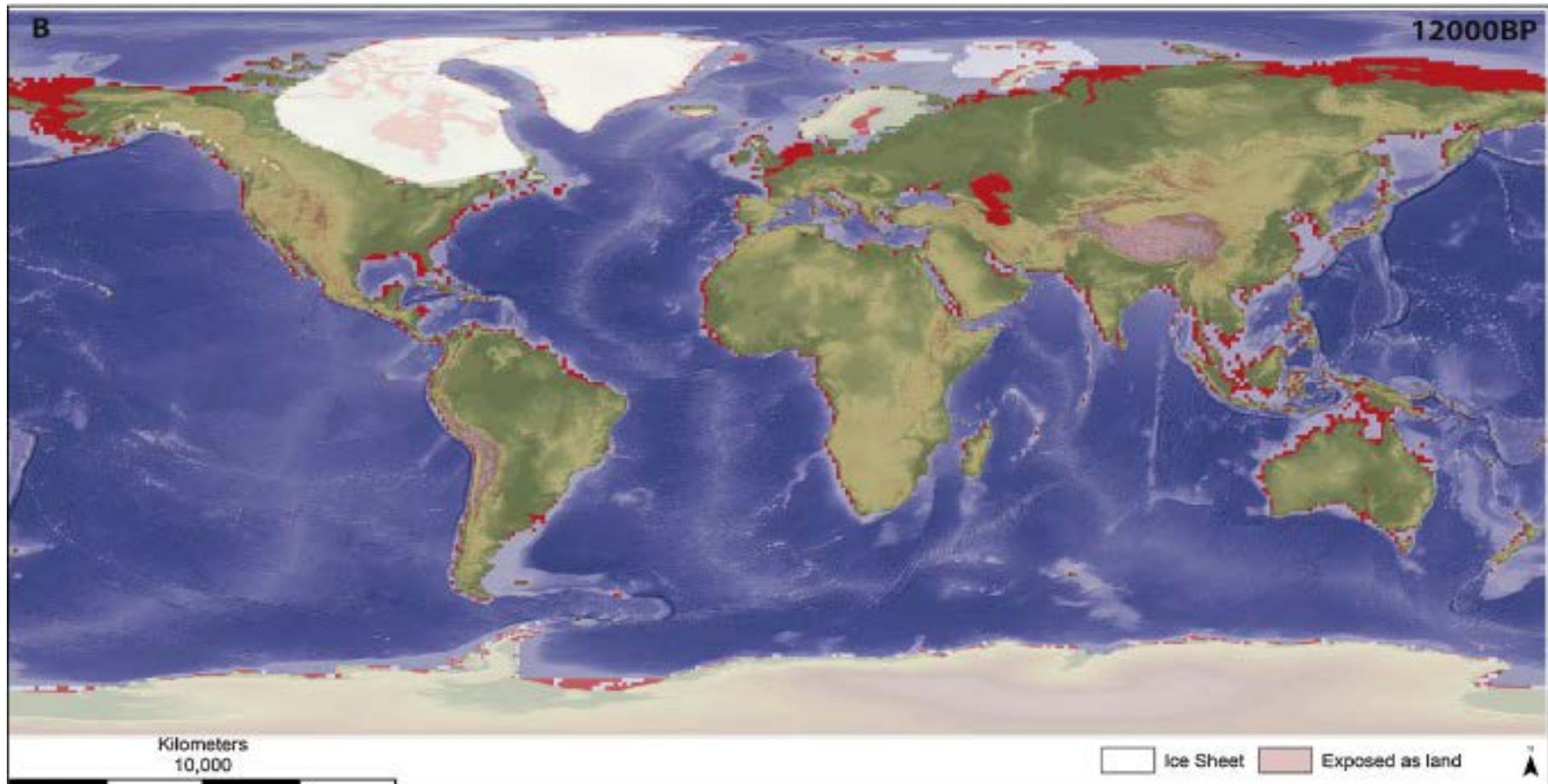
Sea-level data from Siddall et al (2003)





Sturt, F., Flemming, N. C., Carabias, D., Jöns, H., & Adams, J. (2018). [The next frontiers in research on submerged prehistoric sites and landscapes on the continental shelf](#). *Proceedings of the Geologists' Association*, 129(5), 654-683.





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- Folklore
- Traditional practices
- Songs
- Belief systems

Theme 4  
Intangible  
maritime  
traditions

- Palaeo-  
environmental  
Reconstruction
- Submerged  
Settlement

Theme 1  
Submerged  
Landscapes



Theme 3  
Nautical  
past

Theme 2  
Coastal  
Archaeology

- Shipwrecks
- Traditional boats
- Nautical technology
- Marine artefacts

- Coastal Settlement
- Ports, harbours and  
landing places
- Fishing installations
- Coastal Industry





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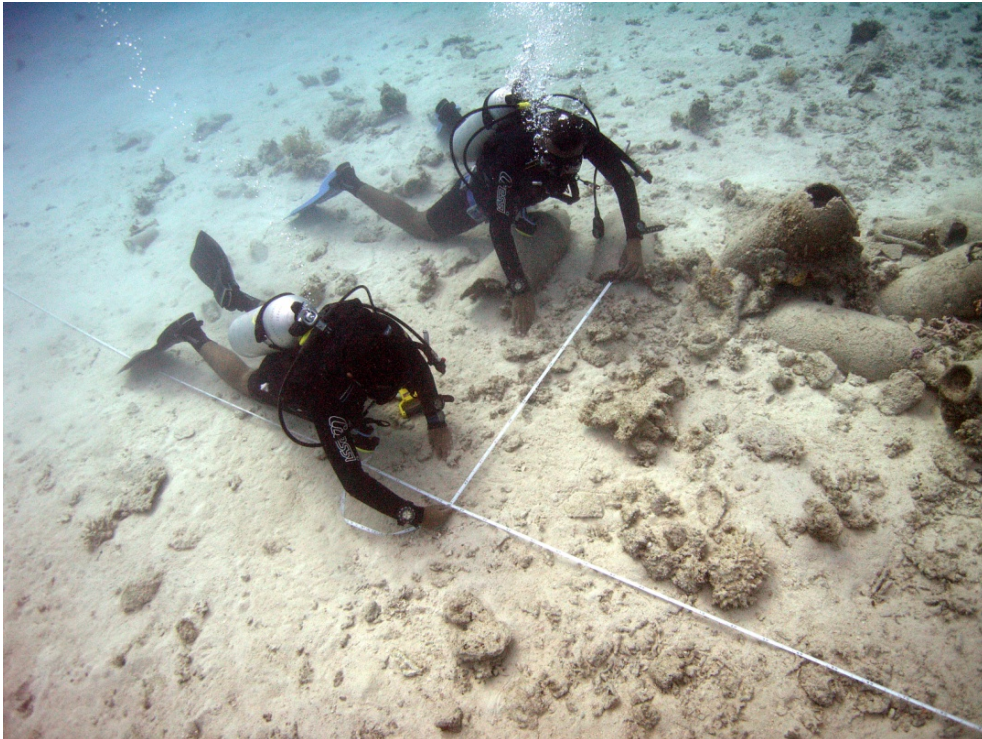
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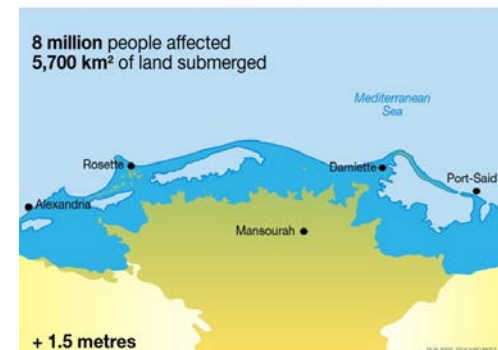






# Coastal and maritime zone under threat

- Coastal & offshore development
- Marine industry, fishing & pollution
- Environmental processes/coastal change



*Atlas of Risks of Climate Change on the Egyptian Coasts and Defensive Policies, Assiut University in Egypt*

# MarEA Aims and Objectives

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- to comprehensively and rapidly document maritime archaeological heritage in coastal and near-shore zones of the MENA region
- to assess the condition of archaeological sites and potential threats
- to develop an improved understanding of the nature and extent of maritime cultural heritage in the MENA region
- to integrate the acquired data in an open access online database
- to develop tools for governments and other agencies for maritime cultural heritage management





# Area Selection

## ➤ Location

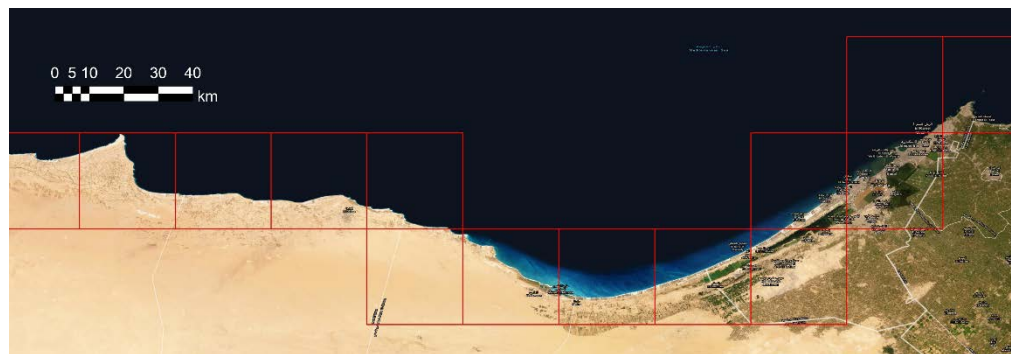
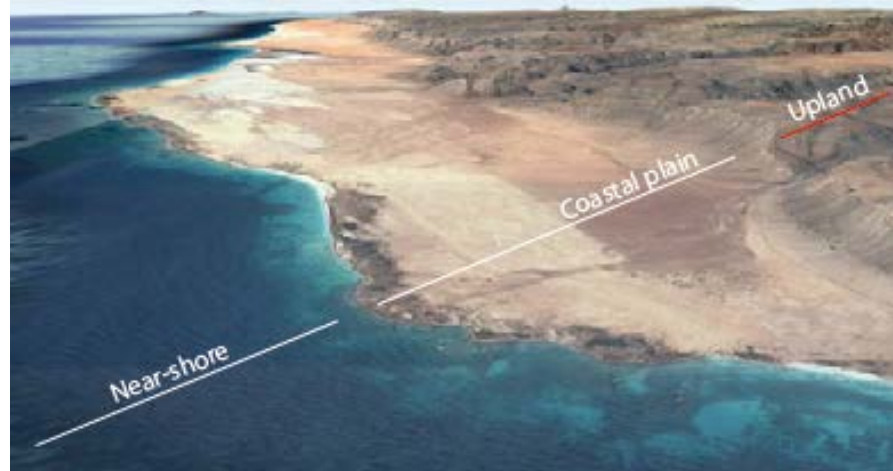
- Coastal zones
- Largely following 27 x 27 km grid squares (depending on local geography) equivalent to 1.5 million sq. km
- Up to 20km inland

## ➤ Priorities

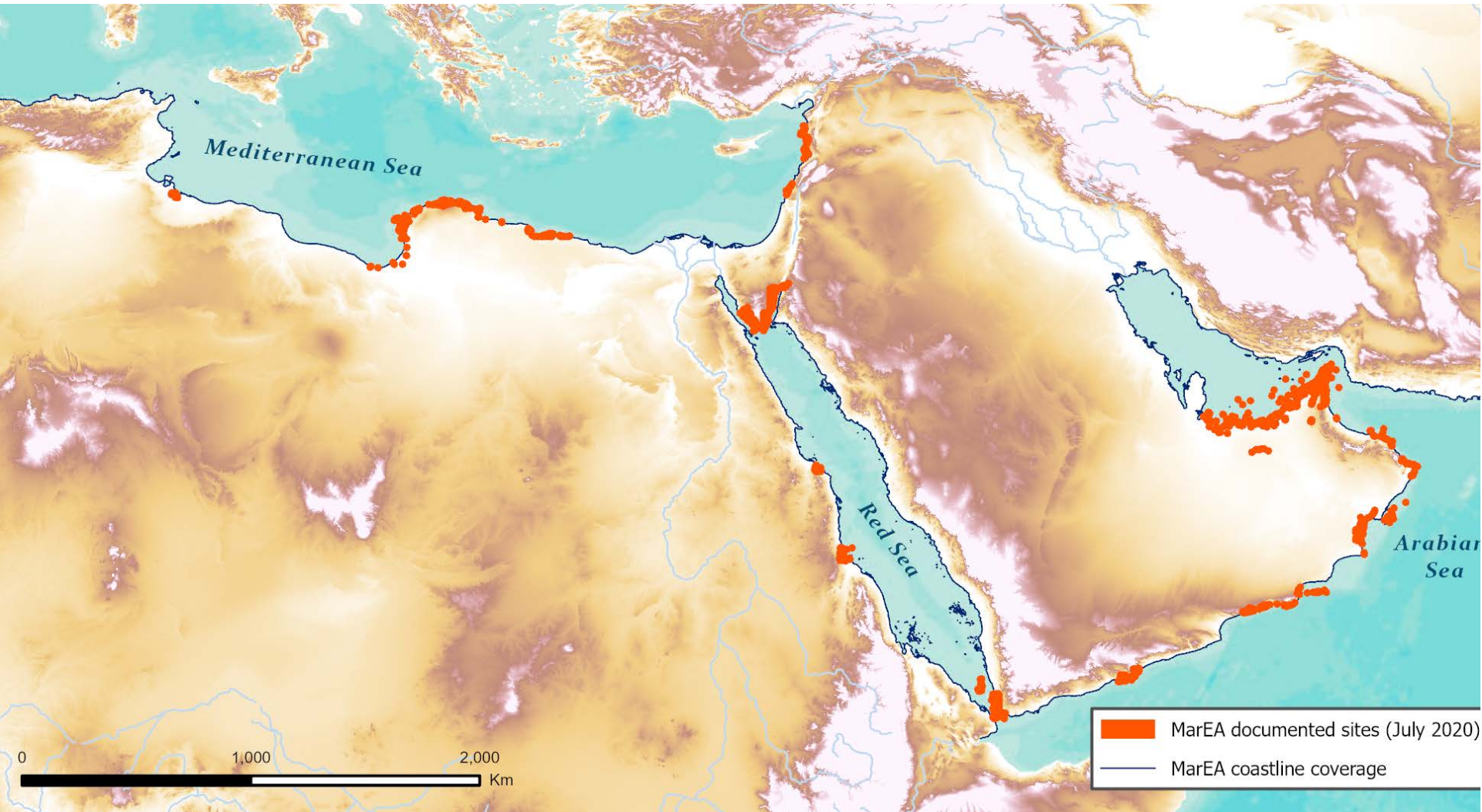
- Areas of high density of archaeological evidence
- Areas subjected to imminent threats

## ➤ Sources

- Academic literature
- Satellite imagery
- Archives & online databases
- Governments & developers



# MarEA coverage





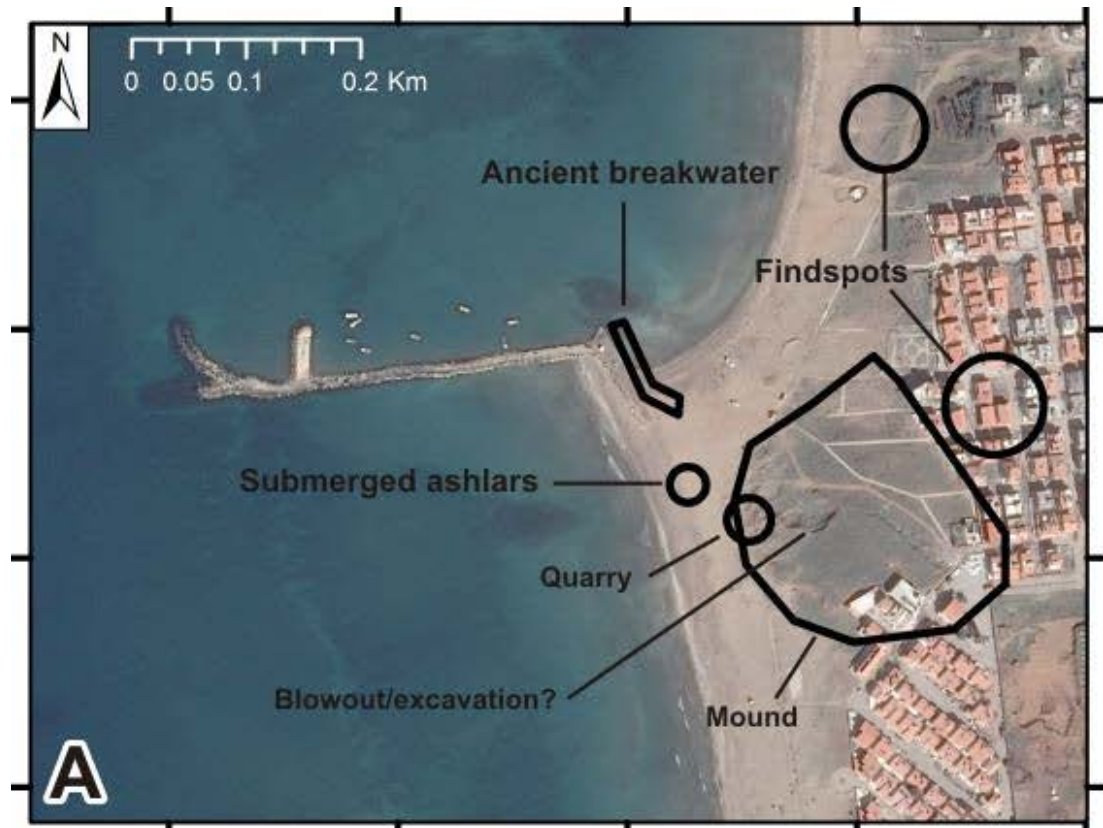
# Assessment Type & Method

## ➤ Archaeological assessment

- Type of site/feature
- Chronology
- Interpretation

## Site interpretation-maritime terms

Pier/Jetty/Breakwater/Mole	Steamship
Pontoon/Mooring	Submarine
Quay/Wharf	Warship
Ship/Wreck	Shipyard/Boat Construction
Canoe	Anchorage
Cargo Vessel	Ballast
Dhow	Fish Pond
Galley	Fish Trap/Weir
Logboat	Landing Place
Sailing Vessel	Slipway



# Assessment Type & Method

## ➤ Condition assessment

- Disturbances
- Causes of disturbance
- Threats

## Disturbance/threats-maritime terms

Aquaculture

Cable/Pipe Laying

Coastal Advance/Accretion

Coastal Erosion/Retreat

Dredging

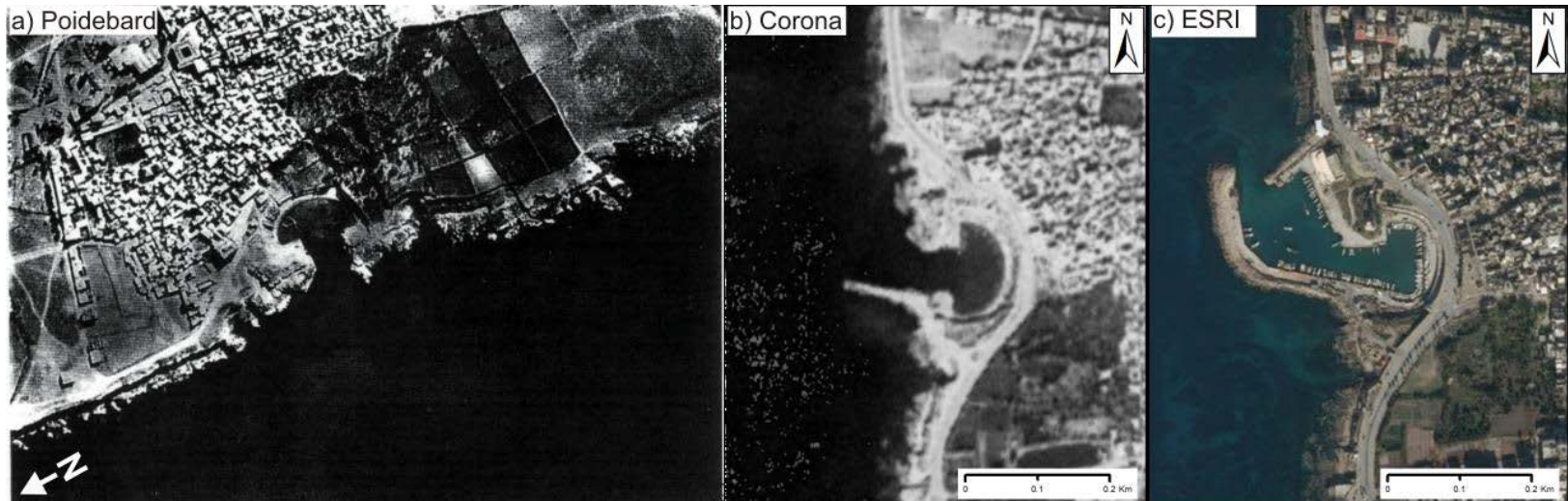
Land Reclamation

Mooring/Anchoring

Salvage

Trawling

Jableh harbour (Syria) 1939 (a) to 1968 (b) and 2015 (c)





# Assessment Type & Method

## ➤ Environmental assessment

- Topography
- Elevation/depth
- Marine environment
  - Fetch
  - Wave climate
  - Tidal energy
- Geology
  - Bedrock geology
  - Surficial geology
  - Depositional process

### Fetch

Protected (<10km)
Moderately exposed (10-110km)
Exposed (>100km)

### Surficial geology

Coarse sediment
Mixed sediment
Mud (Clay and Silt)
Organic sediment/deposit
Palaeontological remains (macro)
Palaeontological remains (micro)
Rock and boulders
Sand
Archaeological Deposit/Artefact Bearing Deposit

### Tidal energy

Microtidal (<2m)
Mesotidal (2-4m)
Macrotidal (>4m)

### Bedrock geology

Igneous (undefined)
Basalt
Conglomerate
Granite
Limestone/Chalk/Dolomite
Marble
Metamorphic (undefined)
Mudstone/Siltstone
Organic sedimentary rock
Sandstone
Sedimentary (undefined)
Slate
Tuff

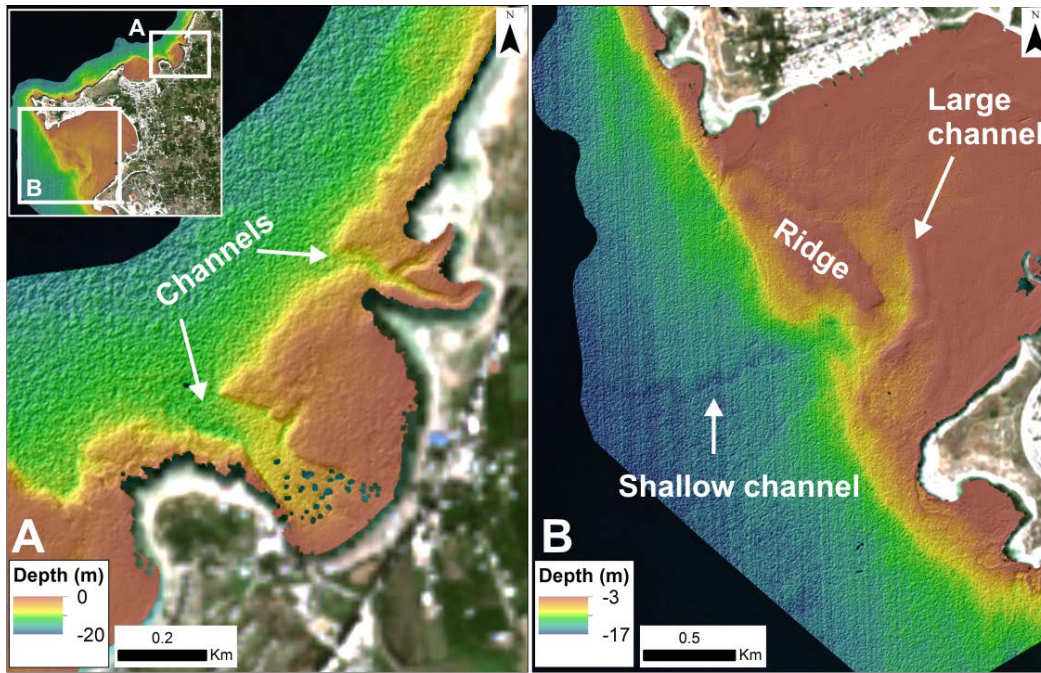


# Assessment Type & Method

## ➤ Geoarchaeology Resource Model

- Sea-level change
- Coastal erosion/accretion
- Palaeo-coastlines
- Maritime resources  
(mangroves, landing places, natural harbours)

Possible palaeo-channels  
(Ras Ibn Hani, Syria)





# Assessment Type & Method

Raised beaches and shorelines; marine terraces



## ➤ Geoarchaeology Resource Model

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Jbeil, Lebanon: beach deposit located above modern beach by several metres



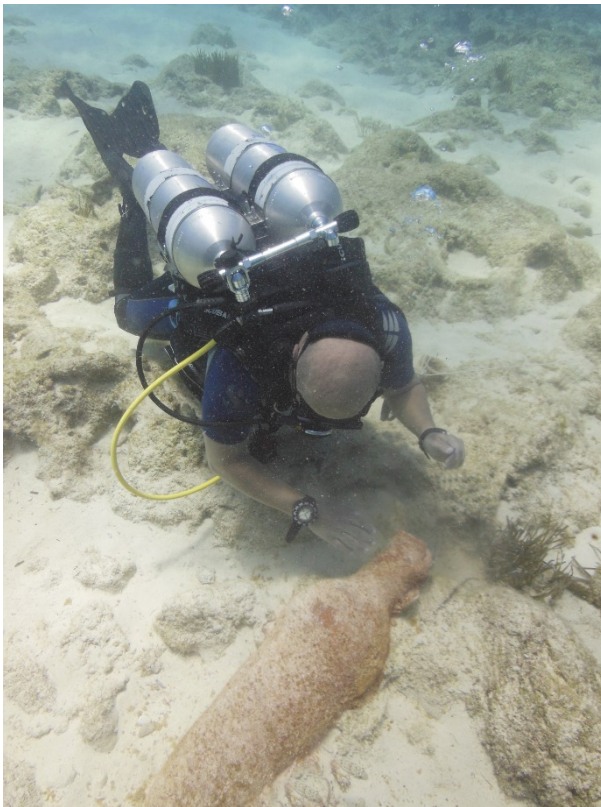


## Aqaba

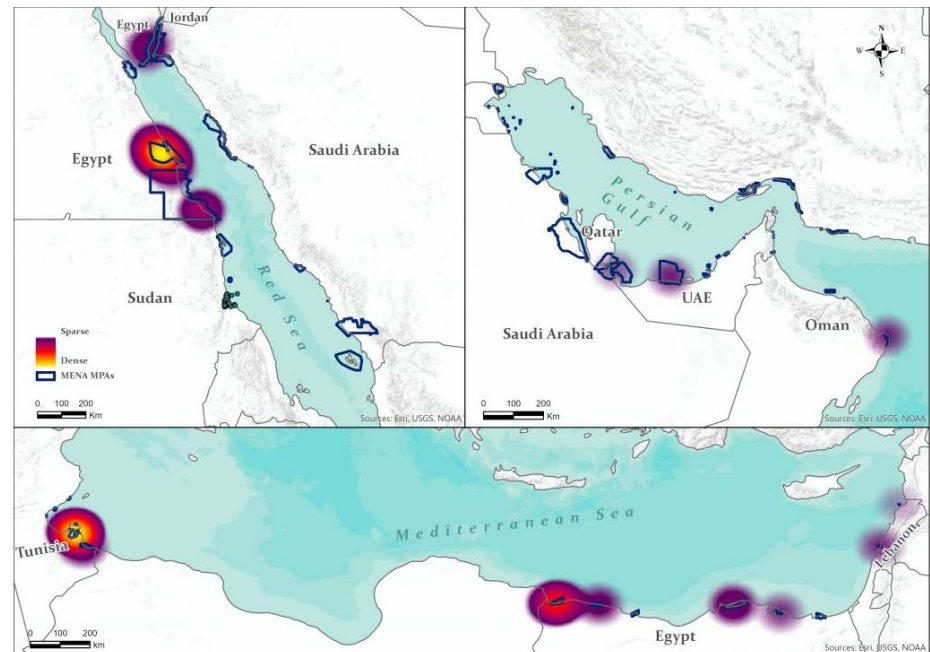
Maritime cultural heritage in a Red Sea port town

Maritime Endangered Archaeology (MarEA) Project | July 23, 2020

## Engagement with local partners



## Survey and fieldwork



## Management and protection measures





# Coverage

We cover the Middle East and North Africa (MENA) region

[EXPLORE MORE](#)



Find Address/Coordinates (Lat/Long)



# Further resources

Contact: [marea@soton.ac.uk](mailto:marea@soton.ac.uk)

MarEA website: <https://marea.soton.ac.uk/>

MarEA Twitter: @MarEA\_project

**Example case study (Aqaba, Jordan):**

<https://storymaps.arcgis.com/stories/a4add4d1482149d787fa5b7c8d9b2de2>

## Maritime Archaeology resources

- **بتوع آثار** YouTube playlist by the Centre for Maritime and Underwater Archaeology Alexandria  
<https://www.youtube.com/channel/UCxRa8R5mdvO0fhwm43ZbHbA/videos>
- **كتاب الآثار البحرية والتراث الثقافي الغارق (عربي)** Maritime Archaeology and Underwater Cultural Heritage book <https://honorfrostfoundation.org/wp-content/uploads/2020/10/Arabic-Handbook.pdf> <https://honorfrostfoundation.org/publications/other-publication-projects/>
- Honor Frost Foundation website: <https://honorfrostfoundation.org/>
- UNESCO- underwater cultural heritage:  
<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/protection/underwater-archaeology/>
- Maritime Archaeology timeline: [https://www.southampton.ac.uk/maritime-arch-timeline/index.html#vars!date=1524-07-28\\_00:47:21!](https://www.southampton.ac.uk/maritime-arch-timeline/index.html#vars!date=1524-07-28_00:47:21!)