



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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Dr Ash Smith



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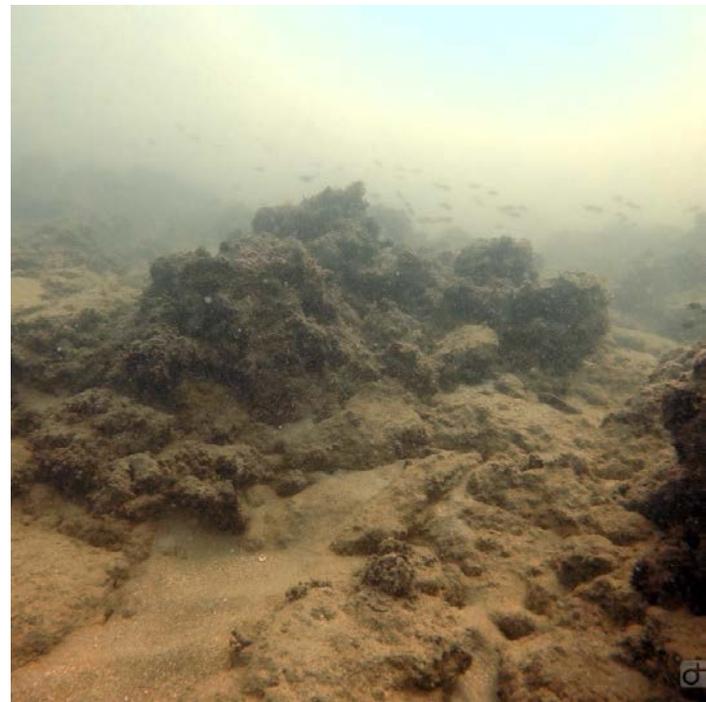
Dr Harmen Huigens

Partners

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

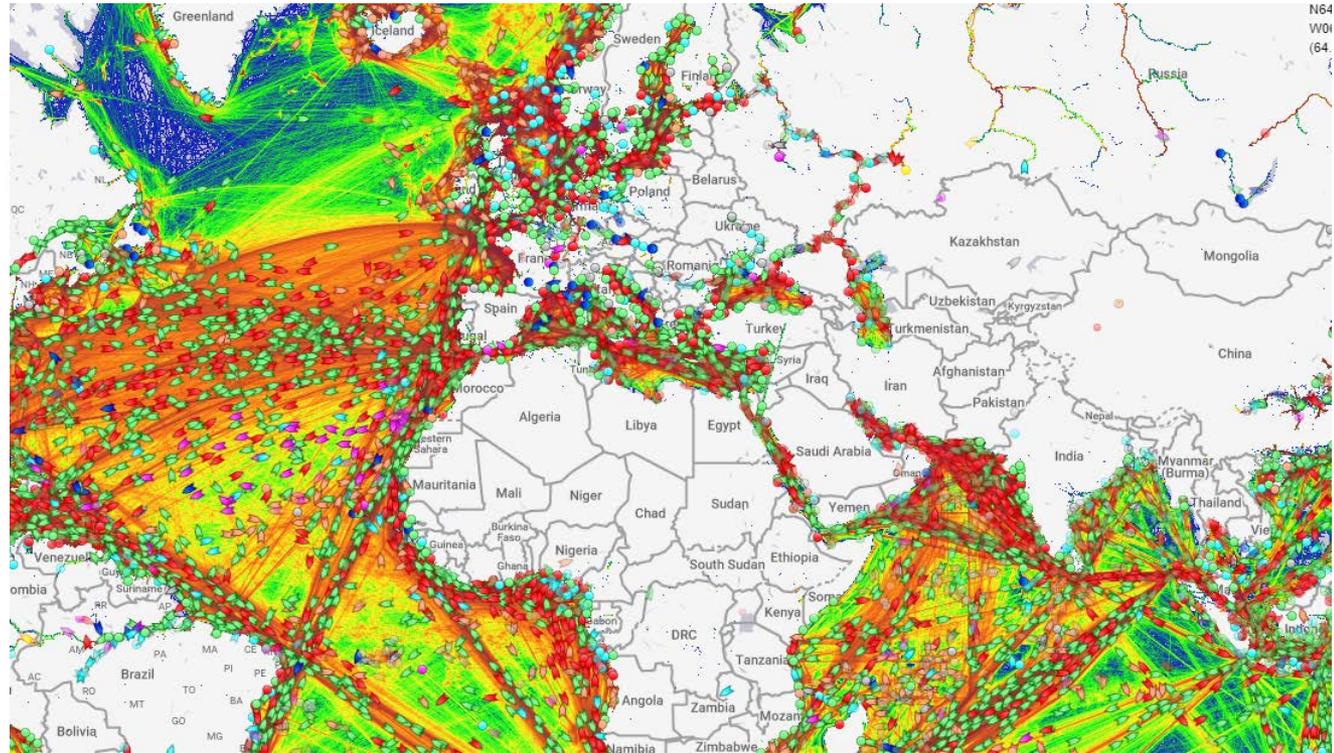


Maritime/coastal
environments
and significance



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)



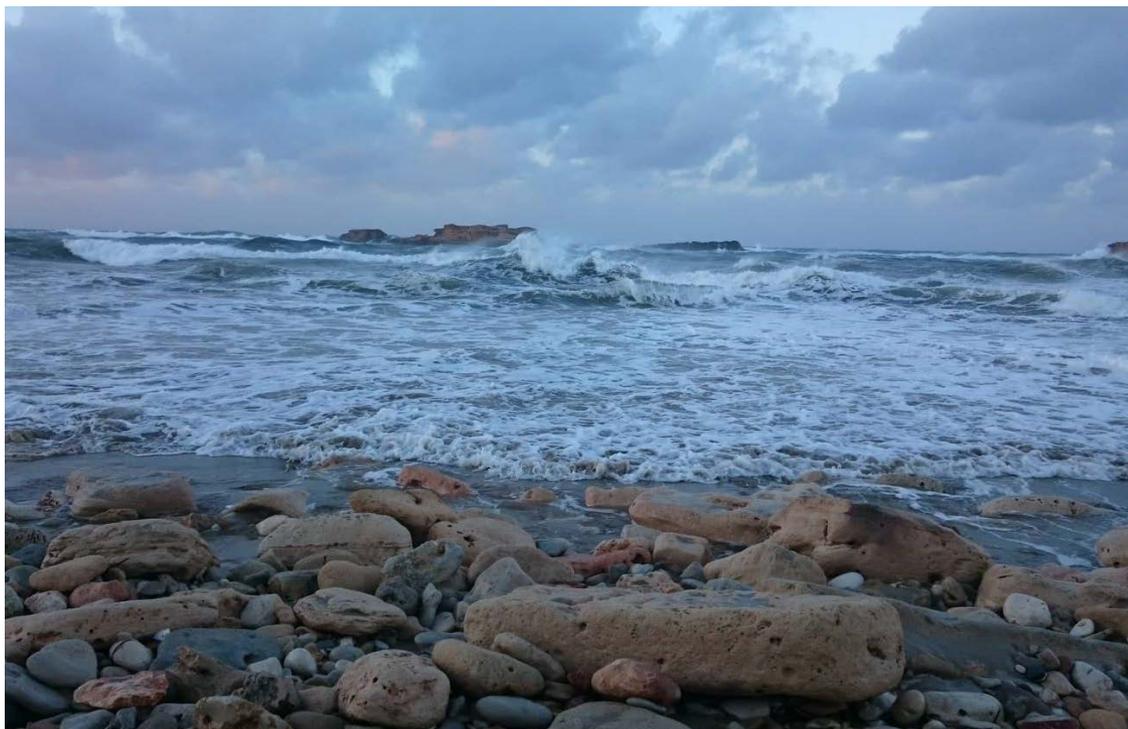
Marinetraffic.com 2019

The maritime & coastal environment

- Maritime resources (both terrestrial and aquatic)
 - Fish / shellfish
 - Salt
 - Coastal flora/fauna

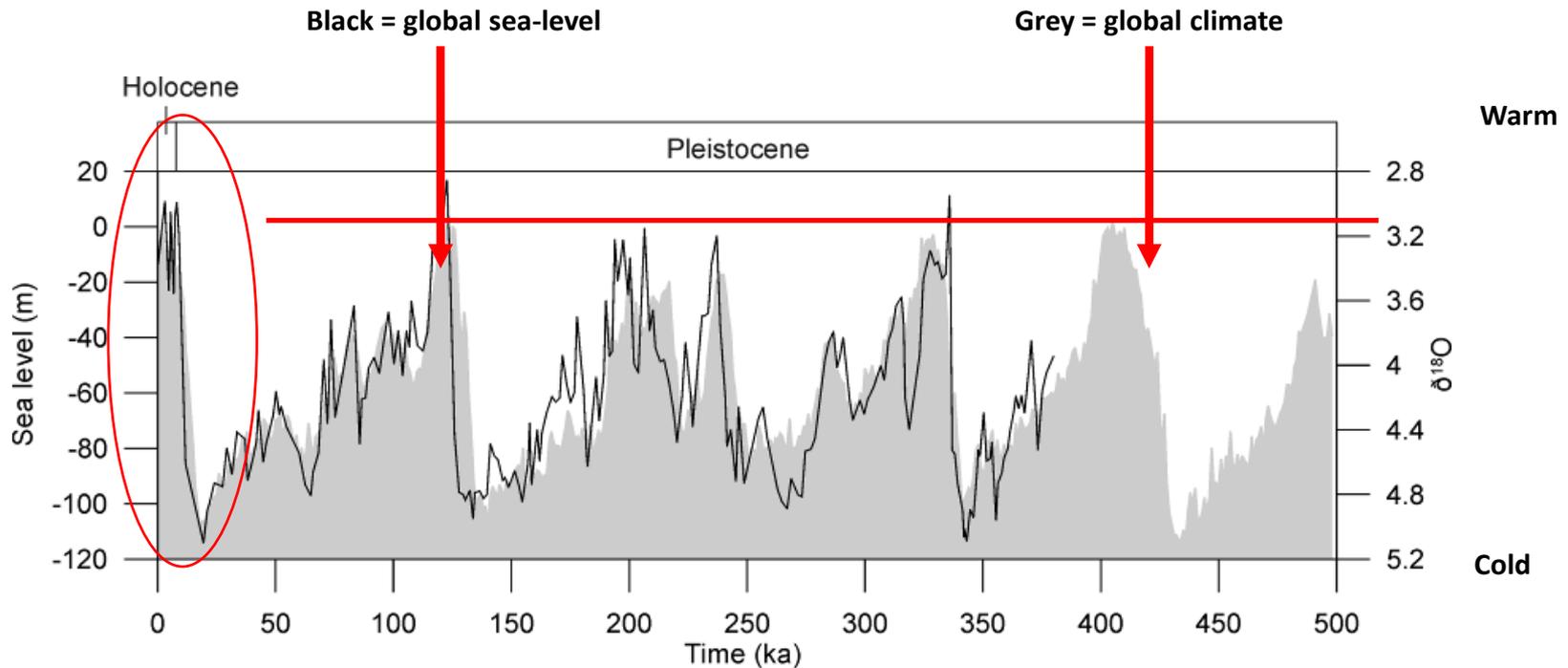
- Accessibility, mobility, connectivity
 - Movement across the coast
 - Movement across the sea
 - With the hinterland
 - With other coastal locales

- Maritime traditions and practices
 - Boat-building
 - Navigation
 - Technology
 - infrastructure



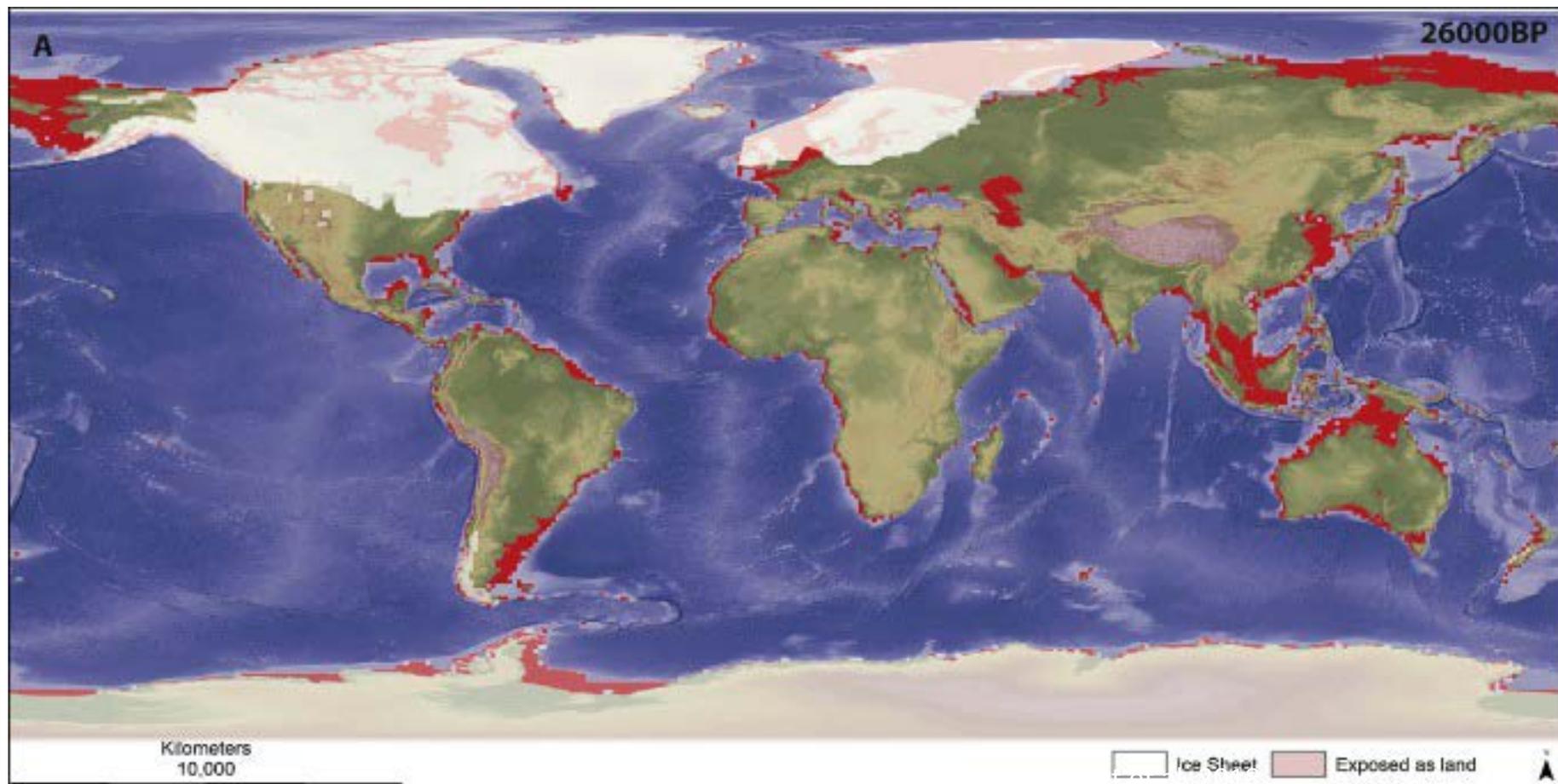
Sea-level changes over 500,000 years

- 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

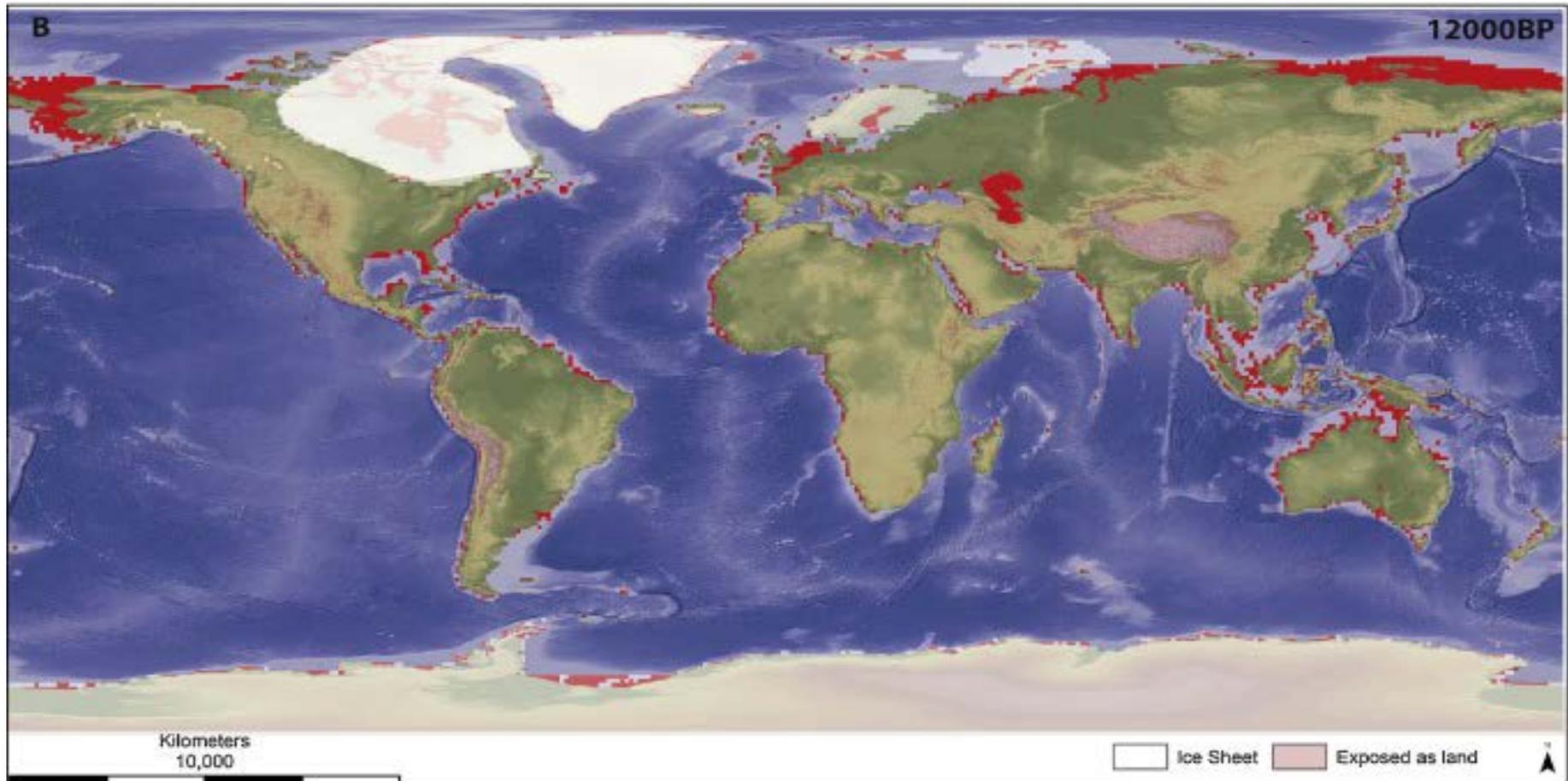


¹⁸O data from Lisiecki & Raymo (2005)

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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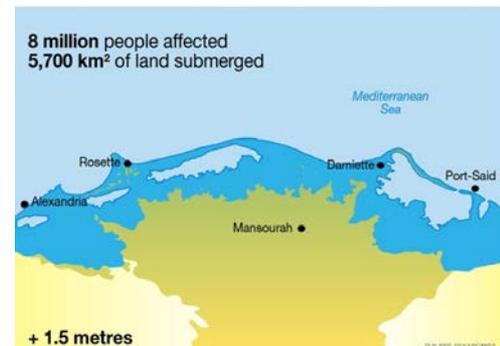
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Coastal and maritime zone under threat

- 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



- 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

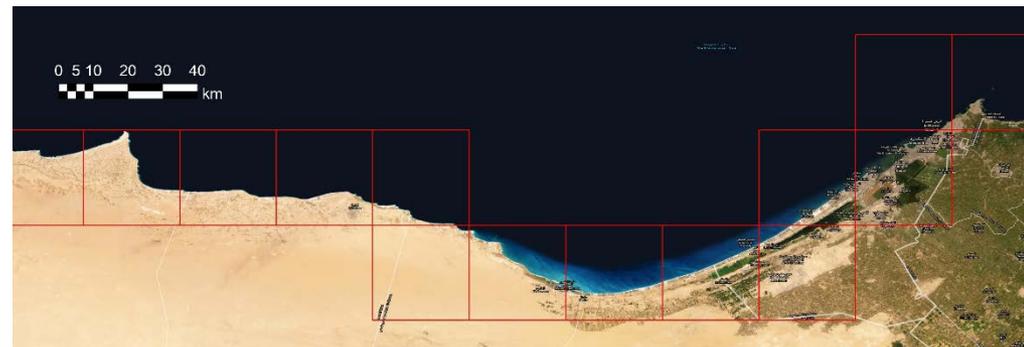
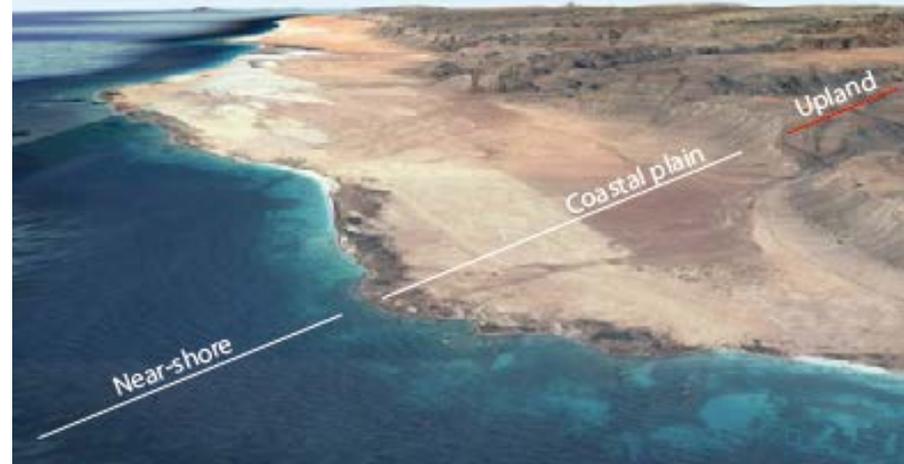
- Coastal zones
- Largely following 27 x 27 km grid squares (depending on local geography) equivalent to 1.5 million sq. km
- Up to 20km inland

➤ Priorities

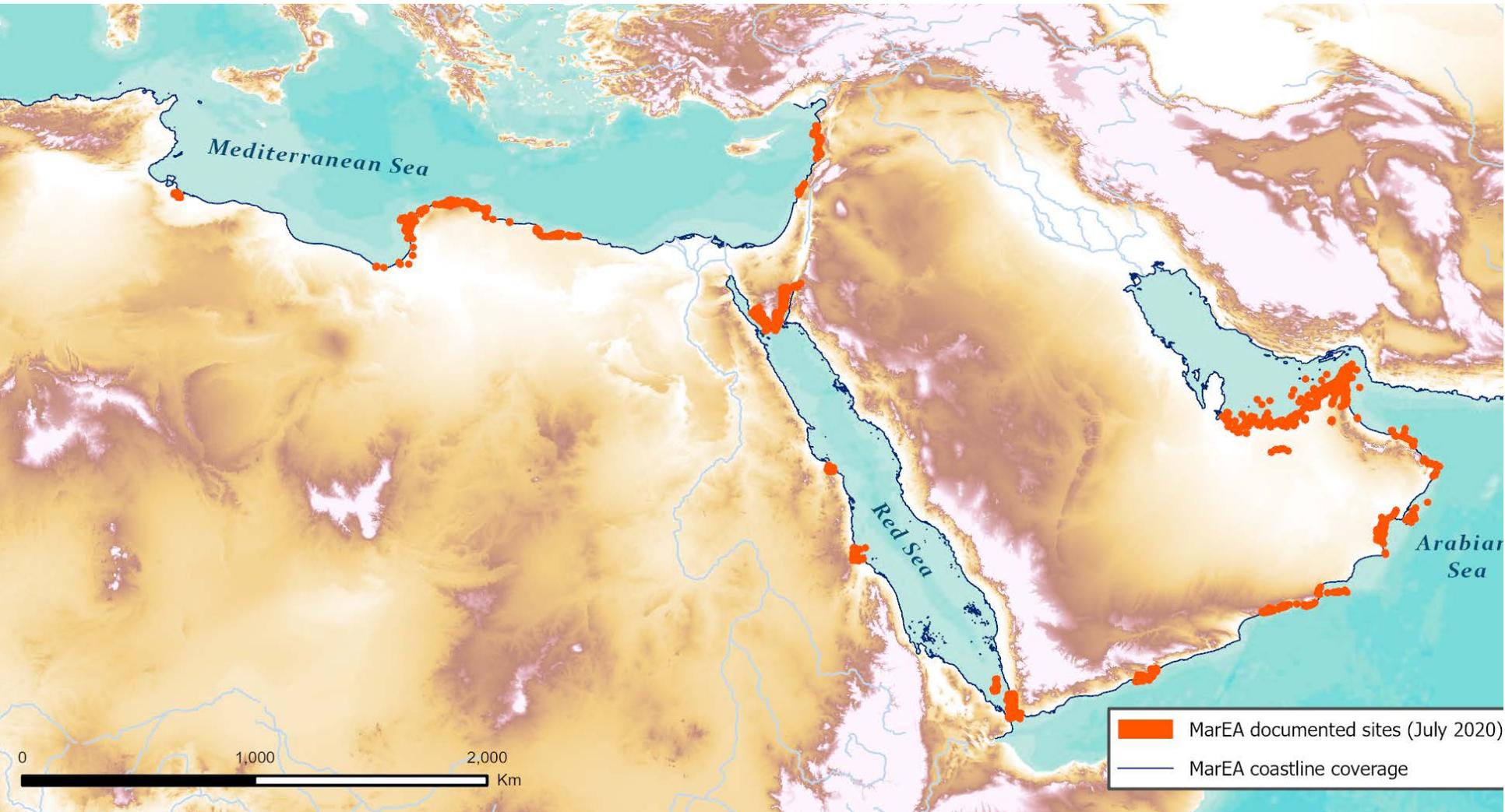
- Areas of high density of archaeological evidence
- Areas subjected to imminent threats

➤ Sources

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



MarEA coverage



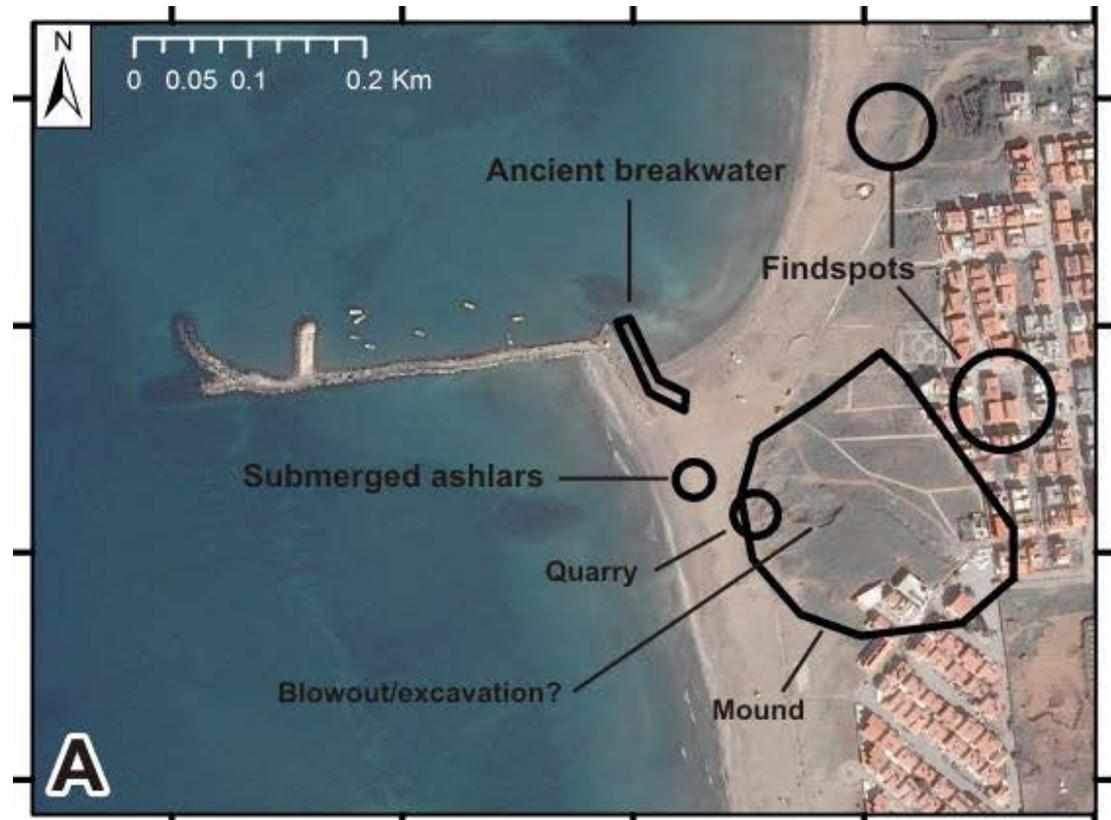
Assessment Type & Method

➤ 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

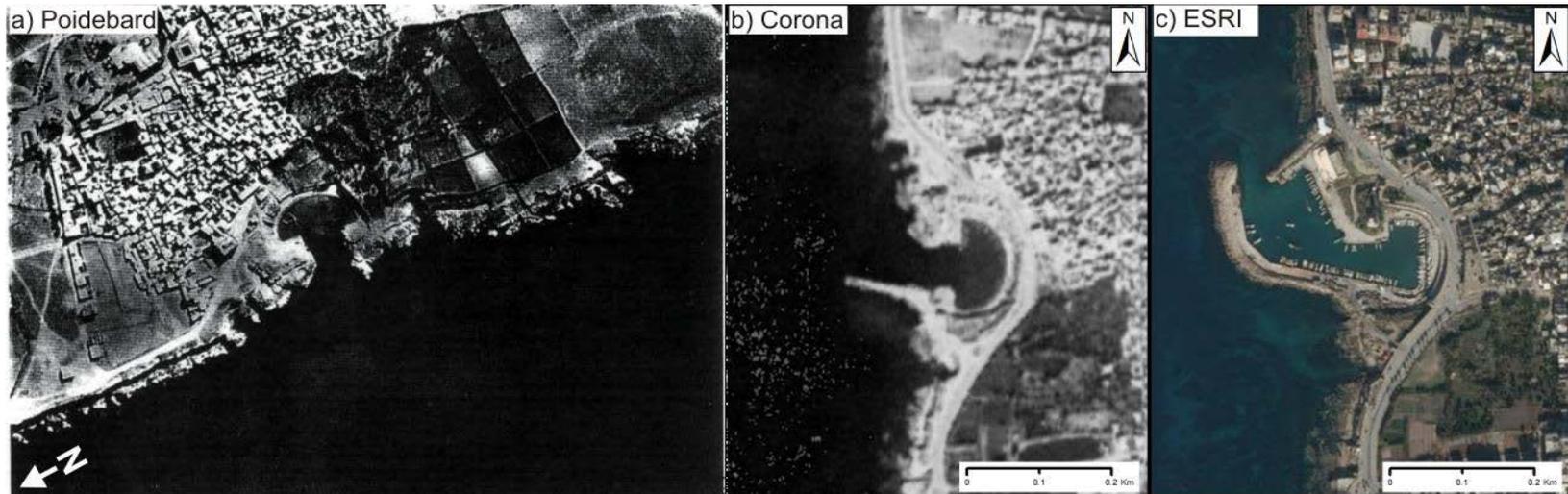
➤ Condition assessment

- 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

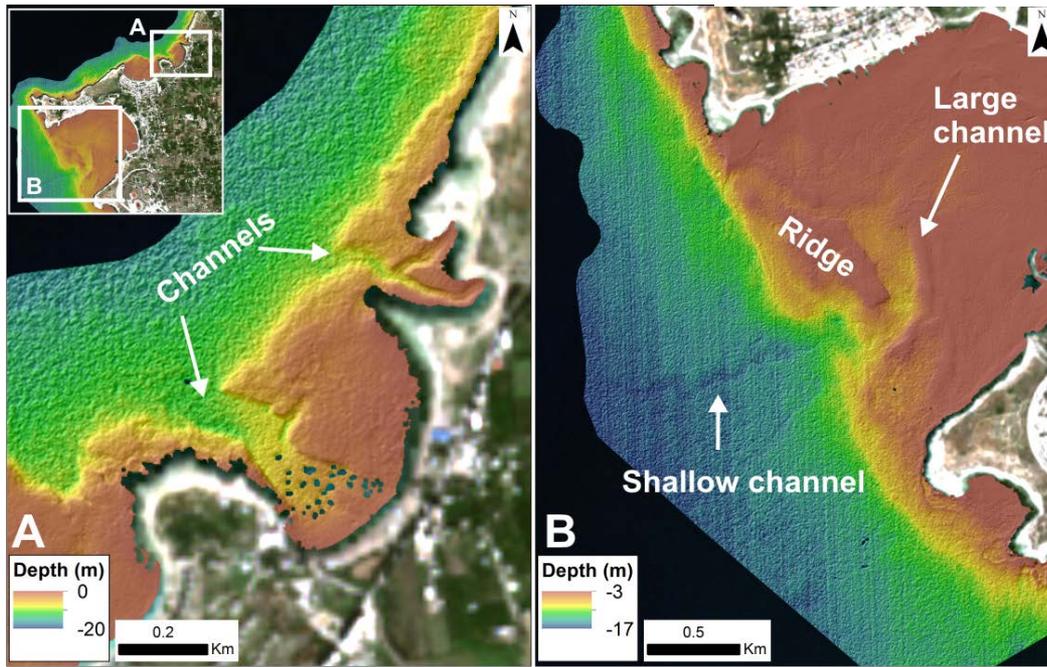


Assessment Type & Method

➤ 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**

- Sea-level change
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Jbeil, Lebanon: beach deposit located above modern beach by several metres

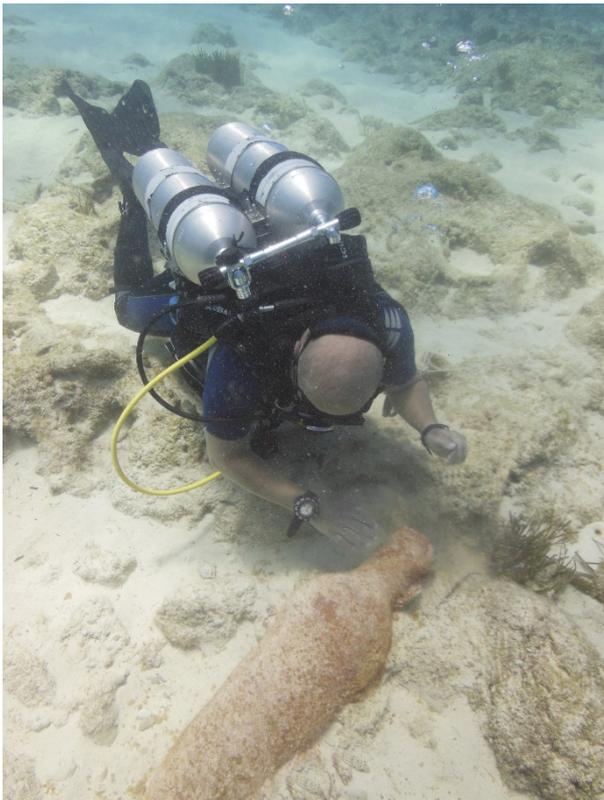


Aqaba

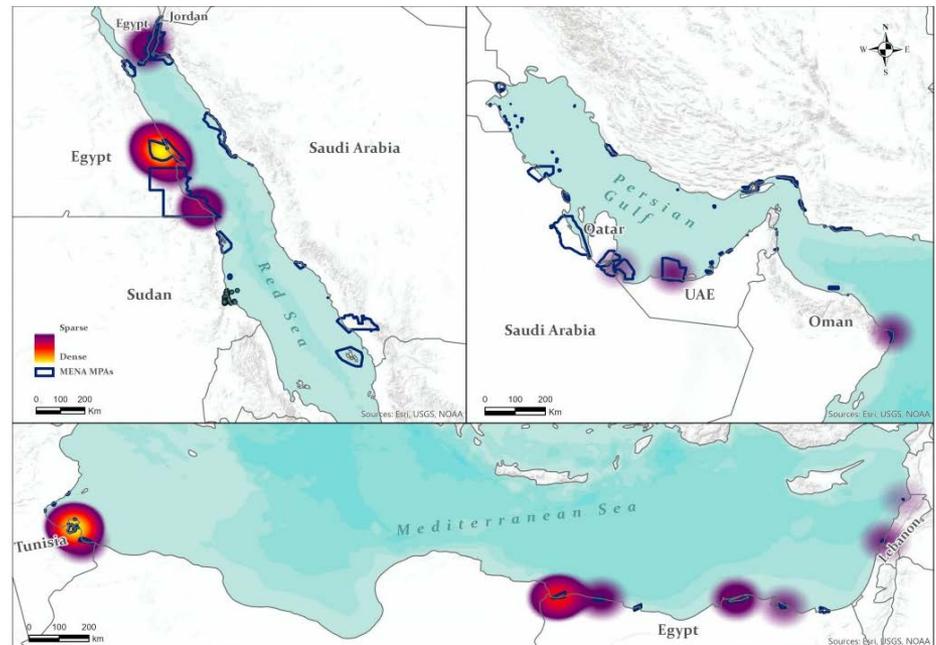
Maritime cultural heritage in a Red Sea port town

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

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Endangered Archaeology in the Middle East & North Africa



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Further resources

Contact: 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!