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**

**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)
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
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

Sea-level changes over 500,000 years

- Gray = global climate
- Black = global sea-level

$^{18}$O data from Lisiecki & Raymo (2005)
Theme 1: Submerged Landscapes
- Palaeo-environmental Reconstruction
- Submerged Settlement

Theme 2: Coastal Archaeology
- Coastal Settlement
- Ports, harbours and landing places
- Fishing installations
- Coastal Industry

Theme 3: Nautical Past
- Shipwrecks
- Traditional boats
- Nautical technology
- Marine artefacts

Theme 4: Intangible Maritime Traditions
- Folklore
- Traditional practices
- Songs
- Belief systems
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

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pier/Jetty/Breakwater/Mole</td>
<td>Steamship</td>
</tr>
<tr>
<td>Pontoon/Mooring</td>
<td>Submarine</td>
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<tr>
<td>Quay/Wharf</td>
<td>Warship</td>
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<tr>
<td>Ship/Wreck</td>
<td>Shipyard/Boat Construction</td>
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<tr>
<td>Canoe</td>
<td>Anchorage</td>
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<tr>
<td>Cargo Vessel</td>
<td>Ballast</td>
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<tr>
<td>Dhow</td>
<td>Fish Pond</td>
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<tr>
<td>Galley</td>
<td>Fish Trap/Weir</td>
</tr>
<tr>
<td>Logboat</td>
<td>Landing Place</td>
</tr>
<tr>
<td>Sailing Vessel</td>
<td>Slipway</td>
</tr>
</tbody>
</table>
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

- 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
  - Slate
  - Tuff

- 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
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
Engagement with local partners

Survey and fieldwork

Management and protection measures
Coverage

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

- 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/publications/other-publication-projects/

- Honor Frost Foundation website: https://honorfrostfoundation.org/

- UNESCO- underwater cultural heritage:

- Maritime Archaeology timeline: https://www.southampton.ac.uk/maritime-arch-timeline/index.html#vars!date=1524-07-28_00:47:21