### Unearthing Archaeological Evidence of Navigation from the South Caspian Coasts



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The oldest evidence of human occupation in south Caspian coast dating back to the Epipalaeolithic in a series of caves in Mazandaran Province, southeast of the Caspian Sea. Mc Burney (1968) postulated a link between the diet of the cave inhabitants and the Caspian Sea level changes.





Background

The CS level have changed widely since the Last Glacial Maximum from +50 msl high water levels during the Late Pleistocene (Khvalynian deglaciation) to -113 msl (?) during Mangyshlak lowstand at the beginning of the Holocene.





The post LGM Caspian sea level rise was catastrophic for the dwelling populations but it could also lead to the development of a producing economy and the appearance of ancient civilizations (Chepalyga, 2007). The earliest ships appeared in the Caspian region immediately after the flood, which may be Interpreted as a consequence of this event.

#### **Petroglyphs of Gobustan**

The oldest seagoing boat images on the Caspian coast, south of the Kura River Delta.





#### The Caspian Sea is well known in historical texts



Sailing from Mazandaran to Derbent needs a week, if the wind is in right direction but sailing from Abeskoun to Khazar's territory needs more time, as Abeskoun lies at the corner of the sea (Ibn Hawqal, 988 AD).







Historical and geological evidence of the last millennium Caspian sea level changes were plotted and different scenarios for the position of the ancient harbors were prepared.



Years (AD)



Based on geological study and historical documents, the last millennium Caspian sea level changes was reconstructed.





#### Archaeological reports

Russian Fort, Ashouradeh, Southeast CS





#### Historical maps and satellite images





A comprehensive study on the Persian's maritime activities was conducted by the Iranian scholars and 23 potential sites were introduced for geoarchaeological investigations.





An unshielded Mala Geoscience Ground Penetrating Radar system was implemented to detect any buried structures in potential areas. A 200 MHz antenna was used during this investigation.





According to the geophysical and archaeological works, evident documents of ancient maritime activities were found in 7 sites. The evidence are related to Safavid (1501 to 1722 AD), Afshari (18<sup>th</sup> century) and Pahlavi (20<sup>th</sup> century) dynasties.





Geophysical results revealed different types of buried archaeological structures from ship and boat remains to buried architectural structures.











# Main All archaeological findings belong to the last 4 centuries Points All of the findings are on shore

Nothing was found inland

No access to offshore



The fail in detecting inland evidence of navigation and the young age of the findings onshore could be related **highly dynamic** nature of the coastline.



#### **High Sedimentation Rate**







## **Conclusion** More precise reconstruction of the past Caspian sea level changes is needed to find older evidence of navigation.

Paleoenvironmental studies should be considered in the marine geoarchaeological investigations.

More penetration depth using different geophysical methods is needed to detect heavily buried structures in south Caspian coasts.

Many evidence are in the sea bottom. Underwater studies are needed for unearthing them.

The rich historical documents provide opportunities to find clues of the past navigation routs and ancient ports.