

The monumental submerged Punic harbour of Malfatano and associated Piscinni quarries: sea level changes and geoarchaeological approach

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The Ria of Malfatano is the site of one of the most important maritime structures from the Punic-Roman times in the Mediterranean, whereby the bay's two opposing monumental structures have been preserved between - 7 and - 2 meters due to the rising sea levels, this work, through stratigraphic, palaeontological and geochronological data, aims to trace the bay of Capo Malfatano evolution in relation to the sea level rise during the last 4 ky. Piscinni's quarries because of the proximity of coastline to the basement didn't have access from land, thus it is likely that the placement of the material was done by means of floats, as for the loading of materials from the quarry. However, we may assign the date of the structure to the Carthaginian age. Considering the military strategy adopted by Carthage from their second treatise with Rome in the middle of IV century B.C., it is eminently possible to envisage a military function of this port basin (V-III century B.C.; 2400±100 ky BP). Piscinni quarries provided an extremely selective quality of construction material, sandstones and micro-conglomerates with strong carbonatic cementation, a lithotype that can easily and quickly be worked and which has good geo-mechanical. Using a high resolution terrain model has been possible to estimate the total extracted volume of about 120,000 m³, for coastal quarries and about 30.000 m³ for submerged quarries area; only a small proportion, estimated at 25,000 m³ was used for the realization of the crowning work of the breakwater at the entrance of Capo Malfatano bay. There is also an extensive use of sandstone in the Bithia settlement, where, from the Phoenician tombs in the necropolis to the buildings found in the acropolis area in Torre di Chia to the Punic sanctuary of Bes.

