

### ***Geomorphological features of the marine area of Sinuessa in Campania, southern Italy***

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Submarine surveys carried out since the 90s along the coastland of Sinuessa, facing the town of Sessa Aurunca, allowed to draw up a geomorphological map with archaeological findings. Along the sea bottom, about 650 m off and -7 m depth, a *Campanian Ignimbrite* bedrock was detected: dated 39 kyr BP, its position is incompatible with the current sea level. Towards the northern edge of the shoal, a depressed area 3 m deep, with 24 cubic elements 3x3 m wide and in concrete (*opus cementicium*) was surveyed. At the top of the blocks were observed semicircular holes, used for lifting, transporting and juxtaposition operations: these artifacts (*pilae*) are typical of Roman maritime structures, as described by Vitruvius in *De Architectura* (15 century BC). *Pilae* were widespread along the Phlegrean coast for jetties and docks, as in *Baiae* and *Portus Julius* settlements. Beachrocks and accessory morphologies at the same depth as the leveled bedrock suggest that this was emerging and was attended by man in Roman times, even for activities related to port facilities. The shoal is markedly dissected by submerged palaeo-channels, more or less deep, in alignment of current watercourses on the mainland. These palaeo-channels were modeled in subaerial environment during the Würm glaciation, following the tuff deposition: at that time the Mediterranean sea level lowered down to -120 m. The northernmost channel, sinuous and next to the *pilae*, is 3-4 m deep and from 60 to 350 m wide: this probably allowed transit and manoeuvring of Roman ships. The recovery of a large stump of lead anchor, a hundred of Roman amphorae and their fragments confirm this finding. Probably the sinuous physiography favoured the choice of this site for the docking of Sinuessa, as sheltered from storm surges: also Strabo (Geographikon v.3.6) relates the term Sinuessa to a bay (*sinus*).

