

Vertical ground displacement since Graeco-Roman Period desumed from new geoarchaeological and morphosedimentary data in the site of Sinuessa in Campania, southern Italy

Carlo DONADIO, Micla PENNETTA

Department of Earth Sciences, Environment and Resources, University of Naples Federico II, Napoli, ITALY

Since the early 1980s, along the littoral of Sinuessa, facing the towns of Sessa Aurunca and Mondragone, geoarchaeological and morphosedimentary surveys have been carried out. On the seabed, from -7 m depth seaward, sedimentary and morphological elements related to coastal and proximal marine environments have been detected. Among these, beach-rocks and strips of marine terraces modelled on the Campanian Ignimbrite bedrock, with accessory forms of marine (microcliffs, palaeo-sea notches, cavities, pebbly palaeo-beaches), tidal (rock pools) and continental (gullies) environments, have been observed. These aspects, related to mainland and submarine geoarchaeological elements of this coastland, have allowed to assess the magnitude of sea-level changes due to tectonics, assuming that the contribution of sea level fluctuation linked to glacio-hydro isostatic processes is about +1 m. Considering such a change in sea level over the last 1,700 years, there was a significant ground lowering of about -7 m. The detection of submerged Roman artefacts, resting on the tufa shoal, later subsiding, allows us to place the shoreline of that time about 1 km off the current one. Two paleo-shorelines have been identified: an older, pre-Roman times, about -11 m deep, and a recent one about -7 m deep. The oldest palaeo-shoreline, purged from variations related to the above described processes, was located at -3 m depth and 1300 m off the current coast, therefore it could be ascribed to the Greco-Roman Period. The recent paleo-shoreline could be dated between 1,700 years ago and the present: it would be similar to the current one, unless the glacio-hydro-isostatic compensation of about 1 m. The rates of ground lowering results approximately 6 mm/yr in the Greek-Roman period and 4.5 mm/yr from the Roman times to date, summarizing >5 mm/yr during the last 2300 years: therefore, they are due to tectonics besides to subsidence.

