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