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Mapping beachrocks for palaeoenvironmental and geoarchaeological reconstruction - A case study from Halkidiki, N. Greece

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Beachrocks have been used in literature in order to gain information about sea level changes, palaeoclimatic and palaeoenvironmental reconstruction and carbonate precipitation processes in coastal areas. Precise mapping of beachrocks has been achieved by the use of electrical resistivity tomography method, appropriately modified for that specific application. In this study, mapping of beachrocks was used in combination with geomorphological and sedimentological data in the coast of Poseidi, west Halkidiki, N. Greece, aiming to reconstruct the evolution stages of the coastal zone. Geochemical analyses and stable isotopes were also used in order to identify the hydrological conditions which prevailed during the precipitation of the carbonate cement of these formations. The information gained from these analyses revealed the environmental and water equilibrium regime in the coastal zone, providing answers relatively to the aquifer transitional trends. Archaeological data were also used from archives in order to imprint the human occupation of the area and the development of settlements and ceremonial places. The importance of the specific area is established by the presence of the ancient temple of Neptune just a few tens of meters from the coastline. In this study, there is also an effort to look into the possibility of the use of beachrock blocks as structural material in quite nearby structures - Neptune Temple-. Finally, the coastal evolution during the last 10 000 years was correlated with human presence and activity in Poseidi area. Special attention was given to the impacts of the beach equilibrium alterations - sediments, coastline deposition, wave regime, beach transition from sandy to rocky etc - as well as of the environmental and climatic changes on the conditions of human occupation.