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Late Holocene paleoenvironmental and paleoclimatic evolution at Elaiussa Sebaste archeological area (South-Eastern Turkey): preliminary results.

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Geological disciplines are increasingly applied to archaeological research. Their potentialities are able to cover numerous fields of research, since they can become very interesting tools to define the ancient environments, the origin of the human settlements and the natural and anthropic processes which occurred through the evolution of the territory.
Elaiussa Sebaste (Mersin region, South-Eastern coast of the Turkey), which was an important coastal town from the II century BC to VII century AD, may represent a noteworthy field of application of geological disciplines.
This site was one of the main trading harbours of the Mediterranean (from the Augustan to the Byzantine era) growing in the Augustan period and maintaining its prestige until the late Empire and the Byzantine era. Actually it was the intersection of the most important shipping and land routes among Syria, Egypt and the Anatolian peninsula. The evolution of the coastal environment around this town has been continuously modified by men along its history. The most evident modification occurred North and South the promontory of Elaiussa-Sebaste bay, i.e. the construction of two harbours, which have been subsequently buried by not well defined events.
The definition of the geological processes controlling the evolution of the coastal area during the last 3000 years, should become essential to reconstruct the succession of the palaeoenvironments of Elaiussa Sebaste, including the decline of the harbours. With regard to this topic, the geomorphologic analysis reveals the complex interactions among tectonics, erosion and sedimentation in this coastal area in both, emerged and in ancient times submerged settings facing the archaeological site.
During the summer 2012, a geological survey allowed us to drill nine boreholes along the land-to-sea transects in both harbours. Preliminary observations indicate the stratigraphic evolution from restricted to open marine coastal environments. Sedimentology, palaeontology, palynology and sediment geochemistry are applied to study the stratigraphical sequences of boreholes and archaeological excavations. We plan obtain an evolutionary model which might consist of natural (pre-harbour) deposits, covered by low hydrodynamic sediments, which were deposited in the harbour "container", and finally overlaid by other ones responsible of the harbours burial. Radiocarbon dating will precisely define the chronology of these events. We emphasize the role of the palynological analyses which will be addressed to the reconstruction of the evolution of the vegetation, identifying its climatic/environmental changes through the time, also in relation with the human activities in the site.