

Abstract

Estuary of the Bensafrim River. Geo-archaeoseismological approach

Keywords: Paleoenvironment; Estuary; Bensafrim river; Archaeoseismology; Seism.

This thesis shows the evolution of the estuary of the Bensafrim river, in the city of Lagos, for the last 3.000 years, in a multidisciplinary approach. Our first goal was to study the paleoenvironmental evidence preserved in the estuary's sediments, and therefore a research plan was developed based mainly on two sciences: Geomorphology and Archaeoseismology.

The first one allowed not only the description of the Bensafrim river's basin, but also a regional geological picture that contextualizes the estuary. The second one established an almost clear conclusion that there was a strong seism on that location in the late republic Roman Era.

In order to reach this goal, a manual coring was made in the right riverside of the estuary, so that it could help understand the processes of sedimentary dynamics and of the sanding of the estuary itself and, secondly, to see if there were any tsunami evidence in the core.

The coring did not bring any factual evidence on the marine transgression. Yet, we concluded that the Bensafrim estuary was open into the direct sea until 2800 cal BP, and perhaps began by then its closing process, by the interposition of sandbanks in the river mouth.

Several essential tools were used, such as the Geographic Information Systems for the construction, cartographic analysis and digital modeling of the terrain, as well as the radiocarbon to complete our sedimentary basin analysis.

Furthermore, other research projects will perhaps show if the Bensafrim estuary was, or not, once filled with marine sediments brought by a tsunami. What remains almost certain is that the 63 a.C. earthquake (*circa* 2000 BP) happened in this part of the Algarve.