Abstract title

ALGARVE: A STUDY CASE FOR GLOBAL VS REGIONAL CLIMATIC CHANGES IN MID LATITUDE ESTUARIES DURING THE HOLOCENE

Authors

VEIGA-PIRES CRISTINA CARVALHO [1], MESTRE NÉLIA [1], MOURA DELMINDA [1], LUIS JOAQUIM [1], BOSKI TOMASZ [1]

presenter's e-mail: cvpires@ualg.pt

1 - CIMA - Universidade do Algarve

Keywords

estuarian sediment

spectrophotometry

geochemistry

holocene

Abstract

Located at the extreme southwestern end of the Iberian Peninsula, in the South of Portugal, the Algarve province is bordered to the north by the Alentejo province, to the east by the Guadiana River, and to the west and south by the Atlantic Ocean. Its coastal region can be divided into two different sectors: the eastern sector, which is mainly made of barrier island and lagoon system named the Ria Formosa, and the western sector mainly represented by clastic and carbonated cliffs. In each sector, we sampled long and short sedimentary cores (ca. 30m and 3m, respectively) in two different estuaries. Therefore, the different sedimentary records obtained from the four estuaries should permit to identify global vs. west-eastern regional climatic changes through the observation of several proxies. Two of these proxies are sediment color and magnetic susceptibility, which have been acquired every five centimeters along core depth, using the Colortron II spectrophotometer and SM-20 magneto-susceptometer, respectively. Sediment surfaces of short cores were also digitized using the Mustek 1200 A3 PRO Scanner. Furthermore, short cores have been sampled every five centimeters along depth in order to analyze the sediment for its major and minor elements content, its organic carbon content, and its granulometry and mineralogy. Some shell fragments have also been sampled and sent for radiocarbon radiometry or AMS dating, allowing therefore constructing some absolute chronologies for the several cores. Some relative chronologies based on digital color profiles are also being used in order to correlate sedimentary sequences between cores. All the cores are mainly composed of clay, with the existence of soil horizons at the top of the cores and frequent sand layers towards their base. Several element profiles along depths are compared, namely those regarding Sr, Ca, F, Ba, Al and Ti, as well as their ratios. First results indicate that geochemical and color data allow to identify similar sequences from west to east probably related to major climate episodes. Although, pronounced differences in mineralogy and accumulation rates from on site to another are probably due to differences, respectively, in the geochemistry of the drainage basin substratum and in the flow rate of the rivers, and therefore to local precipitation. We acknowledge FEDER and OE that financed this study through the Portuguese Foundation for Science and Technology (FCT) (POCTI/CTA/39733/2001).

ACCEPTED as Poster Presentation
in session: "G19.04 - Continental sequences and climatic changes"