



## **AN ATTEMPT TO DEVELOP SPECTROPHOTOMETRY AS A PROXY FOR SEDIMENTARY STUDIES IN ESTUARINE ENVIRONMENTS**

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In deep-sea sediment studies, reflectance has been used as a proxy for high vs. low productivity intervals for several years. This value of the white-black scale is obtained through the use of spectrophotometers when using the CIE Lab color system, which also gives values on green-red and blue-yellow scales. In estuarine/continental sediment studies, color data are still often based on Munsell Table which does not allow to obtain numeric and continuous data and which is biased by the observer's choice. The present study is therefore an attempt to develop solid state spectrophotometry as a proxy for sedimentary studies in estuarine environments. For this purpose, we used several long and short sedimentary cores (ca. 30 m and 3 m, respectively) from four different estuaries located in Algarve, South of Portugal: Guadiana, Gilão-Almargem, Arade and Alvor estuaries. Color and Magnetic susceptibility have been acquired every five centimeters along depth, using the Colortron II spectrophotometer and SM-20 magneto-susceptometer, respectively. Sediment surfaces of short cores were digitized using the Mustek 1200 A3 PRO Scanner. Cores have also been sampled every five centimeters along depth in order to analyze the sediment for its major and minor elements content, its organic carbon content, its granulometry and mineralogy. A good reproducibility was observed for both magneto-susceptometer and color instruments. Statistics revealed that CIE Lab color parameters and magnetic susceptibility are frequently very well correlated. The explanation of this partial correlation should come from the results of chemical and grain size analysis as they are under processing. Furthermore, ANOVAs based on CIE Lab color parameters from several short sedi-

mentary cores distant from fifty centimeters to two meters, demonstrate that there is no similarity between them, which means that they cannot be considered as twin cores for analytical purposes. Therefore, it seems that CIE Lab color parameters could become a good proxy in estuarine environments only if coupled with another information such as magnetic susceptibility or granulometry. In any case, all these data are easily obtained and they deliver quick and cheap profiles of sedimentary records, which can then be used as a proxy all together. We acknowledge FEDER and OE that financed this study through the POCTI program from the Portuguese Foundation for Science and Technology (FCT- POCTI/CTA/39733/2001).