



Multiproxy characterization of high energy layers in the inner continental shelf of Quarteira (Southern Portugal) – Preliminary results

Jacqueline Santos^{1*}, Teresa Drago^{1, 2}, Delminda Moura^{3, 4}, Vitor Magalhães^{1, 2}, Cristina Roque⁵, Pedro F Silva^{2, 6}, Ana Isabel Rodrigues¹, Pedro Terrinha^{1, 2}, Anxo Mena⁷, Guillermo Francés⁷, Ana Lopes^{1, 8}, Ana Alberto², Maria Ana Baptista^{2, 6}

¹ Instituto Português do Mar e da Atmosfera, Lisbon, Portugal, jacqueline.santos@ipma.pt

² Instituto Dom Luiz, University of Lisbon, Lisbon, Portugal.

³ Centro de Investigação Marinha e Ambiental, Faro, Portugal.

⁴ Universidade do Algarve, Faro, Portugal.

⁵ Estrutura de Missão para a Extensão da Plataforma Continental, Paço d'Arcos, Portugal.

⁶ Instituto Politécnico de Lisboa, Instituto Superior de Engenharia de Lisboa, Lisbon, Portugal.

⁷ Centro de Investigación Mariña da Universidade de Vigo, Spain.

⁸ Universidad of Salamanca, Salamanca, Spain.

Key words: *Algarve continental shelf sedimentary record, sand mineralogical composition, sediment sources.*

The occurrence of sedimentary layers indicating high energy events is common in the continental shelves sedimentary record. Their presence has been usually related either to tsunami waves or storm waves. In both cases, the identification of the transport mechanism requires a variety of proxies. This work presents the preliminary results of the analysis of a gravity core (MW-107) collected at ca. 57 m water depth in the inner continental shelf of Quarteira (Algarve) and aims to identify potential high energy events. Based on variations in grain-size, geochemical (XRF) and magnetic parameters, four layers were identified as potential high energy event related (L1-L4 from the top towards the bottom). A detailed study of mineralogical elements within these layers was also performed in order to identify the possible coastal sediment sources. For this purpose, the sand mineralogical composition of the core layers L1-L4, as well as the adjacent coastal zone samples, were analysed under a binocular microscope. The results showed the existence of two mineralogical elements - "iron-coated quartz" and "orange clay aggregates"- that were identified in some levels of the defined core layers and in coastal sites, especially from Forte Novo and Vale do Lobo cliffs. Overall, this study provides an additional information to the ASTARTE continental related material proxies. However, the transport mechanism (storm/tsunami waves) for these sediments is still a work in progress.

Acknowledgments. The authors wish to acknowledge MOWER (CTM 2012-39599-C03) project for the cores sampling and Vincent Kümmerer for the age model availability. Jacqueline Santos performed the work under a EMSO – PT project (PINFRA/22157/2016) fellowship (IPMA-2020-011-BI). This is an ASTARTE (Assessment, Strategy And Risk Reduction for Tsunamis in Europe, 603839, FP7) contribution.