Publications of the Institute of Geophysics, Polish Academy of Sciences
Geophysical Data Bases, Processing and Instrumentation
vol. 423 (C-112), 2018, pp. 141-142
DOI: 10.25171/InstGeoph_PAS_Publs-2018-072
16th Castle Meeting New Trends on Paleo, Rock and Environmental Magnetism, Chęciny, Poland, 2018

Quaternary Slope Instability and Mass Movement Deposits Characterization (Portimão Bank, SW Iberia)

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A b s t r a c t

Submarine slope failure and associated mass movements are common processes worldwide, some of them with high economic impact and societal consequences. This work represents an approach to the more suitable proxy's in order to identify and characterize mass movement deposits and the respective deformation. As case study was selected the Portimão Bank, a submarine E–W elongated structural high with prominent slide scars, located offshore southern Portugal in the Gulf of Cadiz. The used methodologies enabled a two different scales approach. On a broad scale, we look for the occurrence of mass movements deposits through accurate geomorphological mapping and seismic interpretation. At local and detailed scale we looked for the vertical characterization and development of MMDs along piston core (PC-07, 338 cm long retrieved in the centre of a slide scar) by means of sedimentological, environmental magnetism, paleomagnetism and magnetic fabric studies, complemented by bioturbation analysis and C^{14} dating. Our results show that: i) The Portimão bank is characterized by a series of important on-going landslides; ii) The sedimentary column retrieved from piston core is replicated; iii) Anisotropy of magnetic susceptibility is able to identify a segment with approximately 90 cm that accommodated the deformation associated with the replication of the sedimentary column. Important to emphasize that such deformation goes unnoticed by mesoscopic analysis; iv) in the deformed seg-

ment, the AMS lineation represents an intersection lineation that can not be interpreted as the preferred direction of grain alignment. This work was supported by project FCT UID/GEO/50019/2013 to Instituto Dom Luiz.

Keywords: mass movement deposits, Gulf of Cadiz, magnetic fabric, rock magnetism.