Geological, geophysical and geotechnical highlights of the southern part of the Al Idrissi strike-slip fault system from the Alboran sea

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Résumé

In the Alboran Sea, oblique convergence between the African and Eurasian plates led to the establishment of the Al Idrissi sinistral strike-slip fault system 1 Ma ago. Several moderate magnitude earthquakes ($Mw > 6$) have been recorded on different segments of this fault system. The objective of this study is to analyse the dynamics of this nascent plate boundary by studying the tectonic activity and physical properties of the sedimentary series along a key transect of the fault system. To do so, we used a panel of geological, geophysical and geotechnical tools, some of which were acquired during the ALBACORE oceanographic campaign (R/V Pourquoi Pas? 2021). The data analysed are derived from (i) sediment cores of the ALBACORE oceanographic cruise (with multi-sensor core logger - MSCL), (ii) heat flux measurements, (iii) penetration tests with the Ifremer Penfeld piezocone (CPTU) as well as (iv) multibeam bathymetry data and (v) seismic reflection/depth data. These data were acquired along a transect of the Bokkoya fault system, south of the Al Idrissi fault system. This fault system, characterized by transtensive deformation, shifts the Small Al Idrissi volcano with a left-lateral shear component. The seabed in the study area is influenced by the circulation of deep Mediterranean water masses and contouritic deposition. Along a transect perpendicular to the fault, isotopic analysis of biogenic carbonate components provided a

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