

Big Sources of Earthquake and Tsunami in SW Iberia - Bigsets

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The coasts of Portugal, Spain and Morocco are earthquake and tsunami prone areas as testified by the historical occurrence of large events. Recently, the tectonic structure which has probably caused the famous 1755 earthquake has been identified offshore Cape S. Vicente. A thrust fault (the "Marquês de Pombal" thrust) was detected in 1992 with at least 50 km of length and a dip-slip throw of more than 1 km, its three-dimensional structure, the uplift rate and the extension of its rupture are being studied, comprising multibeam, high-resolution and deep multichannel profiling, OBS monitoring, wide-angle reflection and refraction recordings, coring and dating of samples. During the fall 1998, the Italian R/V Urania surveyed the area acquiring more than 2700 km of high resolution MCS, Chirp sonar profiles, magnetics and 6 gravity cores. From the interpretation it is assumed that the recent thrusting on the NNE-SSW faults appears to sole out in the upper crust along previous low-angle extensional faults, Marquês de Pombal thrust representing the NW termination of the contractional deformation of the hanging wall above the thrust fault which develops and deepens SE of the structure. The present day intense seismic activity of this area along the Cape San Vicente Canyon, would imply a deep thrust fault suggesting a larger rupture area than the one deduced from the dimension of the "Marquês de Pombal" structure itself.