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Seismic Velocities and Geotechnical Data Applied to the Soil Microzoning of Western Algarve

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The Algarve province is located in the South of Portugal, near the E-W Eurasia-Africa plate boundary. It is characterized by a moderate seismicity, which presents a diffuse pattern in a regional setting, with some important historical and instrumental earthquakes causing loss of lives, serious damage and economical problems. It has therefore been the target of several seismic risk assessment projects. The CAPSA project (Characterization of the Seismogenetic Potential of Accidents in Western Algarve) was one of these projects, in which extensive geological and geophysical studies were carried out. This paper focuses on the evaluation of the most interesting and useful geotechnical near-surface parameters through the acquisition, processing and interpretation of P and S-wave refraction profiles and the use of standard penetration test (SPT) data. V_P/V_S ratios and the Poisson coefficient were estimated and a coarse subsoil classification based on geophysical and geotechnical parameters is presented. The classification, based upon European Eurocode 8 for civil engineering and SPT bedrock data, was carried out for land use planning and design of critical facilities. Other parameters were computed to provide information for future site effects studies. The experimental procedure tested here is a relatively fast, economical and easy to process method to estimate a soil microzoning in the absence of local passive earthquake records requiring heavier investments and longer time-consuming to process.