

BEDROCK DEPTH ESTIMATIONS AND THEIR LIMITATIONS - COMPARISON BETWEEN REFRACTION SEISMICS AND GEOTECHNICAL INVESTIGATIONS

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In this study, we compared a model of bedrock depth derived from a high resolution seismic dataset to a very extensive set of geotechnical bedrock depth estimations. The results of both methods are in very good agreement on the larger scale, but also show considerable differences in some locations. These differences are usually attributed to errors in the refraction model since it has generally a lower accuracy and is affected by unresolved near-surface velocity variations. However, we found several locations where the data consistently indicate that the geotechnical sounding yielded significantly too shallow bedrock estimations. Therefore, we argue that both methods should be evaluated carefully and – wherever possible – should be combined to a comprehensive dataset. Since geotechnical investigations are one-dimensional and seismic measurements are areal, they provide complementing information that can be used to reduce errors.