

High resolution seismic surveying of the Cheb Basin

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In this study we present first results from several shallow high-resolution reflection-seismic profiles from the Cheb Basin (Czech Republic) collected in the years 2014–2020. The Cheb Basin is a small intracontinental basin, located in the Bohemian Massif, at the Western end of the Cenozoic Eger Rift, which is the target of the ongoing International Continental Scientific Drilling Program (ICDP) “Drilling the Eger Rift”. Our surveys aim to investigate the up to 350-m-thick Miocene and Quaternary basin sediments and the bedrock of Variscan units and post-Variscan granites. We collected four datasets in total, each with a 480-m-long split-spread of single geophones at 2 m spacing. A 3-km-long profile near Hartoušov was acquired with a 10-m-spaced 240-kg-weightdrop source, with Sissy (gun) shots interspersed where the terrain was not accessible to the weight-drop. The other three profiles of 2 km, 0.8 km and 1 km length, respectively, were shot with a 4-gauge buffalo gun at a 20 m spacing. Additionally, we performed some remote shots at up to 1 km distance to record the refraction from the bedrock. In a first processing step we devised an automated method to optimize an inverse filter that removes a second impact from the weight-drop source. We will also compare the type of the source on the quality of the data and signal characteristics. At the current processing stage, we focus on the construction of high-resolution velocity models of the near surface for the computation of refraction statics.