



## **Crack detection using a 3D seismic tomography**

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Detection of crack system, its density, depth and orientation is a problem which is solved by number of geophysical methods. In this paper we use the 3D seismic tomography for crack detection.

The goal of this study was to resolve the near surface geological situation under the permanent seismic station Ostaš in the NE of the Czech Republic. The seismic station is located near the Hronov-Poříčí fault system and is used for monitoring seismicity in the area. It is situated on the foot of elevation consisting of Cretaceous sandstones and marlites.

The seismic receivers were distributed along two concentric circles with diameters 30 and 60 metres. This enabled effective depth of the survey up to the 15 metres. The data were processed by the first arrival tomography technique.

Resulting velocity model of the subsurface revealed two subvertical crack systems, one perpendicular to another. It is also possible to compare relative “intensity of cracking” of these two systems. The first one continues to the depth almost unchanged whilst the second one is fading out quickly.

According to these results, the 3D seismic tomography seems to be an appropriate tool for crack system mapping even in cases when we do not have an *a priori* information about the possible crack system orientation.