



Seismic image of the Carpathian Foredeep Marginal Zone

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The Roztocze Hills in Poland is the edge of the Carpathian Foredeep. To analyse the structure of this Marginal Zone we designed and performed a high resolution seismic survey. For measurements we used standalone cordless stations with 1 and 3 components geophones, and an accelerated weight drop of our design. Four stages deployment resulted in high fold records with clearly recorded long offsets. The data processing was separated into two different paths focused on deep and shallow structures. The deep processing shows a clear NE dipping reflection at large depths from 500 to about 700 meters. It has been interpreted as an evaporate layer known in neighbour area. To analyse seismic data in the shallow part we used a combination of travelttime tomography and wide-angle reflection imaging. Our analysis shows that careful front mute combined with correct statics are the crucial steps in the processing, that leads to clear image of the structure at depths from 30 to 200 meters. Several SW dipping displacements has been recognized at those depths. Also, we clearly observe a sharp, almost vertical discontinuity of flat reflections suggesting the existence of the main fault, that we interpret as the edge of the Carpathian Foredeep. We also show limitations of our survey that was not able to recover the shallowest structure of the first 30 meters. To recover those information other geophysical methods are needed.

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