



Geophysical images of the Western Eger rift earthquake swarm region: structural implications based on regional and high resolution data analysis

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Regional gravity, magnetometric and spectrometric map were compiled for geodynamically active western Eger rift area, which includes part of western Bohemia and Vogtland. On background of these maps we studied the distribution of earthquake epicentres located by KRASNET network between 1991 and 2004, including major 1994, 1997 and 2000 swarms. Of the analysed regional geophysical fields only radio-metric and spectrometric maps show spatial correlation of main epicentral lineament Vackovec-Novy Kostel-Pocatky with abundances of radioactive elements. Applying the Linsser filtering method to the gravity data we derived positions of density contacts at depth levels of 2, 4 and 8 km. In the area of main epicentral zone pronounced lineament of Linsser density-contact indications at depth of 8 km has WNW-ESE trend, which suggests that it may correspond to a real fault plane for one of two dominant groups of focal mechanisms, defined as type A for 1997 swarm by Horalek et al. (2000).

Detailed gravity data from the Cheb basin, processed into a map of horizontal gradient of gravity, shows fault step of the eastern marginal fault of the basin in the area of Novy Kostel. The observed amplitude of the fault step-over is 700 m. Based on several georadar profiles through the main epicentral zone fault zones were detected, which were interpreted as negative flower-structures.

Solution of the direct problem of the stress analysis shows, that recent movements on the Nový Kostel-Pocatky tectonic zone are sinistral strike-slips. On the eastern marginal fault of the Cheb basin, which is a part of the Mariánské Lázně fault system, vertical normal movements prevail.