



Anomalous propagation of refracted waves beneath the Orlik water reservoir, Czech Republic

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The main hypotheses about the river valley origin are based on erosional or on tectonic processes. We contribute to the discussion about the river valley origin on the basis of seismic observations in the region of the middle Vltava River. Note that several various observations support the idea of a tectonic origin of the middle Vltava valley: 1) repeated levellings performed in the 1950s and 1960s; 2) occurrence of weak earthquakes in the region; 3) recent seismic profile measurements. We analyse refraction measurements along a profile across the Orlik water reservoir and show that the passage of seismic waves beneath the reservoir leads to their time delays and spectral changes (absorption of high frequency components). These anomalies indicate a distinct lateral inhomogeneity or tectonic disturbance in a neighbourhood of the reservoir. The inhomogeneity conforms to the notion about the tectonic origin of the middle Vltava valley. Moreover, the local earthquake of January 13, 2007, with a magnitude of about 2.4, is analysed in detail using the data of the nearby Pribram-Haje seismic array.