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Detailed spatiotemporal monitoring of the Vp/Vs within the focal zone

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Estimation of the elastic parameters of the crust - Vp/Vs, Poisson ratio etc. are usually provided by the means of the tomographic methods.

Recently, a so-called double-difference approach have been developed to analyse the Vp/Vs of the area where the events are clustered. Double-difference methods are working not with the events separately, but with the pairs of events which are located close together, but are distant enough from the stations so we can assume their ray-paths to the stations are outside the cluster identical. With sucient number of event pairs and precisely measured delay times between P and S wave arrivals of these event pairs the above mentioned methods allow us to determine the local Vp/Vs within the cluster.

We modified proposed process to analyse the local Vp/Vs in space and time at once. At first we divide all the events of the activity into the clusters reflecting the evolution of the swarm and the locations of the earthquakes and only then we apply the method to estimate the Vp/Vs.

The first results of the 2014 activity in the West Bohemia/Vogtland earthquake swarm area (three separate mainshock-aftershock sequences) show lower values of Vp/Vs at the beginning of the activity- down to 1.6 and increasing Vp/Vs for the aftershock sequences - up to 1.73.