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PhD thesis

Localization of earthquakes sources using backpropagation method and implementation of the *fast marching* method in 3D model of the area of Poland

Abstract

Finding exact location of seismic event is a task that requires a lot of good quality seismic recordings, precise knowledge about seismic wave velocities in the area and algorithm, that will recalculate wave arrival times at stations into event source time and its location. This paper presents 3D model of P wave velocities in the area of Poland, passive seismic experiment “13 BB star”, and implementation of the *fast marching* algorithm, that allows calculation of the wave front propagation time, that combined with wave front backpropagation method allows precise location of seismic event based on the first arrivals. Paper presents examples of three events for which recordings form passive experiments with use of 3D model and backpropagation method allowed accurate determination of their locations.