

Inversion of microseism H/V spectral ratio for determining the boundary shape of a basin structure

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To estimate the shape of a basin-bedrock interface, an inversion procedure applying a genetic algorithm (GA) based on H/V spectra was formulated for long-period (1 to 10 seconds) microtremors. Numerical experiments of inversion were performed on 2D basin structure models. Using FEM, HV spectra at sediment observation points were calculated using incident Rayleigh waves defined on an outcrop. To determine the depth of the basin-bedrock interface efficiently with high resolution, the basin region was split into grid-size hierarchical models and several horizontal submodels. By incorporating these techniques into GA, efficient and accurate optimal solutions could be found.

