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The Minimum 1-D P-wave velocity model for a local earthquake data with precise and consistent earthquake locations in the southern Hangay region

The one of the main segment of South Hangay fault systems, the Bayanbulag left-lateral strike-slip fault, was activated by moderate sized earthquake with Ml=5.4 on 2012/10/03. The earthquake was recorded by the 72 station BB seismic network deployed in the Hangay dome (44°-51°N, 95°-104°E) during 2012–2014 as part of the scientific collaboration with Lehigh University under frame of the project "Intracontinental Deformation and Surface Uplift- Geodynamic Evolution of the Hangay Dome, Mongolia, central Asia". We performed inversion to estimate a 1-D velocity model with station corrections for the crust and uppermost mantle under South Hangay Dome of central Mongolia. The simultaneous inversion for structure and hypocenters was carried out, using 198 selected events with local magnitude more than 1.5 from over 925 local events recorded by the BB experiments. We determined both, P-wave and S-wave velocity models, compare hypocenter locations and travel-time residual distribution for South Hangay fault systems. Using this new model, we relocated the ~2000 selected events. This new model is expected to improve the accuracy of the routine hypocenter determination and as initial reference models for seismic tomography and also seismic hazard studies in future.

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