



## **Preliminary results on the crust structure of the southern Korean peninsula from seismic refraction experiments in 2002 and 2004**

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In order to reveal the perspective of velocity structure in the southern part of the Korean peninsula, seismic refraction surveys were carried out along two lines in 2002 and 2004. The profiles are 297 km long in the NWW-SEE direction for the profiling of 2002 and 337 km long in the NNW-SSE direction of the experiment in 2004. Seismic explosives of 500-1000 kg were detonated in boreholes of 70-100 m depths at two locations on the NWW-SEE line and four locations on the NNW-SSE line. For the seismic surveys of 2002 and 2004, seismic signals were detected by 198 portable seismometers spaced approximately at 1.5 and 1.8 km intervals and digitally recorded for 115 and 150 s at a 120-Hz sample rate, respectively. The recorded data were analyzed based on the travel-time tomography technique of the SIRT algorithm. First arrivals were picked, velocities were analyzed, initial models were built, and then velocity tomograms were produced for the profile of 2004. Then, the velocity structure from the profile of 2004 was used as a constraint at the crossing point of the two lines for inversion of the profile of 2002, which has only two shot records. Ray tracing indicates that there are several mid-crust layers above the Moho with velocities of 7.7-7.9 km/s. Velocity tomograms show several interesting features. A low-velocity zone of a relatively large scale is imaged at a depth of 6-16 km under the Okchon fold belt between the Gyeonggi and the Ryeongnam massifs. In the southeastern part which is covered with the Cretaceous Gyeongsang sedimentary basin, seismic velocities are low down to a 4.2 km depth, and the depth to the Moho is relatively shallow.