



Anisotropic measurements in South Korea and geodynamic implications

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Seismic anisotropy beneath the southern Korean Peninsula was investigated. The most striking feature of the observed splitting patterns is the preference of the fast directions (NW–SE) that are nearly parallel to the direction of the absolute plate motion in the region. However, the splitting patterns over the region show significant variation in splitting parameters indicating a complex anisotropic structure. Variations of the splitting directions and dissimilarity in the source domains of basaltic volcanisms suggest that the asthenospheric mantle flow since at least the late Cenozoic cannot explain the seismic anisotropy beneath the region. Comparison to shear-wave splitting measurements from eastern China revealed that the NW–SE fast direction of splitting measurements in the southern Korean Peninsula is close to that in the North China Block while the NE–SW fast direction might be related to that in the South China Block. The shallow mantle lithosphere beneath the southern Korean Peninsula retains the fossil anisotropy amalgamated prior to the late Paleozoic before the collision between the North China Block and South China Block, and the anisotropic structure was not completely realigned by the major orogenic events during the late Paleozoic to Mesozoic eras.