**西亞高加索地區的剪力波分離與非均向性**

**Shear-Wave Splitting and Anisotropy Observed in the Caucasus Region of West Asia**

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The Caucasus in west Asia is a natural laboratory to study dynamics of continental collision between the Arabian and Eurasian Plates that initiated ~25 Ma. The new seismic arrays in Armenia and Georgia provide a unique opportunity to constrain seismic anisotropy beneath the region for further exploration on the relationship between lithosphere and asthenosphere associated with the post-collisional volcanisms.

We use the shear-wave splitting (SWS) of SK(K)S phases to estimate the fast-direction and delay time for events recorded during 2010-2020. Moreover, we apply principal components analysis to improve our SWS measurements on accessing linearity of particle motion. Totally, we accomplish 46 stations and 1346 high-quality SWS measurements to map out the lateral variation of azimuthal anisotropy below the study area. The variation along depth, although difficult to constrain, is also investigated with 1-D forward modeling.

Our SWS results show that the fast-direction in Caucasus is oriented primarily at azimuth of NE-SW which is subparallel to the absolute plate motion, similar to previous results in the Anatolia block. However, there is a noticeable decrease in the delay time from 1.06 s in the northwestern Caucasus to nearly 0.70 s in the southeastern Caucasus where Quaternary-Holocene volcanoes are still active in Armenia. We propose that the prevailing NE-SW seismic anisotropy corresponds to long-term & large-scale asthenospheric flow in the Caucasus region; while the reduction in delay time underneath Armenia may be explained by the edge-driven convection (EDC) due to large gradient in lithospheric thickness. It is likely that either a large-scale EDC produces the sub-vertical component of mantle flow or a local-scale EDC enhances a thin layer of horizontal deformation near the base of lithosphere. Both scenarios potentially lead to partial melting and thermal erosion.

***Keywords:*** Caucasus, seismic anisotropy, shear-wave splitting, asthenosphere

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