**Lateral Variations of Seismic Anisotropy in Caucasus Region of West Asia**

**西亞高加索地區震波非均向性的側向變化**

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

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

The results of SWS indicate that the fast-directions of the region primarily show NE-SW orientation which is subparallel with the absolute plate motion. However, the delay time significantly decreases from 1.06 s in western Caucasus to nearly 0.70 s in southeastern Caucasus where Quaternary-Holocene volcanoes are still active in Armenia. We propose that the prevailing NE-SW seismic anisotropy represents large-scale asthenospheric flow in the Caucasus region; while the significant variations in delay time may be disturbed by mantle up-well of small-scale convections right under the thinned lithosphere associated with post-collisional volcanoes.

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

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