**(temp) Shear-wave Splitting and Anisotropy Observed**

**in the Caucasus Region of West Asia**

**西亞高加索地區的剪力波分離與非均向性**

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Caucasus Organic Belt is composed of Caucasus-Iran-Anatolian/Armenia (CIA), was formed by continental collision between Arabian Plate and Eurasian Plate. We can know surface deformation by direct observation and mantle flow by seismic anisotropy which rock and mineral in Earth interior record the history of forcing. Therefore, understanding mantle flow below CIA region can help us illustrate the continental collision zone dynamics. We have unique opportunity to study Greater and Lesser Caucasus where are deficient in analysis of shear-wave splitting (SWS) because previous studies were more focused on Iran and Anatolian Plateau of Turkey.

We mainly used the broad-band seismograph deployed in Georgia and Armenia in 2010-2020 and collected SK(K)S phases of tele-seismic waves to analyze the fast-direction and splitting time of seismic anisotropy. Especially, we applied principal components analysis to improve SWS method used in the past. Totally, we used 46 stations and 1346 high-quality shear waves to understand the anisotropy below the station. Furthermore, we confirmed the depth and strength of anisotropy via 1-D forward modeling because shear wave integrates the anisotropy of ray path.

The results of SWS indicate that overall fast-direction shows NE-SW direction which is subparallel with absolute plate motion. Moreover, splitting time dramatically decreases from 1.06s in Western Caucasus to 0.7s in volcanic area of Armenia where were identified active magmatism region. We proposed that the large-scale seismic anisotropy is asthenosphere dominate and obvious variation of strength may be related to small-scale thermal anomaly caused by upwelling of upper mantle.

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