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Crustal Anisotropy Inferred from Pms Splitting Analysis beneath the Tengchong Volcano

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Information about the occurrence and character of seismic anisotropy allows us to make inferences about the style and geometry of material flow because anisotropy is a direct consequence of deformational processes. One important method used to examine seismic anisotropy is shear wave splitting, which yields some of the most direct constraints on material flow. The Moho P-to-S phase (Pms) splitting provides an opportunity to isolate the anisotropy of the crust from that of the deep mantle, and gives clues as to the deformations within the whole crust in the past and present (McNamara and Owens, 1993). Therefore, understanding how to make and interpret splitting measurements correctly and how to relate them properly to crustal flow is very important to the study of geodynamic.
In previous studies, using the waveform data were recorded by the 21 temporary seismic stations in the Yunnan region and the transverse energy maximal method, we obtained the crustal anisotropy beneath the Tengchong block shows a scatter-shaped direction in the fast polarization, possibly suggesting that the upwelling flow has been obstructed when it meets the upper crust. The high-resolution tomographic image of the crust and upper mantle under Yunnan Province also show the upwelling flow under Tengchong volcano (Lei et al., 2009). However, the data from temporary stations has poorer quality than permanent stations because of the stability of the foundation.
In this study, we added 6 stations of Yunnan digital seismic network, which have stable foundation, and then calculated receiver function pairs of radial- and transverse- components. We selected receiver function pairs with high signal-to-noise ratio and unambiguous Moho converted Ps phases (Pms) to measure the Pms splitting owing to the crustal anisotropy. The results were consistent with previous research. The scatter-shaped direction in the fast polarization is much obvious in the study area.