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# Layered lithospheric anisotropy beneath southeastern Tibet using harmonic decomposition of receiver functions

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The present research work interrogates the depth-dependent lithospheric dipping and anisotropic fabrics that characterize major fault and suture zone rheology, essential to understanding the lithospheric deformation and geodynamic process beneath southeastern Tibet. The depth-dependent anisotropic trend has been investigated via harmonic stripping of receiver functions (RFs) at 70 stations of the Eastern Syntaxis experiment, operated between 2003-2004. First, 3683 good quality P-RFs are computed from 174 teleseismic events. All the events are of magnitude ≥5.5 and recorded in the epicentral distribution of 30° to 90°. After that, the harmonic stripping technique is performed at each seismic station to retrieve the first (k = 1) and second (k =2) degree harmonics from the receiver function dataset. Our study also characterizes the type (fast or slow) of the symmetric axis. The upper crustal (0-20 km) anisotropic orientations are orthogonal to the major faults and suture zones of the area and suggest the structure-induced anisotropy. However, the anisotropic orientations in the mid-to-lower crust and uppermost mantle orientations suggest the ductile deformation due to material flow towards the east. Comparison from depth-dependent lithospheric trend and fast polarization directions obtained from the core-refracted and direct-S phases suggest the decoupled crust and lithospheric mantle beneath the area. The distinct anisotropic trends in the Namche Barwa Metamorphic Massif (NBMM) indicate the northward indentation of the Indian crust beneath the Lhasa block. However, the lower crust and uppermost anisotropic orientation suggest the fragmented Indian lithosphere beneath the area. Our results add new constraints in understanding the type of strain and its causes in the region.