



## **Sn attenuation tomography of southeastern Tibet: new constraints on lithospheric mantle deformation**

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Two-dimensional Sn attenuation tomography is obtained to investigate the uppermost mantle attenuation characteristics and its tectonic implication beneath the southeastern Tibet near Namche Barwa. To achieve our objective, first, we find the inter-station Q values by implementing the Two Station Method (TSM) analysis on 818 station pairs obtained from 36 regional earthquakes ( $M_w \geq 5.5$ ) within an epicentral distance of  $2^\circ$  to  $15^\circ$  recorded at 47 seismic stations belonging to the Namche Barwa network (XE network, 2003-2004). Further, by utilizing these inter-station Q values, SnQ tomography model is achieved by incorporating the SVD algorithm with smoothening and damping parameters that not only reduced the trade-off between data residual and model norm but also minimized the occurrence of the physically unreliable and numerically unstable solution. SnQ values are varying from 98 to 484 in the region. Our tomography image reveals low Q values beneath the central region, i.e., Namche Barwa syntaxis (NBS) ( $93.5^\circ\text{E}$  to  $97^\circ\text{E}$ ). The Q values show a consecutive increase in the west side of NBS in the Lhasa block and intermittent high values to the east of NBS. High-low-high Q values are observed west of  $93.5^\circ\text{E}$  from Indus-Yarlung Suture (IYS) to Bangong-Nujiang Suture (BNS). Our results along with the reported Rayleigh wave tomography and receiver function analysis of the region suggest asthenospheric upwelling beneath the NBS which conforms with the low SnQ and low  $\eta$  values obtained in our study. The high SnQ values to the west of NBS indicate the existence of relatively cold and stable mantle lid which may have been due to subduction of the Indian and Asian plate beneath the IYS and NBS respectively. Our results add new constraints on the lithospheric deformation and tectonics of the uppermost mantle beneath the NBS and surrounding areas.