

## Seismic attenuation structure beneath Nazca Plate subduction zone in S. Peru

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We estimate seismic attenuation in terms of quality factors, QP and QS using P and S phases, respectively, recorded from Peru Subduction Experiment (PeruSE) array deployed above Nazca Plate subduction zone between 13°S and 18°S latitude in S. Peru. We first relocate 285 earthquakes with magnitude ranges of 4.0–6.0 and depth ranges of 20–250 km. We then assume a double-corner frequency source model to measure  $t^*$ , which is an integrated attenuation through the seismic raypath between the regional earthquakes and stations. The measured  $t^*$  are inverted to construct three-dimensional attenuation structures of S. Peru. Checkerboard test results for both QP and QS structures show that we have good resolution in the slab-dip transition zone between flat and normal slab subduction down to a depth of 120 km. Both QP and QS results show high attenuation in the mantle wedge along the normal slab-dip region. Also, both show relatively higher attenuation continued down to a depth of 100 km beneath volcanic arc and also beneath the Quimsachata volcano, located farther away from the arc. We plan to compare our results with velocity models previously derived from various tomography studies for understanding structural heterogeneity, thermal conditions, and fluid content in the study area. Also, we relate measured attenuation in the mantle wedge to material properties such as viscosity to understand the subduction zone dynamics.

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