

# Anomalous seismic attenuation beneath southeastern Central Range of Taiwan: Observations from a linear cross-island array

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## Abstract

Seismic attenuation across southern Taiwan is investigated in terms of  $t^*$  data and  $Q$  models. The  $t^*$  data are obtained by fitting the observed spectra of P and S waves with a  $\omega^2$  model using broadband records of a 25-station linear array deployed across southern Taiwan. The  $Q$  models are determined by inverting the observed  $t^*$  data. Both  $t_p^*$  and  $t_s^*$  data at the eastern stations show remarkable decreasing trends with depth down to 40 km in contrast to the western stations. The inverted  $Q_p$  and  $Q_s$  profiles across southern Taiwan reveal an anomalous attenuation zone ( $Q_p=285.5$ ,  $Q_s=218$ ) at depth about 20 km beneath the eastern stations traversing southeastern Central Range. This high attenuation zone is also marked by other geophysical indicators of very active collision orogeny, such as high mountains, fast crustal uplift, high heat flow, absence of seismicity, low velocities, and strong anisotropy.