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Crustal Attenuation With Seismic T Waves in Southern Africa

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Crustal attenuation structures obtained at high frequencies (>1 Hz) are important for seismic risk assessment and geodynamics studies in stable continents. However, it is difficult to infer attenuation in low seismicity regions using body and surface waves. In this study, we explore the potential of using seismic T phases to constrain the crustal attenuation. We analysed the characteristics of T waves recorded on the seismic array deployed in southern Africa. The converted station-side T-P and T-S phases were identified by analysing the waveform, travel time, polarization, and frequency-wavenumber features. The distinct differences in polarization and slowness are used to quantify contributions from T-P and T-S conversions. The inverted frequency dependent Qp and Qs (attenuation factor of local P and S waves, respectively) in the southern Africa are found to be 204f^1.48 and 685f^0.53, respectively. Our method could be extended to infer crustal attenuation features near the coasts of other continents.

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Promotional text

In our presentation, it is introduced that a method based on T phase to obtain the high frequency (> 1 Hz) crustal attenuation structure in low seismicity regions.

Oral preference format

pre-recorded video

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