

Receiver function seismology

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Abstract

Receiver function seismology is a powerful passive seismic technique used to investigate the structure and discontinuities within the Earth's crust and upper mantle. The method is based on the analysis of converted seismic phases generated when teleseismic P-waves encounter subsurface velocity contrasts, such as the crust–mantle boundary (Moho), lithospheric boundaries, and mantle discontinuities. By isolating the P-to-S converted phases through deconvolution of the vertical component from the horizontal components of three-component seismic recordings, receiver functions enhance signals associated with subsurface interfaces while suppressing the source effects and propagation path influences. Analysis of receiver functions provides valuable constraints on crustal thickness, shear-wave velocity structure, anisotropy, and tectonic processes.