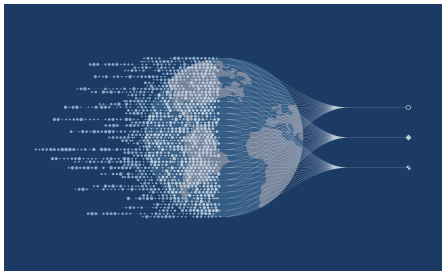

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depth of some South Atlantic earthquakes using teleseismic P-Wave and water reverberations

Oceanic transform faults are important tectonic structures connecting mid-ocean ridge sections, controlling their global morphology, movements, deformation, and rupture process. The complete understanding of these fracture zones relies on earthquake focal depth (Z) estimation. Z is a critical parameter for these tectonic studies that is usually difficult to estimate due to unfavorable continental seismic station distribution at teleseismic distances. Phase depths are a reliable way to estimate these depths. Still, identifying such phases may be complicated due to the low signal to noise ratio, focal depth, and rupture duration. To circumvent these difficulties, we use the methodology proposed by Huang et al. (2015) that includes the water reverberations of the depth phases in the focal depth estimation using array-stacked seismograms at teleseismic depths. In this method, a grid search procedure simultaneously estimates Z and the sea floor depth (H). We tested the methodology using both synthetics under different conditions and real earthquakes from the South Atlantic. The method performs well under several noise conditions and varying numbers of stacked seismograms from different arrays available. Finally, the radiation pattern is a key factor in estimating Z and H reliably.

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