

Beyond the receiver function: A direct mapping from teleseismic waveform records to an image of seismic discontinuities

Hiroshi Takenaka[1]; Ayako Otakara[1]; Toshihiko Ando[2]; Takumi Murakoshi[3]; Taro Okamoto[4]

[1] Dept. Earth & Planet. Sci., Kyushu Univ.; [2] Earth and Planetary Sci., Kyushu Univ.; [3] NDA; [4] Dep. Earth Planet. Sci., Tokyo Institute of Technology

Receiver function analysis is one of the most popular and powerful methods for estimating the crust and upper mantle structures using teleseismic waveform data.

In this study we propose a method for estimating depth distribution of seismic discontinuity from teleseismic records without use of the receiver functions. In this method the downward continuation of the waveform at surface, separation into upgoing and downgoing P and S waves, and deconvolution to get a depth profile of a quantity proportional to the velocity jump at the discontinuities. From this profile we can then identify the discontinuities. We check this method using synthetic seismograms for a realistic structure model, and apply real data.