

## Character of receiver functions for a structure with velocity gradient: PS-converted phase generated in a velocity-gradient layer

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Receiver function analysis of teleseismic body waves is a useful tool for estimating crustal and upper mantle structures below the stations. The receiver functions obtained by deconvolution of the radial waveform with the vertical one emphasize the PS-converted phase generated at interfaces of the subsurface structure. In this study we focus on the PS-converted phase in a structure with velocity gradient.

We found a 'offset' phase appearing between the PS phases generated at the top and bottom boundaries of a velocity-gradient layer on the surface responses of a structure model with velocity gradient due to a P-wave incidence computed by the finite difference method. This 'offset' phase is constructed by the PS-converted waves continuously generated during the direct P wave propagates in the velocity-gradient layer. The amplitude of this phase is very small in the original radial and vertical seismograms, while it is emphasized as well as PS waves generated at the interfaces on the receiver function traces so that it has a enough amplitude available for detecting the velocity-gradient layer. In this study we investigate the 'offset' phase attributed to the velocity gradient by numerical computations using the finite difference method (Tanaka et al., 2002). Receiver function analysis without correct interpretation of the 'offset' phase may lead to mis-estimation of the subsurface structures.