



Investigating the Moho depths and the MTZ beneath eastern Asia using SS precursors

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We study the underside reflections of precursors to SS waves at the lithosphere and the upper mantle beneath eastern Asia. By analyzing the SS bounce points we have been able to investigate the upper mantle discontinuities along a corridor that extends from the Aleutians to the Tibetan plateau passing through Kamchatka, the Japanese subduction zone and the North China craton. One of our aims was to investigate the interaction between the lithosphere and the mantle transition zone beneath different geotectonic units along this corridor and the interaction of geodynamic processes at different depths. In the analysis, we have used the short period content of SS waveform data and methods like CMP stack and migration techniques to acquire high resolution lithosphere and upper mantle images and to improve the lateral and depth resolution for the upper mantle discontinuities. By using a newly developed method we have been able to detect the presence of the continental Moho at different depths along this corridor. We show that the SS precursors provide high resolution images of upper mantle discontinuities such as the 410 and 660 km and the effects of the interaction between the subducted oceanic lithosphere and the mantle transition zone beneath the NW Pacific subduction zone. Furthermore, we show for the first time, that it is possible to create new possibilities to study shallower structures such as the Moho by using the SS precursors.