

P-wave tomography of Northeastern China observed with NECESSArray

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A passive broadband seismic experiment, NorthEast China Extended SeiSmic Array (NECESSArray) has been deployed since 2009 for two years. Northeastern China is a very interesting region because slabs subducting from the south Kuril and Japan trenches are stagnant in the mantle transition zone and extends to northeastern China, and above the stagnant slabs, Sino-Korea craton and unusual volcanism in the continent exist. The relationships between the deep slabs and shallow structures are important clues to understand the tectonic features.

P-wave travel-time picks of the NECESSArray stations were made interactively, while the teleseismic arrival time residuals were extracted using the adaptive stacking method. We picked more than 13,000 event-station pairs. Relative travel-times of P-wave between different stations were measured as a function of frequency using deep events of which P-waves separate in time from depth phases and very shallow events of which P-waves and depth phases are completely coincide. We found strong dispersive effect that is not predicted by our previous three dimensional (3D) P-wave model. We will combine the picked travel times and the frequency depended relative travel times to image a 3D P-wave heterogeneities of the northeastern China. We will present our first model at the meeting. The result shows fin structures of the stagnant Pacific slab. It is It is particularly worth noting that the northern part of the stagnant Japan slab seems to be buckling.

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