Defocusing of teleseismic P-waves by the subducted Kuril slab

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Teleseismic P-wave amplitudes from intermidiate-depth Kuril events (100-200km) are analyzed to study effects of the high-velocity Kuril slab on P-wave amplitudes.

We corrected IRIS broadband records for instrument response, geometrical spreading, and focal mechanism to derive amplitude anomalies due to lateral heterogeneity of the Earth. We picked up the amplitudes at stations located in the dip-direction of the Kuril slab, then found the amplitude in the distance range of 30-60 degrees are smaller than those at 60-90 degrees by a factor of 2.

We did not obtain such a amplitude reduction for deep Kuril events (500-600km), suggesting the amplitude decrease is not caused by site effects near the stations, but by defocusing due to the high-velocity Kuril slab.