

Location of the upper boundary of the Philippine Sea plate beneath Boso Peninsula estimated by receiver function analysis

Noriko Tsumura[1]; Eiichi Misawa[2]

[1] Fac.Sci., Chiba Univ.; [2] Fac. of Sci., Chiba Univ.

Since the seismicity beneath Boso Peninsula is not active, it is difficult to estimate the location of the upper boundary of the Philippine Sea plate from hypocenter distribution and seismic mechanisms. We examined to find Ps waves which are converted at the upper boundary of the Philippine Sea plate in teleseismic waveforms. From IRIS catalog, we selected teleseismic events that were larger than M5.0 and deeper than 100km and downloaded seismic waveforms that were recorded in the Hi-net stations from website of NIED. Receiver function analysis was adopted for these waveforms. Receiver functions for the same station have common peaks if the location of the events were adjacent to each other, however receiver functions for the same event did not show the common peaks for the different stations. These features mean that the observed peaks in the receiver functions are produced just beneath the each station. Then we converted time axis of the receiver functions to depth axis by assuming that the crustal P-wave velocity as 6.0km and the ratio of V_p and V_s is constant(1.732). From this conversion, several peaks are seen at the depths from 7km to 12km below the seismic stations TYMH, IWK, MINH, which are located in the southern part of Boso Peninsula

The other clear peak of receiver functions exists at the depth of 30km beneath CBAH stations. We found that a series of clear peaks become deep toward NNE. In this region, reflection survey was carried out in 2002 and clear reflections are found at the depth of 7km in the southernmost part of Boso Peninsula. These reflections are interpreted as the upper boundary of the Philippine Sea plate. The series of clear peaks in the receiver functions show good coincidence with those reflection events in the study region. Then these peaks probably show the upper boundary of the Philippine Sea plate.