

Location of the upper boundary of the Philippine Sea plate beneath the northern part of Izu Peninsula derived by receiver function

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We carried out a temporary seismic observation at the northeastern part of Yamanashi Prefecture from May 15 to July 29, 2002. Three seismic stations were aligned in the NW direction with the interval of 15km. In these stations, 3-component seismometers with natural frequency 1Hz were set and the wavedata were recorded continuously. From IRIS catalog, we selected teleseismic events that were larger than M5.0 and deeper than 100km and cut out waveform data from continuous data. 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 10km to 40km below the seismic stations. We found that a series of clear peaks become deep toward NNS and it shows good coincidence with the upper boundary of the hypocenter distribution in the study region. Then these peaks probably show the upper boundary of the colliding Philippine Sea plate. The dip of these peaks becomes gentle in the region where the earthquakes do not occur. There are the other series of the similar peaks but the depth of the peaks is 15km deeper and almost parallel to the previous one. This alignment might show the Moho of the Philippine Sea plate. If these two groups of the clear peaks indicate the configuration of the Philippine Sea plate, the Philippine Sea plate might obduct in the northwestern part of Izu peninsula.