

## Configuration of the Philippine Sea plate beneath the Shikoku Island and excitations of later phases

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Shiomi et al. (2002) revealed the detailed configuration of the Philippine Sea (PHS) plate subducting beneath Chugoku-Shikoku district from receiver function (RF) analyses of teleseismic waveforms. They found that the local seismicity in Shikoku area appears to be closely correlated with the configuration of the PHS plate. However, since the velocity structure used for hypocentral determination is not same as that for depth conversion of RFs, it is difficult to discuss such correlation in detail. On the other hand, Oda et al. (1990) and Ohkura (2000) reported that the distinct later P and S phases after direct P and S waves can be found frequently at stations in Chugoku region when earthquakes occurred in the oceanic crust beneath southwest Japan. To evaluate the relationship between seismicity and the configuration of the PHS plate, we investigate the waveforms recorded at Hi-net stations for earthquakes occurred in uppermost area of the mantle beneath Shikoku Island.

First, we select earthquakes occurred beneath Ehime prefecture with focal depth around 40 km, we find the distinct later P phase with apparent velocity of from 6.6 km/s to 6.9 km/s in eastern Chugoku, eastern Shikoku and central Kyushu. This later P phase is the same as that of Ohkura (2000) reported and recognized as the channel waves through the oceanic crust of the PHS plate. Interestingly, we cannot find such later phase at stations in Yamaguchi and northern Kyushu region, which are located in northwest direction from the hypocenters. This azimuth corresponds to the direction of the sharp change of the depth contours of the PHS plate. Since the earthquakes occurred in the oceanic crust, which are lying upon the HVL of the PHS plate, the disappearance of the later phases at the stations in the northwest azimuth indicates that mantle wedge exist between the oceanic crust and the continental lower crust beneath northwestern Ehime. On the other hand, for almost all subcrustal earthquakes occurred in the eastern area of 133.5E, no later phases can be found. This indicates that those earthquakes are occurred in the slab mantle area below the oceanic crust. However, we find the later phases, sometimes, at stations in eastern Chugoku with azimuth corresponding to the direction where the contours of the PHS plate are directed from northwest to southeast. Additionally, we find later phases with apparent velocity 7.5 km/s arrived at 7 s and/or 14 s after the direct P from subcrustal earthquakes occurred beneath eastern Kochi prefecture recorded at stations in Kii Peninsula.

To construct a detail structure beneath the southwest Japan, we shall numerically simulate how and where the later phases should be excited.