

## Quaternary crustal movement and multi-segment earthquakes caused by oblique subduction of undulated Philippine Sea Plate

# Yukinobu Okamura[1]; Masanobu Shishikura[1]; Yuichi Namegaya[2]

[1] Active Fault Research Center, AIST, GSJ; [2] Active Fault Research Center, GSJ, AIST

We propose that N-S trending uplift zones in the outer zone of SW Japan have been caused by oblique subduction of the undulated Philippine Sea Plate (PHS) holding its geometry. The upper boundary of PSP is down warped forming synform under the Kii Peninsula and the Kii Strait. The axis of the synform is located below the western coast of the Kii Peninsula. The plate boundary inclines NW under the Kii Peninsula and NE under the Kii Strait. If the PHS subducts toward NW holding its geometry, the plate boundary under the Kii Peninsula and the Kii Strait shallows and deepens respectively. The change of the depth of the plate boundary is roughly consistent with the vertical movement of the outer arc of SW Japan during the Quaternary. This model is supported by the fact that the formation of the Kii peninsula and change of the plate motion of PHS from north to northwest occurred in the early Pleistocene. The southern coast of the Kii Peninsula has been repeating co-seismic uplift and inter-seismic subsidence at the interval of 100 to 150 years, but the ancient sea-levels inferred from sessile assemblage indicate that permanent uplift has been occurring about every 500 years, and the last permanent uplift occurred at the 1707 Hoei earthquake which is believed to have caused by the rupture of the entire subduction zone along the Nankai Trough. The permanent uplift can be interpreted to have caused by the movement NW dipping PHS toward NW and pushing up of the Kii Peninsula. The uplift at the interval of 500 years suggests that the NW dipping PHS usually plays a barrier between the two inter-plate earthquakes along the eastern and western parts of the Nankai Trough.