

Subsurface Structure at the North of the Yokosuka Fault by Seismic Reflection Survey

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The rupture of the Mikawa Earthquake on January 13, 1945 is considered to be on the Fukozu and the Yokosuka Faults. The Fukozu Fault is located relatively south and reverse L-shaped. On the other hand, the Yokosuka Fault is located relatively north and L-shaped. Ando (1974) mentioned that the NS strike section of the Yokosuka Fault in the fault zone was caused by a secondary deformation. Sugito and Okada (2004) investigated surface displacement in detail along the fault zone. They concluded that the NS strike section of the Yokosuka fault is the upper extension of the earthquake source fault although they referred to the possibility of the secondary deformation. Sugito and Okada (2004) referred that the surface earthquake fault of the Mikawa Earthquake is inconsistent with the source model of the earthquake estimated by Kikuchi et. al. (2003) from seismograms. In this way, the NS strike section of the Yokosuka Fault is not understood clearly. We carried out the P-wave seismic reflection survey at Shikoya-cho, Nishio, Aichi; at the north end of the Yokosuka Fault, in order to investigate lower extension of the Yokosuka Fault.

Not only the survey at the north of the Yokosuka Fault (GS-NSO2) but also the other survey at the south east extension of the Takahama Fault (GS-NSO1) were carried out from September 27 to October 2 in 2018. The length of the survey line GS-NSO2 is 1810m. We used one EnviroVibe manufactured by IVI. Sweep frequency is 10 to 120Hz, and sweep duration is 16S. Standard shot interval is 5m, and exceptionally 2.5m. Total shot points are 421, and we shot 3 to 5 times for each point. We used 3 string geophones of OMNI-2400 ($f_0=15\text{Hz}$) by Geospace. We used offline seismic recorder GSX system also by Geospace. Receiver interval is 5m, and total receiver points are 342. We made seismic profile by CMP stack.

We cannot see any obvious faults or signs related to the faults in the profile. Trenching survey indicate that the Mikawa Earthquake was preceded by one earthquake 2000 years ago. Total displacement of the Mikawa Earthquake and the preceding event is not more than 2m. It is impossible to detect the displacement in case of 2m displacement. However, it is possible in case that the displacement increase with depth. At least, we cannot detect the cumulative displacement in the survey.

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