

Slip distribution along the surface rupture associated with the 1945 Mikawa earthquake

Nobuhiko Sugito[1]; Atsumasa Okada[2]

[1] Dept. Geophysics, Kyoto Univ.; [2] Earth and Planetary Sci., Kyoto Univ.

We have compiled all the data reported in previous studies about features of the surface rupture associated with the 1945 Mikawa earthquake, in order to reconstruct and examine the slip distribution along the rupture. We will also examine how the estimated slip distribution is related to source fault models constructed by previous studies in the presentation.

Surface rupture with length of 28 km, including a 10-km-long submarine section in Mikawa Bay, was associated with the Mikawa earthquake, a destructive earthquake with a JMA magnitude of 6.8 that occurred in the east of Aichi Prefecture, central Japan. It exhibited complex hook-shaped surface traces, consisting of three sections; two north-south-trending sections comprised of the northern section with length of 7 km and the southern section with length of 14 km, respectively, and an east-west-trending 7-km-long section that connected the two north-south-trending sections.

The rupture along the north-south-trending sections showed compressional features like warping with fissures and mole-tracks, and exhibited vertical offset up to 210 cm with no or a little right-lateral offset, suggesting that the western side of the rupture thrust over the eastern side. On the other hand, along the east-west-trending section, the rupture displayed en echelon fissures as well as compressional features, and exhibited both left-lateral offset up to 75 cm and vertical offset up to 100 cm, indicating that the southern side of the rupture thrust obliquely over the northern side. The observation implies that reverse faulting along the north-south-trending sections was predominant during the earthquake and the east-west-trending section behaved itself as a kind of lateral ramp connecting the two north-south-trending sections. Estimated slip distribution reveals that both average and maximum of vertical offset along the southern section of the two north-south-trending sections were larger than those along the other one.