Late Quaternary activity of the active faults in the southern part of the Ina basin, Nagano Prefecture, central Japan

Yasuhisa Hattori[1]; Atsumasa Okada[2]; Taku Komatsubara[3]

[1] Dept. Geophysics, Kyoto Univ.; [2] Earth and Planetary Sci., Kyoto Univ.; [3] Geol. Surv. Japan

The Ina basin in central Japan is bordered by the Kiso Mountains on the west and by the Akaishi Mountains on the east. It is a N trending, narrow, 70-km-long and 10-km-wide basin. There are a lot of active faults in and around the basin. The Ina basin fault zone is divided into two-fault zone. One is a boundary fault zone, another is a frontal fault zone.

In this study, geological and topographical investigation show that the Sanshukaido fault, late Quaternary activity of the NE-SE trending Sanshukaido fault has been evaluated based on the age of fluvial terraces and amount of tectonic displacement etc. Fluvial terraces in this area are divided into seven levels: terraces 1 to 7 in the descending order.

Average vertical slip rates and strike-slip rates for the Sanshukaido fault are estimated to be 0.24-0.57mm/yr and 0.5-4.0mm/yr. As a result, the fault shows a major right-lateral strike-slip displacement in the central Japan.

We conducted a trench excavation at the Samuhara site across the scarp. On a fault outcrop across the Sanshukaido fault, a layer of humic soil is displaced by a low angle reverse fault. This excavation revealed evidences for the latest penultimate events associated with at least two surface-rupturing events. The latest event might be occurred sometimes after AD1466, and the penultimate event occurred between BC7449 and BC2142. The latest event is probably associated with the 1718 A.D. earthquake.

As the result, the Sanshukaido fault has been clarified to have the average slip-rate, the recurrence intervals, etc., which characteristics for this fault are fairy different from the previous studies.