AOGS 2005

Evaluating Earthquake Potential Caused by the Tachikawa Fault in Metropolitan Tokyo, Central Japan Based on the Paleoseismological Surveys

YUKARI MIYASHITA[1], TAKENOBU TANAKA[2] and KIYOSHI ICHIKAWA[3]

[1]*Active Fault Research Center, GSJ, AIST*
[2]*INA Co.*
[3]*Komazawa Univ.*

The first on-fault trenching surveys of the only active fault in Tokyo Metropolis revealed that the latest surface-faulting event of the fault occurred between about 15600-13450 yBP and 7300 yBP.

The Kanto Plane, in which the largest population lives in Japan, has been suffered from not only interplate megathrust earthquakes but also shallow intraplate earthquakes in the past several hundred years. The Tachikawa fault, the only active fault in metropolitan Tokyo on the Kanto Plain, is expected to be the sources of such shallow earthquakes in the future.

Evaluating earthquake potentials need the parameters such as the latest faulting event age, a recurrence interval and a fault length. Based on the different estimated event ages, two different evaluations for the Tachikawa fault have been shown. Tokyo Metropolis (2000) showed that the latest faulting event of the Tachikawa fault was about 1900-1500 years ago, the Headquarters for Earthquake Research Promotion (2003) showed that it was about 20,000-13,000 years ago.

The Tachikawa fault is a 22-km-long NW-SE-trending mainly reverse fault. In order to properly evaluate the earthquake potential by this active fault, we performed two trenching surveys and twenty-four boring surveys on the middle part of the fault in 2004.

The trenches were excavated across 1- to 3-m-high SW-facing fault scarps at the Hakonegasaki A and B sites. Trench walls exposed predominantly gravel, loam and humic soil and fault planes showing vertical to 70° E dip with flower structures. The fault planes deform at least up to the top of gravel and are covered by humic soil.

The K-Ah tephra obtained from the bottom of humic soil shows about 7300 yBP and radiocarbon ages obtained from a humic soil-rich sand layer in gravel shows 15600-13450 yBP. These ages limit the latest faulting event of the Tachikawa fault. The fact that clay and silt layers of the paleo-Sayamagaike pond from boring cores show no evidence for drastic environmental changes during their deposition supports the result described above.