

Timing of mass movement near the northern part of the Kiso-sanmyaku-seien fault zone

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A fault zone, extending for 40 km along the western margin of the Kiso Range, consists of echelon faults which trend in the N-S to NE-SW direction. Our detailed trenching survey revealed that the latest event occurred at around AD1300 (Shishikura et al. 2002, 2003). We found a scar of paleo-mass-movement on the Otanairi Mountain 2-3 km east from the northern part of the fault zone. To reveal the timing of mass movement and relation to paleo-earthquake, we collected the age data from historical documents, geological survey and dendrological survey.

The mass-movement caused debris flow and damming up the branched river. It induced the Nogaïke reservoir, though already drained now. Historical documents described that the dam burst during AD1665. The surface of the present Nogaïke is composed of laminated sand and gravel. We could not obtain any radiocarbon samples in the Nogaïke, but soft sediment, probably lacustrine mud, was confirmed to 6.5m depth by using simple penetration test.

Another small enclosed pond which named Shita-no-ike was arisen in connection with the deposition of debris flow. Lacustrine mud over 3.6 m thick can be recognized by auger drilling on the dry pond. ¹⁴C ages of humus are dated to be 250 yBP in 3.6m depth and 210 yBP in 2.6m depth. These ages are calibrated to be after AD1520. Therefore the birth of the pond ascends to this age.

Depositional surface of the debris flow seems to be hardly dissected. The surface soil is also immaturity. These facts indicate that the depositional age is relatively recent. A lot of stumps over 1m diameter which were cut for lumber 80-90 years ago have remained on the surface. Annual rings of the stumps can be counted to over 300 years.

On the basis of the above results, it is concluded that the mass movement occurred before 400 years ago. Although the earthquake is not necessarily to cause the mass movement, it suggests a possibility of relation with the AD1300 faulting or the AD1586 Tensho Earthquake generated from the Atera Fault.