Paleoseismology at the central part of Itoigawa-Sizuoka Tectonic Line (III): Suwa and Okaya fault groups

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Paleoseismological studies have been performed to clarify seismic events and structure, and to evaluate a potential for dynamic rupture involving multiple segments at the central part of Itoigawa-Shizuoka Tectonic Line active fault system (ISTL). Our paleoseismological results indicate that not all of the Okaya fault group have moved at the most recent faulting of the Kamanashiyama fault group, which lies on the northern part of the Suwa and Okaya fault groups. However, we can not yet estimate their rupture length, because of the inadequate seismic data along the Suwa fault group.

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In the Suwa fault group, northeastern bounding faults of the Suwa basin, the central ISTL, an accurate estimation of the paleoseismic event was not sufficiently successful at the Sakamuro site, whereas the most recent event was considered as it had occurred after 2800 cal.y.B.P.. At the Shiga site, the northeastern Sakamuro along the fault group, we failed the estimation of the most recent event, but detected a possible penultimate event occurred between 2200 and 8000 cal.y.B.P.. Using the tephrochronological tequnique, we estimate a vertical slip rate for the Sakamuro site as correlation of the Aira-Tanzawa tephra dispersed widely in Japan. The result of this approach indicates a vertical offset beyond the observed fault reaches 8-9 meters during 24000 years. An average vertical slip rate is therefore considered as 0.3-0.4mm/yr, possibly 1.0 mm/yr for the Sakamuro site as a whole.

Okaya fault group, southwestern bounding faults of the Suwa basin, the recent events younger than 10,000 years was found at the Katayamakofun-Kita and Shinmei trench sites. The most recent event at the Katayamakofun-Kita site, which is the southern edge of this fault group, occurred sometimes between 930 and 1700 cal.y.B.P., and at the Shimmei site, the north edge of this fault group, it occurred sometimes between 1390 and 2000 cal.y.B.P.. The penultimate event was found only at the Shimmei, occurred sometimes between 6000 and 8000 cal.y.B.P..

These paleoseismological results indicate that not all of the Okaya fault group have moved at the most recent faulting of the Kamanashiyama fault group, which lies on the southern part of the Suwa and Okaya fault groups. However, we can not yet estimate their rupture length, because of the inadequate seismic data along the Suwa fault group.