

## Holocene activities of the Hachiman fault upstream of the Nagara River, Gifu Prefecture, central Japan

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The Hachiman Fault is a NW-SE striking, 20-25 km-long, left-lateral strike-slip fault at the upstream district of the Nagara River, western Gifu Prefecture, central Japan. Although the fault running through a mountainside have caused a series of offset valleys, fault scarp on the river terrace surfaces is obscure. We conducted paleoseismic investigations by trench excavation at three sites on the fault.

The Tawata site is located next to a small shutter ridge on the middle of the fault. A 10-m-long, 2-m-wide and 2m-deep trench was dug between the western slope of the ridge and the fault sag. The Okumino Acidic Igneous Complex of the Mesozoic era is exposed in the eastern half of the trench. The western part of the trench consists of gravel bed and overlying 1.5-m-thick organic sediments. Lenticular soil layers rich in granules and small pebbles are developed at the upper and lower horizons of the organic sediments. 5-m-wide fault zone consist of extensional fractures pass through the middle and eastern part of the trench. 0.5-m-wide main fault border the western rim of the fault zone, and a series of NW-SE trending, west-side-down fractures spreads towards southeast in the eastern half of the fault zone. The horse tail arrangement of the extensional fractures is consistent with left-lateral strike-slip movement of the fault. The main fractures cut the middle of the organic sediments and unconformably overlain by the upper gravelly soil layer that seems to be a colluvial wedge right after a faulting event between 3700±30 yBP and 5280±30 yBP. Another lenticular gravelly soil bed at the lower part of the organic soils is possibly a colluvial wedge related to the penultimate faulting events between 6580±30 yBP and 8280±40 yBP.

The Kossa site is located on an alluvial fan dammed up by a small shutter ridge in the northern-middle of the fault. The upper part of the alluvial fan deposits changes into massive gravelly sand bed dated 4570±40 yBP in the fault sag. On the upstream side of the shutter ridge, gravel beds of the alluvial fan deposits gently tilt toward the upstream of the fan. It is unclear if these faces change and tilting structure were caused by the movement of the Hachman fault or not. The Aburasaka site on the northern fault is located on a terrace surface once used as a skiing area. Trenches across a ENE facing gentle slope exposed the man-made bank of a ski course and underlying terrace deposits without any deformational structure.

Our trench surveys have revealed two paleoseismic events of the Hachiman fault. The most recent event probably occurred between 3930 Cal yBP and 6180 Cal yBP, and the penultimate possibly between 7430 Cal yBP and 9400 Cal yBP.

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