

Average Slip Rate of Ayasegawa Fault since the Middle Pleistocene

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The Ayasegawa fault extends NW-SE from Kounosu City to Saitama City, Saitama Prefecture. Ayasegawa fault constitutes the southeastern part of the 'Fukaya Fault System' (Sugiyama et al., 2004) extending 80km long. It is essential for the earthquake disaster prevention to evaluate the activity of the fault. Sugai et al. (2005) found two probable faulting events and estimated the average slip rate of at least 0.05-0.1m/ka since the Late Pleistocene. But we know little the long-term activity and the exact trace of the Ayasegawa fault.

In the central part of Kanto Plain, marine deposits of Marine Isotope Stages 11 and 9 are widely distributed (Matsushima et al., 2006). The top of the marine deposits shows the elevation of the paleo-sealevel (= isochronic boundary) approximately. Thus the accumulated vertical displacement can be recorded as the difference in the present elevation of the deposits.

The purpose of this study is to clear the long-term slip rate of Ayasegawa fault since the Middle Pleistocene.

We compile geological cross sections in a orthogonal direction of the fault using drilling cores and the data of geologic column drilled by Saitama Pref. and AIST in Kazo Lowland, Arakawa Lowland and Omiya Upland.

The elevation of the top of marine deposits (MIS11 and MIS9) has been clearly deformed along the eastern boundary of the Omiya Upland. At the northwestern and southeastern sides of the deformation zone, the elevation of the 'MIS11' deposits are -65m and -130m respectively, while the 'MIS9' deposits are -40m and -90m. The elevation gap of the top of marine deposit (MIS11) is larger than MIS9, indicating the accumulation of the slip due to faulting activity. Because the ages of the top of the marine deposits are estimated as 420ka (MIS11) and 330ka (MIS9), the average slip rates are calculated at ca. 0.15m/ka. Consequently, the Ayasegawa fault has been active with a constant average slip rate since the Middle Pleistocene and produced large earthquakes repetitively.