## An ancient large earthquake revealed from the trace of the earthquake, and possibility of existence of "Unknown Fault" in Tama Hills

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In my research, I speculated two things about "sand boils" and "clastic dikes" found in Kanagawa prefecture and Tama area (suburb of Tokyo) by the field survey. Sand boils and clastic dikes are known as traces of liquefaction phenomenon and they are mainly found in sedimentary rock layers. Due to the decrease in outcrops because of the construction of residential land in recent years, confirmation of the traces was only five places. An earthquake was estimated by the trace's condition, the positional relationship of traces, and the sedimentary environment of the layers which contain the traces. The first estimation is the reality of the earthquake that triggered them, and the location and scale were estimated using the formula of the distance relation between epicenter and the point which the traces occur. As a result, it was revealed that there was a possibility that an earthquake of magnitude 5.5 or more occurred after 1.43 million years ago near the Tama hills, and an earthquake of magnitude 6.0 or more occurred after 7.00 million years ago in the Shonan area(coast area of sagami bay). The second estimation is about the strange traces that were confirmed in the field survey. Multiple clastic dikes (consist of silt) have been confirmed on the riverbed of the Tamagawa River in Komae City, suburb of Tokyo. As a result of measuring the direction of the dike using a clinometer and examining the distribution of the dikes from GPS position data, it was found that they were in approximately parallel. They seemed Riedel shear as a trace of the strike-slip fault, and it can be seen from the Mi (one of Japanese Katakana characters)-type arrangement that it was caused by the left-slip fault. As a result of checking the relationship between the direction of Riedel shear and the motion direction of the strike-slip fault, and the distribution and direction of the strike-slip faults in the surrounding area, the faults that correspond to the surroundings were not confirmed well, and this trace shows the unknown strike-slip near the Tama hills. Or it was revealed that it may have been caused by the fault or some activity of the Shiozawa fault zone in Shizuoka prefecture (next to Kanagawa prefecture). However, if there is an unknown fault, where is it and how large the earthquake is? Or if it is due to the activity of the Shiozawa Fault zone, how much a fault moves to occur dikes? I have not yet guessed that. These speculations are my future challenges.

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