Evaluation of the activities of the Takada-heiya fault zone based on trench excavation survey

Takashi Azuma[1]; Daisuke Hirouchi[2]; Etsuo Iwasaki[3]; Mitsunobu Usami[3]

[1] Active Fault Research Center, AIST, GSJ; [2] Aichi Institute of Technology; [3] Dia Consultants Co.,Ltd.

We excavated two trenches in order to reveal the history of fault activity in the Takada plain, where both east and west margins are bounded by active faults. These faults were recognized as long ones after detailed geomorphological surveys by Watanabe et al. in 1990's. Around this plain, three destructive earthquakes were recorded in historical documents, but there is no information on the relationships between these earthquakes and active faults along this plain.

We chose two trench sites, Oizumo and Miyauchi, in the southern part of this plain.

At the Oizumo site, trench was excavated across a scarplet that is located on the extension of the foot of the NW-SE trending flexural scarp on the late Pleistocene pyroclastic flow deposits surface. Slip on the bedding of the pyroclastic flow deposits continue into Holocene fluvial sediments, which overlay the pyroclastic flow deposits with unconformity. These structure could be formed accompanying to the growth of flexure which suggests the existence of main blind fault beneath it.

Another trench at the Miyauchi site exposed a small fault cutting terrace deposits. Several faults are running in parallel with NNW-SSE direction around this site and our trench was excavated across one of them. Terrace deposits tilt toward east and are cut by the fault with vertical offset of ca. 50 cm. Drilling survey on the down-thrown side of the fault shows that the tilting of terrace extends to rather east. Therefore a fault in the trench is intrepreted as one of a secondary structure generated on the flexural scarp.

We can obtain the age of the faulting events for both sites, based on the results of dating analysis. However, those ages can't limit the timing of the last faulting event, because it is not necessary that the secondary structures accompany to all activity of the main structure.