

Relationship between active fold and slope collapse by earthquake in Shinano River Tectonic Zone

Mamoru Koarai^{1*}, Taku Komatsubara², Takayuki Nakano¹, Takaki Okatani¹, Takahito Kuroki³

¹GSI of Japan, ²AIST, ³Fukuoka University of Education

We discuss the relationship between active fold and slope collapse in Shinano River Tectonic Zone. Fig.1 shows the distribution of terrace and geological structure around Uono River. The oldest terrace H1 which was formed over 300ka covered by Iz-Kt tephra is distributed in Doko highland. The terraces from over 300ka (H1 terrace) to recent (L6 terrace) are distributed on the left bank of Uono River, however, new terraces (L3-L6 terrace) are only distributed near the junction of Uono River and Shinano River. Since the amount of uplift of this area was large, about 1m uplift was measured in the 2004 Niigata-ken Chuetsu Earthquake. As the axial of Higashiyama anticline is located in this area, we considered the growth of active fold was occurred by this earthquake. In the Imokawa River basin, the terrace covered by Ab-t1 tephra (Imokawa 3 terrace) was identified with L5 terrace, and the terrace not covered by loam (Imokawa 5 terrace) was identified with L6 terrace.

In the 2011 Nagano Niigata Border Earthquake, the slope collapse and road deformations were concentrating by the hanging wall side of a reversed fault. Since these distributions of deformations are dominated by anticline and syncline structure and GPS data shows uplifting of the shape of a dome by the side of a hanging wall, a possibility of the growth of active fold in this earthquake can be suggested.

Fig.1 Distribution of terrace and geological structure around Uono River

Keywords: active fold, slope collapse, Imokawa River basin, Chuetsu Earthquake, Nagano Niigata Border Earthquake

