

Active tilting along the eastern margin of the southern part of Kyoto Basin, central Japan

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1. Introduction

The presenter describes the newly discovered late Quaternary flexure that divides the Kyoto Basin and its surrounding hills. The Kyoto Basin is bounded by active faults, however there is only a little knowledge on the geologic structure of the eastern margin of its southern part.

2. Features of higher terraces and their deposits

There are higher river terraces along the Uji River that run from east-ward hills to the Kyoto Basin. These terraces are useful to horizons of late Quaternary crustal movement. The higher terraces are subdivided into two surfaces.

The highest terrace called the higher 1 terrace consist of thin (less than several meter) hard-weathered gravel and sand, and it is covered with reddish soil that accompanied with reticular texture. These reticular texture in surface soil are major index to identify the higher 1 terrace. The higher 1 terrace forms hill-top flat land, and is continuously distributed in the southern side of the Uji River.

The higher 2 terrace deposits comprise thick (over 50 m at the thickest point) weathered gravel, sand and mud, and its surface is covered with reddish soil. This thick fill deposits and reddish soil that not accompanied with reticular fabric are index to identify the higher 2 terraces. The higher 2 terrace is discontinuously distributed along the Uji river.

No geo-chronological samples are gotten in this study area, however color of the surface soil and weathering degree of sediments indicates these two terraces are late middle Pleistocene in age.

3. Deformation of horizons and description of the late Quaternary tectonic movement

These two wide-spreading river terraces have west-ward gradient. The inclination of higher 1 terrace and the higher 2 terrace are 35/1000 and 17/1000 respectively on the projection to N70W direction in 2 km section. The inclination of the higher 2 terrace is 28/1000 in 5 km section, and relative height of this section is 140m. On the other hand, inclination of the recent river bed of the Uji river is about 1/1000.

These facts indicate the cumulative west-ward tilting have occurred during the late Quaternary, and mean vertical displacement rate of this tilting movement would be ranked to B class (0.1 to 1 mm/yr) in activity. This activity would be comparable to the other given active faults surrounding the Kyoto Basin. The length of this geologic structure is thought to be longer than 3km according to the width of the higher terrace. This late Quaternary geologic structure is called the Uji flexure.

The deepest subsidence has occurred near the Oguraike marsh in the Kyoto basin during Quaternary (e.g. Kansai Geo-information Application Committee, 2002).About 800m Quaternary Basin-fill deposits have piled in this area. This distinct subsidence area locates just west of the Uji flexure. This fact also supports that the Uji flexure is active structure during late Quaternary.

4. Re-examination of the continuity of active fault zone

The former studies had not recognized active fault in the southern end of the Kyoto Basin. And there is about 7km-long gap of active fault between the Kyoto Basin and the Nara Basin. The Headquarters for Earthquake Research Promotion (HERP;2005) summed up that the Kyoto bonchi toen fault zone (eastern marginal fault of the Kyoto Basin) has to be evaluate different segment from the Nara bonchi toen fault zone. The presenter thinks that at least northern 3km of this active fault gap is not exist. And activity of newly discovered active flexure would be comparable to the other active fault. This suggests necessity of re-examine the long-term fault evaluation.

References

HREP(2005)Long-term Evaluation of the Kyoto bonchi-Nara bonchi Fault Zone. http://www.jishin.go.jp/main/chousa/01jul_keina/index.1
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Keywords: active tilting, active fault, Kyoto Basin, higher terrace, Uji Flexure