

Argument against the evaluation of active faults authorized by the Headquarters for Earthq. Res. Promotion (1)-Hakodate Plain-

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The Earthquake Research Committee (ERC), the Headquarters for Earthquake Research Promotion of Japan, published the evaluation of the active fault zone along the western margin of Hakodate Plain, dated June 13 in 2001. In the evaluation, ERC inferred that the fault zone had ruptured probably three times in last 40,000-50,000 years and that the vertical slip per event was about 3m. And ERC concluded the fault would generate M 7-7.5 earthquake in future. But, these recognitions are not consistent with field evidence. Two main questions are listed as follows.

1. Is the vertical displacement per event three meters?

The youngest morphological surface deformed by faulting is namely Terrace 6 (T6) in Hakodate Plain. Based on systematic measurement of flexure scarp on T6, the vertical slip is estimated about 3m on southern area but 0.5-1m on northern area. Hokkaido government (1999) shows that the vertical displacement at last event is estimated about 1.5m based on the vertical separation indicated by depositional surface of fluvial gravel and sandy silts including Nigorikawa Tephra (Ng-tephra: 12,000y.B.P.) in Ichinowatari -minami trench (IST) on the northern area. It also implies that the value of 3m on southern area indicates accumulation for last two events and that T6 is able to subdivide into two areas by age of emergence. This is supported by the fact that Ng-tephra occurs as air-fall deposit in arian loam covering the fluvial gravel in southern area but as reworked deposit in northern area. Why did ERC adopt 3m for vertical slip per event?

2. Is the timing of the last faulting event unable to be recognized?

Although ERC accepted the last faulting event shown by the monocline of sandy silts including Ng-tephra at IST, ERC did not recognize the monoclinical structure of sandy silts containing Ng-tephra at Ichinowatari-chuo trench (ICT), 150m north of IST, where offset landform is indefinite because extension of flexure scarp is covered by alluvial cone. Hokkaido government (1999) shows that thin layer of peat which overlies sandy silts including Ng-tephra down-warps eastward and is unconformably overlapped by alluvial cone deposit in ICT. This stratigraphic relationship indicates that last faulting event occurred between deposition of the thin peat layer and overlapping of alluvial cone deposit. However, very little states about this stratigraphic interpretation in the evaluation by ERC. This needs explaining.