

Continuity between the Hinatatoge-Okasagitoge Fault and the Itoshima-hanto-oki Fault Group, West Japan

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Research in recent years has identified three active faults over almost straight line between the Itoshima Peninsula offing in Fukuoka Prefecture and Tosu City in Saga Prefecture. The Itoshima-hanto-oki Fault Group and the Maebaru Fault were first recorded by the Kyushu Electric Power Company Inc. (2009) and the Hinatatoge-Okasagitoge Fault by the Research Group for Active Fault Geometry and Segmentation (unpublished). The possible continuity of three faults was not investigated because these faults were found by different organizations, and the Hinatatoge -Okasagitoge Fault was not investigated in the field.

The present study had two aims. First, to research the topography and geology of the Hinatatoge-Okasagitoge Fault and the Maebaru Fault in order to clarify their locations and activities. Second, a drilling programme was carried out to investigate the possible continuity of the three faults.

The results were as follows. An analysis of air photographs proved sinistral displacements of a valley and a mountain ridge, the presence of a low fault scarp, and the outcrops of the Hinatatoge- Okasagitoge Fault. Additional detailed research was carried out in the following three districts.

1) Wakiyama district, Sawara Ward, Fukuoka City

A low fault scarp (3.5 m high) was recorded on the Lower Terrace 1. The formation age of the terrace is presumed to be approximately 85 ka. It is, therefore, indicating that the average vertical slip rate on the fault is estimated 4 cm/ka (Activity Rank, Class C).

2) Maebaru district, Itoshima City

A linear topographical feature was recorded at Maebaru between the Hinatatoge-Okasagitoge Fault and the Maebaru Fault. Borehole records show that there is a 6.6 m high displacement of the top of the granitic basement beneath this feature. A borehole core proved a fault in the granitic rocks and an 0.57 m displacement of the base of the middle terrace deposits. There is, therefore, an active fault in this district.

3) Shinowara district, Itoshima City

Borehole cores drilled for an expressway proved a 7.22m high displacement of the top of the granitic basement. This confirms the presence of an active fault in this district.

The principal conclusions of this study are:

1) The detailed study of the topography and field geology has defined the position of the Hinatatoge-Okasagitoge Fault.

2) Previously unknown faults were recorded in the area between the Maebaru and Shinowara districts at Itoshima City, midway between the Hinatatoge-Okasagitoge Fault and the Maebaru Fault.

3) The Itoshima-hanto-oki Fault Group, the Maebaru Fault and the Hinatatoge-Okasagitoge Fault form part of a single fault zone with a combined length of approximately 51 km (M=7.7).

4) The average vertical slip rate on the Hinatatoge-Okasagitoge Fault in the Wakiyama district, Sawara Ward, Fukuoka City, is estimated to be 4 cm/ka (Activity Rank, C Class).

Keywords: Hinatatoge-Okasagitoge Fault, Itoshima-hanto-oki Fault Group, Maebaru Fault, borehole cores, combined length, average slip rate