

The Unusually Gigantic Boulders from Kui Town in Hiroshima Prefecture, Western Japan

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広島県久井町にみられる巨大礫

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We discovered the unusually gigantic boulders of granite from the Yamanakano and Tsuchitori areas of Kui Town in Mitsugi County, Hiroshima Prefecture, western Japan. The areas studied by us are situated in the southern part of the so-called Sera highland regarded as the elevated peneplain and consist of the Holocene deposits and the granite intruded in the Late Cretaceous time. The gigantic boulders can be classified into two types of boulders such as type A and type B. In this paper are given the description of the boulders and the discussion on the origin of the gigantic boulders of type A and type B.

Key Words (キーワード)

Gigantic boulder (巨大礫), Granite (花崗岩), Mud flow or debris flow (土石流), Natural disaster (自然災害), Hiroshima Prefecture (広島県).

In this paper we treat of the unusually gigantic boulders of granite discovered from the Yamanakano and Tsuchitori areas of Kui Town, about 10 km to the northwest of the city of Mihara in Hiroshima Prefecture, western Japan (Figure 1). Both the areas of Yamanakano and the Tsuchitori are located in the southern part of the so-called Sera highland (Sera Daichi).

We found out many unusually gigantic boulders in the Yamanakano area and only one gigantic boulder in the Tsuchitori area mapped by us (1980¹⁾, 1981²⁾). We call the former the type A and the latter the type B.

The boulders of the type A (Figure 2) are lying on the crest of the hill composed of granite which intruded in Late Cretaceous time and they are quite similar to those of Matopo Hill, (Southern Rhodesia) Southern Zimbabwe (C.T. Trechmann in A. Holmes, 1964, p. 398, fig. 277³⁾; p. 227, fig. 114⁴⁾). They might be produced as the core rocks by weathering during the time, probably, from the Miocene to the Holocene and the weathered material is considered to have been washed out or eroded out. Taking all these considerations into account, the boulders can be regarded as being residual boulders originated from granite forming the hill (Sada, 1996, p. 13, fig. 3)⁵⁾.

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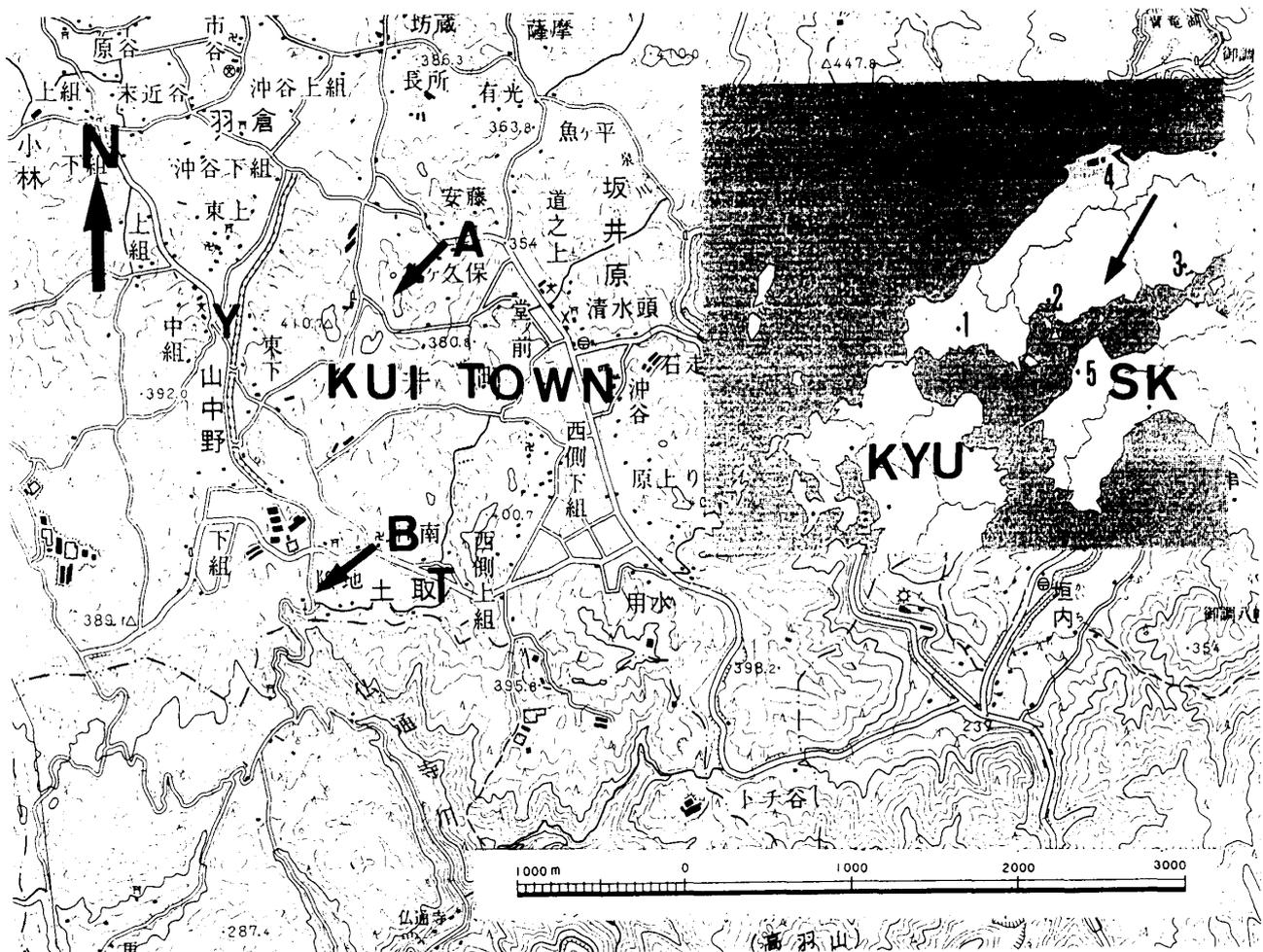


Figure 1. Map showing the location of the studied area and the localities of the unusually gigantic boulders in the southern part of Kui Town in Hiroshima Prefecture.

Localities plotted on Geographical Survey Institute of Japan topographical map "Onomichi" of scale 1:50000, and the index map was taken from Data Map Japan for Windows by Soiku & Co. Ltd.

In the index map, 1 indicates Yamaguchi, 2 Hiroshima, 3 Okayama, 4 Matsue, 5 Matsuyama, SK Shikoku and KYU Kyushu, respectively. In the locality map, A shows the locality of type A and B the locality of type B, respectively. T indicates Tsuchitori and Y Yamanakano, respectively.

On the other hand, the boulder of the type B (Figure 3) rests upon the Holocene sediments in the rice field and we could not observe any relationship between the boulder and the Holocene sediments in the rice field. It seems to us that the boulder was transported from the hinterland by a catastrophic debris flow or a mud flow (debris flow) consisting of boulders, soil and muddy water with the heavy specific gravity.

Most part of Hiroshima Prefecture is composed of granite intruded in Late Cretaceous time, and there, the depth of the weathered granite crust is generally very deep on the flat surfaces of the Sekiryō highland (Chugoku backbone range), the Kibi highland, the



Figure 2. The unusually gigantic boulders of the type A in the Yamanakano area in Kui Town.



Figure 3. The unusually gigantic boulder of the type B in the Tsuchitori area in Kui Town.

Sera highland and the Setouchi. They generally involve thousands of the core rocks of the boulders.

The slopes between each surface of the highlands contain the residual boulders and the talus developed on it is consisting of boulders and mud. Therefore, the catastrophic debris or the mud flow (debris flow) caused by heavy rain gets a lot of the boulders in its point and attacks the houses and people with the boulders. The natural disasters, for instance, of Ohno-Cho in 1945, Kure City in 1945 and 1967, and Kake-Cho in 1988, all in Hiroshima Prefecture, resulted from this type of the catastrophic debris flow or the mud flow (debris flow).

Thus the unusually gigantic boulder at Tsuchitori (Figure 3) can be considered to be the boulder in the tip of the catastrophic debris flow or the mud flow (debris flow) which occurred sometime in the past.

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