

## Relations of urbanization and the suffering of the alluvion drill, on large debris disaster of Hiroshima

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By the large-scale debris flow disaster in Hiroshima-City that occurred on the early morning of August 20, 2014, a lot of debris flows occurred for all-at-onceness from the steep mountainous district near plains and overflowed in the residential area of slope of diminishing gradient which was formed to border the foot of a mountain that faced it mainly along the valley of the lower Otagawa region and brought big damage. Hiroshima region has little level ground, and a mountainous district with Chugoku district special constant height spreads out. Steep terrain of relative height 300m - 700m approaches the level ground, and slope of diminishing gradient of 3 degrees - 20 degrees is formed at the exit of many valleys flowing down from the mountainous district a slant. In the Hiroshima suburbs lacking in the level ground, this slope of diminishing gradient is developed flourishingly as a residential land. However, according to the exact topography model that it made by a model laser profiler mounted with a plane after a disaster, as for most of slope of diminishing gradient, it became clear to be the alluvion drill which the development of the bench was formed from the extremely fresh sedimentation side that it had little. As for this, slope of diminishing gradient is the place where accumulating continues now; of the mud flood flow down; and suggest that sedimentation occurs frequently. In fact, of the mud flood by this disaster that Japan Society of Erosion Control Engineering made flowed down, and a slant overlapped with the range of 3 degrees - 20 degrees, and, in the sedimentation range, a lot of of the place that occurred of the victim was almost slope of diminishing gradient more than slant 7 degrees that the valley exit was near again. In addition, a mean incline between the style inferior segment of the mud flood matches that a mud flood sedimentation section is said more than 3 degrees more than 10 degrees. In Hiroshima District, I suffer big damage in a residential area developed by the large-scale earth and sand disasters that occurred on June 29, 1999 in the similar topography ground in the past. Therefore, using base map information numerical value topography model, a slant around Hiroshima-City extracted the domain of less than 20 degrees more than 3 degrees. As a result, in slope of diminishing gradient formed by the alluvion drill top and creation over a wide area in the city, a slant was able to extract domains more than under 15 degrees, 15 degrees more than less than 10 degrees, 10 degrees more than 3 degrees. After repeating a population concentration area in these domains, it was wide, and, on a slope having a slant equivalent to a mud flood sedimentation section between the mud flood style inferior segment in the Hiroshima-City suburbs, it was confirmed some other time that development advanced.

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