

Regional distribution of large landslide configurations in Japan

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Distribution maps of large landslide configurations (1:200,000 scale) were created by compilation of existing landslide maps and decipherment of 1:25,000 scale topographical maps on whole Japanese islands. Data about the position of landslides are registered on the GIS (Geographical Information System; for Arc View) and can be used for various statistical analyses.

Data on geology, relative height, mean gradient, mean elevation, and dispersion of altitude were prepared with 2kmx2km grid to discuss the relationships between the regional distribution of landslide configurations, and topography and geology. The number of meshes for statistical analyses is 90,661. The geological data were compiled to 15 categories from the one million-scale geological map (Geological Survey of Japan, 1995) by referring the categories of Kuroda (1982). Data on relative height, mean gradient, mean elevation, and dispersion of altitude were calculated from the digital map 50m grid published by Geographical Survey Institute.

33.7 % of analysis meshes contain landslides. These meshes are named landslide mesh here. The meshes in which 40% or more of area are occupied by the landslide configurations are named dense landslide mesh.

About 19,000 meshes are occupied by alluvium and terrace and hill deposits. The other 71,000 meshes are occupied by mountains, low mountains and volcanoes. About 40% of the latter 71,000 meshes are landslide meshes. The geological categories which include many landslides are the Pliocene sedimentary rocks, Green Tuff and the Paleogene and Neogene coal-bearing sedimentary rocks. In these geological categories, 50% or more of meshes belong to landslide mesh and the rates of dense landslide mesh are twice or more as high (7.3%) as the whole average. The rates of a landslide mesh exceed 40% in the geological categories of the Pliocene volcanic rocks, the Cretaceous Izumi Group, the Sambagawa metamorphic zone and the Mikabu zone.

Landslide meshes show frequency distributions of relative height and mean gradient which are similar with all meshes. This fact suggests that regional distribution of landslide configurations are not controlled only by relative height nor mean gradient. Dense landslide meshes are not distributed on the slopes whose gradients are less than 10 degrees or greater than 40 degrees. Most of the landslides distributed in the area whose range of dispersion of altitude are 40m-100m.