



Denudation of an uplifted peneplain by landslides in the central Asan Mountains, northeastern Shikoku, Southwest Japan

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Many landslides are distributed near gentle ridge tops in the Asan Mountains along the Median Tectonic Line, northeastern Shikoku, southwest Japan. Topographic analysis and geological investigation revealed that these gentle ridge tops are the remnants of an uplifted peneplain, which is now being denudated by landslides. We interpreted aerial photographs, made field investigation, and analyzed the topography by using DEM (Digital Elevation Model) with a mesh size of 50m. The bedrock in the study site is the Cretaceous Izumi Group consisting of the alternating beds of sandstone and mudstone. Ridge-top gentle slopes are in the elevations from 400m to 700m and some of them have gravels on it, indicating that they used to be river beds. The ridge-top gentle slopes are dissected by landslides, which were induced by the rejuvenation of rivers and by undercut. Landslides repeated and retrogressed, making the area of the “peneplain” smaller and smaller. There are linear depressions on the marginal slopes of some ridge-top gentle slopes, indicating the incipient stage of landslide. Rejuvenation of rivers occurred stepwise, which is indicated by the presence of step-like gentle slopes bounded by a concave slope break upslope and by a convex slope break downslope. Along these convex slope breaks are aligned landslides induced by the undercut at convex slope breaks. Large landslides thus occurred on slopes with slope breaks, which were made by the rejuvenation of rivers. On the other hand, large landslides are also controlled by geology; they are concentrated on cataclinal slopes. Mass movements to dissect anaclinal slopes are slope failures, leaving only steep slopes and no landslide mass on the slopes.