



Genetic types of large-scale landslides induced by The Wenchuan earthquake

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The 5.12 Wenchuan earthquake had induced thousands of landslides, including hundreds of large-scale ones. Through the deep investigation and survey on the 20-landslides of its deformation and destroy characteristics induced by the Wenchuan earthquake and combined with the tools of shaking table test and numerical simulation, we found that the deformation and destroy model and the intrinsic mechanical mechanism of these large-scale landslides induced by the Wenchuan earthquake is observable different from landside mechanism induced by routine gravity. On the condition of strong shock, the earthquake-horizontal acceleration on the middle-top of the declivity can exceed $1g$, and its earthquake horizontal inertia enormously exceeds the tension strength of the rock mass. Seismic action firstly shaped a deep large fissure which was parallel to the clinohedron on the back of the slope, and then the bottom of the pull-apart rock mass engendered shearing glide, finally, there induced landslide. On the condition of strong shock, the most essential deformation and destroy element of the slope rock mass are tension-cracks and shearing glide, and mainly based on tension-cracks. As far as different slope constructs, the bottom shearing glide will occur with different discontinuities. According to the geological environment of the landsliding source region as well as the characteristics of the slope form and lithological association, this article separated the large-scale landslides, induced by the Wenchuan earthquake, into five genetic types: tension-cracking and consequent sliding, tension-cracking and bedding sliding, tension-cracking and horizontal sliding, tension-cracking and scattering sliding and tension-cracking and shearing sliding.