



Earthquake-induced Landslides and Quake Lakes during the great Sichuan Earthquake of May 12, 2008 (Sichuan, China)

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The Mw 8.0 R earthquake on the 12th of May 2008 that stroke the Sichuan Prefecture of the People's Republic of China caused tenths of thousands of casualties and significant social and economic consequences. The earthquake was triggered by a reverse fault approximately 100 km in length, of NE-SW strike, dipping towards the NW with a reverse-lateral slip character and focal depth of 18 Km.

Due to the great height and steepness of the slopes and their loose geotechnical characteristics in the mountainous terrain, thousands of landslides and collapses occurred in the Longmenshan fault zone during the earthquake, resulting in a large amount of geotechnical damages, such as the destruction the roads, villages, towns and bridges. A total of more than 9000 geological disasters occurred, among which there were approximately 4000 landslides, 2300 slop collapses, 800 debris flows, 1700 unstable slopes and more than 80 locations with hidden danger of geological hazard. Approximately 1.000.000 people and their properties in the affected area were under a directly serious threat.

Landslides mobilized millions of cubic meters of rock and soil that slid across adjacent rivers, creating large landslide dams. The blockage of rivers was accompanied by the formation of quake lakes that were flooding the upstream river valleys. As water rises, there is potential of overtopping and downstream flooding.

In the affected area 32 quake lakes were formed of various scales. he largest one , and most dangerous, is located in Beichuan County. The lake was formed because massive landslide partially blocked Qianjiang River upstream of the devastated Beichuan County seat. It is 40 m deep and contains about 30-40 million m³ of water. The landslide dam had a height of 60 m, the quake lake in the Shitingjiang River direction is more than 900 m long, its largest width is more than 600 m, and its area at the dam crest level is about 300.000 m². As of June 7, 2008 the reservoir capacity of the quake lake was 240 million cubic meters, which posed a threat to a significantly large area of the down-stream zone, however the hidden danger was relieved by dredging and water drainage.