



Controls of the Xiannvshan Fault on landslides and Reservoir induced earthquakes located at head area of the Three Gorges Reservoir

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Landslides and reservoir induced earthquakes are two main types of geological disasters, which have serious influence on the Three Gorges Project. The Xiannvshan Fault is ten kilometers away from the Three Gorges Dam, and it has important control on landslides and earthquakes located at head area of the Three Gorges Reservoir. Data collected show that: (1) the fault stretch runs in northwest-west orientation with a total length of more than 80 kilometers, its north endpoint extends to the Yangtze River and Jiuwanxi Fault is one of its branches. The Xiannvshan Fault has a high level of activity with the average annual decline of 0.076mm in the west wall and the dextral sliding of 0.116mm. (2) Controls on landslides resulted from the Xiannvshan Fault lie in two aspects. One is a large of landslide accumulation bodies resulted from two collapse events, which are corresponded to the two intense faulting. The other is that the Xintan landslide occurred in 1982, which is resulted from the stress accumulation of the fault. (3) The Xiannvshan Fault is active. Three big earthquakes had been induced by the fault from 1959 to the time of impounding, of which one occurred at its southern endpoint, Panjiawan of Yidu, and was magnitude 5, one occurred at its northern section, Zhou Ping, and was magnitude 3.3, and another occurred at Huilongguan of Zigui with a magnitude 5.1. Earthquakes have been happening more frequently after the impoundment of the Three Gorges Reservoir or on the high water level than before. More than 40 earthquakes with magnitudes bigger than 3.3 were recorded after the impoundment, of which 4 ranged from 4.1 to 5.1 and occurred when the high water level was decreasing. Otherwise, most earthquakes centered on the northern endpoint of the fault, which indicates a characteristics of tectonic reservoir earthquake. This study, for the three gorges reservoir area landslide and seismic reservoir prediction is of great significance.