



Sedimentation in the high mountains of Taiwan

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Abstract

This research focuses on sedimentation processes from four large reservoirs of Taiwan. According to the surveying of sediment delivery between 1934 and 2004 from the upstream area at the Techí, Shimen, Feituei and Wanta reservoirs, the process that dominates sediment delivery in Taiwan is typhoon rainfall. The study shows that Taiwan has an exceptionally high sedimentation rate (2.1-4.9 mm/yr), primarily because of the juxtaposition of tectonic activity and intense tropical storms. The results of the study suggest that sedimentation processes in Taiwan are interesting in four respects: 1. The rate of sedimentation is exceptionally high, especially in the areas studied here, which are founded in tectonically-active areas on metamorphic rocks that are all susceptible to erosion in the sub-tropical environment; 2. The high stream power and erosivity leads to high denudation rates, especially at the river bank; 3. Loose materials are generated from weathering as well as slope deposition from previous landslides; and 4. Large earthquakes weaken slope materials, which can then detach from slopes during heavy rainfall or typhoon. The volume and impact of sediments generated by earthquakes and typhoons need to be taken into accounts during the design and construction of infrastructure projects.