

The impact of the Chi-Chi earthquake on suspended sediment transport in the central and southwestern Taiwan

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Abstract

The Chi-Chi earthquake (September 21, 1999; M7.3) has caused significant changes in local landscapes and subsequently in the earth surface processes in Taiwan. Three watersheds, Choshui, Tsengwen, and Kaoping Rivers, located in the central and southwestern Taiwan at different distances from the epicenter were used to examine the impact of the Chi-Chi earthquake on suspended sediment transport temporally and spatially. The post Chi-Chi earthquake suspended sediment load in the Choshui River watershed where the epicenter is located has increased since in both upper stream mountain and lower stream floodplain regions. Yet, the post earthquake suspended sediment load showed an increase at lower surface water discharge in the Kaoping River watershed, about 180km south of the epicenter. In addition, this significant increase in load occurred mostly in the upper stream mountain region. Surprisingly, the post earthquake suspended sediment load showed a decrease in load in the lower stream floodplain regions. Most suspended sediment transport particularly took place during the wet season, May to October in the region. This may have played an important role for this spatial distribution pattern. The Tsengwen River watershed, about 100 km south of the epicenter, showed the same patterns as that of Kaoping River watershed. However, the post earthquake suspended sediment load changes seems short-lived in the study area.