The seasonal variation of discharge and suspended load of Tsailiao river in southwestern Taiwan

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The Tsailiao River, a distributary of the Tsengwen River, flows through the weak and easily eroded rock formation. That results in high concentration of the river loads. This paper attempts to analyze the characteristics of rainfall, discharge and suspended load of the Tsailiao River based on the hydrological data from 1972-2004 documented by Water Resource Agency. The results show that about 90% of the annual rainfall (2,383 mm) concentrates in the wet season (Oct.-March), especially in June, July and August. It is also remarkable that more than half of annual rainfall concentrates in 13 day/yr in several severe typhoons. Therefore, 95% of the annual runoff distributed in the wet season. The discharge is 10.9 cms in average, and the maximum daily discharge reaches 613 cms. Dramatically the instantaneous discharge has even gone up to 1030 cms occur in Typhoon Polly, August 1992. In contrast, the discharge less than 1cms was lasted for some 8 months per year. Under the effect of intense rainfall and eroded soil and rock, nearly all the annual suspended load (6.7×106 t/yr in average) concentrates in the wet season, especially in August (40%). More than 80% of the suspended load concentrates sharply in some heavy rainfall events occurred only in 13 days per year in average. The maximum daily suspended load in history is up to 17.6 million tons, one thousand times of its daily average value (18×103 t/day) occurred in Typhoon Herb. On the contrary, the suspended load less than 1 t/day has been delivered for some 4 months per year. In conclusion, the discharge and suspended load of the Tsailiao River vary strongly with seasons and the trend has shown no significant change over the past 30 years.

Key words: rainfall, discharge, suspended load, Tsailiao River

Geomorphic indicators and indices of active tectonics in the Fengpin River Basin, eastern Taiwan

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Methods of indicators of active tectonics, including (1) aerial-photo interpretation of changes in width of channel and fluvial terraces, (2) geomorphic indices of active tectonics, (3) characteristics of sediments, channel geometry and hydraulics, and (4) palaeo-long profiles, were applied to identify possible locations of active tectonics along the Fengpin River, eastern Taiwan. It is hypothesised that anomalies of these indicators of active tectonics should occur coincidentally at similar locations if active tectonics exists. The results aim to answer the question: where the locations of active tectonics in the Fengpin River basin are? Several possible locations of active tectonics were identified in the Fengpin River basin, but not all the indicators of active tectonics occur at the same location, and, therefore, data interpretation is difficult. Why the inconsistency between the indicators happens and what causes it is discussed.

Key words: active tectonics, Fengpin River