



Estimation of the relative tectonic active rate by stream power erosion model in the Chiayi Area, Taiwan

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Abnormal high m/n ratios, $0.40 \leq m/n \leq 0.76$, were found in one of the most active region of the western Foothills, Chiayi, Taiwan, making this area an unique site for stream power erosion model studies . This unusual high ratio range indicates two possible causes: (1) higher local incision/erosion rate and (2) lower regional tectonic modify. In order to differentiate the significance of the effect, we calculated the mean annual precipitation, water discharge and suspended sediment export concentrations (Cs) for a period of eighteen years (1983~2001). These data were used to represent the local erosion efficiency in the study area with the assumption that they all under the same hydrological influence. The preliminary results show that m/n ratio primary reflects the tectonic activity in the study area mainly based on precipitation and Cs values. In addition, the spatial distribution of m/n ratio also indicates that the tectonic active effect plays a more important role by faults crossing than the erosion effect does in the study area.