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## Anthropogenic and precipitation factors affecting karst soil erosion in the Nandong Underground River System in Yunnan, Southwest China

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In karst areas, underground riverine sediment has been widely used to reflect the subterranean stream basin erosion, which influenced by both of precipitation and anthropogenic factors. In this study, 15-years of the sediment yield across Nandong underground river system of China were monitored, Mann-Kendal mutation test and simple proxy indicators were used for detecting the influences of human activities and precipitation on sediment yield. The results showed that: 1) both of the anthropogenic factor and rainfall impacted sediment yield, although the influence of anthropogenic factor on sediment yield was greater (76.38%), and 2) rainfall showed a hysteresis effect on soil and water loss. There were three distinct stages based on the mutation points and variation characteristics of sediment yield from 1998 to 2014, resulting from different driving forces. Before 2004, the decrease of sediment yield was caused by natural forest protection project in the whole basin. During 2004 to 2008, because of drought, flood disaster and cultivation on steeper slope, sediment yield of the basin increased. After 2009, sediment yield decreases due to the construction of soil conservation projects and mushrooming reservoirs. As human population is expected to increase, these findings are expected to provide insights for watershed management and ecological restoration in the fragile karst ecosystem.