

Temporal and Spatial Variations of Weathering Along the Catchment of Heping river and Sinwulyu river in Eastern Taiwan

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This study conducted a comprehensive investigation of physical and chemical weathering along two catchments in eastern Taiwan by accessing the curve of ion concentration from 2012 to 2016, landslides and sediment discharge triggered by typhoon or earthquake events.

The water hydrochemical experiments were carried out on Heping catchment in the north part and Sinwulyu catchment in the south part of eastern Taiwan, respectively. The chemistry in Heping river was rock-dominance. Carbonate dissolution was the main source of river chemistry during wet seasons (May to October), followed by silicate weathering during dry seasons (November to April). Sediment discharge yielded during wet seasons was 5.4 times higher than which during dry seasons. The annual sediment discharge was 4.4Mt, and the concentration of sediment discharge was proportional to water discharge with R-squared 0.52. Moreover, the concentration of sediment discharge increased with earthquake events apparently and then decreased after about six months. On the other hand, the chemistry in Sinwulyu river was rock-derived, too. Total dissolved solid primarily derived from carbonate during wet seasons along with silicate-derived chemistry during dry seasons. Sediment discharge yielded during wet seasons was 29.4 times higher than which during dry seasons. The annual sediment discharge was 19.4Mt and the concentration of sediment discharge was in proportion to water discharge with R-squared 0.66.