

Sediment Regimes in South Korea

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Abstract

This study provides a comprehensive review of the existing river measurement data of South Korea. The specific sediment yield in the country is 5–1,500 tons/km²·year. The watershed area decisively affects the shapes of the curves for flow duration, sediment rating, and cumulative distribution of water and sediment discharge, and it can determine the effects of topographic and anthropogenic characteristics on erosion and sedimentation processes. Regarding flow regime, small watersheds have flashy hydrographs and high sediment concentrations at a given flow discharge. The coefficient of the sediment rating curves for various rivers decreases from 1 to 0.02 as the watershed area increases from 100 to 20,000 km², with the exponent of the curves ranging from 1.5 to 2.0. Moreover, sediment transport in small watersheds depends on large floods. The half-yield discharge typically ranges from 5 to 40 times the mean discharge, and it decreases with increasing watershed area. This study proposes equations to calculate the annual discharges, flow duration curves, sediment yield, and cumulative distribution curves of the flow and sediment, as well as the sediment yield at reservoirs in South Korea. Additionally, the sediment regimes in the country are compared to those in other continental regions.

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