Geomorphologic Instantaneous Unit Hydrograph Stream Flow Simulation for the Yalobusha River Basin, MS

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Abstract. In erosion and sedimentation problems, estimating the range of significant stream flows to include when computing sediment transport can prove challenging in ungaged or under-gauged basins. This paper describes an event-based model incorporating a geomorphologic instantaneous unit hydrograph and stochastic descriptions of peak flows and frequency of storm events from nearby reference watersheds to determine discharge at locations throughout the Yalobusha River Basin, Mississippi. Timing the hydrograph according to distance from the basin outlet approximates flood peak travel times. The results of the model were calibrated using a characteristic velocity of flow and compared against flow-duration curves and the annual maximums of an existing gauge.