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Modelling the Mekong: hydrological simulation for environmental impact studies

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Abstract

The Mekong, with a basin area of almost 800,000 km² and a length of 4500 km, is one of the most important rivers of the world. The many lakes and wetlands along the river, including Cambodia's Tonle Sap (Grand Lac), are major sources of fish for the riparian peoples and form an important part of the regional economy. This resource may be affected by proposed developments in the basin. Using climatic, topographic and land cover data from the Internet, the semi-distributed land-use runoff process (SLURP) hydrological model was used to simulate the complete hydrological cycle of the Mekong and its tributaries. Information on dam locations and reservoir characteristics were obtained from local sources. The model was verified by comparing simulated flows with recorded daily flows for the Mekong River and by comparing simulated levels of the Tonle Sap lake with recorded daily levels. The daily computed levels of the Tonle Sap lake were then converted into flooded areas for each land cover around the lake which were

then used in a fish production model to evaluate the possible impacts of basin development on the fisheries. Model outputs may also be used to investigate issues such as water allocations and the effects of land use change or climate change on water resources and the aquatic and riparian environments.



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Keywords

Mekong River; Tonle Sap; Dams; Hydrologic model; Environmental impact

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