

Flood stage forecasting using a data-driven model

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In Taiwan, rivers administered by central government have rigorous flood protecting standard and completely flood forecasting system, nevertheless, rivers governed by local government do not. These rivers usually flow through the urban area and might have a huge impact on local residents' life and property safety if flood occur. Therefore, the flood warning system is getting important for rivers administered by local government and it needs detailed geological and hydrological data for flood modeling, especially for river cross-section data which are usually unavailable for rivers administered by local government. In this study, the high-resolution digital terrain model is used to identify the basic geological/hydrological data of the upstream watershed of the river, such as catchment area, river slope, river width and length. Then the relationship between water level, flow, rainfall and the data above is developed using methods of neural network for establishing a flood forecasting system to predict the water level for rivers lacking of cross-section data. Results of this study may provide local governments a useful protocol to avoid the flood disasters.

Keywords: flood forecasting system, neural network, water level prediction