AOGS 2006

Development of the Flash Flood Monitoring and Prediction Model Using Digital Terrain Analysis Model and Rainfall Radar

BYUNG SIK KIM[1], SEOK YOUNG YOON[1], JUN BUM HONG[1],
KYU HYUN CHOI [2], YANG SOO KIM[2]

[1] *Korea Institute of Construction Technology*

[2] *River Information Center*

Since the latter half of the 1990s the flash flood has became one of the frequently occurred natural disasters in Korea. Flash floods are a significant threat to lives and properties. The government has prepared against the flood disaster with the structural and nonstructural measures such as dams, levees, and flood forecasting systems. However, since the flood forecasting system requires the rainfall observations as the input data of a rainfall-runoff model, it is not a realistic system for the flash flood which is occurred in the small basins with the short travel time of flood flow. Therefore, the flash flood forecasting system should be constructed for providing the realistic alternative plan for the flash flood. To do so, firstly, Flash Flood Monitoring and Prediction (FFMP) Model must be developed suitable to Korea terrain. In this paper, we develop FFMP model which is based on GIS, Radar techniques and hydro-geomorphologic approaches. We call it the F2MAP model. F2MAP model has three main components; (1) radar rainfall estimation module for the Quantitative Precipitation Forecasts (QPF), (2) GIS Module for the Digital terrain analysis, called TOPAZ(Topographic PArametiZation), (3) hydrological module for the estimation of threshold runoff and Flash Flood Guidance(FFG). For the performance test of the model developed in this paper, F2MAP model applied to the Kangwon-Do, Korea, where had a severe damage by the Typhoon Rusa in August, 2002. The result shown that F2MAP model is suitable for the monitoring and the prediction of flash flood.