INTEGRATION OF HIGH RESOLUTION REMOTE SENSING AND WEATHER RADAR DATA FOR OVERLAND FLOW MODELING FOR FLOOD PREDICTION

Patrick Jackson, Gregory Easson. Department of Computer and Information Science, Department of Geology and Geological Engineering, University of Mississippi, University, MS 38677

Predicting potential flooding prior to and during a storm event requires accurate mapping of the spatial variations in a basin and the spatial and temporal variations in the amount of precipitation falling in a basin. Many small municipalities and county emergency planners need access to a system that will accurately predict the amount of runoff from an impending storm based on current rainfall estimates from the National Weather Service's NEXRAD system. Additionally, municipal planners need to be able to model proposed landuse changes in a basin to assess the impact of those changes on surface runoff.

Modeling the amount of runoff from a storm event requires two spatial input components. The basin component describes the hydrologic systems as derived from digital elevation data. This component includes the parameters that define the amount of infiltration of the precipitation. A second component is the spatial and temporal distribution of precipitation falling in the basin.

An integrated system is presented that uses high-resolution remotely sensed information to accurately define the basin component of a hydrologic model. High resolution remotely sensed data used included interferometric synthetic aperture radar elevation data allowing for accurate definition of the hydrologic system. High-resolution imagery will be used to accurately determine the landuse in the basins for a precise definition of runoff characteristics. The use of imagery makes it possible to update the landuse as often as needed to accurately reflect the changes in a basin.