WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2004TX158B

Title: Radar-Based Flood Alert System for Austin, Texas

Project Type: Research

Focus Categories: Floods, Models, Surface Water

Keywords: Floods, Modeling, Climate Data, Use of Real-Time Data

Start Date: 03/01/2004

End Date: 02/28/2005

Federal Funds: $5,000

Non-Federal Matching Funds: $10,084

Congressional District: 2670

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Abstract

Flooding is a severe problem in the Onion Creek Watershed near Austin, Texas. Floods that visited the watershed in November 2001 and July 2002 were some of the most damaging storms in Austin's recent past. The problem facing this watershed is that rainfall draining through Onion Creek flows into the most urbanized parts of this watershed. To help solve this problem, the City of Austin Watershed Protection Department has expressed a great interest in determining if a flood alert system developed by Rice University could be adapted for the Onion Creek Watershed.

In this project, advanced NEXRAD weather data will be acquired from the National Weather Service San Marcos site. Rainfall data will be converted to runoff through hydrologic models. Peak flows and flow relationships for Onion Creek will be calculated through the HEC-1 computer simulation model developed by the U.S. Army Corps of Engineers. The model will be calibrated using data from a number of severe storms, including the floods in 2001 and 2002, and a series of flood nomographs will be created.

Nomographs use data about rainfall intensity and duration to predict flows at points of interest in the watershed. Geographic Information Systems will be utilized to delineate subwatersheds and to develop input parameters about watershed traits.

Once completed, the flood alert system will provide real-time information about flood risks in the Austin area that can be provided to the public through GIS-based maps that may be made available through the internet. The flood alert system will give water resources managers and the public more timely and accurate information about such issues as the need to issue high water warnings, close roads, and take other safety measures. This research builds upon a recent TWRI-NIWR grant awarded to Bedient and graduate student Jude Benavides in which the flood alert system was developed for the Houston area.