Ahmet KÖSE

Flood Early Warning Software With Radar Data On Web Based GIS System

a.kose@ibb.gov.tr

Authors

Yavuz Selim Güçlü, Istanbul Technical University,
Ahmet Köse, Istanbul Metropolitan Municipality,
Selçuk Tütüncü, Istanbul Metropolitan Municipality,
Uğur Şenel, RkSoft,

Floods are among the major nuisances that give damages to urban areas, and therefore, their early warnings are of utmost importance. Although there ready software for this purpose, but they require involved data types and also numerical weather prediction software outputs, which may cause to complexity in the understanding of the fundamental principles and applkications. This paper provides rather effective and simple approach to the problem by taking into consideration the rainfall amount conversion from the radar reflectivity values and also the drainage basin features such area, slope, and especially cross-sections. The software converts the radar born rainfall amounts into surface runoffs and their passages through a set of cross-sections gives raise to different water levels in the cross-section. The first step is to obtain the rating curve between the cross-section discharge and water level, and subsequently, depending on the water levels, a systematic warning procedure is established such that prior to the cross-section flood three early warning levels are established as warning, preperation and alarm cases. The application of the methodology is presented for Cendere drainage basin, which is subdivided into 13 sub-basins each with a control section.