Main theme	Sub - Theme	Code Number
Natural Resources	**Water – GIS**	**2**

Study Name	**An Evaluation of Geographical Information Systems for Surface Water Studies in the Badia Region of Jordan**
Author	Rafe S. Abu Ashour
Date of Study	1998
Objectives	The main goal of the research is to apply GIS techniques for the study of surface water in the Jordan Badia region, in particular the wadi Rajil watershed area. The focus is first on the digital description of the hydrological processes and the watershed characteristics relevant to surface water applications and then on the development of a spatial hydrological model that fits the available data.
Output and Recommendation	The important function of the hydrological model is to predict the watershed response under a given set of conditions. Wadi Rajil model can only be expected to give a crude assessment of the hydrological parameters. This is mainly due to two reasons. First, there are important hydrological parameters not simulated in the model. Secondly, the model has not been calibrated or tested against observed or verified measurements. The database and the hydrological model presented in the research were developed using all the data that were available. If these applications are to used for providing reliable and precise information the following recommendations are suggested: • *Unless other more accurate and updated data are available, the basic layers need not be changed* • *The watershed characteristics layers derived from the DEM need to be recreated if another DEM is used or if the cell size used in generating the DEM has to be changed.* • *The hydrological layers are dependent on certain assumptions.* • *The hydrological model described in the research has not been tested against real or verified flow data.*
Development Aspects	The structure of a GIS-based hydrological model for the study of surface water at wadi Rajil watershed has been described. The aim of the model is to generate hydrographs at the watershed outlet form the input rainfall data. The model is based on a simple water budget equation where balance between input and output water amounts is carried out at the cell level. The routing process consists of calculating the time of travel and the discharge contributed by each cell for each time step of computation. The output hydrograph is produced by accumulating the discharges contributed by all the cells during the hydrograph time step.
Remarks	A thesis presented for the degree of Master of Science, University of Durham, Department of Geography, UK / https://etheses.durham.ac.uk/id/eprint/4734