

Main theme	Sub - Theme	Code Number
Natural Resources	Water - Hydrology	1
Study Name	The Influence of Long-Term Landscape Stability on Flood Hydrology and Geomorphic Evolution of the Valley Floor in the Northeast Badia of Jordan	
Author	Khaldoon Al-Qudah	
Date of Study	2003	
Objectives	<p>The overall of this investigation is to understand the influence of long-term landscape stability on flood hydrology and the geomorphic evolution of valley floors in the northeast Badia of Jordan. The first objective of this study was to determine how the landscape of the drainage basin responds to hydrologic processes through the interplay between characteristics of surface cover and underlying pedogenic processes. The second objective of this study was to develop a quantitative description of the morphometry of the drainage basin and understand how the evolution of the drainage network relates to the surficial physical characteristics and pedogenic processes. The third objective of the study was to understand the flood hydrology of the drainage basin and to identify the hydroclimatic conditions, surficial land characteristics, and drainage morphometry that influence the generation of floods in the drainage basin.</p>	
Output and Recommendation	<p>Analysis of 24- hour maximum precipitation data from two rain gauge stations located in the northeast Badia of Jordan, where records were collected for 60 years, show that precipitation events more likely to generate floods in this area result from convective storms during the transitional seasons (fall and spring). Hydro climatic data (rain gauges), pavement characteristics, and soil morphologies indicate orographic effect on precipitation in the volcanic uplands of the drainage basin. Surface runoff and flood generation is highly controlled by surficial characteristics of the desert pavement. The estimated peak flow of the flood event of April 2001 is 170 cm/s preserved watermarks indicate that the maximum peak flow during the flood event of 1991 in the basin was 450 cm/s.</p>	
Development Aspects	<p>Floods in arid and semiarid regions are considered the only hydrologic process that generates large volumes of water for surface storage and groundwater recharge into the subsurface aquifers. In terms of development aspects, understanding how these floods and their causative precipitation events developed is important. Analysis of maximum precipitation values in 24-hours events in the northeast Badia of Jordan show weak correlation (0.0035) between the timing of the individual events recorded at the H4 and H5 stations (which shows that these are more likely to occur) resulted form localized convective storms. Precipitation analyses showed that more than 50% of the precipitation events occurred in the transitional seasons of fall (October – November) and spring (March - April). It is more likely to be influenced by the Red Sea Trough and affect the southern and eastern parts of Jordan.</p>	
Remarks	<p>Be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, University of Nevada, USA</p> <p>https://www.proquest.com/openview/caeb5e8f3848963498c735fde2dfa92e/1?pq-diss=y&cbl=18750&origsite=gscholar</p>	