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Author: Ms. Fatima AlMarzouqi
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

A STUDY TO MONITOR THE AREA AS PRONE TO FLASH FLOODS IN WADI WURAYAH (UAE)
USING DRONES AND GIS TOOLS

Abstract

The United Arab Emirates located in a tropical dry area, during summer the temperature ranges between 35C and 41C, and in winter the temperature ranges between 18C and 25C, and the annual average rainfall is less than 100 mm. For that water resources are limited, and the government initiated an integrated water resources management (IWRM) strategy to meet the increasing demands of water. Dams are one of the important strategies that are suitable for this arid region, it also contributes to protection from flooding and erosion risks. In addition, this will be improving the quantity and quality of groundwater by increasing recharge rates. Dam waters are used to irrigate agricultural crops, while dams help increase groundwater reserves and maintain their quality by preventing seawater intrusion, for that UAE has given great attention to dams and rainwater harvesting projects. The aim of this study is to highlight the area surrounding Wadi Wurayah, which is in the Northeast region of the United Arab Emirates. There are high-risk cases of flooding around this area, and we should monitor the water flow. This study will help municipalities and environmental entities to encounter the probable unexpected dangers in this area. Because of the destruction and weather condition the topography and terrain of the area is changing. Therefore, monitoring the topography of the area and the flow of the water will help to protect the surrounding area of Wadi Wurayah. We will use Digital Surface Model (DSM) and Digital Terrain Model (DTM) to create a 3D map, then we will simulate the water flow and the dangers area. We combined remote sensing, GIS, and image processing tools to create all the necessary layers for this study.

Keywords: United Arab Emirates (UAE), water flow, Remote sensing, Digital Surface Model (DSM), Digital Terrain Model (DTM), 3D map.