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Entitled

*ASSESSMENT OF NATURAL HAZARDS IMPACT ON HERITAGE SITES IN UAE USING GEOGRAPHIC  
INFORMATION SYSTEM (GIS)*

by

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Date&Venue

Monday, 18 April 2022, 2-4 PM

2:0-2:30 Public

2:30-4:0 Examiners' Meeting

Online

Link: <https://eu.bbcollab.com/guest/8012ba8073c74a3b9ffb3042a0f24dfc>

Abstract

The United Arab Emirates (UAE) pays significant attention to preserving its heritage sites and archaeological finds and treats them as a vital part of its culture, history, and economy. In recent years, the field of archeology in the UAE has witnessed tangible and significant developments, with a number of government initiatives being devoted to the establishment of archaeological departments in all emirates. The firmly stated policy of these institutions is to preserve the UAE heritage sites and educate the public about their importance. However, these sites are, indeed, vulnerable to natural disasters which are considered to be one of the most critical threats to the UAE heritage sites. In this regard, it should be noted that in the past two decades, the United Arab Emirates has witnessed a number of natural disasters such as earthquakes and floods linked to precipitation, rising sea levels, and desertification. This study aims to create a database for the UAE heritage sites, generate maps for natural hazards in the UAE (namely, earthquakes, floods, sea-level rise, and desertification), and assess the proximity of heritage sites to hazard zones. The results show that heritage sites located in the northeastern UAE are more vulnerable to floods, earthquakes, and sea-level rise and that the effects of these risks vary according to their geographical locations, i.e. whether they are close to or far from the coast and whether they are near or far from the fault line, as well as the extent of their height from ground level. The study also finds that the threat of desertification threatens the majority of archaeological sites in the western region of the Emirate of Abu Dhabi. As additional support to assess the results of the spatial analysis the study used the Geographic Information System (GIS) and Remote Sensing (RS), as well as the Analytical Hierarchy Method (AHP). Very experienced archaeologists from the Department of Culture and Tourism in Abu Dhabi were consulted to identify the most natural hazards that may affect heritage sites in Abu Dhabi. In a concise survey questionnaire, those scientists were specifically asked to set a certain weight for each natural factor. (It should be noted that the AHP study was limited to the Emirate of Abu Dhabi in particular due to the lack of necessary information from other emirates of the UAE). The results of the hierarchical analysis process (AHP) indicated that flooding due to rain is the primary threat to heritage sites in the Emirate of Abu Dhabi, followed by desertification and rising sea levels. Desertification is often considered a threat to archaeological sites. However, with the exception of historic buildings such as castles, forts, and mosques - to which desertification is one of the biggest threats - archaeologists believe that the encroachment of and burial of archaeological sites by desert sands protect them from other natural factors. Finally, this study, along with the database, methodology, and outputs, is intended to be a valuable reference for many parties interested in the cultural, historical, and tourism fields, as well as those interested in natural disaster management and urban planning. Furthermore, the GIS database of heritage sites in the UAE saves researchers in antiquities in real-time and effort regarding data collection. In a nutshell, the author of this study is of the view that it is important and must be of interest to all stakeholders.

**Keywords:** UAE heritage sites, Natural Hazard, GIS, Remote Sensing, AHP