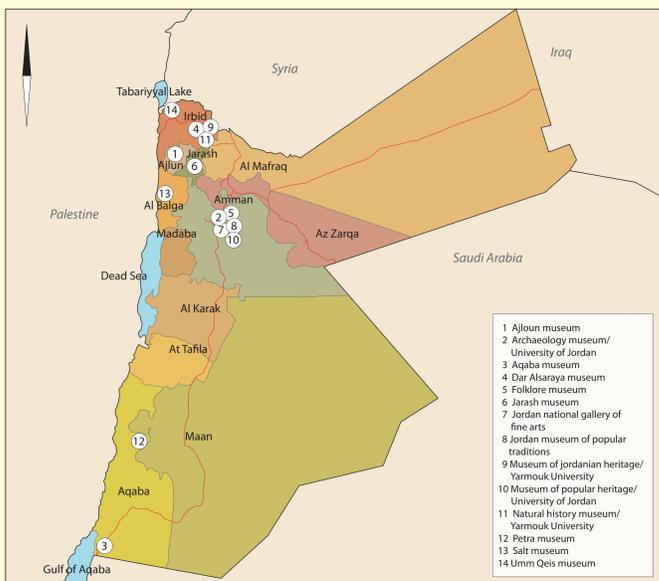


# Indoor environment, Jordan museums

## Recent advances in museum environment studies

### Abstract

This poster is an attempt to map the different approaches to understanding how the museum environment in general has been studied. It is based on a study that aims to analyze the extent to which Jordanian museums comply with international museum standards, so that they provide a suitable environment for the display and preservation of artifacts. Specifically, it examines how well Jordanian museums conform to recommended conditions and standards for housing collections, through measuring the basic factors: relative humidity (RH), temperature, light (natural and artificial), and air pollution, microorganisms, and pests, while taking account of the fact that the museums are located in different climatic zones. The study shows whether these museums' monitoring and control systems adequately maintain temperature and RH within international standards. The variations in RH, light, temperature and air pollution inside the monitored museums will be compared with the variations of the same factors in the exterior atmosphere, to assess the degree of consequential fluctuations of these values inside the museums.



Map of Jordan with the location of museums

### Motivation for the review

This PhD study constituted a case study from Jordan, in order to provide an opportunity for a fundamental base in education in the field of museums in general.

The close relation of museums to the context of museum environment, and the situation in which the museum environment need arises has been widely discussed and the benefits came for museums (and objects) just-in-time.

Most previous reviews of museum environment categorize examples of use according to curriculum area. We believe that the benefits of museum environment for maintaining the museum's objects in their shape encompass more than just a theoretical study into a daily practical action of most museums, and that there is thus a need for a wider review of new and emerging practices and how these relate to theories and how they could be established for the use in education. The review is limited to publications from 2004 onwards because earlier literature is readily available in handbooks.

### Acquisitions

As each archaeological site in Jordan yields archaeological objects and artifacts, which are ultimately destined for display in museums or storage. It is therefore vitally necessary that the knowledge and expertise is developed to handle and display this rich harvest of archaeological treasures in the manner that they deserve.

Museums have the responsibility to adequately display and safeguard the collection they have in their custody. Yet today, most of the Jordanian museums exert their utmost effort through the available knowledge, technology, and material resources to avoid deterioration and destruction that may occur to artifacts due to unsuitable environment.

Reviewed studies have shown, that at present these artifacts are suffering from deterioration and damage due to uncontrolled environmental conditions and mishandling by untrained staff. This is why a study of the processes of deterioration is required, prior to any recommendations concerning conservation treatment.

### Types of museums in Jordan

Museums vary most controversially in the function they perform. It was noticed that different ways are adopted for classifying museums. Thus, classified by their collection we can find in Jordan museums archaeology, art history, natural science, geology, and ethnography. But we should note that there is another kind of museum classification depending on the audience, or by the area they serve, like Museum of Jordanian Heritage (educational museum), and Umm Qeis Museum (site museum).

### Literature review

In spite of the importance of the museum study, local specialized researchers were absent from this field. There are a few studies done about the preservation of collection against the environmental conditions and climate control in Jordan. But in the international area sufficient research all over the world has been achieved about the proper methods to protect collections from being deteriorated and manage their environment.

In order to be able to study the environmental issues in Jordan it was of vital importance to review and assess books and articles on this subject.

Most of the studies in this area were case studies for a specific building, which will be suitable to apply at that building and can not be applied at another museum building, because of the variety of museums locations, museum construction technique, museum objects, and the surrounding atmosphere. Therefore the publishing in this area of study were specialist in there goals, methods, and results where we will describe them here:

The topic of the articles	The ratio among the literature review
Artificial light	3.5%
Dust	5.5%
General evaluation	27%
High RH	9%
RH fluctuation	10.9%
Material aging	18%
Micro climates	9%
Micro organisms	9%
Natural light	7%
Passive air conditioning	3.5%
Pests	7%
Polluted indoor air	5.5%
Polluted outdoor air	2%
Storage	9%
Temperature	9%
UV	0%
Ventilation	9%

Table 1. Articles classifications upon their main topics.

The material used in the articles	The ratio among the literature review
Bone, ivory	2%
Glass	5.5%
Glow	2%
Leather	2%
Metals	7%
Others	11%
Paints	11%
Pottery	0%
Stone	5.5%
Textile	2%
Wood	9%

Table 2. Classified articles according to their materials.

### Conclusion

From this literature review we may notice that there were different type of studies in the field of museology, which extended further more than museum buildings to libraries, churches, archives, and historical buildings. Most of the articles handled the topic of indoor environment in general, measuring the indoor relative humidity, temperature and compare it with the outside atmosphere to identify how far does these buildings provide a suitable environment to host the valuable materials in its custody. Although, it was noticed that some researchers did not give the desired importance to certain types such as the effect of ultraviolet light on organic based materials, the extent of polluted outdoor interference inside the museums, how do dust, and other destructive pollutants in the air effect at the museums indoor climate and eventually at collection in their possession.

While reviewing this literature, articles were considered that are directly or indirectly applicable to the Jordanian system, and may be of benefit for my future study, and for Jordanian museums in general.

Here it was found that it is relevant and important to compare results from the reviewed literature with the Jordan situation. Several articles were found resembling the same characteristics of common situations in Jordan, and it will be of great benefits for these museums to be applied at.



Leiden University

Faculty of Archaeology,  
P.O.Box 9515,  
2300 RA,  
Leiden, The Netherlands  
(<http://www.leidenuniv.nl>)

Raed Alghazawi  
ghzawi@yahoo.com

John Havermans  
John.havermans@tno.nl

Willem Willems  
w.j.h.willems@arch.leidenuniv.nl