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Management and Challenges of Weather and Climate of Pilgrimage Destination

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Abstract

The pilgrimage destinations are a location identified by various religion bodies in order to perform their religion rights according to their faith. The objective of this study is to discuss two prominent pilgrimage destinations for Christians and Muslims all over the world, pilgrimage activities under tourism industry, global economy contribution, weather conditions and climate variability and weather and climate as both resource and constraint to pilgrims. This subject contribution will concludes that the pilgrims should keep in mind that weather and climate can serve as an opportunity for them in their various pilgrimage destinations as well as a potential threat.

Keywords: Pilgrimage destinations, Pilgrims, Tourism, Religion, Christian, Muslim, Global economy, Weather, Climate

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1. Introduction

The objective of this subject contribution is to describe the impact of weather and climate to pilgrimage activities and its contribution to global economy. Pilgrimage activities are indirectly or directly dependent on weather and climate. In view of larger population and increase in human activities, adaptation and mitigation of weather conditions and climate variability required concerted efforts (Sharma and Gosain, 2010). Human and societal ability to adapt and respond to climate variability and change rely on our knowledge and understanding of the climate and how to incorporate it into resource management decisions by authorities' in-charge of tourism, hospitality and recreation (Vincent, 2007).

The profound impact of weather and climate events in recent decades shows that societies are at risk to climate hazards on a global-scale (Sharma and Gosain, 2010). In order to reduce human and societal risk to climate hazards, our scientific understanding of the weather and climate information to bridge the gap between climate science and policy implementation by both decision and policy makers are necessary and important (Sharma and Gosain, 2010). Regional vulnerability assessments for both analysis and forecasts of climate data assist tourism industry in mitigating the effects of weather and climate hazards through the use of Climate Transfer (Tourism) Information Scheme, CTIS (Matzarakis, 2006). To understand the nexus between the complex climate-human dynamics, there is need for combination of teams of experts or professionals from various disciplines, for example, social, natural and physical sciences as well as decision makers, stakeholders and resource managers that are working directly at various government levels (Sharma and Gosain, 2010).

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Pilgrimage (religious tourism) contributes significantly to the global economy, and it is also a key foreign exchange earner for the countries of destination. In view of the numerous benefits from tourism industry, the United Nations has identified the development of tourism as one of the methods poorer countries might use to meet the Millennium Development Goals (MDGs) ([UNWTO-UNEP-WMO, 2008](#)).

2. Prominent Pilgrimage Destination for Christians: Jerusalem

Jerusalem (Figure 1) is an acclaimed capital city to both Israel and Palestine. Jerusalem has been the holiest city in Judaism and the ancestral and spiritual homeland of the Jewish people since 10th century BC. Jerusalem is a city located in modern day Israel and is considered by many to be one of the holiest places in the world. According to Di Segni (2001) and reported by Newsletter 168C (2023), there are more than 50, 33 and 300 of Christian churches, Muslim mosques and Jewish synagogues respectively in the city of Jerusalem. For Christians, Jerusalem is also the place where Jesus preached, died and was resurrected. It is also central to an imminent Second Coming of Jesus Christ for Christian religion and a major tourism site for both Christians and non-Christians from around the world ([Limor, 1998; 1999](#)).

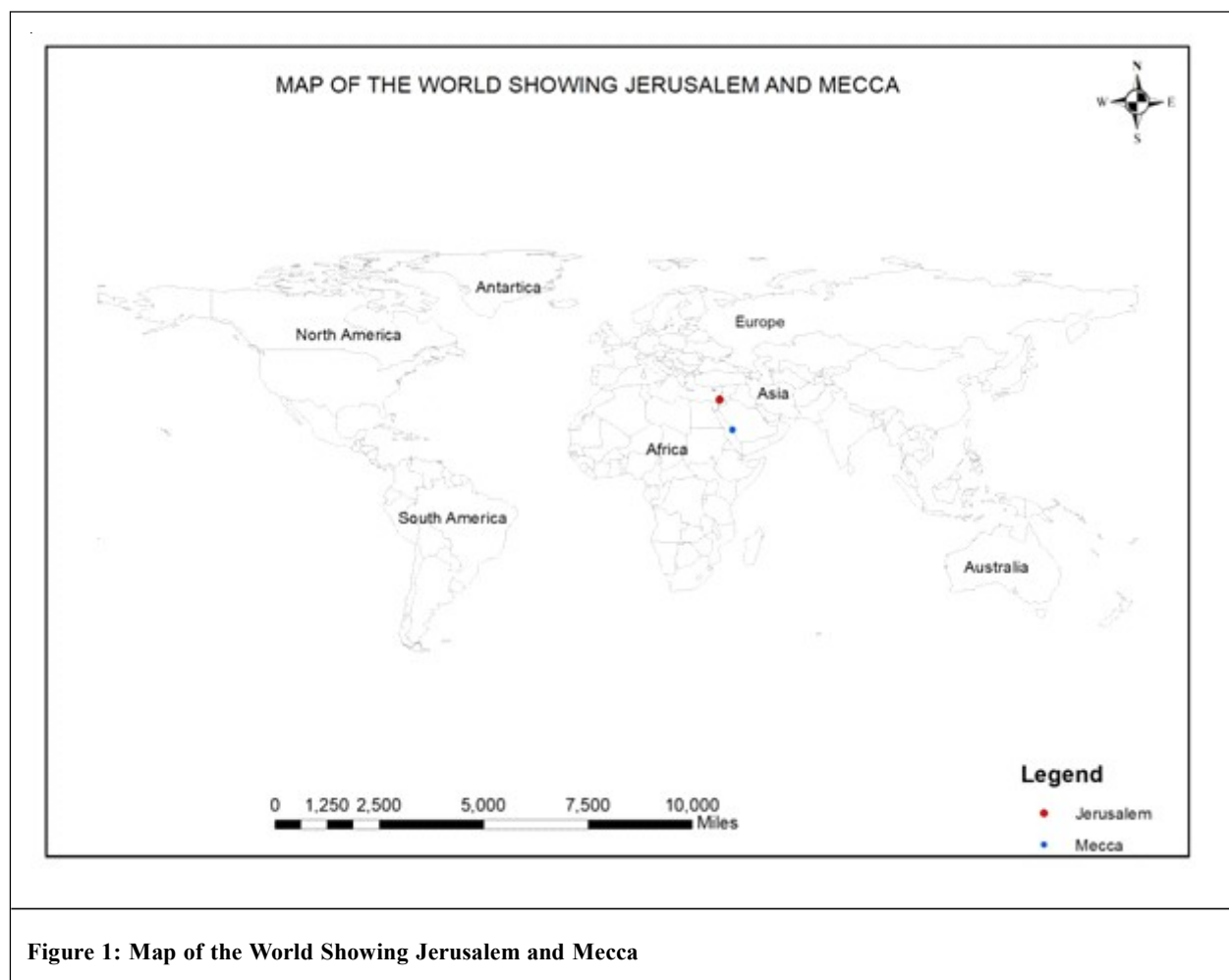


Figure 1: Map of the World Showing Jerusalem and Mecca

In the eastern side, Jerusalem looks down on the Dead Sea and across the Jordan River to the arid mountains of eastern Jordan and to the West; it faces the coastal plain and the Mediterranean Sea which is about 60 km away. It has a mixed subtropical and semiarid climate with warm dry summers and cool rainy winters. The average annual rainfall is about 600 mm, and snowfalls, which in some years do not occur. Two distinct seasons experienced in Jerusalem according to Köppen climate classification are winter and summer ([Broshi, 1992](#)).

Climate variability and change are important factors for choosing a tourism location in a number of ways ([Scott and Lemieux, 2010](#)). Weather conditions and climate variability are sensitive to tourism locations. Various tourism locations are influenced by natural seasonality, which may be positive or negative depends upon inter-annual climate variability that brings heat-waves, unseasonable cold, drought or storms and heavy rain that can affect both tourist comfort and safety and those products that attract tourists, for examples, snow cover, coral reefs and wildlife. Climate variations also affect various operations within tourism industry, such as, water supply and quality, heating-cooling costs, snowmaking

requirements, irrigation needs, pest management, and evacuations and temporary closures (Scott *et al.*, 2008). The report of Wall and Badke (1994) stated that an international survey with 66 national tourism and meteorological organizations found that 81% of responses felt weather and climate were major determinants of tourism in their nation. Several researchers (Burton, 1995; Boniface and Cooper, 2004) argue that climate is among the most dominant factors affecting global tourist flows.

3. Prominent Pilgrimage Destination For Muslims: Mecca

Mecca, (Figure 1) the ancient western city of Saudi Arabia which is located in the sirāt Mountains inland from the Red Sea coast. It is the holiest of Muslim cities (Taibi and Qadi, 2016). Muhammed, the founder of Islam, was born in Mecca, and it is toward this religious centre that Muslims turn five times daily in prayer. The city is located in the Red Sea region of Hejaz, east of Jiddah in western Saudi Arabia. The climatic characteristics of Mecca is hot temperature in winter, the air temperature is around 18 °C at night and 30 °C in the day time (Abdel-Rahman and Almalki, 2018). The summer temperatures are extremely hot, range from over 40 °C during the day time to 30 °C at night (Becken and Hay, 2007).

It is known fact that weather and climate influences choice of a tourism destination because of the sensitivity of weather conditions and climate variability to tourism industry in this dispensation of global climate change (Anderssen and Colberg, 1973; Pike, 2002; Scott and Lemieux, 2010). Studies of some researchers (Hu and Ritchie, 1993; Scott and Lemieux, 2010) indicated that ‘natural beauty and climate’ were very significant and important factors for choosing a tourism destination. Tourism industry in many small island developing states (SIDS) depends on climate as principal resource (Scott and Lemieux, 2010).

4. Pilgrimage (Religious Tourism) Activities Under Tourism Industry

It should be noted by the general public that tourism is not just about travel for leisure and holidays. It involves travel for education, health, religion, conventions and conferences, general business travel and visiting friends and relatives (Scott and Lemieux, 2010). The definition of tourism by the United Nations World Tourism Organization (UNWTO, 1995) is: “... the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited.” In accordance with the report of the UNWTO (2009), tourism industry have developed and grown to accommodate international tourists’ arrivals of more than 200 million in 1980 to 922 million in 2008 and also forecast to almost double to 1.6 billion in the year 2020 (UNWTO, 2001).

Tourism sector is diversified into many fragmented structure, its operators varies in terms of ownership, size and purpose, e.g., government, non-government organizations, private businesses, profit or non-profit organizations, conservation, education, community development mandates, etc. (Scott and Lemieux, 2010). One of the important features that motivate both domestic and international travelers is religious tourism. Other features of attraction in tourism industry are: sun and beach tourism, sports tourism, adventure tourism, nature-based tourism, cultural tourism, urban tourism, health and wellness tourism, cruises, theme parks, visiting friends and relatives, and meetings and conferences, etc. (Scott and Lemieux, 2010).

On daily basis, vacationers do make decisions about where to travel in order to pursue their various favorite recreational activities. Tourism destinations and their individual tourism businesses are all vying for the expenditures and vitality these tourists bring to their respective locations. Apart from the distance and cost, tourists put many things into considerations before making travel choices.

Tourism is considered to be a socio-economic activity dependant on the characteristics of a destination. It is a phenomenon designed to satisfy the needs and expectations of visitors who wish to participate in pleasurable and fulfilling experiences away from their normal home environment. Pilgrimage to Jerusalem and Mecca is mainly on religious purposes. Tourism is also viewed as a multi-faceted activity consisting of tasks and functions both directly and indirectly related to customer or visitor services and satisfactions. Consequently there is substantial public and private investment in attractions and supporting infrastructure.

5. Global Economy Contribution

Tourism (religious tourism - pilgrimage) is one of the vital parts of the global economy, it generated about 1 trillion US dollar on a global scale in 2008 and as such it has been ranked as the fourth-largest industry in the world, after fuels, chemicals, and automotive products (UNWTO, 2008). Tourism is a key foreign exchange earner for 83 % of developing countries and the leading export earner for one-third of the world’s poorest countries (Mastny, 2001).

One of the fastest and largest growing global industries is the tourism and hospitality sector. It contributed significantly to both national and local economies of the world (Scott *et al.*, 2011). The report of the World Travel and Tourism Council (WTTC, 2009; Scott and Lemieux, 2010) in 2009 estimates that the contribution of the global travel and tourism industry in 2008 is 9.6 % of global Gross Domestic Product (GDP) and 7.9 % of world-wide employment.

Pilgrimage form a major share of the economy in Jerusalem. The significant economic prospects were open to both the clerical and secular sections of the society. The local economy of Jerusalem substantially developed via transportation, accommodation, sustenance, guidance, indulgences or other expenses as a result of pilgrimage activities that led to influx of large groups of pilgrims to Jerusalem.

It is a known fact that millions of Muslims from all walks of life converged in Mecca to perform the pilgrimage known as the Hajj. The annual occasion has become a lucrative business in recent years, proving a great financial asset to the economy of the region. The report from BBC Arabic, Mecca by Ahmed Maher stated that in 2011 an estimation of 10 billion dollars exchanged hands during Hajj.

The highest rents in Saudi Arabia are found in the holy city of Mecca, the birthplace of Islam. Owners of hotels close to the main mosque charge 700 dollars per night. It was observed that the demand is higher than supply which resulted to the skyrocketing prices of goods and services (Maher, 2012).

The price of Mecca souvenirs is often very high. Maher (2012) stated that there are no official estimates for this profitable trade and very lucrative business during the Hajj.

Hajj is one of the five pillars of Islam and an obligation that a Muslim with financial and physical power must perform. The ritual of coming to this spiritual land which demonstrates the unity of Muslims and their total submission to Allah will continues no matter how expensive the trip to holy land of Mecca.

6. Weather Conditions and Climate Variability

The most volatile component of the climate system and humans domain is the atmosphere. It is a place where living things exist (Ayoade, 2002; Karl *et al.*, 2008). Unstable weather systems and changes give the atmosphere a unique role in the climate system. The trapping of species in the cold stratospheric polar vortex can lead to chemical depletion of the ozone layer as a result of the combination of some weather elements and some particular items in the atmosphere under the control of winds. In climate system, cloud and water vapour feedbacks are major factors in determining the response of forcing from rising levels of greenhouse gases and changes in aerosol distributions. Karl *et al.* (2008) reported that natural modes of variability, such as El Niño and the North Atlantic Oscillation, are associated with changes in atmospheric circulation and storm tracks, making it vital to determine and understand the processes involved, as their intermittent occurrence can obscure climate change detection, and climate change itself may be manifested partly in changes in the frequency of occurrence.

Generally, the global atmospheric observing systems for climate are progressing. The reason for this is due to the efforts put in by the national sponsored regional operators of ground- and space-based observing systems. There is a slow or reverse of declining of the in-situ meteorological network observation globally in all regions, except for Africa in the case of upper-air data (Karl *et al.*, 2008, 2010). Despite the overall progress reported by the World Meteorological Organization (WMO), some regions of the world have not seen real improvement in their poor observational coverage. Karl *et al.* (2008 and 2010) stated that, there is need to improve capacity building in developing and least developed countries in order to ensure improved observational coverage and capacity to use climate data these countries required to adapt to a changing climate and to meet general needs.

Weather conditions and climate variability and change will impact various destinations of Tourists. It is a known fact that the future economic development and growth of tourism and hospitality sector will be determined by climate sensitivity and other driving forces (Kozłuk and Zipperer, 2015). The impacts of climate must be considered as a priority in meeting the challenge of providing good thermal environment, food and water for all Tourists and Pilgrims that will come for pilgrimage (Vera *et al.*, 2010).

Tourism location required several levels of decision-making, such as, international, national and household. Various Climate information such as, short-term and seasonal forecasts are needed for various users to decide the period and number of days the tour will take (Eugene and Stewart, 2010).

7. Weather and Climate as Both Resource and Constraint to Tourists

Weather and climate can act as both a resource and as a constraint to tourists. Sequel to the growing number of tourists (including religious people all over the world), visit to various tourism locations has increased. In addition to geographical

location, topography, landscape, vegetation and fauna of a tourism region as mentioned by Matzarakis *et al.* (2004); de Freitas (2003); the effect of weather and climate on the physical environment and thermal comfort also determine the choice of a tourism location (Shiue and Matzarakis, 2011). The second highest factors that influence the choice of tourists travel destination in literature review is climate information (Lin *et al.*, 2006; Matzarakis, 2006; Hamilton and Lau, 2005; Shiue and Matzarakis, 2011). The available information makes an individual to look for a suitable thermal environment or to make adaptation or mitigation to maintain normal body temperature (Nakamura *et al.*, 2008; Shiue and Matzarakis, 2011).

It was observed that region with high variability of rainfall due to the effect of El Niño and the urban heat island are started to experience intensifying extreme climatic events (Patz, 2001; Patz *et al.*, 2005; Shiue and Matzarakis, 2011). Therefore, it is very important to carry out complete investigations of atmospheric systems in order to have full knowledge of the impact of regional climate change on human health and/or tourist's potential. The investigation will further assist at protecting human-being from extreme climatic events during tourism activities. Jerusalem and Mecca which are the most prominent visited places by Christians and Muslims all over the world attract several million of international visitors annually. Since, there are several million international travels annually; the policy of mitigating climate change through reductions in greenhouse gas emissions should be accorded high priority both at national and international levels. The adaptation and response measures are also imperative, since increased incidence of extreme and unpredictable climatic events can act as a shock process resulting in both short- and long-term reactions in natural and social systems, e.g. pilgrim, tourism and recreation (Teigland, 2002; Shiue and Matzarakis, 2011). Previous studies have concluded that indices that integrate all the important aspects of climate and the human body affect an individual's state of warmth and coolness, and may be used as a measure of climatic hardship in addition to medical and other applications related to human physical wellbeing with the aim of further providing information for planning and timing of outdoor activities, vacation and tourism (de Freitas *et al.*, 2008; Shiue and Matzarakis, 2011).

8. Conclusion

Conclusively, future studies on tourism should incorporate weather and climate rather than focus on economic variables only because of the contribution made by tourism to climate change and contribution made by weather and climate events to tourism industry.

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