

**CLIMATE PREFERENCES FOR TOURISM:  
AN EXPLORATORY TRI-NATION COMPARISON**

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**ABSTRACT** This study examines tourist perceptions of optimal climatic conditions for tourism and the relative importance of four climatic parameters (air temperature, precipitation, sunshine, wind) in three major tourism environments (beach-coastal, urban, mountains). A survey instrument was administered to 831 university students representative of the young-adult travel segment, in three countries (Canada, New Zealand, Sweden). Three salient findings included: the perceived optimum climatic conditions varied significantly among the three major tourism environments, the relative importance of the four climatic parameters was not the same in the three tourism environments, and the climatic preferences of respondents from the three nations were found to be consistent in some ways but varied significantly in others. The findings have a number of important implications for the literature on climate and tourism, including the development of climate indices for tourism, the definition of single optimal climate for global tourism, and climate change impact assessments. We believe that with a broader cross-cultural sample of tourist segments, this approach holds much promise for revealing the detailed complexities of tourist preferences for climate.

**KEYWORDS:** *Preference, Canada, New Zealand, Sweden*

## **INTRODUCTION**

A number of lines of evidence indicate that the atmospheric environment is a dominant attribute of a tourist destination and has a major effect on tourism demand and satisfaction (de Freitas, 2003). Weather and climate affect tourists and the desirability of tourist destinations in different ways. Weather is the current state of the atmospheric environment and is what tourists actually experience when at a destination, affecting their activities and holiday satisfaction. Weather also affects key aspects of tourism operations, including infrastructure, activity programming, and operating costs. Climate is the weather that is expected at a location for a certain time and is typically expressed as ‘average weather’ (sometimes referred to as ‘climate normals’ or ‘climate means’) over a 30-year

period, which is the technical standard established by the World Meteorological Organization. Climate is what a tourist would anticipate experiencing at a specific destination and time and is a key factor considered by tourists, consciously or implicitly during travel planning. For these reasons it is an important attribute taken into account in locational planning, infrastructure development and destination marketing.

Weather and climate are an intrinsic component of the vacation experience and can act as a central motivator in an individual's selection of holiday destination and timing of holiday travel, and be a salient factor in tourism spending and holiday satisfaction. Hu and Ritchie (1993) reviewed several destination image studies and found that 'natural beauty and climate' were of universal importance in defining destination attractiveness. Weather has been found to influence travel patterns and expenditures in several nations (see Scott 2006, for a review). It is thought that for many travellers, weather conditions at the destination are central to overall trip satisfaction, although further research to understand the influence of weather on consumer travel satisfaction is required. Seasonal climate fluctuations at tourism destinations and at high latitude source regions are considered a key driver of the seasonality of global tourism demand (Gossling and Hall, 2006).

The aforementioned body of research indicates clearly that climate is a resource that is exploited by the tourism industry and tourists alike and as such is a resource that can be measured and evaluated (de Freitas, 2003). An important challenge of doing so rests in the selection of appropriate meteorological variables (e.g., temperature, rain, wind, sunshine, visibility, humidity, air quality, UV radiation, etc.) and in the definition of 'optimal' through to 'unacceptable' climatic states, as perceived by tourists.

The preferences of tourists for all aspects of climate have been explored in various ways. Several attempts have been made to identify most favourable or 'optimal' climate conditions for tourism generally and for specific tourism segments or activities (e.g., 3S holidays in beach environments). The purpose of evaluating climate for tourism and identifying 'optimal' climate conditions has varied in the literature. Overall, the heterogeneous approaches to examining tourist climate preferences and defining 'optimal' climates for tourism can be grouped into three types of studies: expert-based, revealed preference and stated preference. These respective bodies of literature are reviewed by the authors elsewhere and cannot be adequately discussed in this short paper.

The purpose of this study is to examine these two central questions using a survey of climatic preferences of a sample of tourists from three nations: Canada, New Zealand and Sweden. Four specific research questions guiding the study included:

- 1) What is the range of climate preferences among tourists in terms of the optimal conditions for certain variables, such as temperature? Are tourists homogenous in their climate preferences so that a common 'optimum climate' for tourism could be identified?

- 2) What is the relative importance of different climate parameters to tourists? Is temperature the dominant climate variable or are other variables equally important?
- 3) In what way, if at all, do the climate preferences of tourists differ among tourism environments or destinations where the dominant tourist activities would differ substantially?
- 4) Do cultural or ethnic differences exist in tourist climate preferences?

## **METHOD**

To our knowledge, this study represents the first *ex situ* study of tourist climate preferences, where the survey is administered in a climate controlled laboratory setting, free of potential bias from existing or recent weather conditions and where respondents can express their perceived satisfaction with a wide range of climate conditions in very different tourism settings. A sample of university students was used for this study of stated climate preferences for tourism. Structured questionnaires were administered to undergraduate students attending upper year classes in the University of Waterloo (Waterloo, Canada), the University of Auckland (Auckland, New Zealand) and Lund University, Helsingborg Campus (Helsingborg, Sweden). The total survey sample consists of 831 students, with 333 from Canada, 207 from New Zealand and 291 from Sweden. A pre-test of the survey instrument ( $n=35$ ) was conducted in Canada and slight modifications made to improve the clarity of some questions. The survey was conducted in English in all three countries.

## **RESULTS**

Much of the existing literature considers air temperature to be the primary climate variable of importance to tourism. It was therefore deemed important to further explore the range and distribution of temperature preferences among the three distinct tourism environments. Preferred temperatures for each of the three environments varied among respondents and importantly among the three tourism environments. The median preferred temperature for beach holidays was 27 °C, five-degrees warmer than for urban destinations and seven-degrees warmer than for mountain destinations (Table 1). For a beach holiday, a majority (58 %) preferred a range of between 25-28 °C, while an additional 25 % of respondents preferred temperatures of 30°C or warmer. In an urban destination, 82 % preferred a cooler daily maximum temperature of between 19-26 °C. The preference for mountain destinations was even cooler, with 84 % identifying a daily maximum temperature of 15-26 °C as ideal and 44 % indicating a narrower range of between 19-22 °C. These results appear theoretically correct given the types of activities common to each type of tourism destination.

**Table 1: Ideal temperature in different tourism environments (°C)**

	Beach	Urban	Mountain
Mean	26.8	22.5	20.5
Median	27	22	20
Std Dev	4.54	4.12	3.96

Table 2 shows that the majority of respondents preferred scattered light cloud (25 %) as the sky condition in all three tourism environments. This finding is consistent with de Freitas’s (1990) findings in a beach tourism environment, but appears to carry through other tourism environments as well. There were however some notable differences in the preferences for sky condition among the three tourism environments.

**Table 2: Ideal sky conditions in different tourism environments (percent of respondents)**

Cloud Cover (% of sky)	Beach	Urban	Mountain
0 %	41 %	12 %	23 %
25 %	54 %	54 %	57 %
50 %	4 %	31 %	18 %
75 %	<1 %	1 %	3 %
100 %	<1 %	<1 %	<1 %
Mean Value (1-5)	1.64	2.39	2.01

Table 3 shows a clear majority preference for light breezes, particularly in beach environments where the cooling effect may be most beneficial, considering the stated preference for warmer temperatures in that environment and access to water to enhance the cooling affect of a light breeze. In urban and mountain environments there was more diversity in the stated preferences for wind conditions, as the remaining respondents were almost equally split by a preference for no wind or moderate wind conditions.

**Table 3: Ideal wind conditions in different tourism environments (percent of respondents)**

Wind Speed	Beach	Urban	Mountain
No wind	7 %	10 %	18 %
Light breeze (1-9 km/h)	87 %	78 %	68 %
Moderate wind (10-40 km/h)	6 %	12 %	14 %
Strong wind (41-60 km/h)	<1 %	<1 %	<1 %
Very strong wind (61-90 km/h)	<1 %	<1 %	<1 %
Mean Value (range 1-5)	2.00	2.03	1.99

Exploring the relative importance of the four different weather variables (sunshine, temperature, rain and wind) in each of the tourism environments was an important objective of this study. A key finding is that the order of importance of the four climate variables investigated is not the same for any of the three major tourism environments. The results somewhat contradict the contention that temperature is the primary climate parameter for tourism and support the contention that climate indices that only examine the thermal aspect are not sufficient to assess the suitability of climate for tourism. The different climate preferences (temperature, sky condition and importance ranking of climate parameters) indicate (Tab. 4) that a universal climate index for tourism, as originally conceived by Meiczowski (1985), may be conceptually unsound. Instead, the development of climate indices for specific major tourism segments, particularly those that are strongly influenced by weather (e.g., beach tourism, skiing), would appear more appropriate and an area deserving further inquiry.

**Table 4: Importance of weather variables in different tourism environments**

Importance Rank	Beach	Mean (1-7)	Urban	Mean (1-7)	Mountain	Mean (1-7)
1	Sun	6.14	Temp	5.98	Rain	6.04
2	Temp	6.11	Rain	5.77	Temp	5.84
3	Rain	5.87	Sun	5.14	Sun	5.55
4	Wind	5.13	Wind	4.75	Wind	5.41

*Temp* = 'comfortable temperature'

*Rain* = 'absence of rain'

*Wind* = 'absence of strong wind'

*Sunshine* = 'presence of sunshine'

While the preceding findings have a number of salient implications for the literature, some of the most interesting results pertain to the different climate preferences among the respondents from the three countries. A discussion of these differences remains beyond the scope of this short paper.

## CONCLUSION

In this study, a questionnaire was developed to investigate the perceived optimum climate conditions for tourism and the relative importance of four climate parameters in three major tourism environments. Data collection took place in three different countries – Canada, New Zealand, and Sweden – allowing for limited intercultural comparisons. Although the study only examined the perceptions of a sample of the young adult traveler market (represented by university students) the findings nevertheless have important implications for the assessment of tourism and climate interactions. Three findings were particularly notable. First, the study established that the perceived

optimum climate conditions differed in some ways in the three major tourism environments examined. Second, the relative importance of the four climate variables examined (temperature, sunshine, rain and wind) was not the same in any of the three major tourism environments. Third, climate preferences were found to differ among respondents from the three nations in some ways, yet were highly consistent in others. The relative importance of the four climate parameters in the three tourism environments was also found to differ among the respondents from the three nations. The main limitations of this study are the relatively narrow tourist market segment it examined (young adults) and the restricted spatial coverage of the survey (only three nations). However, we believe this limitation is compensated for by the novel ability of the approach to explore the climate preferences of tourists in a detailed manner. Future research with a broader cross-cultural sample from more diverse climatic regions (tropical, temperate, monsoon and semi-arid) remains a potentially productive direction. It would seem that the existing literature has only begun to unveil the complexities of the interactions between climate and tourism and much more remains to be explored.

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