

Article

# Comparison of Climate Preferences for Domestic and International Beach Holidays: A Case Study of Canadian Travelers

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**Abstract:** Coastal tourism is the largest segment of global leisure tourism and it is firmly linked to the destination's natural resources—with climatic resources chief among them. Through observations and survey responses of beach users, studies have evaluated climatic resources for coastal tourism by quantifying optimal and unacceptable conditions. However, these studies have not taken into consideration that different forms of holidays (e.g., daytrips, short trips, main annual holiday, “once-in-a-lifetime” trip) may have varying degrees of resilience to climatic conditions. This is the first study to explore whether ideal and unacceptable climatic conditions vary between domestic and international tourists. Using an *in situ* survey, Canadian beach users traveling domestically ( $n = 359$ ) and internationally ( $n = 120$ ) were examined. Key findings include statistically significant differences ( $p \leq 0.05$ ) between the two sample groups for every climate variable, with the international sample more resilient to a broader range of weather conditions, including a greater acceptance for warm temperatures, longer rainfall durations, higher wind speeds, and greater cloud cover. This study adds further insight into the complexities of evaluating climate for tourism, with implications for the demand response of tourists to climate change.

**Keywords:** climate; tourism; tourist; beach; coastal; international; domestic; weather; Canada; Caribbean

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## 1. Introduction

The cultural background of tourists and the influence this has on tourist behaviors and travel decisions has been highly researched. Extant literature demonstrates cross-cultural differences in travel motivations (push and pull), destination choice, activity selection, trip expectations, and satisfaction levels [1–6]. Although less researched, significant behavioral differences have also been recorded between domestic and international tourists. Evidence indicates that domestic tourists have different travel motivations compared to international tourists [7,8], as well as varying destination image perceptions [9], information search behavior and source preferences when trip-planning [10], recreational and shopping choices [11–15], service expectations [16,17], and degrees of destination loyalty and satisfaction [18]. The greater distances traveled by international tourists, including often-increased holiday length, are thought to be key factors that influence this behavioral difference from domestic visitors [13,15,19–22].

The decision to travel and the factors that guide destination choice is a complex behavioral process that involves an assessment of internal and external variables [23,24]. Weather and climate are

important external factors that influence this process from the initial motivation to travel [7,25], to the timing and destination selected [7,26–30], to the overall travel experience itself [31–35]. While there has been much progress in understanding the significance of climatic resources for tourism demand, our knowledge of how tourists evaluate climatic resources, particularly those conditions that trigger a behavioral response, remains incomplete [36–39]. Specifically, existing research has not taken into consideration that different forms of holidays, such as daytrips, short trips, the main annual holiday, or the “once-in-a-lifetime” trip, may have varying degrees of resilience to climatic conditions [40,41]. An international trip with a high degree of planning and financial commitment prior to travel may result in different climatic preferences and tolerances compared to a spontaneous daytrip or short domestic trip.

It is important to understand how tourists evaluate climatic conditions and to quantify those conditions that are most preferred or avoided. Tourists have the greatest capacity to adapt to weather and climate, with the ability to alter their destination (*i.e.*, change location), the timing of their trip (*i.e.*, go another day), and the intensity (*i.e.*, go less often) of their holidays, or substitute their intended travel activity for another (e.g., go on an urban sightseeing holiday instead of a winter sports holiday). The ease with which tourists can alter their travel plans is a challenge and concern for weather-sensitive tourism businesses, as well as destinations heavily dependent on tourism, as they cannot adapt as readily to variable climatic conditions due to large capital investments in immobile infrastructure (e.g., hotels, shopping facilities) [42]. The importance of this research is amplified with climate change, as a direct impact on tourism will be the global redistribution of climatic resources [37]. Climate change could change the length and quality of climate-sensitive tourism seasons, affecting the temporal and spatial distribution of international and domestic tourism flows and spending.

The aim of this study is to examine whether ideal and unacceptable climatic conditions for a beach trip vary between tourists traveling domestically and internationally. The analysis is based on primary data collected through *in situ* surveys of Canadian travelers visiting domestic Great Lakes beaches in the province of Ontario (Grand Bend, Kincardine, Toronto) ( $n = 359$ ) and Canadians traveling internationally to visit beaches abroad in the Caribbean (Barbados, Saint Lucia, Tobago) ( $n = 120$ ). The results from this study advance our understanding of tourists’ climate needs, which is fundamental if we are to more accurately assess climate (change) impacts on tourism demand patterns (seasonally and geographically).

## 2. Climate as a Resource for Tourism

As indicated, the literature is clear that weather and climate represent a key element of the natural resource base of a tourism destination and this is an important consideration in tourist decision-making. Climate not only determines the suitability of a location for tourist activities, but it is the principal driver of seasonality in tourism demand—a defining characteristic of global tourism [43]. Given that leisure tourism is voluntary (*i.e.*, people participate freely for personal satisfaction or pleasure), one must perceive the climate to be suitable for undertaking the types of activities desired at a specific destination, with an unfavorable climate inhibiting tourists’ destination choice or range of activities pursued [44,45]. Therefore, the potential for tourists to travel to a destination is a function of the perceived appeal of the climate resources to tourists and their constraints on tourist activities, which can be classified along a spectrum from ideal to unacceptable [45–47].

Over the past three decades, a variety of methods have been used to quantify optimal and unacceptable climate conditions for a variety of types of tourism. Approaches include expert assessments, such as Besancenot *et al.*’s “weather typing” classification [48] and Mieczkowski’s integrative tourism climate index (TCI) [49]. Statistical models, including multiple linear regressions, have examined the effect of weather on visitation numbers at tourist attractions [50–59] and econometric models have estimated tourism-climate demand functions based on international tourism arrivals data at both a regional [60–62] and global scale [63,64]. Researchers have also observed tourists’

*in situ* behavioral response to weather conditions (e.g., via webcams) [65–67] and have surveyed tourists directly about their preferred climatic conditions [25,29,38,42,68–74].

As the tourism climatology literature has developed, increasing evidence reveals the complexity of quantifying tourists' climatic preferences. Studies have shown that preferences vary based on the type of tourism environment or activity (e.g., beach, urban, mountain) [38,42,70,71,74], as well as interpersonal factors, such as socio-demographics (e.g., age, family status, gender) [38,70,75] and climatic region of origin [29,42,73]. The importance of psychological factors, including perceived control and expectations, can also significantly influence how tourists evaluate outdoor environments. For example, Ruddy and Scott found beach tourists were willingly exposing themselves to (and preferred) very strong thermal stress (e.g., >38 °C) [38]. The thermal tolerance was linked to tourists' high level of autonomy, as they can choose the timing and location of their holiday, as well as the discretionary activities they participate in and the duration of exposure to the thermal conditions. This allows tourists to have a high level of thermal control, whereby they can either adjust their thermal conditions (e.g., move into the shade or go swimming) or leave the beach when the conditions are no longer personally suitable. Climatic preferences have also been shown to vary based on seasonal expectations, with people preferring higher temperatures at their place of residence in the summer compared to the winter season [76–78]. Natural seasonality is a primary driver of some of the world's largest global tourism flows (e.g., northern Europe to southern Europe/Mediterranean, northern USA and Canada to southern USA/Caribbean), with tourists investing time and money to travel long distances to escape cooler temperate regions and experience conditions that are significantly warmer than at home. It is therefore possible that tourists' climatic preferences vary depending on whether or not the beach holiday is domestic or international.

### 3. Methods

This study explores the climatic preferences of Canadians, specifically Canadian coastal tourists traveling internationally to the Caribbean as well as domestically within the province of Ontario (Canada). Coastal tourism is the largest segment of global leisure tourism [79–82] and it is firmly linked to the destination's natural resources—with climatic resources chief among them [7,29,46,83,84]. Multiple studies provide evidence of the sensitivity of coastal tourists to weather conditions. For example, low temperatures, high winds and precipitation have been linked to low levels of beach use, with high temperatures and sunshine linked to strong levels of demand [65–67,85]. Major intra-regional tourism demand patterns highlight the influence of seasonal climate for coastal tourism. Millions of North Americans travel south to the warm and sunny coasts of the Caribbean during the winter months (December to April), including 2.5 million Canadians, annually [86]. In Ontario, the province received over 127 million domestic tourists in 2012, with the largest share (32%) arriving during the summer months (July–September) [87].

The results from this study are based on primary data collected through *in situ* surveys of Canadian beach users. The self-administered surveys were disseminated during peak beach usage time (11 a.m. to 5 p.m. local time), with all beach users who were sitting or lying down on the sand approached to participate. The international sample (*i.e.*, Canadians traveling abroad) was collected over three weeks between March and April 2012 at Caribbean beaches located alongside resorts on the islands of Barbados (Accra, Amaryllis, Dover, Holetown), Saint Lucia (Gros Islet, Rodney Bay) and Tobago (Crown Point, Pigeon Point) ( $n = 120$ ). The domestic sample (*i.e.*, Canadians traveling in Ontario) was collected over three weeks between July and August 2012 at beach-oriented parks on the Great Lakes, including Grand Bend, Kincardine, and Toronto ( $n = 359$ ). The survey was conducted in English in all of the locations, with a high response rate of 85% or greater at each beach.

Respondents were asked about their preferred and unacceptable climatic conditions for their beach holiday, which included temperature, rain, wind and cloud cover. For temperature preferences and thresholds, respondents were asked to circle the range of temperature(s) they deemed ideal and unacceptable for their beach holiday. For the variables of rain, wind and cloud cover, respondents

were asked to select the most preferred and unacceptable daily conditions from a list of five available options (*i.e.*, multiple choice). The survey used in this study builds on previous climate surveys of tourists [29,42,71,73], facilitating needed comparisons across studies.

Given the geographic size of Canada, the latitudinal origin may impact tourist's climatic preferences. To control for this possible bias, the sample does not include Canadians residing in continental subarctic, boreal or tundra climate regions of Canada. There is, however, the possibility of sampling bias with an *in situ* survey, as noted in previous studies [42,73]. First, beach users with preferences for weather conditions that are not available during the sampling period may not be represented (*i.e.*, if the weather conditions were deemed unsuitable to be on the beach, that respondent would not be on site to be surveyed). With this consideration in mind, the sampling period occurred during the tourism high season in both the domestic and international locations to capture the demand preferences of the majority. It is also important to note that the weather conditions during both sampling periods were representative of the long-term averages for the two regions. A second potential limitation relates to the distribution of surveys to beach users on the "dry" part of the beach. Tourists in the water at the time of the survey were not approached to participate, which may result in an under-representation of those who more often engage in water activities. The extent of sampling bias due to these two limitations is unknown.

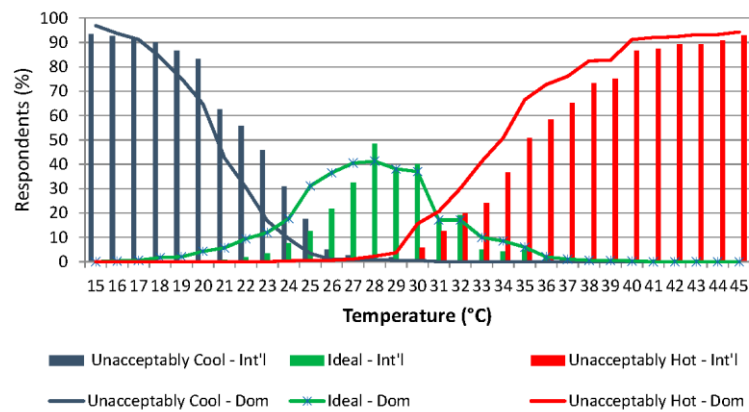
## 4. Results

### 4.1. Respondent Characteristics

In both samples, there were more females than males, with 20% more females in the international sample and 34% more females in the domestic sample. The international sample was older, particularly with respect to tourists aged 55 years and above (39% of the total sample *vs.* 12%). Conversely, the domestic sample had a larger percentage of respondents that were between the ages of 18–24 (20% *vs.* 8%) and 25–34 (22% *vs.* 13%). This age difference reflects the demographics of tourists at the study area beaches, with an older and wealthier demographic traveling to Caribbean destinations in winter months. The international sample had more travel experience at the survey location, with almost all of the respondents having traveled to the Caribbean before (92%), including more than half (59%) who had traveled to the Caribbean six or more times. For the domestic sample, the majority had traveled to the Ontario study location at least once before (83%), but less than half had traveled to the location six or more times (44%).

### 4.2. Climate Preferences

When respondents were asked about their preferred temperatures for a beach holiday, the largest share (30%) of the international sample indicated that they prefer temperatures between 27 and 30 °C for their Caribbean beach holiday, which is slightly warmer than the 25–30 °C that is preferred for a domestic beach holiday ( $\chi(1) = 36.324, p = 0.01$ ) (Figure 1). Statistically significant differences were also recorded for unacceptably cool thresholds ( $\chi(1) = 69.803, p = 0.000$ ). The majority (50%) of the Canadians traveling in the Caribbean stated that <23 °C would be too cool for a beach holiday compared to <21 °C for Canadians traveling domestically. Unacceptably hot temperatures differed by 1 °C between the two samples, with Canadians traveling in the Caribbean more accepting of high temperatures compared to Canadians travelling in Ontario (34 °C and 33 °C, respectively), but this difference was not statistically significant ( $p = 0.087$ ).



**Figure 1.** Unacceptably cool (blue), ideal (green), and unacceptably hot (red) temperatures for Canadian beach tourists traveling internationally (stacked bar) and domestically (line).

Statistically significant differences were also recorded for rain preferences ( $\chi(1) = 211.839, p = 0.000$ ). The majority of domestic beach tourists indicated no rain as ideal for their beach holiday (91%), while the largest share of Canadians traveling abroad indicated  $\leq 15$  min of rain as ideal (48%) (Table 1). Unacceptable rain conditions were similarly significantly different, with domestic travelers less accepting of all rain conditions greater than 15 min compared to Canadian travelers abroad ( $\leq 15$  min,  $\chi(1) = 57.777, p = 0.000$ ; 30 min–1 h,  $\chi(1) = 83.367, p = 0.000$ ; 2–4 h,  $\chi(1) = 26.443, p = 0.000$ ).

**Table 1.** Ideal and unacceptable daily rain conditions (% of respondents).

	No Rain	$\leq 15$ min	30 min–1 h	2–4 h	$\geq 5$ h
<b>Ideal</b>					
Domestic	91	5	2	1	1
International	28	48	24	0	0
<b>Unacceptable</b>					
Domestic	3	43	43	83	94
International	10	5	27	60	97

Statistically significant differences were also recorded for wind preferences ( $\chi(1) = 30.647, p = 0.000$ ), with domestic tourists preferring less wind while at the beach (93% stated no wind or a light breeze) and Canadians traveling internationally preferring windier conditions (99% stated a light breeze or moderate wind) (Table 2). Canadians traveling abroad were statistically less accepting of no winds ( $\chi(1) = 4.864, p = 0.027$ ) and more accepting of higher wind speeds, particularly with respect to moderate (30% vs. 45%) ( $\chi(1) = 8.105, p = 0.004$ ) and strong (83% vs. 75%) wind speeds, although the latter was not statically significant ( $p = 0.060$ ).

**Table 2.** Ideal and unacceptable daily wind conditions (% of respondents).

	No Wind	Light Breeze	Moderate Wind	Strong Wind	Very Strong Wind
<b>Ideal</b>					
Domestic	9	84	7	0	0
International	1	77	22	0	0
<b>Unacceptable</b>					
Domestic	11	2	45	83	94
International	19	1	30	75	93

Although the majority of both sample groups preferred 25% cloud cover for their domestic or international beach holiday (54% and 76%, respectively), domestic tourists preferred less cloud overall when compared to the international sample group ( $\chi(1) = 24.393, p = 0.000$ ) (Table 3). For unacceptable cloud conditions, the majority of both domestic and international beach tourists indicated 75% cloud cover as the threshold of acceptability (64% and 65%, respectively), with no statistically significant differences recorded ( $p \geq 0.000$ ).

**Table 3.** Ideal and unacceptable cloud cover (% of respondents).

	Percent of Cloud Cover				
	0	25	50	75	100
<b>Ideal</b>					
Domestic	35	54	9	2	0
International	13	76	11	0	0
<b>Unacceptable</b>					
Domestic	4	5	32	65	89
International	7	2	23	64	89

## 5. Discussion

The results from this research indicate that tourists' climatic preferences and thresholds for a beach holiday can differ depending on whether the holiday is domestic or international. Canadians traveling in Ontario for a beach holiday prefer and are more accepting of cooler conditions compared to when they travel abroad, which is when they prefer and are more accepting of warmer conditions. The ideal temperature conditions identified by the sample abroad (27–30 °C) are the same or within one degree of the recorded beach preferences identified in other tourism surveys, while the ideal temperatures for the domestic sample (25–30 °C) are up to 4 °C cooler [29,42,71,73]. The cooler temperatures preferred by the domestic sample in this study can likely be explained by the fact that previous studies have all examined international tourists that are effectively paying to escape cooler conditions to enjoy a warm (hot) holiday (*i.e.*, the survey sample has included tourists traveling from Canada to the Caribbean, or Northern and Central Europe to the Mediterranean), whereas the domestic sample in this study is traveling during the warm summer season to experience similar climatic conditions to their place of origin or perhaps to escape the urban heat by travelling to cooler lake-side conditions. Thermal comfort theory suggests that people adjust their climatic preferences based on expectations, with evidence that the same individual will have differing temperature preferences depending on their expectations of the outdoor conditions [77,78,88]. Tourists leaving temperate regions for tropical holidays are expecting to experience warm/hot conditions. High temperature expectations are not only well-formed given that the vast majority of tourists gather weather information prior to their trip [26,71,89–91], but also because of the prominence of weather and climate in marketing the image of coastal destinations such as the Caribbean [46,92,93].

In terms of rain, Canadians traveling abroad are more accepting of rain compared to Canadians traveling domestically. As noted, the international sample has more travel experience with a Caribbean beach holiday than the domestic sample has with an Ontario beach holiday. Perhaps the international tourists understand that the Caribbean dry season weather (*i.e.*, January–June) is dominated by convective storms, with rainfall typically falling in small amounts (e.g., average precipitation in Barbados during the study period is 50 mm; St. Lucia 45 mm; Tobago 40 mm) and for a short duration of time before the skies clear. Similar rain acceptances have also been recorded for tourists from tropical regions who would be similarly experienced with such weather patterns in the region [73]. In Ontario, summer rainfall amounts (*i.e.*, June–August) are not only greater (e.g., average precipitation in Grand Bend during the study is 89 mm; Kincardine 77 mm; Toronto 70 mm), but it is also more likely to persist for a longer duration of time, including longer periods with cloud cover before and after the rain event.



Although both the domestic and international beach tourists had the same ideal and unacceptable wind preferences (light wind and strong winds, respectively), the former was statistically more accepting of no wind and the latter more accepting of higher winds. The influence of wind speed on cooling the body may be linked to the preferences recorded in this study. The higher winds preferred by the Canadians traveling to the Caribbean would reduce the heat load experienced at the higher ideal temperatures (27–30 °C *vs.* 25–30 °C), whereas no wind would enhance thermal comfort at the lower temperatures preferred by the domestic tourists, particularly with respect to acceptably cool conditions (>21 °C *vs.* >23 °C). Similarly for cloud cover, domestic tourists preferred less cloud, which would increase the intensity of thermal radiation and thereby increase thermal comfort at cooler temperatures. These findings suggest that tourists can distinguish the influencing effect of multiple weather parameters, underscoring the need to assess multiple climatic resources for tourism because tourists experience and respond to these combined influences in thermo-physiologically relevant ways [38,45].

## 6. Conclusions

Jafari [19] hypothesized that once an individual arrives at a destination, home life assumes a residual position as the tourist sheds the culture of their home environment and assumes a tourist culture. In so doing, the tourist becomes less critical and more tolerant of the new environment. Since domestic tourists are in an environment that is similar to that of their place of origin, these similarities may prevent them from adopting this less critical behavior. Studies have found that distance traveled, spatial change, and length of holiday are important factors that influence behavioral differences between international and domestic tourists [13,15,20–22]. Despite both sample groups comprising tourists of the same nationality and climatic region of origin (*i.e.*, Canada), ideal and unacceptable climatic conditions for a beach holiday differed for all variables examined.

This study empirically supports the assumptions of Hall [40] and Scott and Lemieux [41] that different forms of holidays, such as a short domestic trip compared to a long-haul international holiday, can have varying degrees of resilience to climatic conditions. Canadians traveling abroad were more resilient to a broader range of weather conditions, including a greater acceptance for warm temperatures, longer rainfall durations, higher wind speeds, and cloud cover. Unlike an international trip, which often requires a high degree of financial commitment and planning prior to departure, a domestic tourist has the ability to plan their trip with minimal or no prior commitment. Domestic tourists are therefore more flexible and can afford to accept a narrower range of climatic conditions and decide last minute whether or not to travel to the beach based on the weather forecast. This last-minute decision-making is supported by how the two sample groups gathered weather information when planning their trip; 57% of the Canadians traveling abroad gathered weather information before booking their flights or accommodation, whereas only 36% of the domestic sample gathered weather information three or more days in advance of their trip. Also, on the day of the survey, 57% of the domestic sample looked at the weather information, whereas less than half (40%) of the Canadians abroad looked at the forecast.

This study also adds further insight into the complexities of evaluating climate for tourism. Growing research reveals that ideal and unacceptable climatic conditions differ depending on the specific tourism environments or activities, as well as on personal factors, including age, family status, gender, and nationality [29,38,42,70,73–75]. The results from this study are the first to reveal that it is also important to consider whether or not the holiday is domestic or international, as this can also influence tourist behavior and travel decisions. Studies that have broadly generalized tourism climate resources (optimal and unacceptable conditions) (*e.g.*, weather typing, climate indices, multiple linear regression models, econometric demand models) do not adequately capture the complexity of tourists' climatic preferences or the implications of diverse preferences for tourist decision-making.

Collectively, this research has implications for the demand response of tourists to climate change. A direct impact of climate change on tourism will be the global redistribution of climatic resources,

which will affect the temporal and spatial distribution of domestic and international tourism flows and economic spending [94]. An increasing number of publications have sought to analyze how travel flows could be altered by climate change [57,60,61,63,64,95–101]. The results from these publications are meant to identify potentially vulnerable destinations and assist the tourism industry in planning future operations, including the development of adaptation strategies to minimize associated risks and capitalize on new opportunities posed by changes in the competitive relationships among destinations [98]. However, such assessments have not been without criticism, for they do not account for the complex role of weather and climate in tourist behavior and decision-making [36,37,46,102,103]. Understanding how tourists evaluate climatic resources, including the contextual influences that guide this response, is a prerequisite if accurate projections are to be made about changes in tourism demand as a result of climate variability or future climate change. With only a handful of studies examining how climatic parameters are evaluated and perceived by tourists, more research is needed to ascertain detailed tourist weather sensitivities across broader tourism environments and activities. This includes both studies that examine the interaction between trip type (e.g., domestic, international, short-haul, long-haul) and climatic preferences, as well as the influence of other socio-demographic factors (e.g., age, family status) on climatic preferences. In so doing, it will allow needed comparisons among different tourism market segments and provide further insight into the influence of climate change on tourism demand patterns.

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## Abbreviations

The following abbreviation is used in this manuscript:

TCI                                      Tourism Climate Index

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