

# THE INTERDEPENDENCE BETWEEN TOURISTIC ACTIVITIES AND CLIMATIC FACTORS

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**Abstract:** Most tourists spend their holidays under the sun, pleasant weather but not too hot. Fashionable destinations are on the verge of becoming too hot and avoidable and those destinations which today are very cold will increase their popularity. Almost 10% of the income is spent on recreation and tourism. The climatic changes will not influence the sum spent but the places, the destinations where these will be made. The incomes from tourism are, for some regions, the most important sources and their loss could determine a big economic problem. There is an obvious sensibility of the tourist's behavior concerning the changes which affect the environment in which they spend their time. We analyze in this paper the psychological and physiological impact of the climate on tourists by adapting Romania's climatic particularities to the models applied in the western literature recently preoccupied with this extremely sensitive interferences. The data we use in this paper is offered by the Meteorological Region Center of Oltenia.

## 1. Introduction

The data of World Tourism Organization (W.T.O.) indicate that in 2006 more than 900 millions international arrivals were registered. The domestic tourism doubled this number, the visits surpassing 1,8 billions persons. At this moment tourist companies comprise approximately 250 million employees which work in hotels and other such establishments, public alimentation, transport, entertainment and other segments of the touristic market. Being a branch which provides working places we anticipate a rise in the employee's number in a very short period of time, to over 350 million employees. Approximately one third of the export of services is held by tourism (almost 10% of the total export of goods). All these impose a very careful analyses of the touristic phenomenon and the identification of the intrinsic and external parameters which influence the demand and touristic attraction.

Known as the sector with the greatest and fastest growth of the modern industries, tourism, as an activity, was too little studied by the contingency factors which determine its structure, dimension and evolution. The climate and the weather determine the environmental resources which represent the base of most touristic categories, the length and the quality of the "touristic seasons", the tourist's health and comfort etc. The consequences regarding the seasonality, the demand and the tourist's migrations are more powerful as the modification of the climatic parameters has become an incontestable reality. Until today, the climate was not analyzed like a contingency factor, because it was either considered a constant variable or because of the impossibility of its control.

The data regarding sector's comparative sensibility indicate that only three domains realize, generally, incomes bigger than losses after the unforeseeable climatic phenomena. For the United States of America, only the retail, the insurances and the construction sectors realize profits as a result of facts determined by the climate

oscillations. The most affected sectors are the transports (loses are five times bigger than the advantages), the agriculture and familial farms, energetic sector etc. Concerning tourism, the climatic events have a negative impact, the benefits realized as a result of better climatic conditions being approximately +0,15% of sector venues, and the loses are estimated at -0,2% of venues [Maunder, W.J., 2003].

The people are never indifferent when it comes to the environmental modifications in which they leave, some people are attracted by these oscillations and others try to avoid them. The nature give us some ungracious elements which are exploited in tourism.

## **2. The weather evolution and climatic tendencies versus touristic offer**

Meteorologists most often use the General Circulation Model. This means that raise of the temperature will accelerate the hydrologic cycle with massive rain fall in the rainy seasons (spring and the beginning of summer, autumn), the rate of evaporation will grow and will lead to the diminish of the rain fall during summer, changing for high altitudes the balance between solide/liquide precipitations [Bogdan, O., 2000].

For the temperate regions we can determine an index for touristic favorability (ITF) which correlates the monthly medium temperature, the hours of solar shine and the period of daily rain fall. Starting from this index, Al. Păcurar (in *Turismul internațional*, Cluj Press University Publishing , 1999, pg. 43) identifies the existence of the following types of climate:

- the mountain climate, for which the duration of the warm season reaches 180-200 days in the low regions and a maximum of 120 days in the high mountains; the winter season lasts 70-80 days in the low regions , up to 150 days in the high zones.

The climate presents a positive modification on the termic parameters, the increase of the nebulosity, the diminish of the length of the intermediary seasons (spring and autumn) and the growth of the number of risky climatic phenomenon such as storms, tornadoes, heavy and long-lasting rain fall, long periods of drought, etc. (as a negative motivation in the tourist's behavior)

- the hill and plateau climate characterized by a warm season of up to 240 days and

In these regions the climatic manifestations such as the increase of the medium temperature, the concentration of the rainy seasons mostly in spring and autumn and the multiplication of the extreme phenomenons can also influence the tourist behavior

- the plain and seaside climate is characterized by a warm season of over 250 days and a cold one of approximately 30 days.

Lately the irradiative flow (normally with a curative effect) is modifying it's structure and can generate negative effects on the human body. The increase of temperatures is accompanied by the diminish of precipitations which determines the transformation of some regions deserted enclave, a very obviously negative situation.

The thickness of the snow lair determines the practice of winter sports, (also impaling other recreative activities) and will determine unfavorable evolutions for resorts situated at low altitudes (Sinaia, Borșa, Vatra Dornei), respectively a concentration of this touristic potential in resorts at high altitudes (Bâlea, Păltiniș, Poiana Brașov, Parâng, Râncea). The mountain environment in which these resorts are situated are generally characterized by medium winter temperatures of -3, -4<sup>0</sup>C in low altitude resorts and -6, -7<sup>0</sup>C in high altitude resorts. The snow lair usually reaches 50-80 cm thickness at low altitudes and over 100 cm and even 2 m in high altitude resorts.

The favorable factor, the snow lair is affected by the increase of the temperature. For these mountain resorts the climatic date show an increase of the termic average with approximately 1,5<sup>0</sup>C in the last 50 years, of which 0,7<sup>0</sup>C only in the last 10 years. The snow lair maintains in some mountains from December until April (in Făgăraș, at Bălea there is abundant snow even until May) , oscillating in thickness because of the temperatures and solid precipitation. The tendencies of these parameters can not be compensated by the installations that produce artificial snow. The climatic evolution influence the touristic capacities of some resorts. The 2006-2007 winter, for example, was extremely hot, in some low altitude resorts, the snow lair lasting only 40-50 days which determines considerable lost for the owners of touristic companies, owners of slopes etc.

Regarding the material basis, we can correlate, for Romania, the climatic evolution of the last 15 years and the capacities oscillation. The structure of tourism reception have modified their structure as following:

- The number of hotels and motels has increased between 1995 and 2005 with 45%, but the repartition of these units is concentrated in the traditional touristic areas (seaside, mountain resorts, big cities ), the areas with a great natural potential still being neglected because they lack a proper infrastructure;

- Inns and touristic chalets have diminished their number in an alarming way (with 90% and respectively 50%) because of the reorientation to “commodity-tourism, mass-tourism” practiced in areas well equipped. On the other hand we notice the disappearance of some establishments because of causes which can be determined by the climate: in the last 15 years 20 mountain chalets have burned down; the position of some establishments in gorges, on the insecure shores of some rivers and in the risky topographic areas have determined the destruction of these establishments during some extreme climatic and hydrological events; the natural consequence is the decrease of occupation with 90%.

- The campings almost disappeared, the most serious problem being their irrational disablement and the lack of construction of new establishments. The regions from which these buildings have disappeared were almost entirely taken out of the touristic circle.

- campingurile și taberele pentru tineret aproape că au dispărut, cea mai gravă problemă constituind-o dezafectarea irațională a acestora și lipsa instalării unor stabilimente noi. Regiunile din care aceste edificii au dispărut, au fost scoase aproape în totalitate din circuitul turistic;

- in compensation, the number of touristic urban pensions have risen (over 10.000 units have been created after 1993) and those of rural pensions (12.000 in the last 10 years). The balance is unfavorable, tacking into account the neglect of the topoclimate’s modification. The establishments from the urban and rural regions contribute to the increase of the so called “green house effect”, of the medium temperature, hinders the normal circulation of the atmosphere, the modification of the radiative balance, the thermic and chemical atmospheric pollution etc. All these , without taking into account the landscape modification imposed by the construction of the establishments, determine the aggravation of the climatic modifications (the warming) and the apparition of some extreme climatic phenomenons (storms, the *microwave* effect, dog-days, acid rains, the lack of rainy and snowy periods etc.). All these modifications have repercussions on the material base we mentioned (the destructive force of nature is unsuspected) and on the index of comfort and climatic attractiveness for tourists.

### **3. The physical and the physiological impact of climate on the tourism**

The Romanians prefer the summer season for their holidays and other touristic activities. Making a correlation between the touristic flows, especially in June-August period, and the last climatic evolutions, we can interpret some observations:

- the termic increasing during the summer (1 to 4<sup>0</sup>C) is dabbled by the accentuation of the draughty seasons, the dog-days and the increase of the humidity coefficient, factors which determines seriously problems in the peoples and tourists water consume and alimentation, the freatic lairs being put under limits and the the superficial drain is diminish to drying limit during the summer;
- every summer appears the draughty and precipitations deficit which determines seriously damage to all economies; the climatologically stress is extremely affected;
- the barrenness of the climate take out of the touristic circle huge territories, even in Romania (Oltenia, Muntenia, Dobrogea);
- The comfort index contribute to modification of the balance between the domestic tourism and the foreigner tourism. The tendency is to increase the number of Romanian tourists who decide to spent their holidays in other countries.

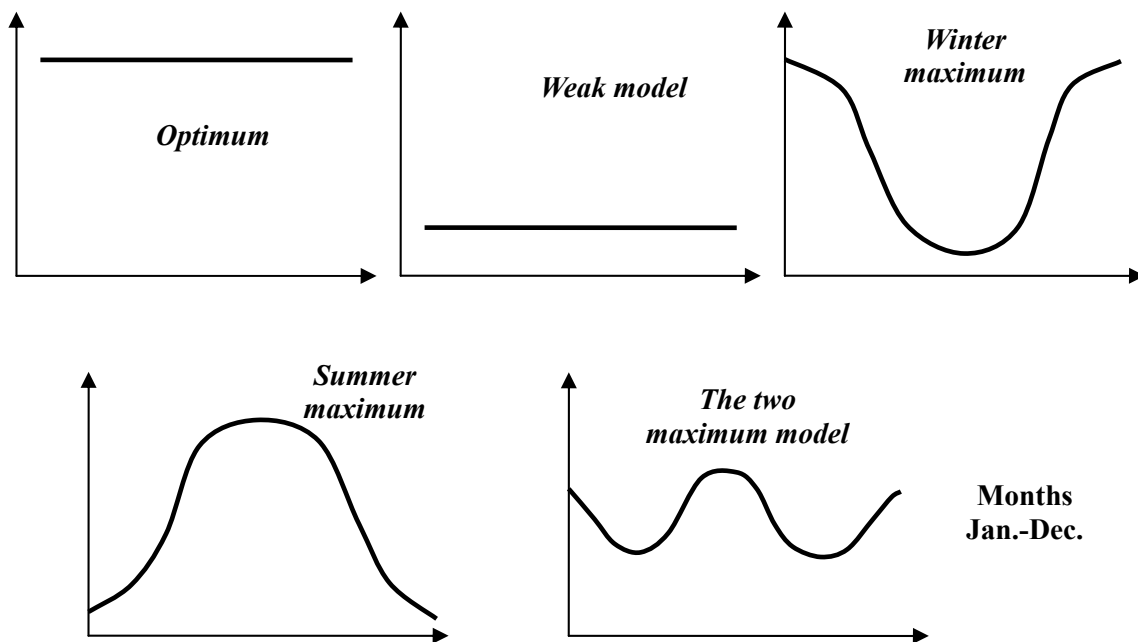
The dimensions of climatic oscillations are difficult to evaluate with high precision. We consider necessary to accentuate some dimensions. Firstly, is the problem of sea level increasing and its consequences on the beaches quality. The climatic warm accentuate the tendencies from geological eves of beach erosion. This elements determines the sand transport and the cliffs destruction.

The climatic comfort studies starts with the PET index (physiologically equivalent temperature). The human body is adapted and functioned in the patterns imposed by these termic stress index or termic comfort index. PET evaluate the termic conditions concerning the philological aspect and is defined as the termic difference between the intrinsic conditions of the body and the external conditions which he support. For adapting at these conditions, the human body need to modify his energetic balance according to some meteorological parameters: temperature and air humidity, wind speed, long wave and short wave radiation etc.

The PET index is different with the tourist's regions of departure and of destination. An individual which lived in the south of Europe will be more tolerant with the high temperatures but will suffered physiologically and psychologically with every departure in Northern Europe. Romania propose for their tourists an excellent merge of PET tolerance. The climatic changes will transform the south of Romania in a subtropical region which will impose others parameters of meteorological sensibility to the tourists.

### **4. The models and the limits of climate-tourism correlation**

Scott and McBoyle [2004] realized some climatic models which overhear the annual distribution of touristic flows. For Romania, we considered like relevant five of these models.



**Figure no. 1: The conceptual typology of anual touristic climates in Romania**  
 Source: Scott and McBoyle (2004).

The mark models (the *weak* one and the *optimum*) are extremely difficult to realize in practice but these are the departure points for others models and limits for the sixth model, the *annual linear model*. We can identify such a model in the case of religious tourism (with Bucovina's destinations or North-Oltenia's monasteries), business tourism and urban tourism. This model does not suppose significant oscillations and keeps a constant level of visits for each month.

The *Winter maximum* model corresponds to winter sports tourism. Resorts like Poiana Braşov, Râncea, Păltiniş, Semenic or Parâng concentrate the most part of tourists in the cold season firstly because of their attractiveness factor, the skiing slopes.

The *Summer maximum* model correspond to Danube Delta's Tourism, the tourism practiced in Dobrogea Region and in Black Sea Riviera. The same touristic pattern includes the activities realized in Pořtile de Fier-Valea Cernei area, the diference between seasons being less obvious.

The *two maximum model* can easily verify for Romania's territory but it is not necessarily influenced by climatic factors. The traditions and the living style are those who determine the Romanian's program. In this way, there are two classic periods for vacations, the winter and the summer. Although recently the four seasons are not synoptically respected anymore, the two touristic maximums still characterize our tourism.

Using the existing models (for Germany, United Kingdom, France) we can estimate a average of the maximum temperature which feels comfortable, 32<sup>0</sup>C, any surpassings of these leading to the diminish of visitor's number. The model can be developed by inserting the statistical parameters for estimating the touristic flows in relation with the termic increasing. The tourist's first impression can be interpreted with this logic: *the heat is good, so the hotter the better*. The temperature needs to be correlate with the value of humidity. In the last period, with the increasing of dog-days

situations, the use of the *thermal comfort index* is extreme. This index is a big risk factor (the index touches the alert state, respectively the average of 65-80% in half of the total days, surpassing the risk limit in 20% of the days, especially for the last 10 years). The frequency and the length of the dog-day periods (tropical temperatures and minimum precipitations) increase because of atmospheric circulation and of climatic changes, these facts being accentuated by the loss of many humid regions or their transformation in urban or agricultural surfaces [Marinică, I., 2006].

More important than the acceptance of a termic average as acceptable for the tourists is their reflection in mass-media and in informational basis of touristic offer. Tourists need to know when a resort is too hot and they will try:

- to be informed about the weather conditions of their destinations and
- to interpret and compare these informations.

For example, not too many tourists can interpret an increase of temperature with 1°C in comfort terms – especially when the informations regarding other parameters like air humidity or wind speed.

The theory conceptualizes a linear relation between the increase of temperature and the tourist's flow oscillations. Normally, the warming and its effects are more intense at north latitudes and less perceived in the south of Europe, where the tourists expect a warm climate anytime. In this way, the termic perception will be a very important element for the decision regarding the voyages and the vacations. The hot region image will change into a too hot one and will influence in that way the touristic flow for this region.

Concerning the extreme phenomenon, the example of hurricanes which affected the Atlantic coast of USA is pretty relevant. Their impact in Florida (2004, 2005, 2006) will influence in long terms the tourist's decisions. The tourism in Florida was drastically affected in 2007.

The image and the fear of tourists regarding the regions in which the climatic extremes have taken place today or in the past (tornados, storms, drought – events who appear especially in the southern half of the country) will affect for long terms the touristic destinations. The tourist's behavior is adapted to the whether extremes trying to avoid the impact zones.

In Gössling and Hall's [2006] opinion, the internal tourists are more sensitive to climatic conditions than the foreigners, for these the weather being an obstacle in their successful holidays. In one of the same author's studies, they use the Likert scale and identify this situation: almost 60% of the respondents consider that the importance of the climate for the voyage decision is important or very important and only 25% of the respondents consider this factor not important or with a small importance.

The representations of the reality using the models and the mathematical patterns suppose some compulsions which put under doubt the scientific determinism between the environmental reality and the human behavior.

1. The first of those limits is represented by the volume of the available data. And if this data exist, they are not very homogenous spatially and temporally:

- in the national statistics, different tourism categories are grouped together;
- from these categories, some tourism types are more sensitive concerning the climatic conditions (the vacations in the skiing resorts) than other types (relative visits);
- the data are collected from a great geographical area (national dimension) and for great temporal intervals (years);

- the costs of this data surpass the research budgets. The only sources are the statistical institutions.

The quality of this touristic available data are extremely weak considering the importance of this sector in economy. We consider extremely important the implantation of some statistical systems for dimension of touristic flows and its correlation with the available data until the present because a good analyze suppose the exploit of some consistent data for many consecutive decades.

2. The climate, the weather and the decision. Most studies considered only the termic parameter in the process of evaluation between the climate and the tourism. The impact of temperature is very important for the human body but the manifestation of climatic non-termic events determine the attractiveness of the destinations. The temperature spatial variability influences the distribution of precipitations, humidity, the clouds and the weather variability which are synoptical elements with their own evolution. Extremely precise data which can be integrate in the models are available only for the temperatures and the precipitations. The tourists can find, usually, in the catalogs, booklets or folders at least some references regarding the average, minimum or maximum temperature.

A study realised in Germany [Hamilton, J.M., 2006] in 2005 proves the importance of the climate in the decision of tourists regarding their holyday destinations. Only 12% of the respondents did not mention the importance of the temperature. The maximum temperature was selected from 2/3 of the respondents and 70% of them say that they are informed about the climatic parameters before making a decision. All the respondents are interested to include the climatic elements in their choices for the holiday destinations. From the number of the respondents who do not use to get information about the climatic parameters of their destinations, 2/3 have already visited this resorts. The conclusions of this study indicates that the majority of the tourists are interested about the climatic configuration of the destinations and this information can affect their decisions, even if not all of them get information about it.

The majority of specialists consider three impact climatic aspects: termical one, physical one and the esthetic aspect. Recently another aspect appeared in theory, the neurological one. They are not yet clear parameters for dimension the degree of touristic demand and the attractiveness of certain climates. The trend is obvious: the climate and the weather have a great importance in the choice of touristic destinations.

The weather experience and the climatic phenomenon observed during the vacations can became brand images for the concerning destinations.

If for some individuals the climate is not a determinant parameter, we can not exclude the possibility of this factor in the decisions regarding the vacation planning or just friend's or relative's visits, their length and frequency.

## **5. Conclusions**

The tourism depends on the succession of some climatic parameters like the temperature, the wind, the humidity, the snow and the rain or the clouds. This parameter's variability will influence the tourist's behavior regarding their voyages as a result of quality's reduction of the destination's weather, this climatic parameters being interpreted more or less comfortable by the tourists. The climate, as a variable, determines many oscillations in the tourism industry of some states or regions, of some specific attractions (parks or reservations) some activities or touristic sectors (the skiing tourism). We consider important to continue the research of the influence of the climate

on tourism at least for some implications like: summer and winter holidays in the mountain regions, the temporal relation between climatic parameters and the choice of touristic destination on tourism categories (alpine, seaside etc.), the climatic effects on the decision regarding the holiday destinations and choosing a place to live after retiring.

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