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Analysis and Estimate Tourism Climate Index of Mazandaran Province, Using TCI Model

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Abstract. Role of clime is significant on life, health , human comfortable and also tourism development .tourists has try to select time for tourism that has most comfort from climate , and also select places that have suitable weather condition .
The aim of this study is determine the best time and location for tourism in Mazadaran province.
In this study with statistic analysis of meteorologist parameters (temperature , raining , moisture , speed of wind , sun radiation) with using TCI model in metrology stations of Mazandaran Province and adjacent stations , preparation and combination of maps during 20 years period as monthly has considered to analysis time and place climate comfort in different areas of Mazandaran . the results has presented in all place of Mazandaran Province , June Month has the best condition for tourists presence and after that May, July, August, September, have similar specification of tourism condition climate and have the best condition for tourism comfort.

Keywords: Tourism comfort climate, Mazandaran , daily comfort, 24 hours comfort

1. Introduction

One of the most important factor on human health and comfort , especially in tourism discussion is weather condition .and weather condition of one region is is one of the most effective factor in attract or repulse of tourist. [1]

According to Hunter [2] believe this condition is from interaction between environment and tourist, certainly its necessary for correct programming of tourism in order to integrated development and considered either request & distribution and also organizational and framework factors.

Development stability is one of the most necessary case that have the main role in tourism programming because the most tourism development designs is according to attractions and related activities with natural environment , cultural heritage , and regional cultural works and in case of their destruction , will lost attraction tourism regional and couldn't considered as tourism center.

Mieczkowski [3] for the first time with present TCI Model with using climate parameters , has calculated tourism comfort condition of 453 metrology stations and is generalized the results during 12 month of year for whole of world .

Scott & Mc Boyle [4] with using TCI index analysis in 17 area of North America , has determined the peak state of Canada cities in summer .

Hamilton and his colleagues in 2005with using simulation model stated with increase of Dioxide Carbone amounts and climate changes in global level , travel and residence of tourists has increased more toward geographical heights and width.

Matzarakis [5] with point to climate condition before and during travel (trip) has considered this factors important in relation with tourism industry programming and considered the effects of atmosphere on health and comfort of human temperature.

In other study that done by Matzarakis [6] in Greece and study the physiology thermal index of human body and reached to this conclusion that condition of August is suitable with human physiological index.

Nicholls and Amelung [7] by using TCI method has analysis the whole amerce states from tourism comfort and predicated until 2050 will be move tourism comfort process from regional with low geographical width to higher width .Although the climate is merely one of the variables that can be effective on the travelling of tourists; however, the majority of tourists take the climate conditions into consideration. The Tourism Comfort Climate Index (TCI) can provide the tourists with required information. If a tourist wants to choose a specific place of the world to travel to, she tries to do this when that place has the best climate condition, and if s/he is limited in selecting a specific time for travelling (like vacations) s/he tries to choose a place that has the best climatic condition at that time.

Moreno and Amelung [8] with analysis climate effects, with especial look to costal tourism during summer season has predicated especial in The Mediterranean sea that until next 50 years will have high level tourism state of this region.

Farajzadeh and Matzarakis [9] with study west north of Iran and with temperature equivalence to physiology concluded that the best season for comfort tourism is summer.

2. Methodology

For this study we use monthly data of climatology phenomena in Synoptic station of Mazandaran province from 1971 to 20005.

In order to determine tourism climate index this process has perform:

1- Extraction of metrology

2- Calculation of comfort index in day time efficiency on base of monthly normal the maximum dry temperature and the minimum weather moisture CID.

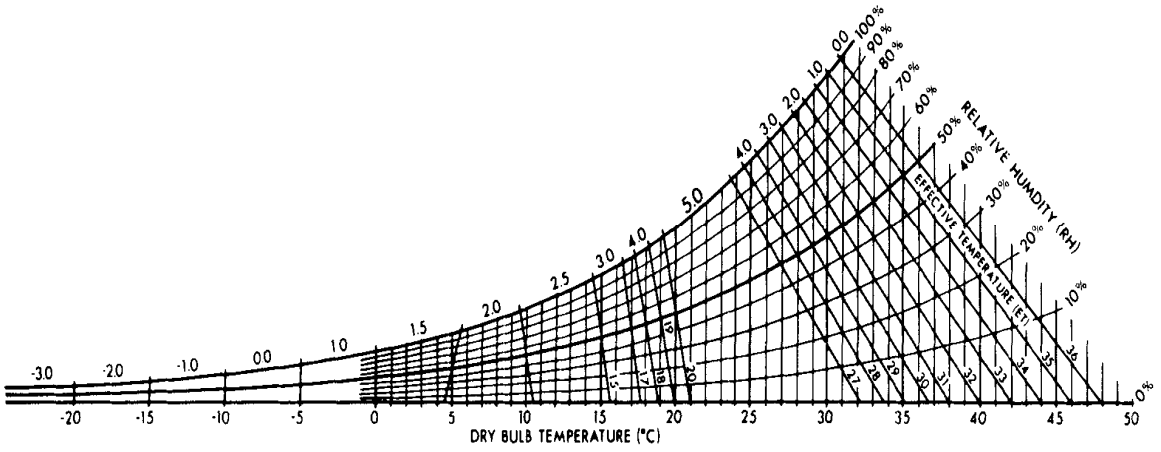

Fig. 1 Classification of thermal comfort climate condition tourism on base of effective temperature index

(Mieczkowski, 1985)

3- Calculation of 24 hours indexes on base of monthly normal of dry temperature and moisture average

CIA: fig.1

4- Rank determination related to raining for each R station

5- Rank determination of radiation for each S station

6-rank determination related to wind for w station

7-calculation of tourism climate index with using following relation:

TCI=8CID+2CIA+4R+4S+2W

8- Determination of numerical quantity of tourism climate and related class with using Table. 1

Table. 1 The quantity numerical of tourism comfort climate condition and description of related level.

Amount of tourism comfort climate index	rank	description of rank state
100-90	9	Ideal
90-80	8	Excellent
80-70	7	Very good
70-60	6	Good
60-50	5	Acceptable
50-40	4	Border line
40-30	3	Undesirable
30-20	2	Very desirable
20-10	1	Extreme undesirable
10-0	0	imposible

3. Results and Finding

According to fig 2 tourism climate condition has present in January, February, March, lack of climate comfort has present undesirable limit. In April with sudden increase warming of temperature and decrease of raining, the state of province has changed severity and most of the areas have the very good and good condition for presence of tourist. The most ideal month for presence of tourist is June and after that May, July, August, September .in October due to penetration Siberia hyperbaric will encounter with high reduction of temperature, due to this reason will change comfort climate in this month. In November and December with sudden reduction of temperature is dominant undesirable state on Mazandaran.

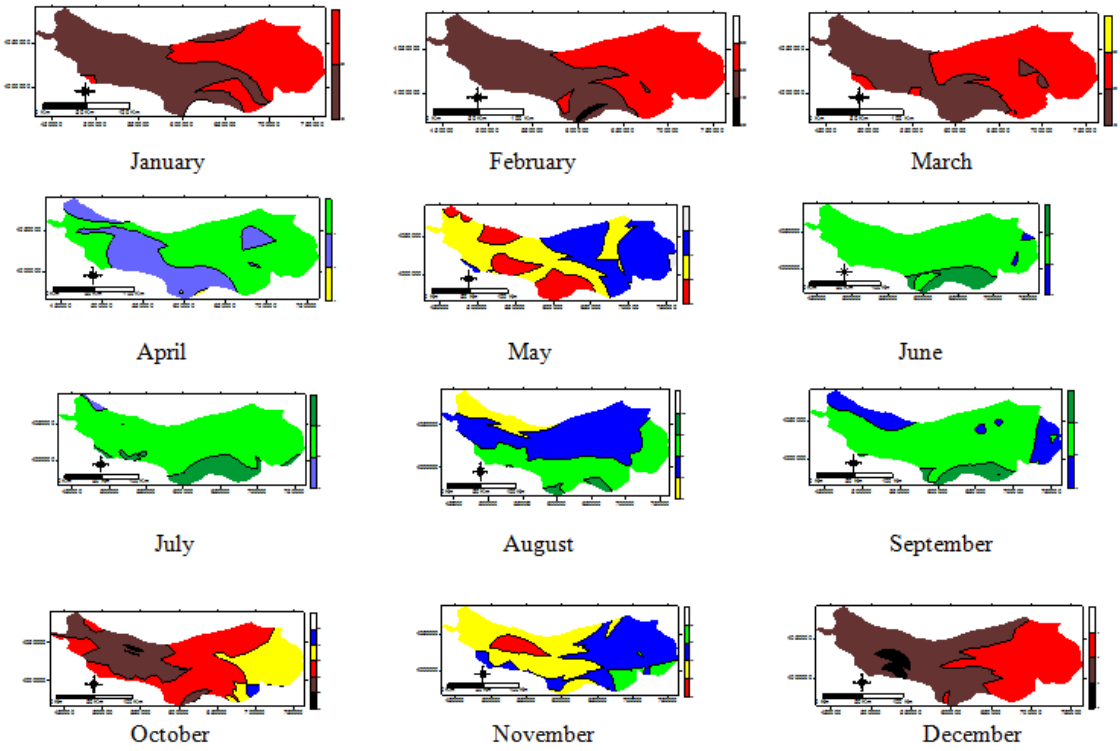

Fig. 2 Distribution map of tourist comfort climate index of Mazandaran Province in months of year

4. Conclusion

After drawing of tourism index distribution maps in each month has provide linear graph from average of all months , the summer has peak in Mazandaran Province, and according to table No 2 standardization for TCI rank in Mazandaran is more and better in June and July Month .

Table. 2 Mmonthly distributions of index parameters of Mazandaran TCI

Month	the minimum rank	the maximum rank	the average rank	standard derivation
JAN	40	58	49/15	3/96
Feb	40	59	50/37	4/41
March	42	62	51/05	4/05
Apr	52	81	67/47	7/56
May	65	88	80/78	4/41
Jun	80	98	87/59	3/09
Jul	80	96	87/07	3/26
Aug	76	98	84/67	4/23
Sep	63	96	78	6/60
Oct	54	87	70/07	6/74
Nor	39	74	55/37	7/47
Dec	38	59	48/73	4/21

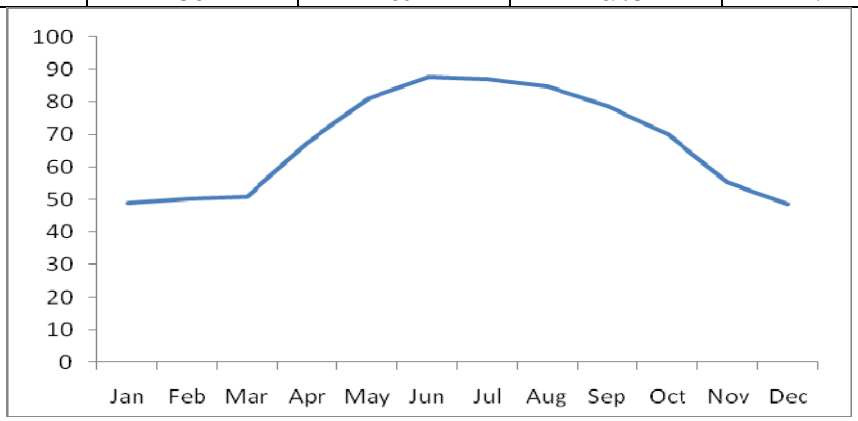

Fig. 3 Monthly distribution graph of tourism climate comfort index In Mazandaran Province

Using the capabilities of GIS in interpolation, conversion of Vector data to Raster data, and combination of maps, it is possible to extend the condition of climate comfort in one point to a wide area, and instead of focusing the discussion on one or two stations, speaking about a wide area such as a city or province.

Generally and based on the above picture and maps, October, May, September, November, and April are the best months for the presence of tourists in Isfahan and climate conditions are excellent to ideal.

June, August and March are located in the next position and during these months, the province is in a good condition.

July, due to hotness of weather and January and February due to rainfall and cold weather are in acceptable position and are considered as having the worst condition for tourists' presence.

Considering the special dispersion, the central parts of province have the best condition for the presence of tourists. The eastern areas during the cold months and western and southern areas during the hot months have suitable conditions for the presence of tourists.

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