TITLE: CLIMATE CHARACTERISTICS AND THEIR IMPACT ON THE DEVELOPMENT OF HEALTH TOURISM IN KATLANOVSKA SPA R. MACEDONIA

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ABSTRACT:

This paper, will present climate elements, with their features in the spa area, and their impact on health tourism in Katlanovska Spa in Macedonia.

Elements of climate are presented: mean monthly and annual air temperature in ˚C between 1991-2010, the absolute minimum temperature and air˚C mean monthly and average annual relative humidity, average monthly and annual mean in cloudiness , monthly and annual rainfall in tenths, monthly annual sums of rainfall in millimeters (mm), average monthly and annual number of days with precipitation > = 0.1mm, number of days with snow roof, number of days with fog, the sun shine duration in hours and mean monthly wind speed.

Key words: climate elements, temperature, relative humidity, rainfall, sun shine, winds.

Introduction

Katlanovska Spa has very favorable location. The Spa is located on the right side of river Pchinja, at an altitude of 230m. The Spa is situated between three major Macedonian cities of Skopje, Kumanovo and Veles. The Spa of the three urban centers is located at a distance of 23-25 km. On the west side of the bath is the Skopje valley, while the east is the Black Hill Top (758м). Feel free to say that no other facilities in Macedonia would like a favorable position as Katlanovska Spa.

The significance and impact of climate elements on the health spa tourism has immense influence. In the analysis will be introduced climate elements in the period between 1991-2 year.

1. CLIMATE CHARACTERISTICS OF THE SPA AREA OF KATLANOVSKA SPA

For the determination of the climate of Katlanovska spa in Republic of Macedonia have been used data obtained from weather station Zajcev hill.

Table1. Average monthly air temperature in C

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Год.
sum	21,4	67,5	159,3	251,2	356,1	443,6	489,3	484,6	376,1	267,0	142,6	42,0	258,4
average	1,1	3,4	8,0	12,6	17,8	22,2	24,5	24,2	18,8	13,4	7,1	2,1	12,9

Source: Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

The average annual air temperature of the Katlanovska spa is 12,9˚C. Highest average air temperature is observed in july and is 24,5˚C. Lowest average air temperature is observed in January and is 1,1˚C.

These temperatures reflect the positive development of health tourism in Katlanovska spa in the Republic of Macedonia until the summer due to higher temperatures attendance is highest, while in winter the attendance is weaker due to lower air temperatures.

Table 2. Absolute max.of the air temperature in °C by date

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year.	date
max.	17,8	23,3	28,2	31,9	35,5	41,4	43,4	40,2	36,5	32,5	25,4	24,1	43,4	24,07,2007

Source: Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to data given in Table 2 the absolute maximum in the period from 1991 to 2010 appeared in July and amounted to 43.4 at 24-07, 2007.

The absolute maximum air temperature positively affects the development of health tourism of Katlanovska spa in the country.

Table 3. Absolute minimum in the air temperature˚C by date

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year	date
Min.	-19,8	-16,8	-8,0	-4,7	3,2	7,0	8,0	8,7	5,1	-1,7	-9,0	-16,6	-19,8	7,01 19 93

Source: Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to Table 3 we see that the absolute minimum air temperature was -19.8 in Katlanovska spa which appeared on the 07-01-1993.The absolute minimum air temperature negatively affects the development of health tourism of Katlanovska spa in the country

Table 4. average monthly relative air humidity (%)

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Mean. year
сума	1568	1395	1266	1236	1242	1152	1058	1085	1246	1446	1560	1620	1323
просек	78	70	63	62	62	58	53	54	62	72	78	81	66

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

Relative humidity has a year to and from December to July is reduced, then this month to December increases, with maximum in December and minimum in July.

This tells us that the relative humidity fairly reflects positively on the development of health tourism in Katlanovska spa in the country.

Taable.5. mean average cloudiness in tenths

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Mean. year
sum	122,9	109,5	113,8	116,2	104,8	78,6	64,5	60,5	86,4	102,6	125,0	140,1	102,1
average	6,1	5,5	5,7	5,8	5,2	3,9	3,2	3,0	4,3	5,1	6,3	7,0	5,1

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to the data form Table 5 we can see that the greatest cloudiness had been detected in December 7, 0 tenths, and a lowest cloudiness appeared in august 3, 0 tenths. We can draw a conclusion that cloudiness also it is reflected in the development of the health tourism in Katlanovska spa in Republic of Macedonia.

Tab.6. Monthly and annual sums of rainfall (мм) , in the period from 1991-2010 year.

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year
Sum	675,6	519,6	670,3	882,0	914,8	857,2	739,0	703,3	796,4	1089,4	929,1	1014,7	9791,4
average	33,8	26,0	33,5	44,1	45,7	42,9	37,0	35,2	39,8	54,5	46,5	50,7	489,6

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

Annual quantity of rainfalls in the period from 1991-2010 year on average is 489,6 mm According to the annual rainfall values we can make a difference in between changed continental rain-gauge mode with maximum rainfall in November by 54,5mm December by 50,7mm and May 45,7mm and a minimum rainfall we have in months February 26,0 mm and march 33,5mm and January 33,8mm. According to the rainfall data we can infer that rainfalls reflect positively on the development of health tourism in Katlanovska spa in the country.

Table.7. Average annual and monthly number of days with rain>= 0,1мм

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	sum
Sum	190	168	178	224	220	183	126	118	167	174	200	241	2189
average	10	8	9	11	11	9	6	6	8	9	10	12	109

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to the data from Table 7 on average highest number of rainy days >= 0,1mm we have in moths December 12 and April and May 11 days. This points that monthly and annual number of rainy days >= 0,1mm does not have negative influence on the development of health tourism in Katlanovska spa in Republic of Macedonia.

Table .8. number of days with snow roof

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Sum
Sum	176	98	23	4	0	0	0	0	0	1	18	86	406
average	9	5	1	0	0	0	0	0	0	0	1	4	20

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to the data from Table 8 on average most snow roof days were was in January 9, February 5 and December 4 days. This shows that the number of snow days does not have negative influence on the development of health tourism in Katlanovska spa in Republic of Macedonia.

Tab.9. number of days with fog

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	sum
sum	114	19	3	4	2	2	0	0	5	31	76	108	364
average	6	1	0	0	0	0	0	0	0	2	4	5	18

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to the data from Tab.9 in Zajcev Hill station in Skopje valley in the period from 1991-2010 year are registered on average annually 18 fog days from which most fog days appeared in January 6, December 5 and November 4 days. This shows that the number of fog days does not have negative influence on the development of health tourism in Katlanovska spa in Republic of Macedonia.

Tab.10. Lasting of the sunny glow in hours

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	year
sum	1701,6	2458,3	3365,3	3674,8	4897,3	5976,4	6408,9	6024,4	4346,3	3104,6	1862,0	1088,6	44908,5
average	85,1	122,9	168,3	183,7	244,9	298,8	320,4	301,2	217,3	155,2	93,1	54,4	2245,4

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to the data from Table 10 on average annually here we have 2245,4 hours with sunny glow or on average daily 6,15 hours. Maximum is in July 320,4 hours or on average 10,33 on a day, and the minimum is in December 54,4 hours or 1,75 hours on a day. According to the data we can infer that the lasting of the sunny glow reflects positively on the development of health tourism in Katlanovska spa in the country.

Tab.11. Average monthly wind speed m/sec.

1991/2010	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Average annual
сума	45,7	51,1	60,0	58,6	56,2	58,0	62,3	56,7	52,2	46,3	45,0	46,5	53,4
просек	2,3	2,7	3,0	2,9	2,8	2,9	3,1	2,8	2,6	2,3	2,3	2,3	2,7

Source : Statistic yearbooks of R.M. for the period from 1992-2010 and R.H.M.B.-Skopje

According to the data from Table 11 we can see that the highest wind speed we have in months July 3,1 and March 3,0m/sec, and the lowest average speed in October, November, December and January by 2,3m/sec. Wind speed affects positively on the development of health tourism in Katlanovska spa in the country.

Conclusion

Acciording to the previously analyzed climate elements and their affection of the health spa tourism in Katlanovska spa we can infer that Katlanovska spa has special and interesting climate conditions.

- Summers are cooler, there aren't suffocating days because the air is clean ,
- Katlanovska spa in Republic of Macedonia is utmost visited by guests in July and August,
- Winters in Katlanovska spa are mild and favorable for guest stay,
- Favorable climate characteristics of the climate elements of Katlanovska spa i.e. fresh and warm summers and mild winters with rare snow occasion, as well as relatively low air humidity, mountain landscape, clean mountain air and air flow of the river Pchinja, are enabling Katlanovska spa to be not just recreate centre for spa tourism but a health recreate and climate centre in Republic of Macedonia.

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