THE CLIMATIC CONDITIONS OF SAJKASKA

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Abstract

Sajkaska is situated in the middle parts of Vojvodina, more precisely in the southern-eastern parts of Backa. It covers the area of 877 km^2 between the Danube, Tisa and the Great Backa Cannel.

The territory of Sajkaska is mainly lowland. The highest point is Titelski breg, with the average height of 120 m, on lower level there is 83m, and the lowest land is alluvial plain of the Danube and Tisza on 71 m above sea level.

For the research of the climatic conditions, we have used the data of the three meteorological stations: Becej, Zrenjanin and Novi Sad (Rimski Sancevi).

For the study of the climatic conditions of Sajkaska, we have used the following climatic elements: an average air temperature, average maximum air temperature, average minimum air temperature, winds, relative air humidity, insolation, cloudiness and precipitation.

According to Koppen's classification of the climates Sajkaska belongs to moderate to warm rainy climate, with warm summers, no dry period, even distribution of precipitation and maximum precipitation in earlier summer with clear late summer. If we present it with the symbols of the Koppen's classification it looks like this: Cfwbx.

Key words: Sajkaska, Vojvodina, climatic conditions, Koppen's classification

Introduction

Sajkaska is situated in the middle parts of Vojvodina, more precisely in the southern-eastern parts of Backa. It covers the area of 877 km^2 between the Danube, Tisa and the Great Backa Cannel.

Until the beginning of 19th century, during the military border, it consisted of the following settlements: Titel, Sajkas, Mosorin, Lok, Vilovo, Zabalj, Curug, Gospodjinci, Gardinovci, Kac and Kovilj. Nadalj and Djurdjevo followed, and after demilitarization of the military border of Budisava.

The border of Sajkaska is conventional and corresponds to peripheral settlements of Sajkaska.

The territory of Sajkaska is mainly lowland. The highest point is Titelski breg, with the average height of 120 m, on lower level there is 83m, and the lowest land is alluvial plain of the Danube and Tisza on 71 m above sea level.

The territory of Sajkaska includes two large river streams, the Danube and Tisa, and two smaller ones, Jegricka and Crna bara, i.e. the Great Backa Cannel. In addition, there are, and there used to be, numerous of active and abandoned river streams, backwater channels, lakes, ponds and swamps with wide meadows and pastures.

In this specific hydrographic, geographic and political environment, a battalion of Sajkaska was formed, some sort of river navy. This battalion with its special boats (called "sajka") was able to develop good strategy and skillful maneuvering.

It can be said that Sajkaska because of its specific characteristics was a unique part of the military border, which Austria formed towards Turkey.

The Climatic Characterictics

The climatic characteristics of Sajkaska are conditioned:
- its position on the Earth
- its position in the Pannonian plain
- the relief of the catchment basin.

The area of our interest lies in the middle of the moderate climatic area between 45°08' and 45°32' North latitude. Therefore, Sajkaska stretches on the 24' longitude (44km). The stretching in the meridian direction is very important because it influences the unequal heating of individual points in the catchment basin. In our case, the distance between the furthest north and furthest south point is not very important because it is small (24').

We know that Vojvodina as a part of Pannonian plain is mostly surrounded by mountains. Vojvodina is more opened towards north and west which causes considerable influences of air currents and changes of weather coming from these directions. This makes the Vojvodina and thus Sajkaska climate continental.

The relief with its forms and heights influences meteorological element so that on small horizontal distance there can be found great differences. The relief of Sajkaska is mainly lowland; the highest point is 128m. This means that there are not any important obstacles for the air mass movement, which can be a cause of more serious differences in the values of meteorological elements.

Surely, the climate of the catchment area is influenced by the Mediterranean and the Atlantic Ocean. But the high Dinarids and Alps and the remoteness of the Atlantic, greatly diminish their influence and emphasize the continental climate.

The Method

For the research of the climatic conditions, we have used the data of the three meteorological stations. If we go from north to south, they are:
1. Becej (45°46' N.lt.; 19°19' E.lg.; above sea level height = 87m),
2. Zrenjanin (45°24' N.lt.; 19°15' E.lg.; a.s.l.h. = 85 m),
3. Novi Sad – Rimski Sancevi (45°22' N.lt.; 19°34' E.lg.; h.= 85 m)

None of the three mentioned stations are on the territory of our interest. The station in Becej is about 10 km northern of the northern border of Sajkaska, the station in Zrenjanin is 12 km eastern of the eastern border, and the station Rimski Sancevi (Novi Sad) is 10 km western of the western border of Sajkaska. We think this does not cause any doubts in the validity of the climate of Sajkaska because the characteristics of the relief, soil and vegetation are the same.

We have used the data from the period 1951 – 1990.

For the study of the climatic conditions of Sajkaska, we have used the following climatic elements: an average air temperature, average maximum air temperature, average minimum air temperature, winds, relative air humidity, insolation, cloudiness and precipitation. We have to mention here that the values for insolation have been available only for Novi Sad station (Rimski Sancevi).

Climatic Conditions

The air temperature

The temperature of the air is very important for the living beings on earth. The position of population, flora and fauna is very much conditioned by the temperature. This is why the air temperature is one of the major climatic elements.

The observation of air temperature in the above-mentioned meteorological stations has been done at 7, 14 and 21 h local time. From the obtained results, we have calculated the mean daily, monthly and annual air temperatures for each station individually and for the entire Sajkaska.

The mean monthly and annual air temperatures

Because of the small area surface and almost identical geomorphological characteristics, we can notice considerable uniformity of temperatures. If we summarize the data from the mentioned period for the three stations, we can conclude that the coldest month is January with all negative temperatures. The coldest town is Becej (-1.14^{o}C), and the highest mean January temperature is in Novi Sad (-0.89^{o}C). The mean January temperature of Sajkaska is − 1.04^{o}C. The temperatures are steadily growing until July, which has the highest temperature. The highest mean July temperatures is found in Zrenjanin (21.30^{o}C), and the lowest is in Becej (21.24^{o}C)

The mean temperature range is 22.32^{o}C.

The mean annual air temperature is from 10.88^{o}C in Becej to 10.93^{o}C in Zrenjanin, and the mean temperature for Sajkaska is 10.90^{o}C (Table 1).

Table 1. Mean monthly and annual temperatures and mean air temperature range for Sajkaska in the period 1951/90.

	J	F	M	A	M	J	J	A	S	O	N	D	Y	A
Becej	-1.14	1.12	5.79	11.24	16.26	19.55	21.24	20.67	16.84	11.68	5.86	1.40	10.88	22.38
Novi Sad	-0.89	1.34	5.75	11.26	16.16	19.64	21.29	20.63	16.85	11.34	5.62	1.92	10.91	22.18
Zrenjanin	-1.09	1.06	5.74	11.32	16.49	19.68	21.30	20.88	17.08	11.56	5.65	1.43	10.93	22.39
SAJKASKA	-1.04	1.17	5.76	11.27	16.30	19.62	21.28	20.73	16.92	11.53	5.71	1.58	10.90	22.32

The important characteristics of the temperature conditions are the considerable differences of the mean monthly temperatures of the same months in different years. The ranges go u to 16.1^{o}C (February). By observing the ranges in the stations we can see that the highest amplitude has been registered in Becej for November. In November 1969, the mean monthly temperature was 18.8^{o}C,

and in the same month 1988 it was –0.5°C, which makes amplitude of 19.3°C. It is also noticed that the mentioned amplitudes are larger in non-vegetation period. (Table 2).

Table 2. Mean monthly and annual amplitudes of the air temperature (°C) for Sajkaska in the period 1951/90.

	J	F	M	A	M	J	J	A	S	O	N	D	Y
Becej	12.0	15.6	9.4	6.7	14.6	5.2	4.8	5.8	5.6	8.4	19.3	8.6	2.5
Novi Sad	11.9	16.5	9.6	6.8	11.4	4.9	4.9	10.7	8.6	9.6	12.7	14.8	2.8
Zrenjanin	11.8	16.3	9.5	6.7	6.7	5.6	5.6	8.1	6.5	7.8	10.3	8.5	3.5
SAJKASKA	11.9	16.1	9.5	6.7	10.9	5.2	5.1	8.2	6.9	8.6	14.1	10.6	2.9

The mean air temperatures according to seasons and vegetation period

The annual climatic seasons differ in their duration from the astronomic seasons. In the study of climate, full months are taken, i.e. winter lasts from December 1 to February 28 or 29, spring from March 1 to May 31, summer from June 1 to August 31 and autumn from September 1 to November 30.

According to table 2, the mean summer temperature is the highest – 20.54°C, and winter temperature is the lowest – 0.57°C (Table 3).

The vegetation period for the greatest number of plants lasts since the beginning of April until the end of September, i.e. 6 months. Since Sajkaska is a developed agricultural area, the mean air temperatures for this period are essential. The mean temperature for the vegetation period is 17.69°C. (Table 3).

Table 3. Mean air temperatures for the seasons and vegetation period for Sajkaska in the period 1951/90.

	Sp	Su	A	W	VP
Becej	11.10	20.49	11.46	0.46	17.63
Novi Sad	11.06	20.52	11.27	0.79	17.64
Zrenjanin	11.18	20.62	11.43	0.47	17.79
SAJKASKA	11.11	20.54	11.39	0.57	17.69

The thermal coefficient

According to this quotient we can somewhat determine the degree of continental or marine climate of a certain place or region. The quotient was defined by Kerner, and is calculated by the following equation (formula):

$Q = ((t_o - t_A) : A)\ 100\ \%$, when: t_o is the mean air temperature in October, t_A is the mean air temperature in April and A is the mean annual amplitude of the air temperature.

If the quotient Q is more than 15%, than the place has maritime climate, while the quotient Q is less than 15% the in continental regions. As much as the quotient is less than 15%, the continental climate is more present. In the areas of extremely continental climate, this quotient is negative.

According to the table 1 the most prominent continentally is in Novi Sad – o.36%, lower continentally is in Zrenjanin with 1.07%, while Becej has 1.96%. The average for Sajkaska is 1.16%, which is a marker for the prominent continentally.

The relative air humidity

The relative humidity, in addition to the air temperature, conditions the need for water and evaporation the soil and plants evaporation. It represents the relation between the present and maximum pressure of water vapour, at the same air temperature, expressed in %. The higher the relative air humidity is the smaller are the possibilities for the water evaporation from the earth's surface, water surface and vegetation. Moreover, the condensations of water vapour, forming of the clouds and precipitation also depend on the air humidity.

At this latitude (Sajkaska), the relative air humidity between 70 and 75% is already a sign of dry weather, and humidity of 50% is a sign of very dry weather, while the humidity of 30% is a sign of extremely dry weather which is disastrous for the living beings in general.

The highest relative air humidity in Sajkaska we can find in winter months (85.12%), and the smallest in summer months (69.72%). The reason for this can be found in the fact that the warmer air can receive the larger quantity of water vapour and vice versa. It is interesting to mention that in spring there is a smaller relative humidity than in autumn up to 5.73%, although the mean air temperature in spring is lower for $0.28^{o}C$. But when we observe the data for the frequency and velocity of winds, we can see that there is less calm weather in spring than in autumn up to 38.0%, while the average wind speed is for 0.3 m/s greater. Therefore, we can say that winds are the cause of the smaller relative humidity in spring than in autumn. (Tables 2, 4 and 8).

The average annual relative humidity for Sajkaska is 75.83% and for vegetation period is 70.18%. (Table 4).

Table 4. The average monthly and annual relative air humidity (%) in Sajkaska for the period 1951/90.

	J	F	M	A	M	J	J	A	S	O	N	D	G
Becej	86.39	83.00	75.36	70.90	70.38	71.19	69.60	70.44	72.92	76.03	84.43	87.70	76.53
Novi Sad	85.95	81.88	73.70	69.50	69.40	70.75	68.18	69.35	72.55	75.85	83.60	86.65	75.61
Zrenjanin	85.55	82.08	73.75	69.95	69.48	70.83	68.38	68.75	70.75	74.73	83.15	86.88	75.36
SAJKASKA	85.96	82.32	74.27	70.12	69.75	70.92	68.72	69.51	72.07	75.54	83.73	87.08	75.83

The highest relative humidity was registered by the station in Becej, and the smallest in Zrenjanin. The data for the frequency and velocity of winds are reversed. (Tables 4 and 8).

Cloudiness

Cloudiness is important for preventing the direct insolation of the earth's surface, and on the other hand, fit prevents the upward radiation flux from the earth. Because of this, if the cloudiness is bigger, the daily fluctuation of the air temperature is smaller, and vice versa. Accordingly, the cloudiness is a climatic modifier, and it modifies the duration of insolation, which is very important for the living beings.

From the table 5, we can se that the clearest day month in Sajkaska is August with only 37.54% of the skies covered. Until the December (71.09%) the cloudiness is increased, while it decreases until August. (Table 5).

The average annual cloudiness in Sajkaska is 54.93%. Autumn is clearer than spring to 5.01%, and this is shown in the air temperatures for the two seasons (Table 5).

Table 5. The average monthly and annual cloudiness (%) in Sajkaska for the period 1951/90.

	J	F	M	A	M	J	J	A	S	O	N	D	G
Be~ej	66.14	62.82	55.68	54.87	52.22	48.59	39.87	36.89	39.72	45.33	65.56	69.68	53.11
Novi Sad	70.53	66.58	60.43	59.43	56.65	52.03	41.65	38.48	42.28	48.18	68.43	71.90	56.38
Zrenjanin	69.43	66.15	59.18	56.75	55.28	51.58	40.50	37.25	41.13	47.53	67.20	71.68	55.31
SAJKASKA	68.70	65.18	58.43	57.02	54.72	50.73	40.67	37.54	41.04	47.01	67.06	71.09	54.93

Insolation

Insolation is an important climatic element, which directly influences the air temperature. The data for insolation were available only in the meteorological station Rimski Sancevi (Novi Sad).

The annual total of insolation for Novi Sad is 2060.9 h, which is about 8 h less than the average for Vojvodina. The month with the highest insolation is July (291.8 h), and the lowest is in December (60.3 h). (Table 6).

Table 6. The average monthly and annual real, potential and relative insolation (h) in Rimski Sancevi (Novi Sad) in the period of 1951/90.

	J	F	M	A	M	J	J	A	S	O	N	D	Y
Real (h)	67.4	89.9	143.0	178.0	229.3	251.7	291.8	285.2	212.0	170.8	81.5	60.3	2060.9
Potential (h)	282.0	301.0	368.0	379.0	462.0	470.0	476.0	437.0	377.0	340.0	286.0	271.0	4449.0
Relative (%)	23.9	29.9	38.9	47.0	49.6	53.6	61.3	64.6	56.2	50.2	28.5	22.3	46.3

A slightly different situation is found when we observe the results of the relative insolation. This rate represents the relation between the real and potential insolation (insolation without cloudiness. The largest relative insolation is not for July but August (64.6%), and the smallest is in December (22.3%) which means that insolation happens only in 2/9 of the time, when the cloudiness would be equal to zero. (Table 6).

Precipitation

The life on Earth is directly or indirectly dependent on precipitation. The air temperatures are not the only reasons why certain parts of the earth's surface are not inhabited, but also a small precipitation, which directly influences the vegetation.

The average monthly and annual precipitation

Annually, Sajkaska receives an average of 586.10 mm of rainfall, which is a bit less than average for Vojvodina. The rainiest month is June, with an average of 79.79 mm. The least rainy is October, 36, 51 mm. The largest precipitation is recorded in the station Rimski Sancevi, 597.10 mm and the smallest in Zrenjanin, 574.73 mm.

The annual distribution of precipitation

We use the so-called method of cumulating to show the annual distribution of precipitation. It shows the average monthly precipitation in pro mille of the annual total. (Table 8).

The pluviometric coefficient according to Angot represents a relation between the real amount of rainfall in pro mille and an even amount of rainfall according to Angot. The even distribution of precipitation is calculated in the following way; months with 31 days have 85 pro mille of total rainfall, months with 30 days have 82 pro mille and February has 77 pro mille. Furthermore, the months that have the pluviometric coefficient higher than 1 are wet months, and those with lower marks than 1 are dry. I t is interesting to see that even three months (April, November and December) have the coefficient 1.00, which means tat they have even distribution comparing to the annual total.

The maximum and minimum amounts of rainfall

If we analyze the annual totals, we can see extremely dry and extremely wet years. The driest year in Sajkaska was 1961, with only 401.70 mm of rain (Becej – 418 mm, Novi Sad – 391 mm and Zrenjanin – 396 mm). The rainiest year was 1955, with 834.66 mm of rain (Becej – 845 mm, Novi Sad – 888 mm and Zrenjanin – 771 mm).

The amount of precipitation for seasons and vegetation period

During the four seasons, the precipitation is even, although there are certain differences. The highest is during summer, 32.89% in average, and the smallest in autumn 20.82%, although in winter is only 0.59% higher than in autumn. Spring receives 24.88% of the total annual precipitation.

The precipitation factor (F)

The precipitation factor represents the relation between the average annual total of precipitation (H) and the mean annual air temperature (t), i.e. F+H/t. According to the formula the precipitation factor for Sajkaska is 53.77, which according to Lag corresponds to humid climate with the vegetation of steppes and savannas.

Table 7. The average monthly and annual total precipitation for Sajkaska in the period 1951/90.

	J	F	M	A	M	J	J	A	S	O	N	D	G
Becej	39.25	38.11	36.11	49.03	59.84	74.44	62.59	54.35	38.05	36.26	47.66	50.69	586.38
Novi Sad	37.63	38.59	38.97	48.8	60.16	84.18	61.38	54.86	35.85	38.67	48.56	49.53	597.18
Zrenjanin	36.63	37.69	36.56	46.76	61.16	80.74	58.32	47.49	37.85	34.6	48.52	48.41	574.73
SAJKASKA	37.84	38.13	37.21	48.20	60.39	79.79	60.76	52.23	37.25	36.51	48.25	49.54	586.10

Table 8. The individual (σ) and cumulative (Σ) monthly amounts of rain (pro mille) for Sajkaska in the period 1951/90.

	J	F	M	A	M	J	J	A	S	O	N	D	Zbir
σ	65	65	63	82	103	136	104	89	64	62	82	85	1000
Σ	65	130	193	275	378	514	618	707	771	833	915	1000	
Angot	0.76	0.84	0.74	1.00	1.21	1.66	1.22	1.05	0.78	0.73	1.00	1.00	

Winds

Winds are very much influence the climate forming of a certain region, since they bring the characteristics of the regions where the air masses originate. As an important factor of evaporation, it is significant for studying of agriculture and river regimes.

The predominant wind in Sajkaska is "kosava" (southern and eastern quadrant). It most often blows during autumn, then winter and in spring, while during summer is very rare. It appears when the air pressure is high above Ukraine and Besarabia, and low in the Mediterranean and Adriatic. This wind goes with dry and clear weather and has great influence on evaporation.

"Kosava" is present 72 days a year (2.5 months). After "kosava", the most often winds are from northern - western quadrant and western quadrant mostly in the summer, when they are more frequent than "kosava". The northern-western wind blows annually 61 days (2 months) and western 52 days. The calm weather (calma0 is most often in summer and autumn, and an annual average is 32 days (1 month). (Table 9).

Winds blow most often in spring (928.61 pro mille), and least frequent in summer (900.49 pro mille).

If we analyze table 9, we can conclude that the most often winds have the highest velocities, although this should not be considered a rule. "Kosava' has the highest average velocity. It is the strongest in winter with the average speed of 3.05 m/s (10.98 km/h), and the weakest in summer with 2.14 m/s (7.70 km/h) The average annual speed of "kosava" is 2.87 m/s (10.33 km/h). "Kosava" is a fallwind, which means that it blows in falls that can reach 42.0 m/s (151.20 km/h).

The highest wind speeds are in spring (2.40 m/s), and the slowest in summer (2.03 m/s), while an average annual velocity of winds is 2.24 m/s.

We can conclude that on the area of Sajkaska winds blow 333 days a year with the average speed of 8.06 km/h.

Table 9. The frequency of winds and calms (promille) and the velocity of wind (m/s) in Sajkaska in the period 1951/90.

		N		NE		E		SE		S		SW		W		NW		C
		f	s	f	s	f	s	f	s	f	s	f	s	f	s	f	s	f
WINTER	Becej	90.73	2.12	71.50	1.70	93.07	1.90	202.54	2.95	89.78	2.10	95.89	1.90	120.05	2.05	146.32	2.32	90.13
	Novi Sad	72.79	2.47	53.97	2.11	120.27	2.33	229.93	3.11	47.77	2.35	51.18	1.95	173.14	2.32	166.02	2.53	84.94
	Zrenjanin	90.10	2.38	72.45	1.79	63.57	1.72	233.83	3.09	154.32	2.65	60.73	1.87	140.86	2.16	129.43	2.44	54.73
	SAJKASKA	84.54	2.32	65.97	1.87	92.30	1.98	222.10	3.05	97.29	2.37	69.27	1.91	144.68	2.18	147.26	2.43	76.60
SPRING	Becej	115.85	2.28	66.47	1.81	81.67	2.06	182.17	2.84	99.60	2.33	87.95	2.27	108.49	2.25	165.68	2.54	92.13
	Novi Sad	105.61	2.82	54.82	2.31	94.85	2.40	223.12	2.97	52.04	2.18	67.51	2.04	157.72	2.28	176.41	2.56	67.91
	Zrenjanin	124.53	2.64	73.39	1.99	58.22	1.97	216.00	3.13	133.98	2.70	70.82	2.13	131.40	2.36	137.48	2.70	54.18
	SAJKASKA	115.33	2.58	64.90	2.04	78.25	2.14	207.10	2.98	95.20	2.40	75.43	2.15	132.54	2.30	159.86	2.60	71.41
SUMMER	Becej	103.51	2.04	71.35	1.60	69.56	1.54	109.28	2.11	77.93	1.87	84.62	1.82	139.79	2.02	224.33	2.31	119.63
	Novi Sad	114.46	2.33	50.72	1.79	79.04	2.08	153.96	2.06	42.73	1.95	68.92	1.79	191.40	1.98	210.50	2.26	88.27
	Zrenjanin	125.58	2.36	76.52	1.71	58.58	1.66	143.63	2.24	97.10	2.29	69.38	1.99	160.45	2.29	178.13	2.49	90.64
	SAJKASKA	114.52	2.24	66.20	1.70	69.06	1.76	135.62	2.14	72.59	2.04	74.30	1.87	163.88	2.10	204.32	2.35	99.51
AUTUMN	Becej	89.22	1.92	77.83	1.61	85.16	1.80	191.90	2.55	95.67	1.95	83.68	1.79	105.68	1.84	155.97	2.18	114.89
	Novi Sad	72.84	2.40	47.55	2.13	115.58	2.17	242.01	2.67	51.02	2.12	61.50	1.78	156.63	2.05	140.26	2.31	112.62
	Zrenjanin	91.18	2.31	67.78	1.69	66.47	1.65	255.99	2.81	141.44	2.50	62.65	1.82	124.65	2.08	121.49	2.31	68.36
	SAJKASKA	84.41	2.21	64.38	1.81	89.07	1.87	229.97	2.68	96.04	2.19	69.28	1.80	128.99	1.99	139.24	2.27	98.62
YEAR	Becej	102.58	2.01	72.33	1.65	77.47	1.94	167.51	2.70	89.16	2.08	82.94	1.92	120.48	2.02	185.29	2.25	102.27
	Novi Sad	88.42	2.62	49.03	2.15	102.11	2.31	210.65	2.88	43.26	2.18	61.00	1.93	171.14	2.16	174.23	2.42	100.16
	Zrenjanin	108.33	2.45	72.23	1.83	60.07	1.78	212.42	3.02	137.00	2.61	65.19	1.99	138.44	2.26	142.06	2.50	64.25
	SAJKASKA	99.78	2.36	64.53	1.88	79.88	2.01	196.86	2.87	89.81	2.29	69.71	1.95	143.35	2.15	167.19	2.39	88.89

Conclusion

According to Koppen's classification of the climates Sajkaska belongs to moderate to warm rainy climate, with warm summers, no dry period, even distribution of precipitation and maximum precipitation in earlier summer with clear late summer. If we present it with the symbols of the Koppen's classification it looks like this: Cfwbx.

The first letter (C) stands for the major climate, in this case moderate to warm climate, where the temperature of the coldest months is between –3 and 18^oC (Sajkaska: - 1.04^oC). The second letter (f0 shows that throughout the year there is enough precipitation (Sajkaska: the relation between the months with the smallest precipitation (October) and the months with the highest precipitation (June) is 1:2.19). The next letter (w) stands for the fact that the driest season is winter (Sajkaska: winter has 125.51 mm and autumn 3.50 mm less, which is acceptable). The letter (b) shows that the hottest month has average temperature below 22^oC (July: 21.4^oC), and that at least 4 months have average temperatures above 10^oC, and in Sajkaska even 7. Finally, the letter (x) shows that the highest precipitation is in early summer (June – 79.79mm), and that the sky is the clearest at the end of summer (August – 37.54% cloudiness and September 41.04% cloudiness).

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