

## CLIMATE ASPECTS IN THE PLAIN OF MIERSIG

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### **Abstract**

*Miersigului Plain is located between Crișul Repede and Crișul Negru; it has altitudes between 100 m to the west and 170 m at the contact with the Lăzăreni Hills. From a climatic point of view, the area falls into the region where most of the precipitation falls in late spring and early summer, and the least during the winter. The average temperature of the warmest month is below 22° C, and seven months of the year have an average temperature above 10° C.*

**Keywords:** plain, climate, Miersig, temperatures

### **INTRODUCTION**

Miersigului Plain is located between Crișul Repede and Crișul Negru. This plain is also called Gepiului Plain. It is a typical Piedmont plain, with flat interfluvies that descend, widening among divergent valleys: Valea Lupului, which passes through Apateu and turns south-west; Nojoridului Valley, which starts from the edge of the hills near Apateu; Mierlăului Valley, which is the widest and longest, with exit to Gurbediu. The limit with the hill oscillates around 160 - 180m. The Miersig Plain is one of the highest plains of the Western Plain.

From a climatic point of view, the Miersig Plain presents a plain climate, the western subtype of oceanic nuance, under the influence of the temperate maritime air.

### **MATERIAL AND METHODS**

The present study aims to evaluate the climatic conditions of the Miersig Plain, considering the impact that the climate has on the characteristics of the local soil, flora and fauna.

Indicators were monitored such as: average annual temperature, cloudiness, duration of sunshine, precipitation, atmospheric humidity and wind regime. The values recorded by the Oradea Weather Station during the last 6 years were studied (2015-2020).

## RESULTS AND DISCUSSIONS

The average annual temperature is 10.5° C. The month with the highest average temperature is June with 21.2° C, and the month with the lowest average temperature is January with 1.5°C (table 1.1.).

The absolute minimum temperature is -29° C and was recorded in January 1942. The maximum absolute amplitude is 68° C.

Average daily temperatures above 0°C are recorded from the second decade of February and last until the second decade of December. The sum of temperatures during the vegetation period (1.03 - 31.10) is 3,530°C or 3,214°C during the period (1.04 - 31.10) which satisfies the requirements of most cultivated plants.

The highest temperatures during the summer, determined by the strong insolation, adversely influence the evolution of the crop during this period, which is of interest the number of days with maximum temperatures over 25°C (summer days) and over 30oC (tropical days).

Analyzing the normal values of this climatic element, it is found that in July and August the hottest days are recorded.

A more detailed analysis shows that the second and third decades of July and the first decade of August have the highest number of days with very high temperatures.

The average monthly and annual cloudiness registered values are close to the normal ones during the two reference years. The duration of the sun's brightness and the average number of clear days have values inversely proportional to those of the nebula and are obviously correlated (tables 1.2. and 1.3.).

Table 1.1.

Average monthly and annual average temperatures  
(Oradea Weather Sation, 2015-2020)

Period	Monthly average (° C)												Yearly
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Normal	-1,5	0,1	5,7	10,9	16,1	19,3	21,2	20,6	16,5	11,1	5,3	0,9	10,4
2015	-12	0,8	5,3	11,7	16,0	19,9	22,0	25,6	15,8	10,5	5,7	-0,4	11,0
2016	1,3	-4,5	2,9	10,0	18,9	20,0	20,1	21,2	15,1	12,6	2,7	3,7	10,3
2017	3,1	2,4	6,6	11,3	15,9	19,2	23,4	22,0	19,7	9,8	5,1	1,0	11,6
2018	-14	4,9	5,5	9,8	15,1	18,8	23,2	20,6	15,0	11,3	1,9	0,6	10,4
2019	-17	-2,3	0,6	11,6	17,9	20,1	19,3	20,2	12,6	10,8	8,1	-0,8	10,55
2020	-18	1,2	3,6	6,7	16,7	19,4	19,2	19,6	14,8	7,8	6,7	2,6	10,35
Average 2015/2020	-17,5	12,1	2,1	9,15	17,30	19,75	19,25	19,90	13,70	9,30	7,40	1,7	10,45

Table 1.2

Normal average monthly and annual cloudiness  
(Oradea Weather Station, 2020)

Period	Average cloudiness in the months												Yearly
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Normal	6,9	6,5	5,6	5,7	5,5	5,1	4,2	4,0	4,3	5,0	6,6	7,2	5,55
2015	6,6	6,5	5,7	5,6	5,5	5,2	4,0	3,6	4,5	4,9	6,8	7,5	5,53
2016	7,2	6,4	6,1	5,4	5,7	5,3	4,0	4,0	4,4	4,7	6,6	7,3	5,59
2017	6,9	6,3	5,9	5,7	5,3	5,2	3,9	3,9	3,9	5,2	6,5	7,2	5,49
2018	6,7	6,4	5,2	6,0	5,4	5,1	3,8	4,1	4,2	5,4	6,3	7,2	5,48
2019	6,7	6,9	6,1	6,3	6,2	4,3	3,9	4,2	4,8	5,7	6,2	7,1	5,70
2020	7,6	6,9	7,0	6,1	6,3	6,2	2,9	5,7	5,9	3,5	7,7	8,3	6,17
Average 2015/2020	6,83	6,48	5,34	5,80	5,62	5,13	3,92	4,15	4,52	4,95	6,60	7,44	5,59

Table 1.3.

Duration of sunshine, monthly and annual; normal values and in the studied years  
(Oradea Weather Station, 2020)

Period	Durata de strălucire a soarelui (în ore)												Yearly
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Normal	63,9	77,2	141,2	186,1	234,4	263,0	294,7	277,5	226,5	183,6	76,4	55,9	2080,5
2015	67,9	90,7	151,9	197,2	254,6	273,7	312,6	285,6	235,7	171,8	82,3	69,8	2193,8
2016	75,9	93,5	163,5	195,4	257,8	278,9	311,5	287,8	236,5	167,9	83,9	75,7	2228,3
2017	80,5	94,7	167,2	199,8	259,0	285,9	321,2	290,3	237,9	160,0	90,2	80,9	2267,6
2018	93,4	97,8	169,9	197,9	260,3	293,5	329,8	291,1	240,3	145,3	97,9	91,8	2309,0
2019	181,0	110,0	170,0	194,9	265,0	312,1	339,3	291,0	240,2	135,0	134,0	157,0	2529,5
2020	139,0	130,0	180,0	193,1	235,0	263,8	382,4	239,7	149,6	115,0	120,0	133,0	2280,6
Average 2015/2020	92,41	95,69	159,8	194,0	250,3	277,7	318,5	280,7	225,5	161,9	92,03	86,04	2234,54

**Atmospheric precipitation.** The annual amount of precipitation, on average for 20 years, is 605 mm, with a relatively uniform distribution during the year. The months richest in precipitation are: June, May and July, and the months with lower precipitation are March, February, October, January, September (Table 1.4.).

Table 1.4

Period	Monthly rainfall (mm)												Yearly
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Normal	35,6	37,4	29,7	46,5	68,1	86,3	65,5	50,4	38,9	34,7	50,2	61,7	605,0
2015	21,8	9,8	8,6	33,8	28,3	62,7	28,5	4,8	67,5	114,6	49,6	16,4	446,3
2016	18,8	9,6	31,6	61,5	18,7	51,4	66,7	23,4	49,8	37,0	57,6	78,4	504,5
2017	30,9	38,2	32,2	76,0	50,6	82,2	22,8	64,2	47,0	36,8	18,8	32,1	532,0
2018	43,3	41,9	37,9	49,0	43,0	119,1	54,1	37,9	40,8	2,7	77,7	82,0	629,4
2019	43,15	36,2	15,5	33,5	104,6	103,8	62,2	142,3	171,8	55,2	32,9	43,3	842,8
2020	21,9	27,5	5,5	60,1	51,9	116,5	162,4	75,4	47,1	35,1	20,7	81,15	705,6
Average 2015/2020	27,58	26,8	29,07	44,97	58,21	83,08	65,32	58,87	59,64	48,49	43,12	49,01	774,05

**Atmospheric humidity.** The relative humidity of the air, expressed in monthly and annual average values, shows more pronounced decreases in May, July and August and higher levels in the winter months (table 1.5.). In general, the annual average values of relative humidity in the experimental years do not vary much from normal values.

**The wind regime** indicates the predominance of winds during the winter months, December, January, February from the south, southwest direction, so that during the summer the dominant direction is from the east, southeast and north (table 1.6.).

Table 1.5

Period	Relative humidity (%)												Yearly
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Normal	86	83	73	68	66	68	65	67	69	77	85	87	69,3
2015	89	79	69	73	68	73	65	56	70	79	85	91	75
2016	83	89	85	75	66	60	68	66	81	82	92	87	78
2017	87	82	74	75	69	68	58	65	70	79	83	92	75
2018	87	81	78	70	71	73	59	63	73	69	81	86	74
2019	93	86	85	65	74	64	67	74	89	84	83	91	80
2020	96	83	71	75	75	81	83	81	83	77	82	80	87
Average 2015/2020	89,2	83,5	76,6	71,5	71,4	71,9	68,1	70,3	78,8	79,4	84,9	87,4	83,5

Table 1.6

## Average wind intensity by direction

Direction	Months												Yearly
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
N	10,2	12,3	15,5	11,8	12,5	11,1	14,4	13,2	11	10,6	2,5	11,6	11,8
N-E	5,1	4,7	6,9	8	6,2	6,3	6,4	5,1	5	5,4	10,7	5,4	5,6
E	12,6	10,2	12,5	14	14,1	15,3	14,6	16,2	17,9	15,8	8	8,4	13,5
S-E	8,3	8,4	7,5	10,2	12,1	13,5	11,9	14	12,2	16	9,4	9	11
S	18,1	25,3	20,2	17,7	14,9	14,1	11,3	10,4	15	15,2	27,2	23	17,8
S-V	9,7	11	12,2	12,6	11,9	8,1	8,4	9,4	9,2	10,2	16	10,2	10,7
V	1,5	2,3	5,6	4,6	6,2	5,8	7,3	5,2	3,6	3	3,4		2,1
N-V	4,4	3,8	3,8	4	4,6	6,2	7,1	5,1	2,7	3	2,4	3,3	4,2

**CONCLUSIONS**

- The sum of temperatures during the vegetation period (1.03 - 31.10) is 3,530°C or 3,214°C during the period (1.04 - 31.10) which satisfies the requirements of most cultivated plants.
- There are exceedances of the number of summer and tropical days, especially in July and August, without the average values deviating too much from the normal ones.
- In general, the average annual values of relative humidity in the years being studied do not vary much from normal values.
- The winds from the south and south-west have the highest intensity, especially in the winter and spring months, as well as in November.

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