

CONSIDERATION UPON CLIMATIC CONDITIONS CHARACTERISTIC TO THE WINTER 2010-2011, IN OLTENIA

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Abstract. There have been analysed the thermal and pluviometric conditions registered in December 2010, January and February 2011. The processed data indicated that the winter 2010-2011 is mostly in normal category with a generally decreased frequency in the last 30 years. The analysis is useful for rendering such climatic type during winter, which is favourable to biological and vegetative processes. However, the weather was warmer than the normal in January, a fact that emphasizes that the climatic warming process still continues, as this month represents “the peak of winter” (the middle month of winter) and the weather aspect is essential for the entire winter. The present paper is useful to climatologists, biologists, bioclimatologists, master students, and, generally, to the experts preoccupied with climatic and bioclimatic aspects.

Keywords: climatic conditions, bioclimatic conditions, Oltenia, winter 2010-2011.

Rezumat. Considerații asupra condițiilor climatice caracteristice iernii 2010-2011 în Oltenia. Sunt analizate valorile termice și pluviometrice ale lunilor decembrie 2010, ianuarie și februarie 2011. În urma prelucrării datelor, rezultă că iarna 2010-2011 se încadrează în bună parte în categoria normalului, categorie a cărei frecvență de apariție a scăzut în ultimii 30 de ani. Analiza este utilă pentru a semnala acest tip de climat în cursul iernii, favorabil proceselor biologice și vegetative. Cu toate acestea, vremea mai caldă decât normal din luna ianuarie arată ca pe ansamblu se continuă procesul de încălzire climatică, ianuarie fiind „vârful iernii” (luna de mijloc a iernii), iar tipul de vreme din această lună este esențial pentru întreaga iarnă. Lucrarea este utilă climatologilor, biologilor, bioclimatologilor, masteranzilor și în general specialiștilor preocupați de aspectele climatice și bioclimatice.

Cuvinte cheie: condiții climatice, condiții bioclimatice, Oltenia, iarna 2010-2011.

INTRODUCTION

The climatic conditions registered in winter interconditions the bioclimatic features, while together they influence the ecosystems, as well as economy and society (MARINICĂ et al., 2010). It is well known that in the last 30 years, the frequency of warm winters increased in Romania, especially in the southwest of Romania (Oltenia), but also in Europe (MARINICĂ & CHIMIȘLIU, 2008). Cold winters were registered at longer intervals, as well as the normal ones. It is worth mentioning that the winter 2009-2010 was a cold winter and there were registered certain climatic records (BOGDAN et al., 2008, 2010; BOGDAN & MARINICĂ, 2009). During the winter 2010-2011, climatic conditions were almost normal and thus, confirmed the increase of climatic variability during the cold season. We shall further analyse the climatic and bioclimatic conditions of the winter 2010-2011.

MATERIAL AND METHODS

For the present study, there were processed data supplied by the archives of RMC Oltenia. There were analysed the results obtained from mathematical models, synoptic charts, and satellite imagery.

1.1. Thermic values of December 2010. The temperature monthly means oscillated between -0.4°C at Băcleș and 1.4°C at Drobeta Turnu Severin, while their deviations from the multiannual mean values, considered normal, varied between -1.7°C at Calafat and Bechet and -0.2°C at Râmnicu Vâlcea. The monthly minimum temperatures oscillated between -21.2°C at Tg. Logrești and -11.7°C at Dr. Tr. Severin. The monthly maximum temperatures were between 11.1°C (registered on December 8) at Dr. Tr. Severin and 16.3°C at Drăgășani (on December 9). The monthly minimum values registered at the soil surface varied between -24.6°C at Polovragi and -9.8°C at Târgu Jiu, most of the values going below -15°C .

1.2. Pluviometric values of December 2010. The monthly precipitation amounts registered in December 2010 were between 59.1 l/m^2 at Calafat, in the southwest, and 126.6 l/m^2 at Craiova, in the centre of Oltenia, at the southern extremity of the hilly area. During the interval December 1-14, there was no *snow cover*; between December 15 and 16 and then December 22 and 27, it was insignificant. In the intervals December 17-21 and December 28-31, the snow cover reached a maximum thickness of 17 cm at Polovragi and Tg. Logrești (December 19).

2.1. Thermic values of January 2011. The mean monthly temperatures varied between -2.1°C at Slatina and Caracal, in the east of Oltenia Plain and Getic Piedmont, and 0.3°C at Dr. Tr. Severin, in the west. Their deviations compared to the multiannual means oscillated between 0.3°C at Slatina and 2.4°C at Tg. Logrești; in the mountains, the deviation reached 3.2°C at Parâng. The monthly maximum thermal values varied between 13.0°C , temperature registered on January 16 at Caracal, and 16.0°C registered on January 15 at Apa Neagră and Tg. Logrești. The monthly minimum temperatures oscillated between -10.3°C , on January 31 at Dr. Tr. Severin and -19.8°C , on January 31 at Apa Neagră. The minimum monthly temperatures at the soil surface varied between -8.1°C , registered on January 31 at Caracal, and -24.6°C , registered on January 26 at Slatina.

2.2. Pluviometric values of January 2011. The monthly amounts of precipitation varied between 18.6 l/m² at Bechet and 65.8 l/m² at Apa Neagră, while the mean for the entire region was 35.9 l/m². With regard to the *dynamics of the snow cover*, it was insignificant on January 1, discontinuous between January 2 and 15 and on January 22, while during the interval January 23-31 it was significant; the maximum thickness of 20 cm was reached on January 24, at Bâcleș, in Mehedinți Hills.

3.1. Thermal values of February 2011

Monthly mean temperatures varied between -1.6°C at Bâcleș and 0.8°C at Dr. Tr. Severin, while their deviations compared to the normal oscillated between -1.4°C at Calafat and 1.2°C at Tg. Logrești; in the mountains, there were 1.7°C at Parâng. The monthly minimum temperatures were comprised between -19.4°C registered at Apa Neagră on February 1 and -10.2°C registered on February 2 at Calafat. The monthly maximum temperatures varied between 14.0°C at Calafat and Caracal, registered on February 7, and 17.0°C at Apa Neagră, on February 6. The minimum temperatures at the soil surface were between -8.9°C at Tg. Jiu, registered on February 3 and -22.2°C at Apa Neagră. The daily average temperatures were positive in the intervals February 6-14 and February 18-20, when the weather was warm, the highest values being registered on February 6 and 7.

3.2. Pluviometric values of February 2011

The monthly precipitation amounts varied between 32.2 l/m² at Bechet and 92.7 l/m² at Apa Neagră, while the percentage deviations compared to the normal values oscillated between -7.5% at Bechet and 96.7% at Craiova. In February, the snow cover was continuous in the intervals February 1-5 and February 20-28, discontinuous in the intervals February 6-8 and 15-19, and absent between February 9 and 15. In the first interval, the maximum thickness reached 16 cm, registered on February 1 at Bâcleș in Mehedinți Hills, while in the southern half of the region the thickness was insignificant (generally ≤5 cm). During the second interval, the maximum thickness reached 35 cm, on February 26 at Apa Neagră in the Subcarpathian Depression, while, on a small area near Bechet, the values were ≤9 cm.

RESULTS AND DISCUSSIONS

The analysis and processing of the registered data regarding the climatic and bioclimatic conditions for the winter 2010-2011, revealed the following:

1.1. Thermal regime of December 20

The classifications of the weather type in December, according to Hellmann criterion at the meteorological stations from Oltenia, indicated cool (CL¹) to normal features. Cool weather was registered in the west part of Oltenia Plain (the area of Drobeta Turnu Severin, Calafat, Bechet, Băilești) (Table 1). Cool weather also registered in the south of the Amaradia Hills, at Tg. Logrești, and within the Subcarpathian Depression, at Apa Neagră.

Table 1. Air temperature in December 2010 (°C): Monthly means in December 2010 (M); normal values (N²), deviation from the normal (ΔT); monthly minimum values (Tmin); monthly maximum values (Tmax) and the day they occurred.
Tabel 1. Temperatura aerului din luna decembrie 2010 (°C): medii lunare în decembrie 2010 (M); normale (N); abaterea față de normală (ΔT); minima lunară (Tmin); maxima lunară (Tmax) și ziua când s-au produs.

Weather Station	Hm	N.XII	M	ΔT=M-N	CH	Tmin	Day	Tmax	Day
							Tmin		Tmax
Dr. Tr. Severin	77	1.4	0.2	-1.2	CL	-11.7	18	11.1	8
Calafat	66	1.0	-0.7	-1.7	CL	-18.3	18	14.7	9
Bechet	65	0.4	-1.3	-1.7	CL	-15.7	18	16.2	9
Băilești	56	0.4	-1.2	-1.6	CL	-17.0	18	15.0	9
Caracal	112	-0.1	-0.7	-0.6	N	-15.9	18	14.2	9
Craiova	190	0.1	-0.8	-0.9	N	-16.4	18	13.7	9
Slatina	165	0.3	-0.5	-0.8	N	-17.6	18	14.5	8
Bâcleș	309	-0.4	-1.2	-0.8	N	-15.2	31	14.5	9
Tg. Logresti	262	0.1	-1.0	-1.1	CL	-21.2	18	13.4	9
Drăgășani	280	0.6	0.3	-0.3	N	-14.2	18	16.3	9
Apa Neagră	250	0.1	-1.2	-1.3	CL	-17.5	18	12.0	8
Tg. Jiu	210	0.1	-0.7	-0.8	N	-14.7	18	12.7	9
Polovragi	546	0.1	-0.5	-0.6	N	-16.2	18	13.4	8
Rm. Vâlcea	243	0.5	0.3	-0.2	N	-12.0	18	14.4	8
Parâng	1585	-3.7	-4.3	-0.6	N	-17.8	16	10.2	8
Mean Oltenia	-	0.1	-0.8	-0.9	N	-16.1	-	13.8	-

¹ From the thermal point of view, according to Hellmann criterion, the classes are: excessively cold (EC), very cold (VC), cold (C), cool (CL), normal (N), warmish (WS), warm (W), very warm (VW), excessively warm (EW).

² The normal or the multiannual mean was calculated for the period 1901-2000 (normal N) (°C).

Within most of the region, December 2010 was thermally normal, which is also confirmed by the general mean value of the month of 0.8°C and its deviation compared to the normal (-0.9°C). In the first decade of the month, the daily mean temperatures were positive, the highest values being registered on 8 and 9, when there were also the highest maximum values. The lowest daily means registered on 18, when the thermal minimum values were also the lowest. There were two periods of warm weather with positive daily mean, minimum and maximum values: December 1-10 and December 20-26. The cold intervals, specific to winter, were December 11-20 and December 27-31. Winter phenomena, temperatures below 0°C , snow and snow cover were registered starting with December 14 and 15. On the 19th, the snow cover reached the maximum thickness of the month (17 cm at Târgu Logrești and Polovragi). In the interval December 20-26, the snow cover disappeared due to the warm weather and then formed again on December 27. During most of the month and within almost the entire region, the snow cover was insignificant (less than 5 cm). During the first decade of the month, the thermic regime was particularly favourable to different phenological phases of the autumn crops (springing, multiplication, leaves formation) and, generally, to the specific biological processes of the vegetal cover and ecosystems. The periods with ground frost and low minimum temperatures, which decreased below the critical biological thresholds of the plants, were associated with the lack of the snow cover or with its insignificant thickness. Consequently, there were some negative effects such as frost bites on the leaves or even total degradation of the plants that were sowed later than the optimal period etc. During certain relatively short periods, frost advanced in the soil at different depths.

During the warm periods, the vegetative cycle slowly came to normal. The water supply of the arable soil layer was optimum. However, in certain areas, there persisted small pools. The variation of the mean daily temperature, the mean of daily minimum values and the mean of daily maximum values calculated for the entire region of Oltenia is rendered in figure 1. The graph emphasizes the weather warming and cooling periods.

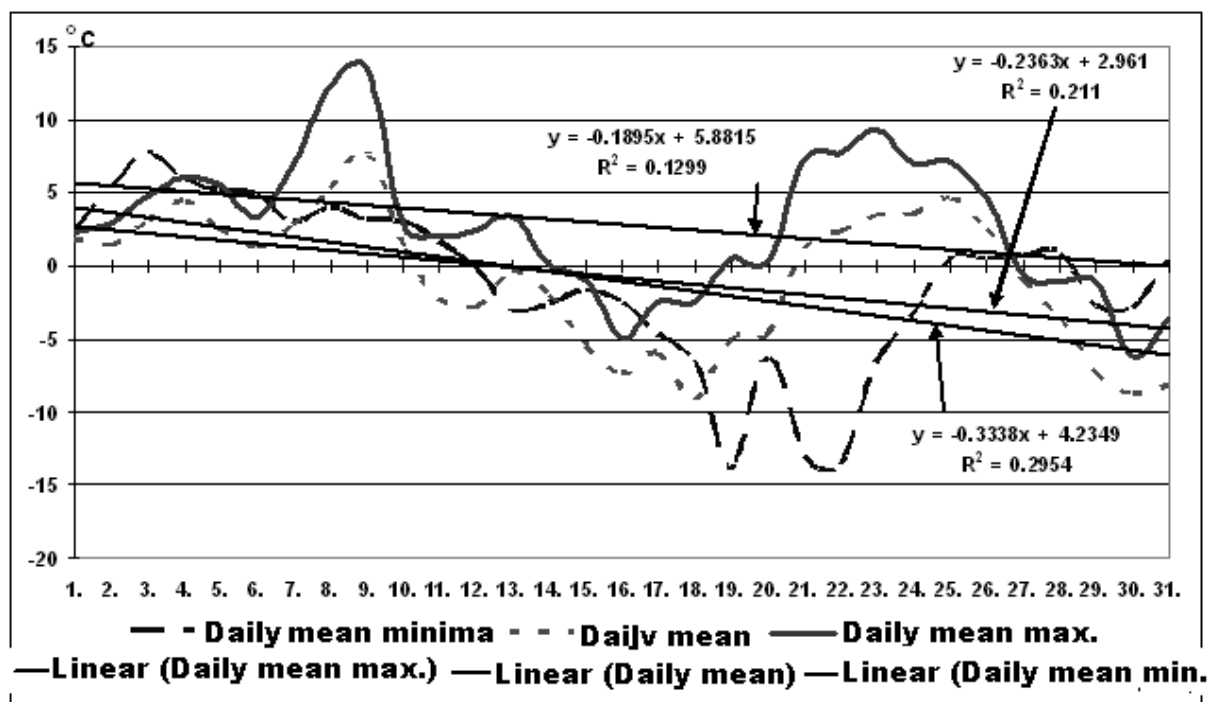


Figure 1. The graph of the variation of daily mean temperature, daily mean minimum and daily mean maximum temperatures calculated for the entire region of Oltenia in the month of December 2010.

Figura 1. Graficul variației temperaturii medii zilnice, media minimelor zilnice și media maximelor zilnice calculate pentru întreaga regiune Oltenia în luna decembrie 2010.

1.2. Pluviometric features of December 2010. The classification of the pluviometric types in December, according to Hellmann criterion, is rendered in Table 2.

According to Hellmann criterion, within most of Oltenia, in December 2010, there predominated very rainy (VR³) and excessive rainy (ER) cases. Normal type registered on a small area at Dr. Tr. Severin, the rainy type (R) developed at Calafat and Băcleș, while little rainy (LR) type characterized the Subcarpathian Depression at Apa Neagră. According to the deviation of the general precipitation mean for the entire region (56%), December 2010 was excessively rainy (ER). The rich rainfalls registered in December 2010 contributed to the maintenance of the moisture excess in the soil after the very rainy autumn of 2010.

³ The pluviometric features according to Hellmann criterion are: excessively rainy (ER), very rainy (VR), rainy (R), little rainy (LR), normal (N), little dry (LD), dry (D), very dry (VD) and excessively dry (ED)

Table 2. Precipitation amounts registered in the winter 2010-2011 (Σ) compared to the normal values (N for the period 1901-1990), deviation (%) and the type of pluviometric time according to Hellmann criterion (CH).

Tabel 2. Cantități de precipitații înregistrate în iarna 2010-2011 (Σ), comparativ cu valorile normale (N pentru perioada 1901-1990), abaterea (%) și tipul de timp pluviometric conform criteriului Hellmann (CH).

Weather Station	Hm	December 2010				January 2011				February 2011				Winter 2011			
		Σ II	N	$\Delta\%$	CH	Σ I	N	$\Delta\%$	CH	Σ II	N	$\Delta\%$	CH	Σ	N	$\Delta\%$	CH
Dr. Tr. Severin	77	67.2	61.2	9.8	N	44.5	51.4	-13.4	LD	74.8	47.9	56.2	ER	186.5	160.5	16.2	LR
Calafat	66	59.1	45.5	29.9	R	33.5	40.4	-17.1	LD	65.8	38	73.2	ER	158.4	123.9	27.8	VR
Bechet	65	60.3	36.3	66.1	ER	18.6	33.5	-44.5	VD	32.2	34.8	-7.5	N	111.1	104.6	6.2	N
Băilești	56	63.4	46.8	35.5	VR	23.7	38.5	-38.4	VD	50.4	36.1	39.6	VR	137.5	121.4	13.3	LR
Caracal	112	63.9	39.5	61.8	ER	39.2	34.7	13.0	LR	45.1	34.5	30.7	VR	148.2	108.7	36.3	VR
Craiova	190	126.6	41.8	202.9	ER	30.3	37.5	-19.2	LD	59.8	30.4	96.7	ER	216.7	109.7	97.5	ER
Slatina	165	62.2	42.8	45.3	VR	42.0	36.0	16.7	LR	38.1	38.4	-0.8	N	142.3	117.2	21.4	R
Băcleș	309	68.2	54.7	24.7	R	36.6	50.5	-27.5	D	60.4	44.1	37.0	VR	165.2	149.3	10.6	LR
Tg. Logrești	262	88.0	44.8	96.4	ER	26.1	35.9	-27.3	D	44.0	41.0	7.3	N	158.1	121.7	29.9	VR
Drăgășani	280	70.6	44.6	58.3	ER	29.4	34.1	-13.8	LD	50.8	35.4	43.5	VR	150.8	114.1	32.2	VR
Apa Neagră	250	94.2	82.3	14.5	LR	65.8	70.9	-7.2	N	92.7	66.4	39.6	VR	252.7	219.6	15.1	LR
Tg. Jiu	210	86.7	64.0	35.5	VR	43.0	53.9	-20.2	D	64.4	52.0	23.8	R	194.1	169.9	14.2	LR
Polovragi	546	85.1	56.1	51.7	ER	38.6	48.9	-21.1	D	48.1	48.4	-0.6	N	171.8	153.4	12.0	LR
Rm. Vâlcea	243	107.2	46.2	132.0	ER	34.5	35.5	-2.8	N	52.9	38.4	37.8	VR	194.6	120.1	62.0	ER
Parâng	1585	84.8	54.6	55.3	ER	33.0	57.7	-42.8	VD	43.2	47.7	-9.4	N	161.0	160.0	0.6	N
Mean Oltenia	-	79.2	50.7	56.0	ER	35.9	43.96	-18.3	LD	54.8	42.2	29.9	R	169.9	136.9	24.1	R

2.1. Thermal regime of January 2011. The classification of weather types according to Hellmann criterion are given in Table 3.

Table 3. Air temperature in January 2011 ($^{\circ}\text{C}$): Monthly means for January 2011 (M); normal values (N); deviation from the normal (ΔT); monthly minimum values (Tmin); monthly maximum values (Tmax) and day of occurrence.

Tabel 3. Temperatura aerului din luna ianuarie 2011 ($^{\circ}\text{C}$). Medii lunare în ianuarie 2011 (M); normale (N); abaterea față de normală (ΔT); minima lunară (Tmin); maxima lunară (Tmax); temperatura minimă lunară la suprafața solului (Tmin sol) și ziua când s-a produs.

Weather Station	Hm	N.I	M	$\Delta\text{T}=\text{M}-\text{N}$	CH	TMin	Day		Data		Tmin		Day	
							TMin	TMax	TMax	Tmin	Sol	TminSol		
Dr. Tr. Severin	77	-1.1	0.3	1.4	WS	-10.3	31	14.8	15	-12.0	31			
Calafat	66	-1.8	-0.3	1.5	WS	-12.6	31	15.5	14	-18.2	26			
Bechet	65	-2.2	-1.5	0.7	N	-13.5	26	14.1	15	-15.0	26,27,31			
Băilești	56	-2.3	-1.1	1.2	WS	-13.8	31	14.2	14	-14.8	26			
Caracal	112	-2.9	-2.1	0.8	N	-16.4	31	13.0	16	-8.1	31			
Craiova	190	-2.6	-1.7	0.9	N	-13.4	31	13.3	16	-20.0	31			
Slatina	165	-2.4	-2.1	0.3	N	-15.3	31	13.8	16	-24.6	26			
Băcleș	309	-3.0	-1.3	1.7	WS	-13.5	27	13.1	16	-16.6	28			
Tg. Logrești	262	-2.7	-0.3	2.4	W	-15.0	27,31	16.0	15	-10.4	31			
Drăgășani	280	-2.2	-0.9	1.3	WS	-11.5	27	14.0	16	-17.5	31			
Apa Neagră	250	-2.6	-1.8	0.8	N	-19.8	31	16.0	15	-16.1	31			
Tg. Jiu	210	-2.6	-1.0	1.6	WS	-15.1	31	13.4	14	-15.6	31			
Polovragi	546	-3.2	-1.6	1.6	WS	-14.9	27	14.7	15	-14.0	31			
Rm. Vâlcea	243	-2.2	-0.4	1.8	WS	-11.4	30,31	14.4	15	-17.6	27			
Parâng	1585	-5.9	-2.7	3.2	C	-15.4	26	6.7	17	-	-			
Mean Oltenia	-	-2.6	-1.2	1.4	CL	-14.1	-	13.8	-	-15.8	-			

According to Hellmann criterion at the meteorological stations from Oltenia, January was normal (N), warm (W) and within most of the region warmish (WS). The general thermal mean for the entire region was -1.2°C and its deviation from the normal 1.4°C , which indicates a warmish month (WS). There occurred two intervals of cold weather with negative daily temperatures between January 1 and 8 and January 23 and 31, and an interval of warm weather characterized by positive daily temperatures between January 9 and 17. The daily averages oscillated around 0°C in the interval January 18 and 22, leading thus to the prolongation of the warm interval to 14 days.

The graph rendering the variation of the mean minimum and mean maximum daily temperatures calculated for the entire region Oltenia emphasizes the cooling and warming periods in January 2011 (Fig. 2). In the interval January 12-22, the soil was not frozen and the vegetative processes continued slowly.

The phenomena of thermic stress associated to low temperatures which decreased below the critical biological limits of plants occurred in the intervals January 1-8 and January 26-31.

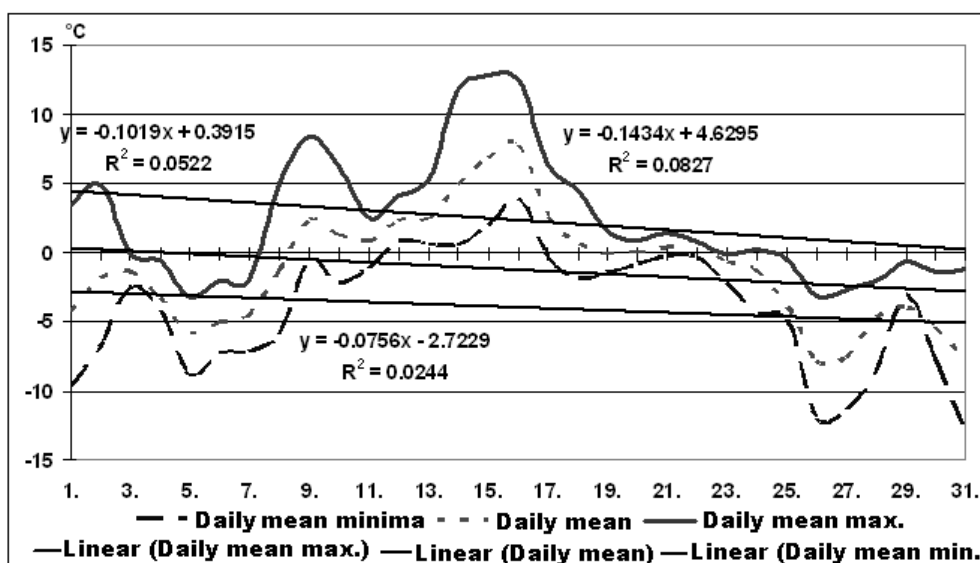


Figure 2. Graph of the variation of the daily mean temperature, daily mean minimum and daily mean maximum temperatures calculated for the entire region of Oltenia in January 2011.

Figura 2. Graficul variației temperaturii medii zilnice, media minimelor zilnice și media maximelor zilnice calculate pentru întreaga regiune Oltenia în luna ianuarie 2011.

2.2. Pluviometric features of January 2011. According to Hellmann criterion applied to precipitation amounts registered at the meteorological stations January 2011 varied from normal (N) to very dry (VD). If taking into account the deviation of the general mean compared to the normal, it was little dry (LD). Very dry (VD) weather was registered in the south of Oltenia Plain in the area of Băilești, Bechet. However the moisture reserve in the arable or superficial layer of the soil was almost optimum or even optimum for winter crops due to the high amounts of precipitation registered during the previous months and to the reduced temperatures.

3.1. Thermal regime of February 2011. According to Hellmann criterion February 2011 was normal (N) within most of the region, cool (CO) on small areas at Calafat and Slatina where fog and thermal inversions were frequent and warmish (WS) at Tg. Logrești and Parâng (Table 4). It is worth mentioning that warming during the cold season in the mountains became almost a characteristic in the last 20 years. There were registered two *intervals with warm weather* between February 6 and 14 and February 18 and 20. The soil was frozen between February 1 and 17 and between February 21 and 28.

Table 4. Air temperature in February 2011 (°C). Monthly means for February 2011 (M); normal values (N); deviation from the normal (ΔT); monthly minimum values (Tmin); monthly maximum values (Tmax); monthly minimum temperature at soil surface (Tmin sol) and the day it occurred.

Tabel 4. Temperatura aerului din luna februarie 2011 (°C). Medii lunare în februarie 2011 (M); normale (N); abaterea față de normală (ΔT); minima lunară (Tmin); maxima lunară (Tmax); temperatura minimă lunară la suprafața solului (Tmin sol) și ziua când s-a produs.

Weather Station	Hm	N.II	M	$\Delta T=M-N$	CH	TMin	Day	TMax	Data	TMin	day
							TMin		TMax	sol	TminSol
Dr. Tr. Severin	77	0.9	0.8	-0.1	N	-10.2	2	16.7	7	-11.6	2
Calafat	66	0.4	-1.0	-1.4	CO	-12.5	3	14.0	7	-18.2	28
Bechet	65	-0.1	-0.3	-0.2	N	-13.2	2	16.0	7	-15.6	4
Băilești	56	-0.1	-0.4	-0.3	N	-13.6	2	15.6	7	-15.6	4
Caracal	112	-0.7	-1.1	-0.4	N	-12.5	3	14.0	7	-13.2	2;11
Craiova	190	-0.4	-1.2	-0.8	N	-13.5	2	15.5	6	-14.4	28
Slatina	165	-0.2	-1.3	-1.1	CO	-16.3	1	14.2	7	17.3	3
Bacleş	309	-0.9	-1.6	-0.7	N	-15.5	1	16.1	7	-21.0	1
Tg. Logrești	262	-0.7	0.5	1.2	WS	-16.4	1	16.5	7	-18.3	1
Drăgășani	280	-0.2	-0.4	-0.2	N	-14.6	2	14.1	6	-17.5	2
Apa Neagră	250	-0.6	-1.5	-0.9	N	-19.4	1	17.0	6	-22.2	4
Tg. Jiu	210	-0.4	-0.8	-0.4	N	-13.7	1	16.3	7	-8.9	3
Polovragi	546	-1.4	-1.2	0.2	N	-13.8	1	16.7	7	-22.0	1
Rm. Vâlcea	243	0.0	0.0	0.0	N	-11.7	2	15.7	6	-14.4	2
Parâng	1585	-5.6	-3.9	1.7	WS	-13.8	28	14.3	8	-	-
Mean Oltenia	-	-0.7	-0.9	-0.2	N	-14.0	-	15.5	-	-14.0	-

The graph of the variation of the daily mean temperature, daily mean minimum and daily mean maximum temperatures calculated for the entire region Oltenia emphasizes the cooling and warming periods (Fig. 3).

3.2. Pluviometric features of February 2011. According to Hellmann criterion the weather features varied from normal (N) to excessively rainy (ER); if taking into account the percentage deviation of the precipitation general mean calculated for the entire region. February was a rainy month (R). The moisture reserve in the arable or superficial soil layer was optimum during the entire month and in the warm periods the vegetative processes continued.

Pluviometric features of the winter 2010-2011. The seasonal precipitation amounts varied between 111.1 l/m² at Bechet and 252.7 l/m² at Apa Neagră. According to the percentage deviations from the normal, Hellmann criterion, in Oltenia the weather varied from normal (N) (Bechet and Parâng) to excessively rainy (ER) (Craiova). The percentage deviation of the general mean for the entire region and winter interval (24.1%) indicate a rainy (R) winter.

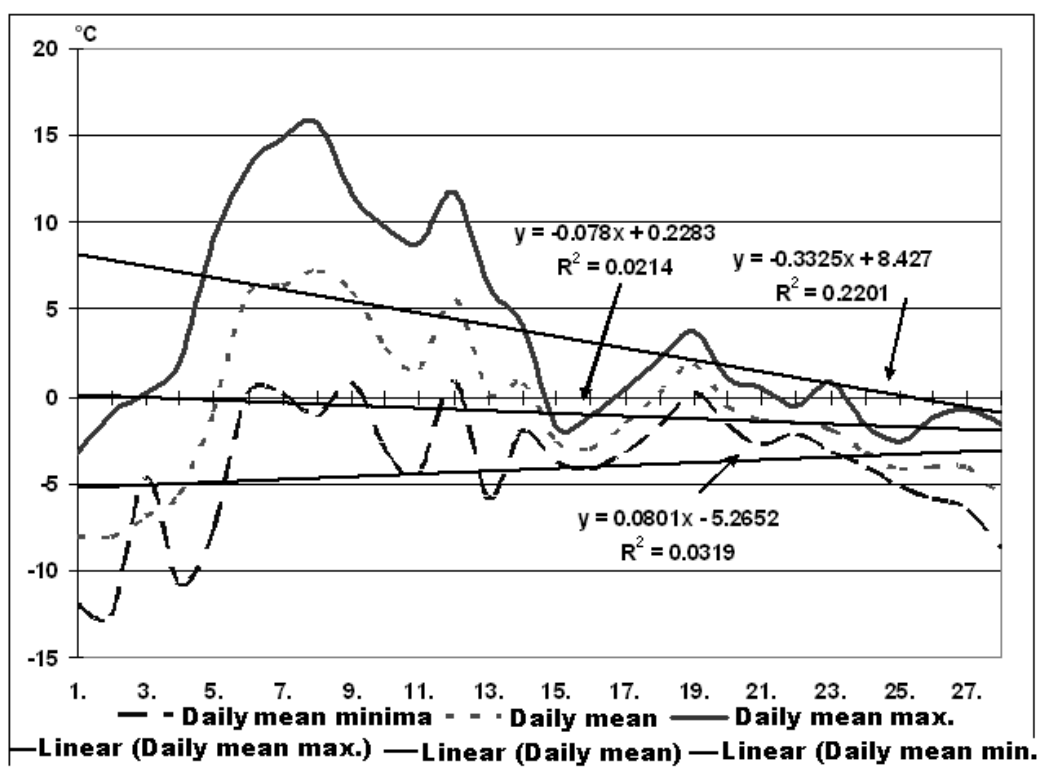


Figure 3. Graph of the variation of the daily mean temperature, daily mean minimum and daily mean maximum temperatures calculated for the entire region of Oltenia in February 2011.

Figura 3. Graficul variației temperaturii medii zilnice: media minimelor zilnice și media maximelor zilnice calculate pentru întreaga regiune Oltenia în luna februarie 2011.

CONCLUSIONS

Our analysis emphasizes that the thermal general mean of December 2010 was -0.9°C for the entire region, with a deviation from the normal of -0.8°C , which indicates a thermal normal month. In January the thermal general mean for the entire region was -1.2°C , registering a deviation of 1.4°C from the normal, which indicates a warmish month (WS). In February, the thermal mean for the entire region registered -0.9°C , with a deviation of only -0.2°C , which indicates a normal month. The mean temperature for the entire winter in the region was -1.0°C , registering a deviation of 0.1°C , which emphasizes a normal winter from the thermal point of view. In pluviometric terms, it was a rainy winter (R), while from the bioclimatic perspective, the intervals affected by thermal stress induced by low temperatures were short.

Warm intervals were registered during all the winter months. After the prolonged warm interval (January, 9-22) on the night of 23 there were signalled geese flocks migrating towards Oltenia. We mention that, during the aforementioned interval, there was warm weather within the entire Europe, which explains this early migration of geese that were confused due to the weather warming. During the entire winter there were five warm intervals summing up 43 days (48% of the winter days), when vegetative and biotic processes restarted. The winter 2010-2011 is mostly normal, a category the frequency of which generally decreases in the last 30 years. This is why such analysis is useful for signalling this type of climate during winter, which favours biological and vegetative processes. However, the weather was warmer than the normal in January and this indicates that the climate warming process continues, as January is the middle winter month, the so-called "peak of winter" and the weather aspect is essential for the entire winter.

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