WINTER 2006-2007 IN OLTENIA COMPARED WITH WINTER 2007-2008

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Abstract. - Winter 2006-2007 in Oltenia compared with winter 2007-2008. The starting point of the paper was an american climatological report under which globally, the winter of 2006-2007 was the most warm from whole series of observations. Also, the National Administration of Meteorology has made in department of climatology a report which certifies that, namely, in our country the mean temperatures of January 2007 have exceeded the multiannual means in all country regions. Starting from these climatologically opinions, paper aims synoptic analysis at european scale and mezoscara of atmospheric circulation at different layers of the atmosphere. This analysis was motivated by abnormally warm weather in the winter of 2006-2007, especially in January, compared with the winter of 2007-2008. For this purpose, we have determined the main types of circulations that favored the thermal variations. Also, we analyzed the distribution of monthly precipitation amounts.

Key words: *winter, temperature anomlies.*

1. Introduction

Globally, in January 2007 the mean surface temperature was 0.45 ° C above the mean of the years 1971-2000, and was the highest since 1891.Regarding Romania, January 2007 was the most warm month of winter, the mean temperature deviations from the climatological norm were between 6.1°C and 8.0°C. In Oltenia, winter 2006-2007, especially January, was characterized by extremely warm weather; with long intervals of predominantly fine weather and scanty amount of precipitation, especially rain.

1.1 Oltenia's general climate characteristics

Oltenia is situated in south-west of Romania. Because of this it is under the influence of pressure centres action from the Mediterranean Sea, Atlantic Ocean, Russian Plain, Northern Africa, Scandinavia and even Peninsula Groelanda.The atmospheric circulation which predominates over Oltenia are those with the western and eastern component, the other types are less common. In Oltenia invasions of cold polar air or arctic are less, compared with other regions of the country. The position the Carpathian Mountains and the Subcarpthians, in relation

with directions by penetration of air masses, is influencing Oltenia on the distribution of annual mean temperatures which decrease from west to east and from north to south(Dr.Tr.Severin 11.7°C, Strehaia 10.8°C, Craiova 10.9°C, Dragasani 10.4°C, Slatina 10.4°C). The altitude obviously affects air temperature, the highest mean values being recorded in southern Oltenia.

Winter in general is not so severe like in East of the country, and in West of Oltenia (Mehedinti county) is as mild as in the Banat. For eastern Olteniei Winter is more severe. In winter season, in low side of Oltenia are frequent heat inversions, usually associated with radiation fog or low clouds which often persist during the day and determine the maximum daily much lower than the hill.

2. Research data and methods used

For the analysis we used the surface and geopotential data, climatological mediated with CDL, NOAA; the climate daily values precipitations amounts and the maximum and minimum temperature mediated between 1961 – 2004. On these data, taken from the archives of the National Meteorology Administration, we made both statistical processing and synoptic analysis. The climate daily values of temperature and of January 2007 and 2008 were processed determining the averages of these for each month. For mezoscara analysis were used data from synoptical bulletins of CMR Oltenia archives. We have done charts with the evolution of the average of temperature and precipitation values recorded in January 2007, respectively 2008 and the normal values of this month mediated between 1961-2004 and we compared them.

3. Results

3.1. Synoptic situation

January 2007 was characterized by the persistence of a ridge of Azores High, extended over southern Europe, Northern Africa and Mediterranean basin, atypical situation for the winter season (Figure 1). Worth mentioning a zonal structure, of blockage, over all Europe.

Altitude structure reflect about the same configuration as at the sea-level, low geopotential over northern continent and very high geopotential over the half southern of Europe. In January the mean geopotential of our area is 545 hPa while in Figure 2 can be se that Romania is between 552 hPa at north and 564 hPa at south, values which are characteristic of April and May.

Analysis map of surface and geopotential for this month, have highlighted the dominance of west circulation, which determined in the southern half of Europe the act, in most of January, of maritime air masses from middle latitudes brought in

this part of the continent by the Azores High, which dominated the atmospheric situation in January 2007.

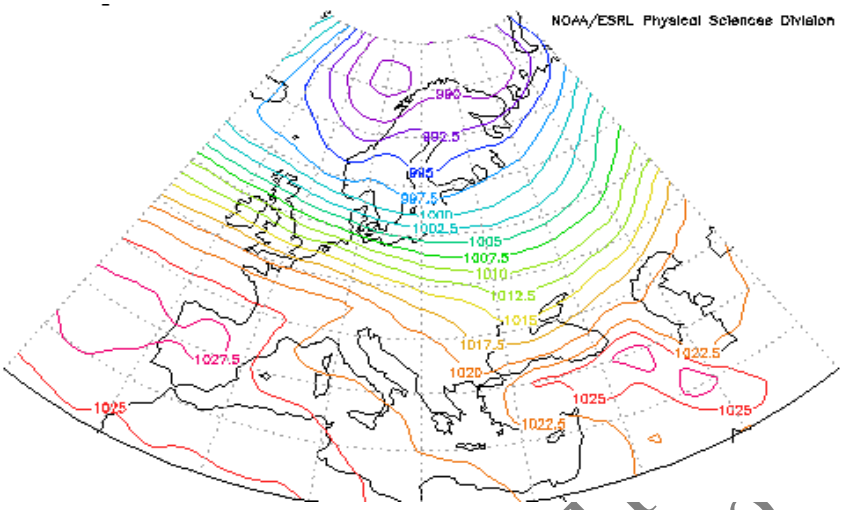

Fig. 1. The atmospheric pressure at sea-level mean (January 2007)

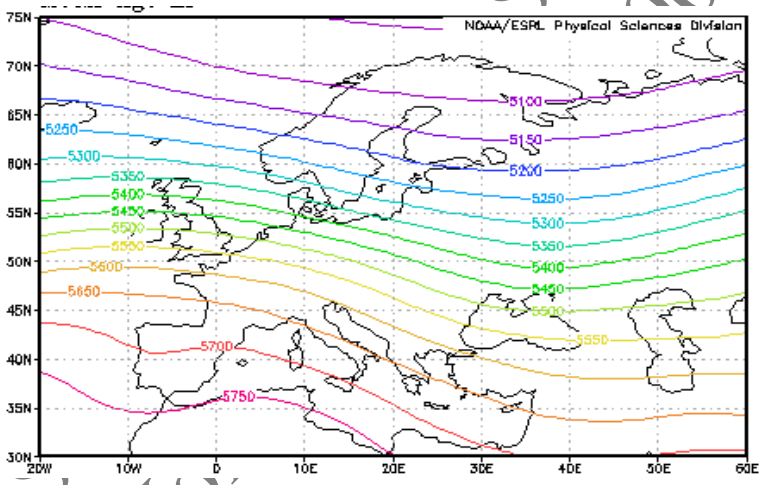

Fig. 2. The geopotential meanat level of 500 mb (January 2007**)**

Although the Icelandic Low was permanently in this month, its influence was felt particularly in north-west, central and eastern part of the continent. The almost total lack of nordic circulations which favors the penetration of polar air to the Mediterranean Sea determined that the formation of Mediterranean cyclons to

be very reduced and their influence over parts of south-east of the continent to be also low. For our country, the atmospheric situations with western circulation cause mild winters and the falling precipitation are mostly rain, rarely sleet and snow.

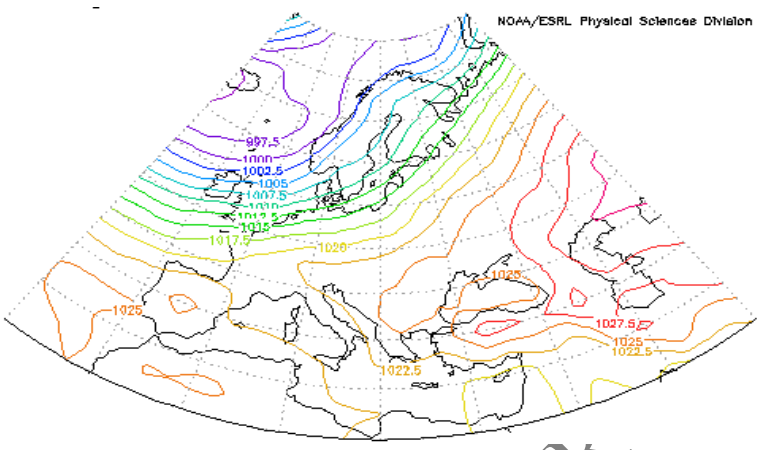

Fig. 3. The atmospheric sea-leavel pressure mean (January 2008)

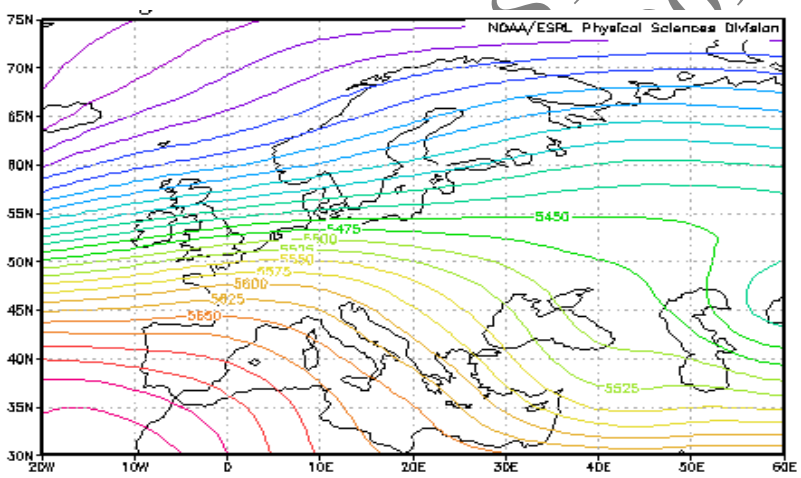

Fig. 4. The geopotential mean at level of 500 mb (January 2008)

January 2008 was characterized by the presence of a high pressure belt between Azores High and Siberian High which has stretched from Atlantic to Urali. One both sides of this high pressure belt was the Icelandic Low and a Low Mediterranean.Romanian territory was under the direct influence of Siberian High and under indirect influence of the Mediterranean Low.

Altitude structure reflects a low geopotential over northern and eastern part of the continent and a high geopotential over Southern Europe. In Figure 4, note that Romania is between 550 hPa and 557 hPa, geopotential values exceeding geopotential mean for our area country.

Map analysis of surface and geopotential, for January 2008, have highlighted the predominance of the eastern sector circulation, which favored invasions of cold air, arctic continental to middle latitudes, made in this part of the continent by Siberian High which dominated the atmospheric situation in January 2008.

3.2 Thermic characteristics

Deviations monthly temperature mean to the multiannual means of 1961-2004 were between 5.4°C to Voineasa and 8.8°C at Calafat (Table 1).

The largest deviations of more than 8°C were recorded in Dolj and Olt. Means monthly air temperature were between 1.7°C to Voineasa and 7.9°C at Calafat. On 15 of 19 wheather stations, the monthly means were ≥ 4.5°C, which means 78.9% of Oltenia. The highest daily minimum temperature of January 2007 was 9.8°C recorded on 2 January 2007 at Calafat.

Table 1. Mean temperature values in January 2007, (C), in Oltenia and positive deviations from normal and to normal March

Stația met.	Media maxime Ian. 2007	Media minime Ian. 2007	Normala 1961-2004 lunii ianuarie	Abaterea fata de norm lunii ianuarie	Normala 1961-2004 lunii martie	Abaterea fata de norm lunii martie
Craiova	11.2	1.3	-1.9	8.2	5.1	1.2
Bailesti	12.6	1.1	-1.6	8.4	5.7	1.1
Bechet	12.3	0.8	-1.7	8.2	5.8	0.7
Calafat	**12.7**	3.2	-0.9	**8.8**	6	**1.9**
Tg. Jiu	11	-1.2	-2	6.9	5.1	-0.2
Apa Neagra	10.8	-1.4	-2.4	7.1	4.3	1.4
Polovragi	9.2	0.4	-2	6.8	3.6	1.2
Tg. Logresti	10.7	-1.7	-2.2	6.7	4.3	0.2
Dr. Tr. Severin	11.5	1.8	-0.5	7.2	6.1	0.6
Bacles	10.2	1.4	-2.1	7.9	4.3	1.5
Caracal	11.3	1.4	-2	8.3	5.4	0.9
Rm. Valcea	10.7	-0.8	-1.4	6.4	5.2	-0.3
Voineasa	5.6	-2.1	-3.7	5.4	2.5	-0.8

The warm day of January 2007 was on 21 when it recorded monthly maximum 20.5 ° C at Bailesti and at 15 stations from 19 maximum temperature was ≥ 15°C (which equates to 78.9% of Oltenia), but however, exceptional maximum temperatures were not recorded. Most of the monthly means of January 2007 were higher up to 1.9°C (at Calafat) from the March monthly mean of 1961-

2004(on 84.2% of Oltenia), what characterizes a warm weather than in the first month of spring.

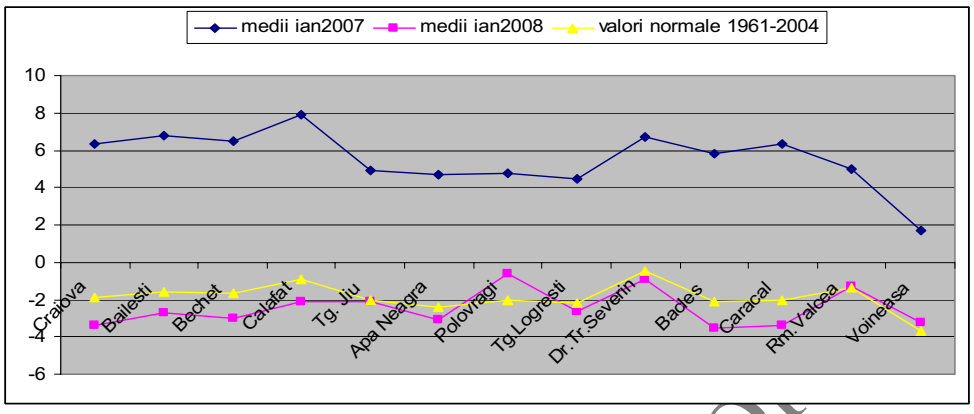

Fig. 5. Monthly mean temperatures in January 2007 and 2008 compared with normal values (1961-2004)

Most of the deviations of monthly means temperature from the multinnual means between 1961 and 2004 were negative were negative except for 2 stations in the subcarpathian area.

The smallest daily minimum temperature of January 2008 was -25.7°C recorded on 4 to Bechet.

The warm day of January 2008 was on 21 when it recorded monthly maximum 14.4°C at Calafat and at 11 stations of 16 maximum temperature was ≥ 10°C.

3.3. Pluviometric charactheristics

In terms of precipitation recorded in January 2007, worth mentioning is that in our region pluviometric regime has been lacking. The exception was the area of mountain (Petroşani area and Vâlcea county) where the amounts of precipitations were above normal values of this month. They were recorded in particular due to the situation in the 2 and 3 January 2007 when in the south of the country was the first „attempt" to install the winter and in other regions of Romania precipitation turned into snow and were recorded phenomena winter.

In Oltenia these phenomena were present in these two days, only in mountain areas and subcarpathian. Intervals of very warm weather in January 2007 made precipitation fallen to be predominantly rain and only in mountain area and subcarpathian be predominantly snow.

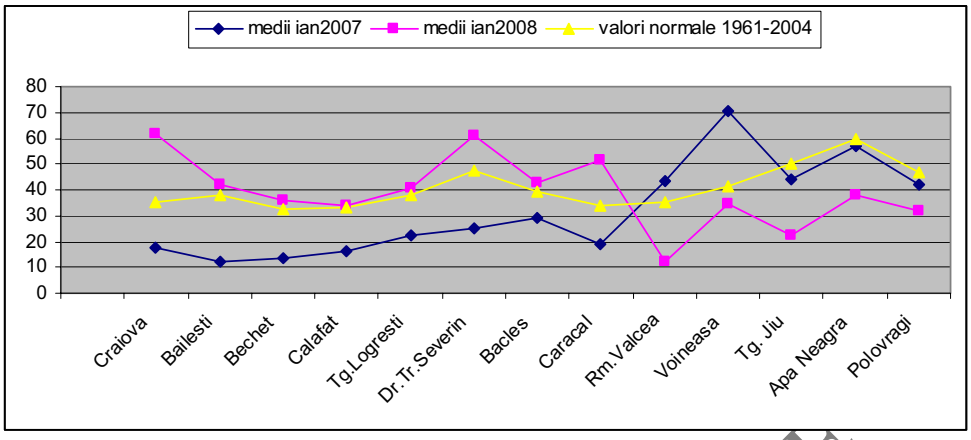

Fig. 6. Precipitation amounts in January 2007 and 2008 compared with normal values (1961-2004)

Pluviometric regime of January 2008 was an excessive one for the Dolj, Olt and Mehedinti counties, while in the mountain and subcarpathian area predominated a scanty one. Following the distribution of the total amount of precipitation in decades, note that they have achieved in the first decade as a result of abundant snows reported during 1-6 January 2008.

4. Conclusions

Both in January 2007 and in January 2008, the analysis of geopotential maps revealed geopotential values above the normal values for this month. Noteworthy is that geopotential values registred in January 2007 were characteristic to April and May.

In January 2007 was noted a high presence of the west circulation and the absence of polar or ultrapolar circulation, specific in winter season. In January 2008 these types of circulation specific in winter season were present.

In comparison with normal monthly mean temperatures values (1961-2004), monthly mean temperatures recorded in January 2007 were over these values and in January 2008 were under these values.

In January 2007 the evolution of weather was influenced by the Carpathian-Balkan chain which determined the dissipation of clouds and the foehn effect of the air masses over the greater part of Oltenia (21°C at Bailesti on January 21 - very close to absolute maximum of January).

Unlike January 2007, when the amounts of precipitation recorded were mostly under the monthly average, in January 2008 the pluviometric regime was mostly an excessive one.

While comaparing the two months analyzed, we observed that dominance of west circulation cause excess amounts of precipitation in the mountain and subcarpathian area and their almost lack in the southern region compared with a predominantly east circulation (cyclone field) which determs an inversion of the distribution area of precipitation

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