

**THE CLIMATIC RISK OF THE PLUVIOMETRIC DEFICIT
REGIME IN THE COLD SEMESTER. A COMPARATIVE STUDY
BETWEEN THE OLTENIA PLAIN AND THE SOUTHERN
DOBRUJA PLATEAU**

**RISCU CLIMATIC AL DEFICITULUI REGIMULUI
PLUVIOMETRIC ÎN SEMESTRUL RECE. STUDIU
COMPARATIV ÎNTRE CÂMPIA OLTENIEI ȘI PODIȘUL
DOBROGEI DE SUD**

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Abstract: This paper analyses the pluviometric deficit regime during the cold semester, in the Oltenia Plain and the Southern Dobruja Plateau in the last half of the century (beginning with 1961), by treating comparatively this issue. The climatic evolutions in the last interval of time refer both to the tendency of sudden fall of atmospheric precipitations and to the tendency of air temperature increase in the last decades. The scanty precipitations registered for years on Earth extended surfaces led to phenomena of drought, which have been signalled also on the territory of our country, including in the two analysed regions. The significant differences we have found prove clearly the tendency of climate aridity in these regions situated in the two southern, south-western and namely south-eastern extremes of Romania.

Key-words: *precipitation deficit, drought, anticyclone regime, climatic influences, aridity*

Cuvinte cheie: *deficit pluviometric, secetă, regim anticiclonic, influențe climatice, ariditate*

I. INTRODUCTION

The Oltenia Plain and the Southern Dobruja Plateau are two Romanian regions located in the two southern extremities of the country – Oltenia in the south - west and Dobruja in the south-east; they display different climatic features, which we will enumerate further on. Generally speaking, the climatic conditions of Oltenia are similar to those in the south of Banat. Winter and the influence of the East-European Anticyclone are felt (especially in the east of the region).

The southern half of Oltenia is characterised by an annual average temperature exceeding 10°C (at Drobeta Turnu-Severin the annual mean is of 11.7°C, as a consequence of warming during the transition seasons, through foehn processes, at

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Drăgășani, 10.4°C). The annual isotherm of 11.0°C passes in the north of Drobeta-Turnu Severin, north of Vânju Mare, south of Segarcea and east of this locality near the isohypse of 100 m altitude.

Autumns are, in general, long and warmish, for example the average temperature of October at Drobeta-Turnu Severin is of 12.5°C and at Drăgășani of 11.2°C, values higher than the annual mean. In the Oltenia Plain, the invasions of polar cold or arctic air are rarer than in other regions of the country. As a measure of the frequency of these type of air masses penetrations we can show, for example, that in Craiova the visibility is so high that the Carpathians Mountains can be seen (Great Parâng) of 18-20 times a year and 3-4 times a year the Carpathians Mountains and Balkan Mountains can be seen (it is known that in the polar and arctic air masses, the visibility is very good, the air is free of impurities and it is very clear). Due to the advections of more accentuated cold air, in Oltenia the absolute minimum values are 7-13°C higher (in the Oltenia Plain the absolute thermal minimum values are comprised between: -35.5°C at Craiova registered on January 25, 1963 this being also the absolute thermal minimum value within the Romanian Plain and -26.0°C at Calafat registered on January 13, 1985) than, for example, in the Southern Dobruja Plateau (the absolute minimum thermal values are comprised between -17.5°C at Constanța, a value registered in January 2006 and -23.2°C at Adamclisi registered on January 31, 1987).

The position of the Carpathians Mountains and Subcarpathians compared to the penetration directions of air masses driven by the main baric centres which influence Oltenia has repercussions on the distribution of annual average temperatures which decrease from west to east and from north to south (for example: Drobeta-Turnu Severin 11.7°C, Strehăia 10.8°C, Craiova 10.9°C, Drăgășani 10.4°C, Slatina 10.4°C). The altitude influences air temperature in an obvious way, the highest average thermal values being registered in the south of Oltenia (The Oltenia Plain).

The Southern Dobruja Plateau is individualised best from a climatic point of view since it is in the region with the highest degree of continentality. This phenomenon can be explained, in the first place, due to its position and geographic individuality compared to the neighbouring relief units, over which the influence of the main baric centres of atmospheric action superposes. Due to its position in the south-eastern extremity of Romania, near the Black Sea, Dobruja Plateau is overall characterised by the most frequent and persistent phenomena of dryness and drought that render a dominant climatic note to this territory, in which the Southern Dobruja Plateau is also included.

The influenced of Black Sea aquatic surfaces in the eastern side and the Danube surfaces on the western and northern peripheries, which, due to the processes of air descent, lead to the appearance of some “thermal dams”, with more moderate temperatures and the predominance of fine weather, while inside the Dobruja plateau, the convective and radiative processes stimulate distinct thermal-pluviometric contrasts. On the other hand, between the neighbouring aquatic and continental surfaces, plateau, obvious climatic contracts appear, which dominate due to the intensity of the warming and cooling processes on which the local air dynamic,

the frequency of diurnal and nocturnal nebulosity, the reduction of precipitations, the occurrence of dryness and drought phenomena of the abundance of dew deposits, especially near water sources, are dependent.

Consequently, the most persistent dryness and drought phenomena occur on the seaside, namely on the plateau eastern side, neighbouring the Black Sea, as on its Danube western side. The cause is represented by the position of stations which bear the influence of the Black Sea and Danube, and on their surface temperature inversions occur, which tears the cloudy system favouring the intensification of sunstroke processes, dryness and drought phenomena; in the case of Hârşova station we can add the presence of limestone which maintain a drier topoclimate than inside the plateau (Văduva et al., 2009).

Under the influence of Black Sea which conditioned the reduced nebulosity and the long duration of Sun brightness in the seaside (Constanța, Mangalia), the multiannual average air temperature reaches and even exceeds 11.5°C. Inside the Dobruja land (Trajan's Wall, Medgidia, Adamclisi) the values drop to 10.7-10.8°C, and afterwards they start again to grow near Danube (Hârşova, 10.9°C), whose influence is more limited than the latter. The multiannual average temperature decreases from east towards west, simultaneously with the increase of land influence.

On the seaside, the increase of air temperature is due to the high values of radiative and caloric balance, which is higher than in the rest of Dobruja territory, but also to the urban topoclimate (Văduva, Rîșnoveanu, 2005, Văduva, 2005).

In the cold semester the temperature means vary from 3.6°C in Hârşova and 5.4°C in Mangalia. Their territorial distribution falls within the general distribution tendency of monthly and annual average values from the analysed region, being higher in the seaside, under the influence of the Black Sea and lower towards the center and west under the influence of continental air (Văduva, 2005, 2008).

As a consequence of the obvious differences in the climatic regime, there are also significant differences in the precipitation regime in these two regions of Romania. Our study aims at emphasizing these differences and contrasts registered by precipitation regime. Within this framework, we stopped upon the pluviometric deficit for cold semester of the year, as this has severe consequences upon environment and economy over long periods of time.

II. DATA AND METHODS

For the The Oltenia Plain we used the pluviometric data from the present meteorological stations: Craiova, Băilești, Bechet, Calafat, Dr. Tr. Severin, Caracal, and Slatina (Fig. 1).

For the Southern Dobruja Plateau we used the pluviometric data supplied by the following meteorological stations (Fig. 1): Mangalia, Adamclisi, Medgidia, Constanța, Hârşova, which are representative for all landforms of the region.

The processed data generally covered the interval 1961-2008 (48 years, a significant interval of time of almost half of century). The main used method was Hellmann's criterion, which gives us the opportunity of rendering the pluviometric deficit, allowing both a quantitative and qualitative analysis.

539.6 mm registered in the cold semester 1985-1986 in Dr. Tr. Severin with a positive deviation of +191.9 mm (+55.2% from the normal).

From a quantitative point of view the highest negative deviation was of -286.5 mm in Dr. Tr. Severin in the cold semester 2001-2002 (a percentage representing -83.4% of the normal), and the highest deviation was 236.3 mm (101.5% of the normal), registered in Caracal in the cold semester 1972-1973. Therefore, we will find extremely significant differences between the pluviometric regime of The Oltenia Plain and the one in the Southern Dobruja Plateau. We will further notice that while the negative deviations can be in the worst situation, of -100% from the normal (in exceptional situations of total lack of precipitations), the positive deviations can sometimes exceeds the normal value.

The extreme situations presented show that the high intensity of drought in the interval 2001-2002 but also the exceptional value of the excess of precipitations in the intervals 1972-1973 and 1985-1986 (Marinică, 2006; Bogdan, Marinică, 2007; Văduva, 2008; Bogdan et al., 2009).

Pluviometric deficit during the cold semester (October-March)

In October (Fig. 2), in the The Oltenia Plain, the general average percentage of the month with pluviometric deficit for the entire territory was of 62.4%, and in the territory the percentage of the months October with pluviometric deficit was comprised between 59.4% at Slatina and 66.7% at Calafat (in all meteorological stations there have been values $\geq 60.0\%$ exception Slatina station) with a difference of 7.0%.

The general average percentage of the excessively drought months of October was of 43.3% being 2/3 of the one of the months with a pluviometric deficit, and the percentage values in the meteorological stations were comprised between 37.5% in Bechet and 46.9 in Slatina with a difference of almost 10%.

The general average percentage of the very droughty month of October was of 12.8%, and in territory was comprised between 10.4% in Caracal and Craiova and 16.6% in Bechet, with a difference of 6.0%. The general average percentage of the months of October with a complex drought was of 56.1% with 7.0% lower than the months with a pluviometric deficit, which shows that the months of October with a complex drought are dominant.

The general percentage of the months of October with moderate drought was of 6.3%, and in territory was comprised between 0.0% in Slatina and 10.4% in Calafat. Compared with February, the average percentage of the months with a pluviometric deficit and the excessively droughty months is slightly higher, and this is why in October the drought has a higher intensity and extension than in February. In conclusion, we can say that in October the complex drought and excessively droughty months prevail.

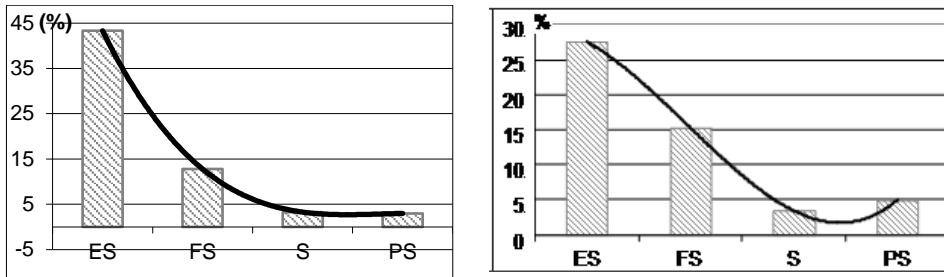


Fig. 2. Pluviometric deficit (%) in October within the The Oltenia Plain (left) and the Southern Dobruja Plateau (right)

In October (Fig. 2), in the Southern Dobruja Plateau, the general average percentage of the month with pluviometric deficit for the entire territory was of 51.16%, lower than the percentage in The Oltenia Plain with 11.0%, and in the territory the percentage of the months October with pluviometric deficit was comprised between 45.8% at Adamclisi and 58.3% at Mangalia with a difference of 13.0% namely half of the percentage in the The Oltenia Plain.

The general average percentage of the excessively drought months of October was of 27.5%, namely double compared to the percentage in the Oltenia Plain, and in the territory the percentage of the very droughty months of October was comprised between 22.9% at Hârșova and 33,3% at Mangalia, with a difference of 10.0%.

The general percentage of the months of October with moderate drought was of 42.74% with 9.0% lower than the percentage of the months of October with a pluviometric deficit and lower than the percentage in Oltenia with 15.0%. In the territory, the percentage of the months of October with complex drought was comprised between 35.4% at Adamclisi and 45.8% at Hârșova and Mangalia, with a difference of 10.0%, namely with a half more than the percentage in the Oltenia Plain, due to the lower territorial variability in the Southern Dobruja Plateau.

The general percentage of the months of October with moderate drought was of 8.42% slightly higher than the percentage in (with only 1.9%). Compared with February, in the Southern Dobruja Plateau these percentages remain lower and, thus, February is the draughtiest month of the year. In conclusion, in the Dobruja Plateau and in the Oltenia Plain, in October, the complex drought prevails, and the percentage differences in the territory are lower than in the Oltenia Plain. Therefore, October is one of poorest months in precipitation, and the Oltenia Plain is even poorer than February.

In November (Fig. 3), in the Oltenia Plain, the general average percentage of the month with pluviometric deficit for the entire territory was of 57.6% (with 5.0% lower than in October), and in the territory the percentage of the months November with pluviometric deficit was comprised between 43.7% at Craiova and 66.7% at Dr. Tr. Severin with a difference de 3.0%.

The general average percentage of the excessively drought months of November was of 31.2%, and in the territory the percentage of the very droughty months was comprised between 20.8% at Craiova and 39.6% at Calafat with a

difference de 19.0%. The average percentage of the very droughty month of November was of 14.7%, being about half of the excessively drought months and slightly higher than the percentage from October, and in the territory the percentage of the very drought months of November were comprised between 9.4% at Slatina and 20.8% at Dr. Tr. Severin with a difference of 11.0%.

The general average percentage of the months of November with complex drought was of 46.0% namely lower than the percentage of the months with a pluviometric deficit with 11.0% and being with 10.0% lower than that during October, and in the territory the percentage of the months with complex drought was comprised between 33.3% at Craiova and 52.1% at Dr. Turnu-Severin, with a difference of 19.0%, reflecting a high variability.

The general average percentage of the months of November with moderate drought was of 11.6%, namely 4 times lower than the months with complex drought and almost double compared to the percentage during October, and in the territory the percentage of the months of November with a moderate drought was comprised between 6.3% in Bechet and 18.7% in Caracal, with a difference of 12.0%.

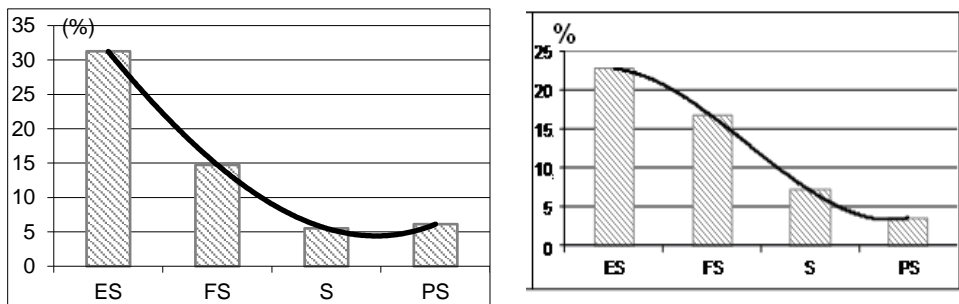


Fig. 3. Pluviometric deficit (%) in November within the Oltenia Plain (left) and the Southern Dobruja Plateau (right)

In conclusion, we can say that the extension and intensity of phenomena related to the precipitation deficit decrease in November compared to October and present a high variability in the territory. In November (Fig. 3), in the Southern Dobruja Plateau, the general average percentage of the months with a pluviometric deficit for the entire territory, was of 50.0% lower than the percentage in Oltenia with 7.0%, and in the territory the percentage of the months of November with a pluviometric deficit was comprised between 47.9% at Adamclisi and Hârșova and 54.2% at Mangalia, with a difference of 7.0%, much lower than the percentage in Oltenia (with 20.0%), due to the reasons presented above.

The general average percentage of the excessively droughty months was of 22.7% with 8.0% lower than the percentage in the Oltenia Plain, and in the territory the percentage of the excessively droughty months was comprised between 20.0% at Constanța and 27.1% at Mangalia (both extremes were registered in the meteorological stations located on the seaside), with a difference of 7.0%.

The general average percentage of the very droughty months of November (VD) was of 16.6% with 2.0% higher than the percentage in Oltenia, and in the territory the percentage of the very droughty months was comprised between 10.0% at Constanța and 22.9% at Hârșova with a difference of 12.9% (with 6.0% lower than the percentage in the Oltenia Plain).

The general average percentage of the months of November with complex drought was of 39.34% lower than the percentage in the Oltenia Plain with 7.0%, and in the territory the percentage of the months of November with complex drought was comprised between 30.0% in Constanța and 45.9% in Mangalia, with a difference of 15.9% (lower than the percentage in The Oltenia Plain with 5.0%).

The general average percentage of the months of November with moderate drought was of 10.66%, with 1.0% lower than the percentage in The Oltenia Plain, and in the territory the percentage of the months of November with moderate drought was comprised between 4.2% at Hârșova and 20.0% at Constanța, with a difference of 16.0% higher with 4.0% than the percentage in the Oltenia Plain.

The differences which occur can be explained due to the fact that in the last month of autumns in the Southern Dobruja Plateau the influence of the retrograde pontic cyclones appears faster, while in the the Oltenia Plain the influence of the Mediterranean Cyclones delay in some autumns and even in November.

In December (Fig. 4), in the Oltenia Plain, the general average percentage of the months with a pluviometric deficit for the entire territory was of 49.4%, with 8.0% lower than the percentage during November, and in the meteorological stations the percentage of the months with a pluviometric deficit in December was comprised between 39.5% at Bechet and 62.5% at Slatina with a difference de 25.0%. The general average percentage of the excessively droughty months of December was of 23.2%, with 8.0% lower than the percentage of the months of November, and in the territory the percentages of the excessively droughty months of December were comprised between 20.8% at Bechet and 31.3% at Slatina (between 1/5 and 1/3 of the number of months) with a difference of 11.0%.

The general average percentage of the very droughty months of December was of 11.9% namely half of the one of the excessively droughty months and with 3.0% lower than the percentage of November months, and in the territory the percentage of the very droughty months of December was comprised between 6.3% at Băilești and 16.7% at Calafat, having a difference of 13.0%.

The general average percentage of the months of December with a complex drought was of 35.1% (4/5 of the total number of the months with a pluviometric deficit), and in the territory the percentage of the months of December with complex drought was comprised between 29.1% at Bechet and 43.8% at Slatina, with a difference of 14.0%.

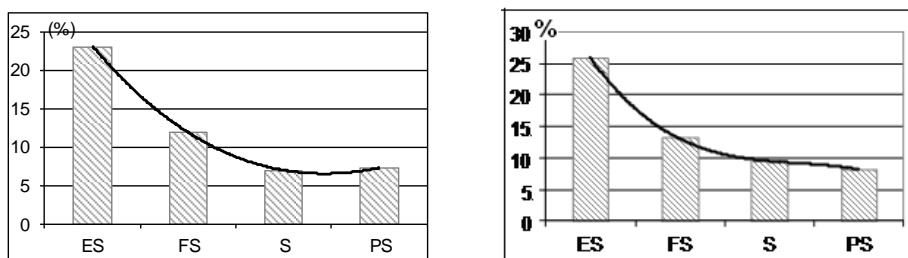


Fig. 4. Pluviometric deficit (%) in December within the Oltenia Plain (left) and the Southern Dobruja Plateau (right)

The general average percentage of the months of December with moderate drought was of 14.3% (1/4 of the total number of months of December with pluviometric deficit), and in the territory the percentage of the months of December with moderate drought was comprised between 10.4% in Bechet and 18.7% in Slatina with a difference of 8.0%.

In December (Fig. 4), in the Southern Dobruja Plateau, the general average percentage of the months with a pluviometric deficit for the entire territory was of 56.52% higher than the percentage in Oltenia with 5.0%, and the percentages of the months of December with a pluviometric deficit was comprised between 54.2% in Mangalia, Adamclisi and Hârşova and 62.5% in Medgidia with a difference of 8.0%, lower than the percentage in The Oltenia Plain with 15.0%.

The general percentage of the excessively droughty months of December was 25.84%, namely approximately equal to the percentage in The Oltenia Plain, and in the territory the percentage of the excessively droughty months of December was comprised between 25.0% in Mangalia Constanţa and Hârşova and 27.1% in Adamclisi and Medgidia with the difference of 2.0% (7 times lower than the percentage in The Oltenia Plain), having a high uniformity in the territory.

The general percentage of the very droughty months of December was of 13.02%, approximately equal with the percentage in The Oltenia Plain, and in the territory the percentage of the very droughty months of December was comprised between 6.3% in Medgidia and 16.7% in Hârşova, with a difference of 10.0% (equal with the one in The Oltenia Plain).

The general percentage of the months of December with complex drought was of 38.86% namely only with 3.0% lower than the percentage in The Oltenia Plain, and in the territory the percentage of the months of December with complex drought were comprised between 33.4% in Medgidia and 41.7% in Mangalia and Hârşova, with a difference of 8.0%, namely lower than the one in The Oltenia Plain with 7.0%.

The general percentage of the months of with moderate drought was of 17.66%, with 3.0% higher than in the Oltenia Plain, and the percentages of the months of December with moderate drought were comprised between 12.5% in Adamclisi and Hârşova and 29.1% at Medgidia, with a difference of 17.0%, compared to the percentage in the Oltenia Plain with 9.0% higher.

In conclusion we can say that in the the Oltenia Plain the percentage of the months with a pluviometric deficit decreases from the ones during November, and in the Southern Dobruja Plateau the percentages are higher but the uniformity of the percentage values from one station to another is higher than the one in the Oltenia Plain.

In January, in the the Oltenia Plain the weather with a pluviometric deficit, in multiannual average value of the monthly negative deviations was comprised between 40.6 % (almost half of the months of January taken into consideration) at Slatina area and 54.2% at Calafat, Bechet and Caracal in the southern extremity (which is also the part with the highest deficit of Oltenia in this month).

For the excessively droughty weather (ED) (Fig. 5) the percentage deviation is comprised between 28.1% at Slatina and 37.5% at Dr. Tr. Severin.

The complex drought occurred in a percentage of 37.5% of the number of months at Dr. Tr. Severin and 52.1% at Bechet, and the values exceeding 40.0% were registered in all the analysed meteorological stations. The moderate drought has modest processes in the months of January between 0.0% at Slatina and 14.6% at Dr. Tr. Severin.

In January, in the Southern Dobruja Plateau, overall the weather with a pluviometric deficit has a preponderance of 53.4% for all the studied area, and this is why we could say that the pluviometric deficit in this month is “normal”.

Detailed by time types, the excessively droughty weather (ED) (Fig. 5) has the predominance of 37.1% of the months of January of this interval (1961-2008) on the entire territory, the very droughty weather had an extension of 9.4% that is a quarter of the ED, and the D and LD weather had almost equal and insignificant percentages, namely 3.5% and 3.4%. We can observe the tendency of fast increase from less dry weather (3.4%) to exceedingly dry weather (37.1%).

Depending on the values calculated in the stations, the ED weather was comprised between 31.3% at Adamclisi and 41.7% at Hârșova, and at Medgidia, Mangalia and Constanța for 48 years, had a distribution of 37.5% (equal with the highest value of the Oltenia Plain registered at Dr. Tr. Severin), thus being highlighted values much higher than in the Oltenia Plain.

The very droughty weather (VD) was comprised between 7.5% of the months of January at Constanța and 12.5% at Mangalia, and the complex drought (CD) was comprised between 39.6% at Adamclisi and 50.0% at Mangalia and Hârșova, the average percentage in the entire Southern Dobruja Plateau was 46.5%, which is close with almost 4% higher than in the the Oltenia Plain.

The moderate drought had modest values comprised between 6.2% at Mangalia and Adamclisi and 8.3% at Hârșova, which means a net prevalence of the complex drought, that is in the Dobruja Plateau drought is generally complex.

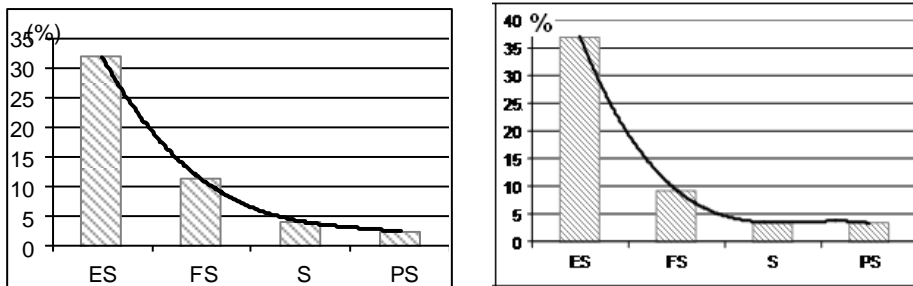


Fig. 5. Pluviometric deficit in January (%) within the Oltenia Plain (left) and the Southern Dobruja Plateau (right)

In February, in the Oltenia Plain the weather with pluviometric deficit, in the multiannual average values of the months of February with a pluviometric deficit was comprised between 4.3% less dry months (LD) and 32.6% excessively dry months (ED), and overall the average percentage of the months of February with a pluviometric deficit was 57.4%.

Depending on the conditions in the meteorological stations the percentage of the months of February with pluviometric deficit was comprised between 43.8% at Craiova and 68.7% at Slatina. On pluviometric time type, the exceedingly droughty weather was comprised between 25.0% at Craiova (a quarter of the months of February) and 39.6% at Calafat.

The percentages of the very droughty months of February (VD) were from 1/6 of the excessively dry months to 1/2 of them, excepting Slatina meteorological station, where it was the same 28.1% for the very dry months (VD) equal with the percentage of the excessively dry months (ED) (Fig. 6).

The high percentage of the months of February with complex drought at Slatina is due to the location of the meteorological station at the southern limit of the Getic Piedmont, where the conditions of precipitation and relief interaction with the general circulation of atmosphere is different from most of Oltenia.

The percentage of the months of February with complex drought was from 3 to 20 times higher (Craiova) than the percentage of the months with moderate drought and depending on the geographical position of the meteorological station was comprised between 41.7% (Caracal, Craiova), and the values $\geq 50.0\%$ were registered at the meteorological stations Dr. Tr. Severin (50.0%), Bechet (52.0%) and Slatina (56.2%).

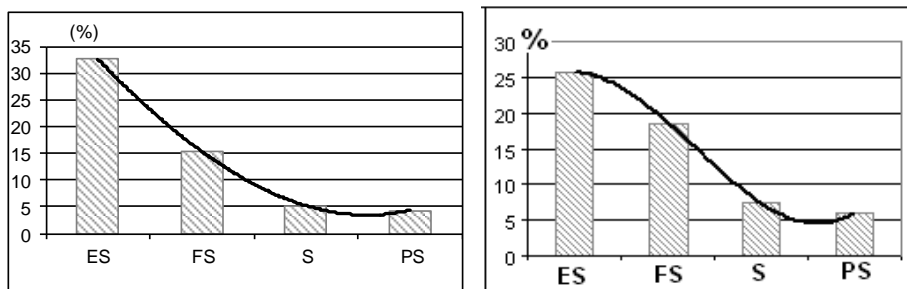


Fig. 6. Pluviometric deficit in February within the Oltenia Plain (left) and the Southern Dobruja Plateau (right)

The percentage of the months of February with moderate drought (MD) was comprised between 2.1% at Craiova and 14.6% at Calafat. It should be noted that February is climatically the poorest in precipitations months of all months and taking into account the high percentage of the months with pluviometric deficit (in all meteorological station over 50%, excepting one station – Craiova), we can consider that in February, the deficit of precipitations is “normal” in the Oltenia Plain.

In February, in the Southern Dobruja Plateau, overall the number of the months of February with a pluviometric deficit have the preponderance of 57.82%, which means that is approximately equal with the percentage in the Oltenia Plain, the difference being of +0.42% in “favour of Dobruja”, a normal fact for the entire south of the country in February when the thermal contrasts and the conditions air circulation are almost balanced for this extended area.

The percentage of the excessively droughty months of February (ED) was comprised between 20.8% at Adamclisi (1/5 of the number of months) and 33.3% at Hârşova (that is 1/3 of the number of months), which compared to the Oltenia Plain means significantly fewer excessively dry months of February (Fig. 6). The percentage of the very dry months of February (VD) was comprised between 10.4% at Hârşova and 29.1% at Medgidia, a distribution similar to the one in the Oltenia Plain.

The complex drought occurred in February with percentage values between 37.5% at Mangalia and 56.2% at Medgidia, that is compared with the the Oltenia Plain the values are lower with 0.0 up to 4.2%, but in the Dobruja Plateau the normal values are comprised between 24.7 mm at Mangalia and 29.4 mm at Constanţa, while in the Oltenia Plain are much higher being comprised between 30.4 mm at Craiova and 38.0 mm at Calafat which renders the complex drought more severe in February in the Southern Dobruja Plateau.

The percentage of months of February with moderate drought was comprised between 6.3% at Medgidia and 18.7% at Adamclisi, slightly higher than in the Oltenia Plain. In March, in the Oltenia Plain the general mean of the months with pluviometric deficit was 47.9%, and depending on the values registered in every meteorological station the percentage was comprised between 39.6% at Craiova and 56.2% at Bechet (more than a half of the total number of the analysed months).

The percentage of excessively dry months of March was comprised between 18.8% at Craiova and 31.3% at Caracal, the general mean of the entire region being

of 25.9%, and the very dry months (VD) was comprised between 6.2% at Calafat and 18.8% at Slatina, the general mean of the entire region being of 12.2% (Fig. 7). The percentage of the months with complex drought was of 38.1%, and depending of the values from the meteorological stations was comprised between 33.3% at Dr. Tr. Severin and 43.8% at Slatina. The percentage of the months of March with moderate drought was comprised between 4.2% at Băilești and 14.6% at Dr. Tr. Severin and Calafat, and the general mean on the entire region was of 9.8%.

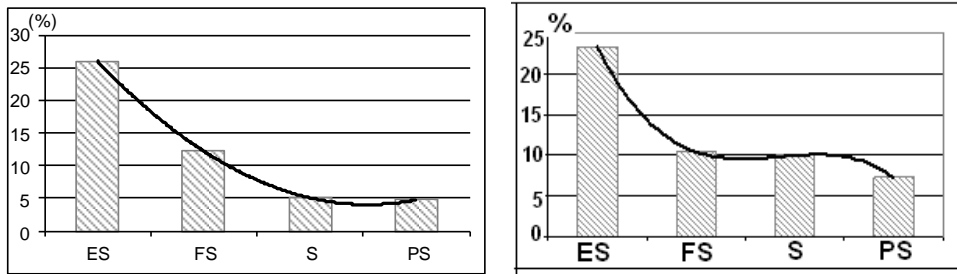


Fig. 7. Pluviometric deficit (%) in March within the Oltenia Plain (left) and the Southern Dobruja Plateau (right)

In March, in the Dobruja Plateau the general mean of the months with pluviometric deficit for the entire territory was of 51.0%, namely compared to the Oltenia Plain higher with 3.1%, and the means from every meteorological station were comprised between 41.7% at Medgidia and 62.5% at Mangalia. The percentage of the excessively dry months of March was comprised between 18.8% at Medgidia in the Southern Dobruja Plateau and 25.0% at Constanța in the seaside, values which overall are lower than the values in the Oltenia Plain.

The percentage of the very dry months of March (VD) was comprised between 6.2% at Adamclisi and 14.6% at Mangalia on the southern seaside, and the general mean overall this territory of 10.42% (Fig. 7), lower only with 1.6% than the one in the Oltenia Plain. The percentage of the months of March with complex drought was comprised between 29.1% at Adamclisi and 37.5% at Mangalia and Constanța (and not by chance both high values are registered on the seaside – the explanation is presented above), and the general mean is of 33.76%, lower than the one in the Oltenia Plain with 4.0%, as a consequence of Pontic influences.

The percentage of the months of March with moderate drought was comprised between 10.4% at Medgidia and 25.0% at Mangalia, and the overall mean was of 17.24%, which means with 7.4% higher than in the Oltenia Plain. In conclusion, in March the percentage of the months with a pluviometric deficit is higher in the Southern Dobruja Plateau than in the Oltenia Plain.

IV. CONCLUSIONS

In both studied areas, the months with a pluviometric deficit are registered in percentage values with significant values from one month to another.

In the Oltenia Plain the driest months, in a decreasing order of the general percentage values for the entire region are: October (62.4%), November (57.6%), February (57.4%), January (49.9%), December (49.4%) and March (47.9%). In the Oltenia Plain three periods with significant deficits of precipitations are registered: October, November and February.

In the Southern Dobruja Plateau, the draughtiest months, in a decreasing order of the general percentage values for the entire region are: February (57.8%), December (56.5%), January (53.4%), September (52.4%) etc.

In the Southern Dobruja Plateau two periods with significant deficits of precipitations are registered: February and December. The relief structure and its interaction with the general circulation of the atmosphere, the geographical location and the multiple climatic influences decisively contribute to explaining the differences mentioned in the paper.

In the The Oltenia Plain, although the percentages seem to be comparable to the ones registered in the Southern Dobruja Plateau, the deficit of precipitations is more acute in the first regions and droughts are more intense, due to the lower multiannual average amounts of precipitation than in the Southern Dobruja Plateau.

In the Southern Dobruja Plateau the relative uniformity of the percentage values is frequent, and in the the Oltenia Plain the variability is much higher. In the Southern Dobruja Plateau the general average percentage of the months with pluviometric deficit in the cold semester, for the entire analysed period of half of century, is of 53.3%, and in the the Oltenia Plain of 54.1%, which leads to the conclusion that: the aforementioned percentages reflect a clear tendency of climatic aridity in both regions, tendency which is however more intense in this semester in the The Oltenia Plain.

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