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- ❖ *2nd warmest July for Serbia, record warm for Novi Sad, Zrenjanin, Kikinda and Banatski Karlovac; warmest July for Serbia based on the minimum air temperature; maximum number of tropical days in July was exceeded in Sombor and Zlatibor and maximum number of tropical nights in July was surpassed in Novi Sad, Loznica, Sremska Mitrovica, Valjevo and Kragujevac*
- ❖ *3rd wettest November for Loznica and Sremska Mitrovica*
- ❖ *3rd wettest December for Serbia*

Air temperature

The year of 2021, with the mean air temperature of 11.4°C ranks as the 16th warmest for Serbia (Figure 1) in the period from 1951 up-today, and 12th warmest for Belgrade with the mean air temperature of 13.7°C since the record-keeping began (1888). Mean annual air temperature ranged from 10.3°C in Pozega to 13.7°C in Belgrade, and on the mountains from 4.3°C at Kopaonik to 8.7°C at Zlatibor (Appendix, Figure 2).

Departure of the mean annual air temperature relative to the 1981-2010 base period ranged from 0.5°C in Sombor to 1.2°C in Belgrade, Negotin and Cuprija (Appendix, Figure 3). Based on the percentile distribution¹, 2021 was in warm and very warm category (Appendix, Figure 4).

¹ **n**-th percentile of a variable refers to the value of the observed variable below which there is n percent of data previously arranged in an ascending order

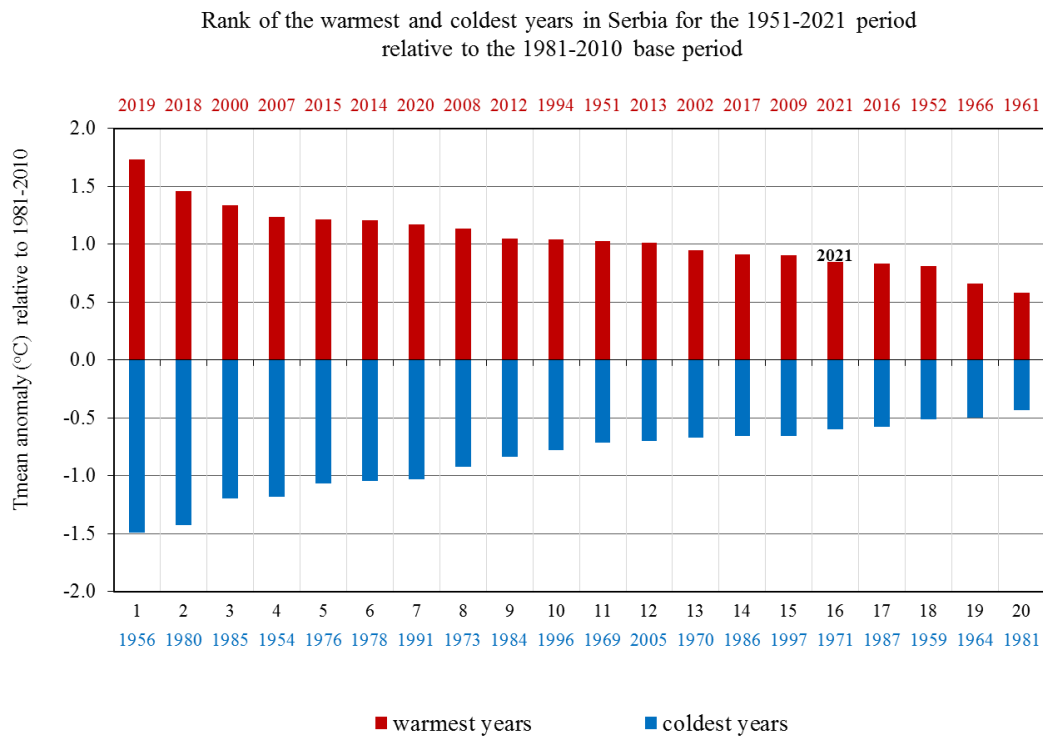


Figure 1. Rank of the warmest and coldest years for Serbia for the 1951-2021 period

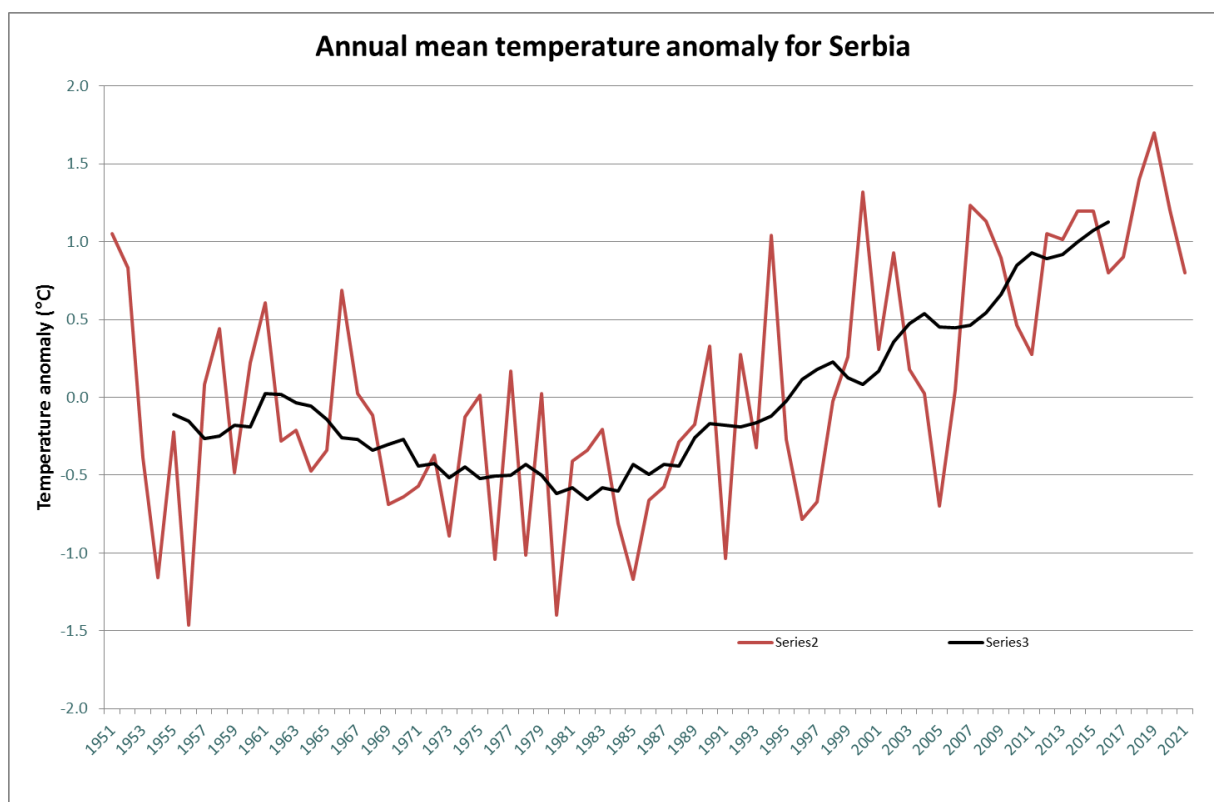


Figure 2. Trend of the mean annual air temperature anomaly for Serbia, 1951-2021 period

In 2021, the highest daily air temperature of 40.7°C was measured in Smederevska Palanka on June 30. Highest number of tropical days², total of 71 days, was observed in Leskovac. Most of Serbia experienced 49 to 69 days, which is 13 to 32 days above the average for the 1981-2010 base period. Belgrade observed 60 tropical days which is 23 days above the average for the 1981-2010 base period.

There were 45 tropical nights³ in Belgrade, 28 night above the average. Negotin observed 22 tropical nights, Zrenjanin and Novi Sad observed 18, Valjevo 17, Loznica 16, and elsewhere fewer than 15. Tropical nights were not recorded in southeast and parts for western and central Serbia.

In 2021, the lowest daily air temperature of -20.5°C was measured in Sjenica on February 16. As for the mountains, number of days with severe frost ranged from 9 days at Zlatibor and Crni Vrh to 33 days at Kopaonik. Dimitrovgrad observed 7, Zajecar 5, elsewhere there were up to 4 days with severe frost. Belgrade and parts of central, western and southern Serbia didn't observe any severe frost.

During 2021, number of ice days⁴ ranged from 2 in Negotin to 9 in Dimitrovgrad, Belgrade observed 4 days, and in the upland from 33 in Sjenica to 73 days at Kopaonik. Number of ice days was 5 to 19 days below the average.

Number of frost days⁵ ranged from 35 in Belgrade to 99 in Dimitrovgrad, and on the mountains from 104 at Zlatibor to 178 at Kopaonik. Number of frost days was 5 to 22 days below the average in most of Serbia.

Distribution of the annual mean minimum and mean maximum air temperatures and their accompanying terciles for Serbia for the period 1981-2021 are given in the Figure 3.

² Tropical day is defined as the day with the maximum daily air temperature of 30 °C and more

³ Tropical night is defined as the night with the minimum daily air temperature of 20 °C and more

⁴ Day with severe frost is defined as the day with the minimum daily air temperature of -10 °C and less

⁵ Ice day is defined as the day with maximum air temperature below 0 °C

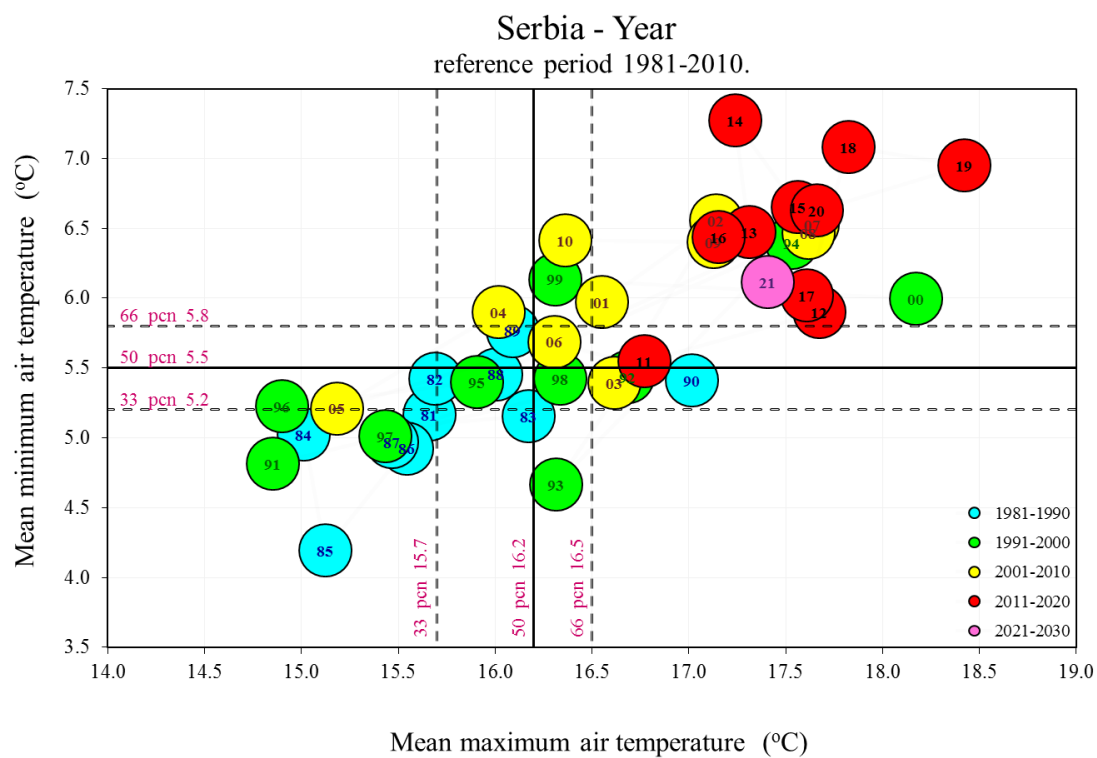


Figure 3. Mean minimum and mean maximum air temperature and their accompanying terciles for Serbia for the 1981-2021 period

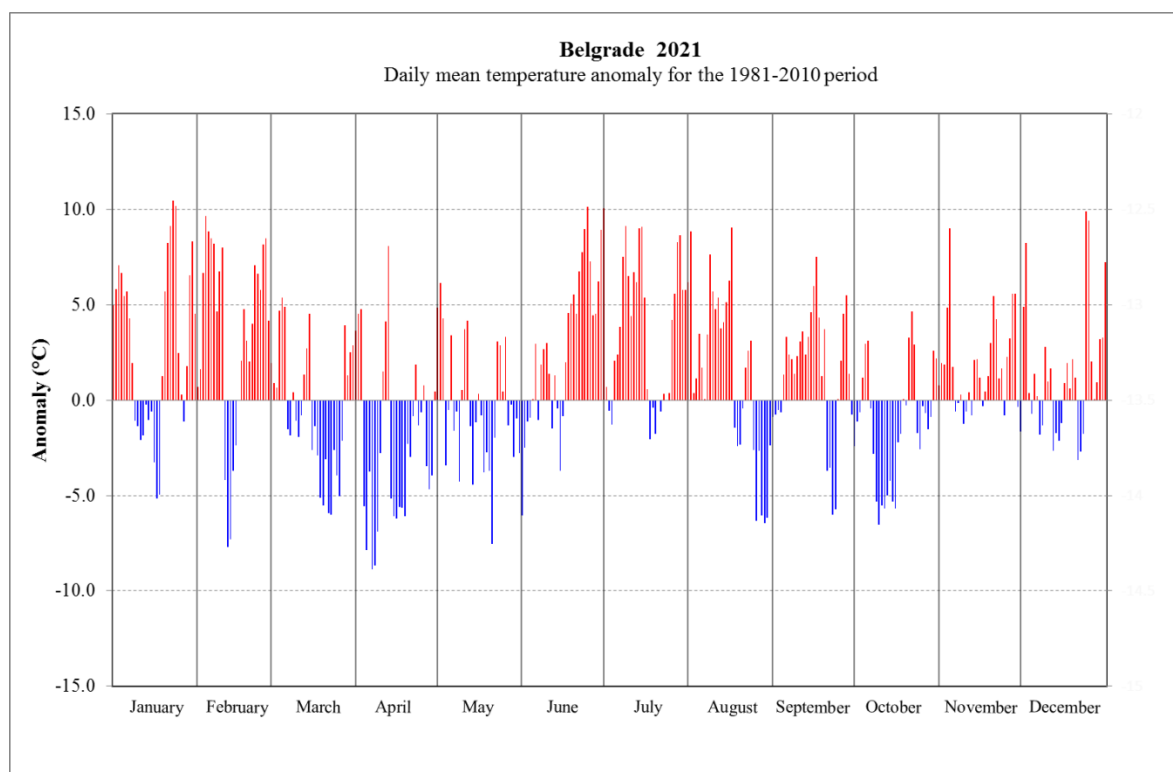


Figure 4. Daily departure of the mean air temperature from the normal 1981-2010 for Belgrade

Precipitation

The year 2021 was averagely rainy in northern, eastern and western parts of Serbia, rainy and very rainy in southern and certain central parts, and extremely rainy in Pozega, Leskovac and Dimitrovgrad. Only in the area of Zlatibor (Appendix, Figure 7) it was dry. The annual precipitation sums ranged from 540.5 mm in Kikinda to 901.3 mm in Dimitrovgrad, and on the mountains from 709.0 mm at Crni Vrh to 1130.5 mm at Kopaonik (Appendix, Figure 5). Percentage of the precipitation sums relative to the normal 1981-2010 ranged from 92% at Crni Vrh to 144% in Dimitrovgrad (Appendix, Figure 6). The year 2021 ranks as the 3rd wettest for Dimitrovgrad (Appendix, Figure 1) in the last 95 years. The highest daily precipitation sum of 96.2 mm was recorded in Dimitrovgrad on July 16.

Number of rainy days, with precipitation sum of 0.1 mm and above, ranged from 126 in Sombor, Zrenjanin and Palic to 151 in Valejvo, and in the upland from 162 in Sjenica to 174 at Zlatibor.

Number of days with precipitation sum of 20 mm and above ranged from 2 in Kikinda and Palic to 11 in Kursumlija, Leskovac and Dimitrovgrad, and on the mountains from 5 at Crni Vrh to 10 days at Kopaonik. Dimitrovgrad and Zrenjanin observed 2 days with precipitation sums of 50 mm and above, whilst 1 such day was registered in Novi Sad, Banatski Karlovac, Loznica, Smedrevska Palanka, Pozega, Kursumlija, Krusevac, Cuprija, Nis, Leskovac and Vranje.

Number of days with snow cover ranged from 7 days in Kikinda to 39 days in Dimitrovgrad, and in the upland from 93 in Sjenica to 162 at Kopaonik. The highest snow depth of 148 cm was measured at Kopaonik on March 25. In the lowland, the highest snow depth of 35 cm was recorded in Kraljevo on January 11.

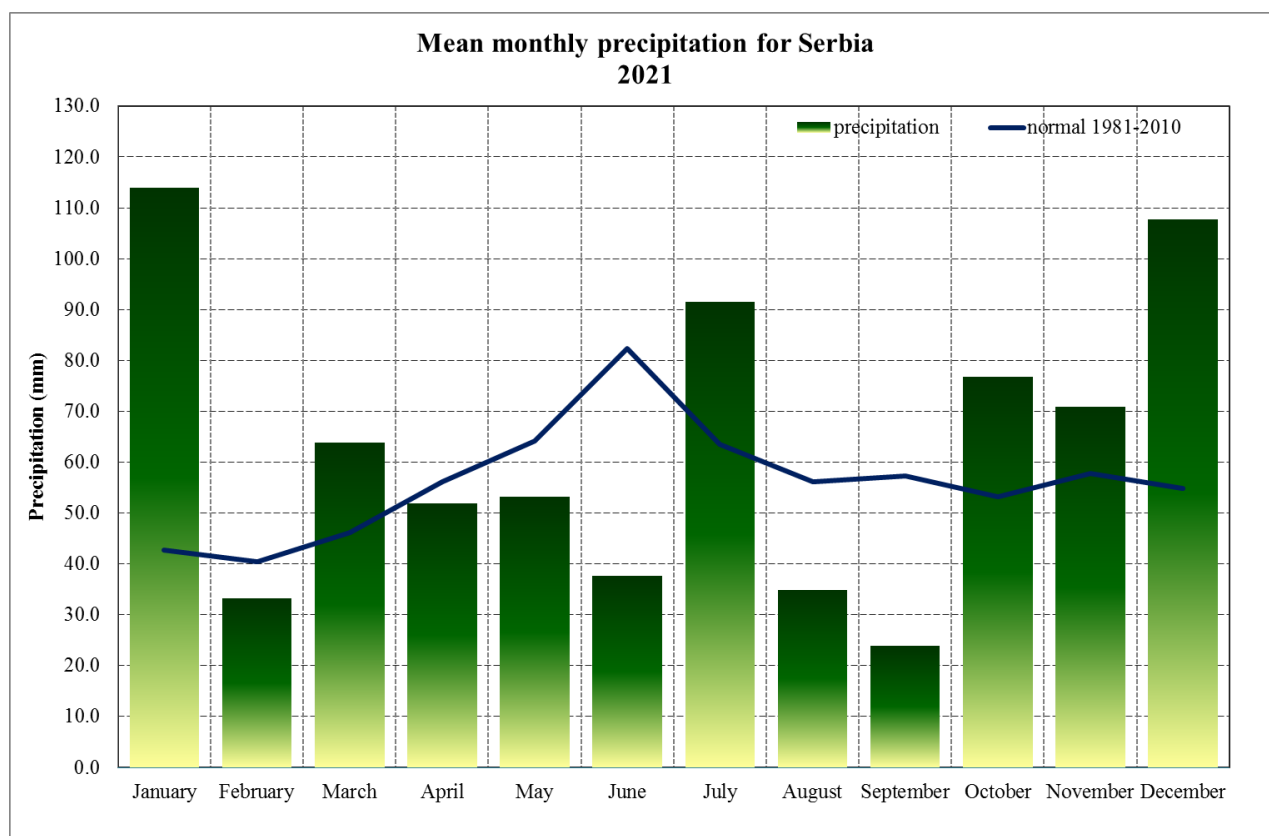


Figure 5. Mean monthly precipitation sums for Serbia

Heat waves and cold waves

In winter 2020/21, one cold wave⁶ was recorded in Vranje and Dimitrovgrad lasting from 13 to 17 February. Several heat waves⁷ were registered in the following period. The onset of the 1st heat wave was recorded on 14 December at Kopaonik lasting to 19 December. The 2nd heat wave was observed at five stations at the end of December and beginning of January. The 3rd heat wave was registered in Sombor and Novi Sad, lasting from 20 to 24 January, 4th heat wave was observed at 10 stations at the beginning of February, and 5th heat wave was recorded at 9 stations at the end of February.

Heat waves were not registered during spring season. Cold wave was recorded in the period from 4 to 11 April in Kikinda, Zrenjanin, Belgrade, Loznica, Kraljevo, Krusevac, Sjenica, Vranje, Dimitrovgrad and Zlatibor, lasting from 5 to 6 days.

Serbia saw 4 heat waves during summer seasons 2021. The onset of the 1st heat wave was observed in the north, lasting from 17 to 25 June, elsewhere from 21 to 26 June, in Negotin from 23 June to 1 July. The 2nd heat wave was registered in most of Serbia in the period from 6 to 16 July, in Negotin up to 18 July. The 3rd heat wave was observed in the period from 25 July to 2 August, and in Zajecar up to 4 August and 4th heat wave was recorded only at Zlatibor and Zajecar, lasting from 7 to 12 August.

There were two heat waves recorded in the autumn season. The 1st heat wave was registered in the north and parts of eastern Serbia, and the 2nd heat wave was recorded in the area of Kopaonik. No cold waves were recorded during autumn season in Serbia.

Monthly and seasonal outline of the climatological characteristics and record temperature and precipitation values in the 2021

January – wettest and 10th warmest January for Serbia in the period from 1951 to 2021. Record wet January for Crni Vrh, Kopaonik, Sjenica, Negotin, Kraljevo, Kursumlija, Cuprija, Nis, Leskovac, Zajecar, Dimitrovgrad and Vranje. Record-breaking January daily precipitation sums observed in Kraljevo, Kursumlija, Cuprija, Nis, Leskovac, Dimitrovgrad and Vranje on January 11. Maximum number of days with precipitation for January recorded in Veliko Gradiste. Record-breaking number of days with precipitation sums of 20 mm and above in Leskovac, Dimitrovgrad, Nis, Kursumlija, Zajecar and Vranje.

⁶ Cold wave, based on the percentile method, is defined as the period during which the minimum daily air temperature falls under the very cold and extremely cold category for 5 consecutive days and longer

⁷ Heat wave, based on the percentile method, is defined as the period during which the maximum daily temperature falls under the category of very warm and extremely warm for 5 consecutive days and longer

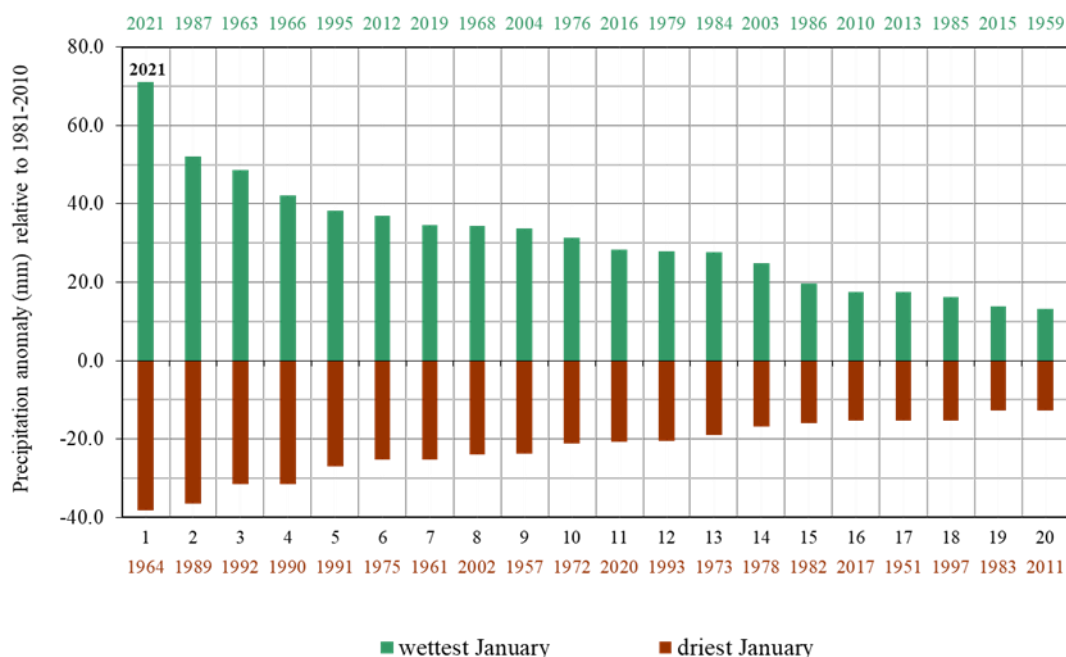


Figure 6. Rank of the wettest and driest January for Serbia for the 1951-2020 period

February – 13th warmest February for Serbia, 8th warmest for Crni Vrh and Zlatibor. February precipitation sums in the categories of normal and dry in most of Serbia. Two heat waves were registered in most of Serbia. Cold wave was recorded in Dimitrovgrad and Vranje.

March – averagely cold March in most of Serbia. Very rainy and extremely rainy in the southern, central and western parts of Serbia. 2nd wettest March for Kopaonik, 5th wettest for Dimitrovgrad.

April – cold and averagely rainy April. Cold wave observed in Kikinda, Zrenjanin, Belgrade, Loznica, Kraljevo, Krusevac, Sjenica, Vranje, Dimitrovgrad and Zlatibor. Highest snow depth exceeded in Pozega, Loznica, Belgrade, Valjevo, Smederevska Palanka and Banatski Karlovac.

May – mean air temperature within the average in most of Serbia. Rainy May in Belgrade, extremely dry at Zlatibor, Pozega and Nis, very dry in Kursumlija.

June – 6th warmest June for Serbia since 1951, 2nd warmest for Novi Sad and Kikinda since 1948, 4th warmest for Belgrade since 1888. Absolute maximum air temperature in June surpassed (Chart 1) at 14 Main meteorological stations (MMS). 3rd driest June for Serbia since 1951, warmest for Sremska Mitrovica and Valjevo since the record-keeping began. Heat wave was observed in most of Serbia.

Chart 1.

Main station	2021		Previous record Tmax	Date of previous record Tmax
	Tmax June 2021	Date of Tmax		
PALIC	37.6	24	37.0	30. VI 1950.
SOMBOR	38.3	24	37.1	14/24. VI 2000/2002.
NOVI SAD	39.0	24	37.6	24/24. VI 1957/2002.
ZRENJANIN	37.9	24	-	-
KIKINDA	37.7	24	37.5	24. VI 2002.
B. KARLOVAC	38.2	24	37.5	14. VI 2000.
LOZNICA	37.6	24	37.3	26. VI 2007.
S. MITROVICA	38.2	24	-	-
VALJEVO	39.4	24	37.7	28/26. VI 1935/2007.
BEOGRAD	38.7	24	38.0	18. VI 1918.
KRAGUJEVAC	38.7	30	-	-
S. PALANKA	40.7	30	39.7	26. VI 2007.
V. GRADISTE	38.4	24	-	-
C. VRH	29.6	25	-	-
NEGOTIN	39.0	25	-	-
ZLATIBOR	34.7	24	32.2	25. VI 2007.
SJENICA	32.4	24	32.2	12. VI 2010.
POZEGA	37.7	24	37.0	26. VI 2007.
KRALJEVO	38.3	30	-	-
KOPAONIK	26.3	24	25.6	26. VI 2007.
KURSUMLIJA	38.0	25	37.7	27. VI 1982.

July – 2nd warmest July for Serbia based on the mean air temperature, warmest on record for Novi Sad, Zrenjanin, Kikinda and Banatski Karlovac. Record warm July for Serbia based on the minimum air temperature. Record-breaking mean minimum air temperature for July observed at 14 MMS. Maximum number of tropical days for July exceeded in Sombor and Zlatibor, and maximum number of tropical nights surpassed in Novi Sad, Loznica, Sremska Mitrovica, Valjevo and Kragujevac. Two heat waves were observed. July precipitation sums above the average in most of Serbia. 2nd wettest July for Smederevska Palanka and Dimitrovgrad. Daily maximum precipitation sum for July exceeded in Cuprija.

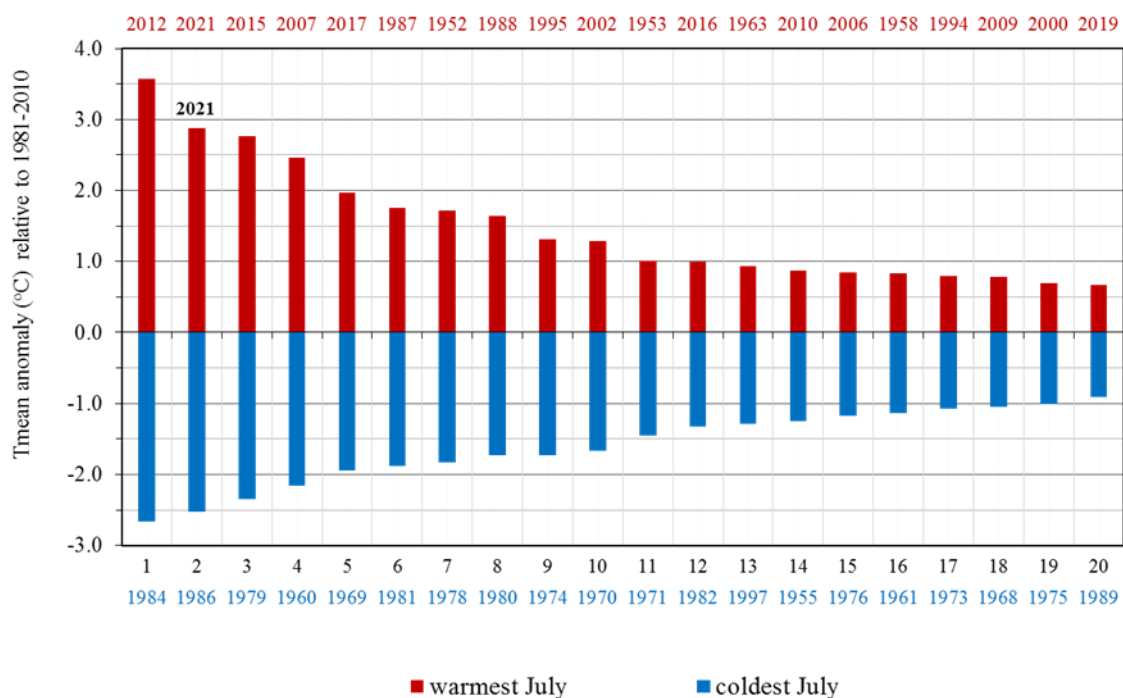


Figure 7. Rank of the warmest and coldest July in Serbia for the 1951-2021 period relative to the 1981-2010 base period

August – warm and dry August in most of Serbia. 3rd driest August for Crni Vrh. Heat wave was recorded.

September – warmer than average September in most of Serbia. 11th driest September for Serbia, 4th driest for Sremska Mitrovica. Heat wave was observed in the northern and parts of eastern Serbia.

October – 8th coldest October for Serbia, 5th coldest for Kursumlija and Leskovac, Averagely rainy and rainy in most of Serbia. 2nd wettest October for Kursumlija.

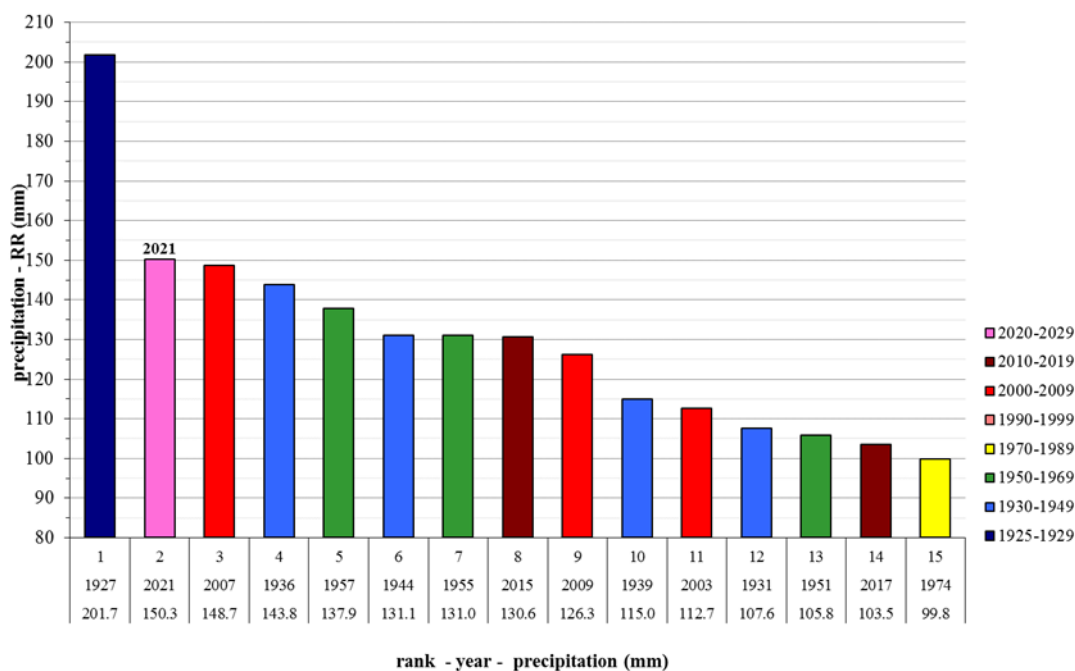


Figure 8. The highest October precipitation sums at Kursumlija for the 1980-2021 period

November – 5th warmest November for Kopaonik. Wettest on record for Loznica and Sremska Mitrovica. Absolute maximum of November precipitation sums was surpassed at four stations. Heat wave was observed at Kopaonik. Crni Vrh registered record low number of insolation hours since the record-keeping began.

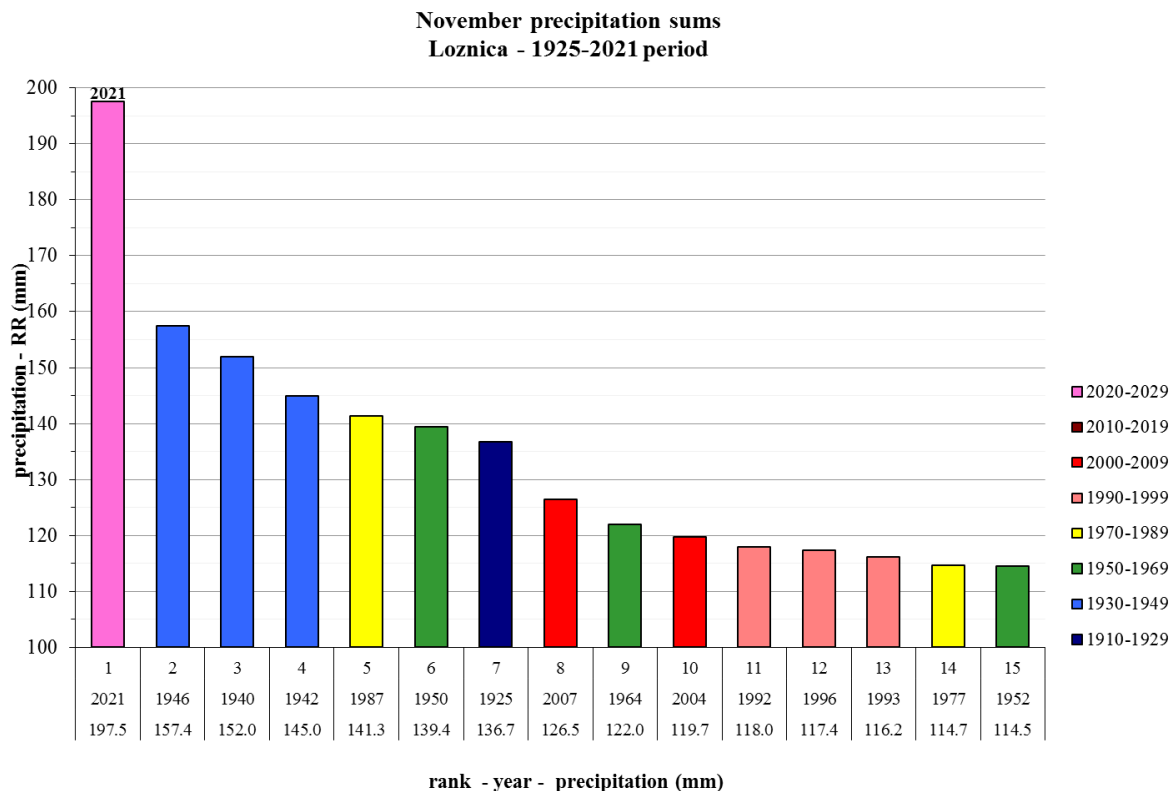


Figure 9. The highest October precipitation sums at Loznica for the 1925-2021 period

December – 18th warmest December for Serbia, 8th warmest for Negotin. 3rd wettest December for Serbia. Wettest December for Cuprija, Veliko Gradiste and Kopaonik, 2nd wettest for Belgrade, Smederevska Palanka and Pozega since the record-keeping began.

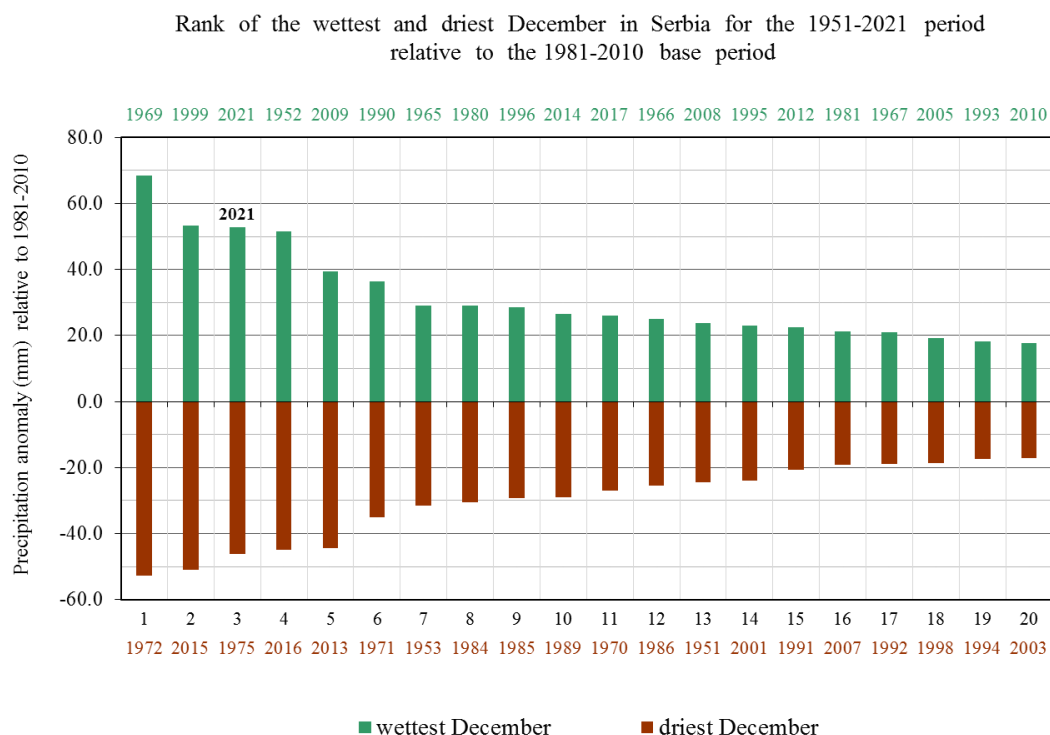


Figure 10. Rank of the wettest and driest December in Serbia for 1951-2021 period

Winter 2020/2021 – warm and wet winter. 3rd warmest winter for Serbia since 1951, 2nd warmest for Belgrade since 1888, 2nd or 3rd warmest winter for most places since the record-keeping began. Record low number of frost days for Kikinda, Novi Sad, Valjevo, Kragujevac, Kraljevo, Kurusmlija and Dimitrovgrad. 4th wettest winter for Serbia since 1951. Wettest on record for Nis, Leskovac, Sjenica and Kopaonik, 2nd wettest for Dimitrovgrad and Vranje, 3rd wettest for Kursumlija since the record-keeping began. Record-breaking number of days with daily precipitation sum of 20 mm and above in Nis, Leskovac and Dimitrovgrad.

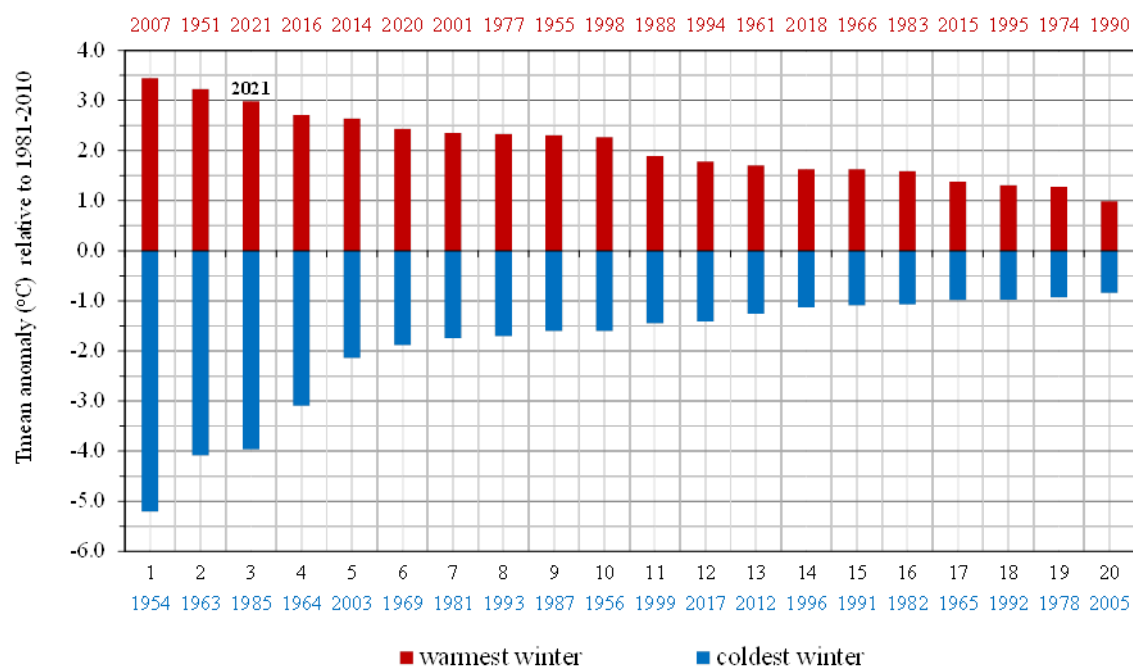


Figure 11. Rank of twenty warmest and coldest winter seasons in Serbia for the 1951-2021 period

Spring 2021 – cold and averagely rainy spring. 8th coldest spring for Sombor since 1942. Minimum number of thunder days in spring was exceeded in Novi Sad and reached in Sremska Mitrovica.

Summer 2021 – 5th warmest for Serbia since 1951. 3rd warmest for Belgrade since 1888 and Kopaonik since 1980, 4th warmest for Valjevo since 1926 and Zlatibor since 1950. 4th driest summer for Zlatibor since 1950. Lowest number of thunder days in summer was exceeded in Kikinda.

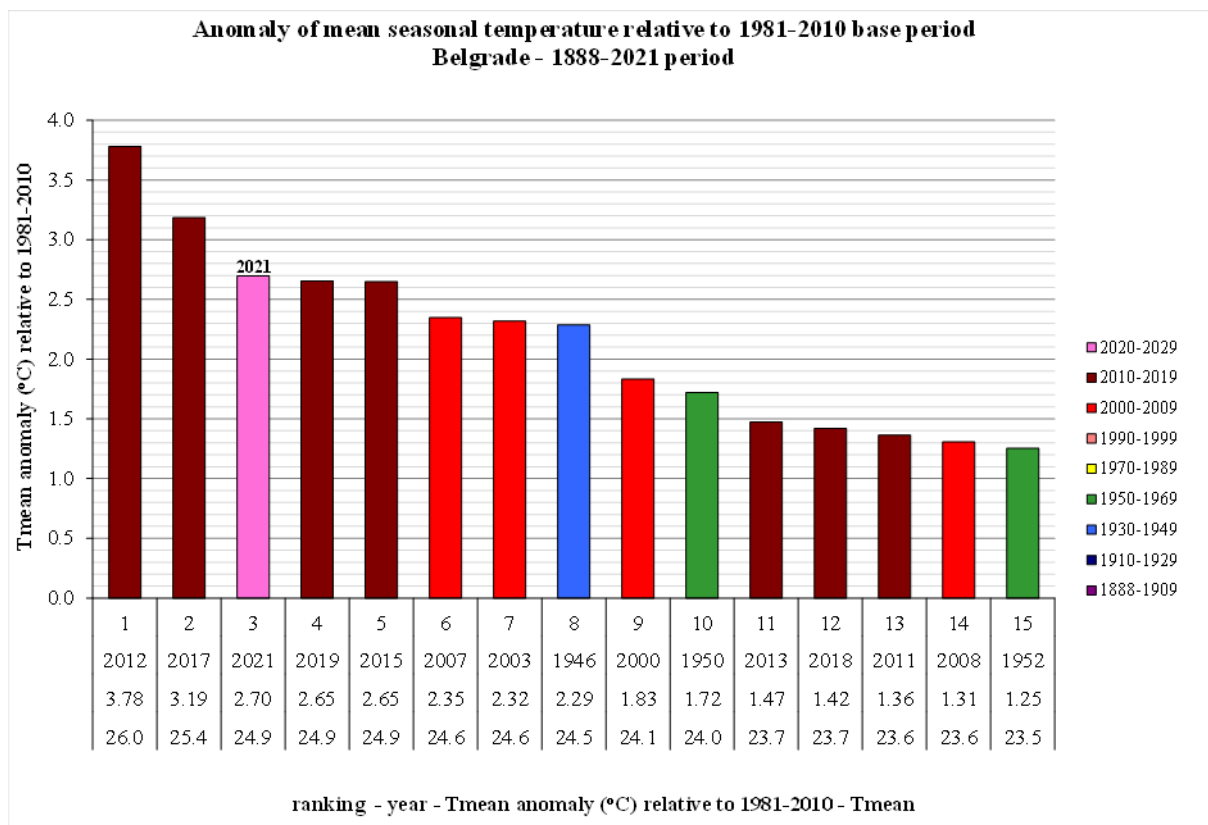


Figure 12. Rank of the warmest summers in Belgrade

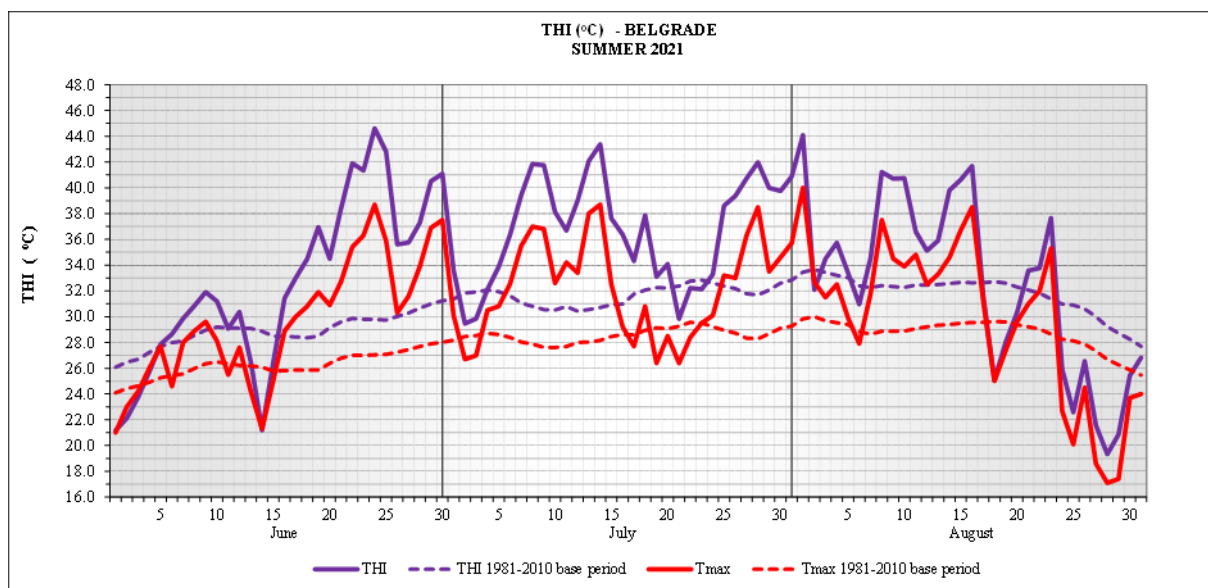


Figure 13. Daily THI and maximum air temperature in Belgrade during summer 2021

Autumn 2021 – averagely warm and averagely rainy autumn in most of Serbia. 6th wettest in Sremska Mitrovica, 8th wettest for Loznica. Maximum daily autumn precipitation sum was exceeded in Sremska Mitrovica and Zrenjanin.

Note: Climatological analysis of meteorological elements was carried out based on the preliminary data obtained from 28 Main meteorological stations

Appendix

Table 1.

MEAN MONTHLY AND ANNUAL AIR TEMPERATURE (°C)													
station/month	January	February	March	April	May	June	July	August	September	October	November	December	Year
PALIC	2.0	4.1	5.7	9.3	15.2	23.2	25.0	21.9	17.5	10.2	6.2	2.4	11.9
SOMBOR	2.3	4.6	5.5	9.0	15.2	22.7	24.4	21.1	17.1	9.7	6.2	2.6	11.7
NOVI SAD	3.3	5.3	6.2	9.6	16.0	23.3	25.5	22.1	17.9	10.6	7.2	3	12.5
ZRENJANIN	2.7	5.0	5.7	9.5	16.2	22.7	25.6	22.1	17.9	10.9	7.5	3	12.4
KIKINDA	2.5	4.5	5.5	9.6	16.0	23.4	25.6	22.3	17.5	10.6	7.0	2.9	12.3
B.KARLOVAC	2.8	4.6	5.4	9.4	16.8	22.2	24.9	21.7	17.8	10.8	7.7	3.1	12.3
LOZNICA	3.9	6.1	6.1	9.8	16.2	22.5	24.8	22.5	17.9	10.1	7.3	4.4	12.6
S.MITROVICA	2.7	4.7	5.5	9.3	16.2	22.7	24.4	21.4	17.5	10.1	7.0	2.9	12.0
VALJEVO	3.4	5.8	5.6	9.6	16.8	22.9	25.3	22.7	17.9	9.8	7.4	3.7	12.6
BELGRADE	4.3	6.5	7.2	10.6	17.4	24.3	26.6	24.0	19.4	11.7	8.9	4.1	13.7
KRAGUJEVAC	3.4	5.6	5.4	9.7	16.8	21.8	24.9	22.2	17.3	10.0	8.1	3.8	12.4
S.PALANKA	3.2	5.0	5.2	9.5	16.6	22.3	25.0	22.0	17.2	10.5	8.3	3.8	12.4
V.GRADISTE	2.6	3.6	5.4	9.2	16.5	21.9	24.8	21.9	16.9	11.0	8.4	3.2	12.1
CRNI VRH	-2.1	1.3	0.8	4.2	11.2	16.8	20.0	18.7	13.3	5.0	3.4	-1.7	7.6
NEGOTIN	2.7	4.3	6.7	10.3	17.5	23.0	26.5	24.8	18.4	10.0	7.6	4.3	13.0
ZLATIBOR	-1.2	2.8	1.2	5.2	12.5	18.1	20.6	19.1	14.0	6.6	5.1	0.1	8.7
SIJENICA	-1.8	1.2	0.7	4.8	12.0	16.1	18.7	17.8	12.2	5.9	4.8	-0.6	7.6
POZEGA	0.7	3.6	3.7	8.2	15.2	19.7	22.0	20.0	15.1	8.1	5.1	1.8	10.3
KRALJEVO	2.9	5.5	5.3	9.8	16.9	21.7	25.0	22.8	17.7	10.1	8.1	3.7	12.5
KOPAONIK	-5.2	-2.2	-3.7	0.5	7.4	12.3	15.7	14.8	9.3	3.7	3.3	-4	4.3
KURSUMLIJA	2.2	4.7	4.2	8.6	15.6	20.0	22.8	21.3	15.9	8.6	7.6	3.5	11.3
KRUSEVAC	3.3	5.0	5.2	9.6	16.9	21.6	24.5	22.4	17.6	9.9	8.4	3.6	12.3
CUPRIJA	3.1	4.6	5.4	9.6	16.9	21.9	25.2	22.2	17.4	10.2	8.2	3.4	12.3
NIS	3.4	5.7	5.7	10.0	17.1	21.5	25.3	23.4	18.1	10.7	8.9	3.9	12.8
LEŠKOVAC	2.9	4.8	4.8	9.7	16.5	20.8	24.3	22.9	16.8	9.1	7.3	3.1	11.9
ZAJECAR	1.9	3.9	4.9	9.3	16.0	20.7	24.2	22.6	16.5	8.8	6.8	3.2	11.6
DIMITROVGRAD	1.4	3.8	2.9	8.3	15.2	19.1	22.8	21.6	15.4	8.7	7.9	2.2	10.8
VRANJE	2.1	4.6	4.7	9.5	16.3	20.4	24.2	23.3	17.5	9.4	8.0	2.6	11.9

extremely cold	very cold	cold	normal	warm	very warm	extremely warm
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Table 2.

MONTHLY AND ANNUAL PRECIPITATION SUM (mm)													
station/month	January	February	March	April	May	June	July	August	September	October	November	December	Year
PALIC	59.4	41.8	29.8	37.9	53.6	41.2	81.9	47.4	32.6	44.8	49.5	58.9	578.8
SOMBOR	70.4	37.8	27.4	36.2	63.5	72.8	123.8	66.5	28	81.6	57.7	73.5	739.2
NOVI SAD	44.7	59.5	42.8	55.1	62.9	23.9	114.4	46.4	16.4	88	114.6	88.9	757.6
ZRENJANIN	44.5	62.6	44	39.1	53.2	23.5	111.6	45.7	7.8	60.8	104.8	96.3	693.9
KIKINDA	48.9	51.8	35	22.7	54.5	12.6	67.3	49.2	14	41.2	72.9	70.4	540.5
B.KARLOVAC	66.6	36.8	26.1	43.9	63.7	52.1	103	34.3	7.5	38.6	81.6	129.1	683.3
LOZNICA	69.8	51.2	71.5	61.7	77.6	46	58.9	47.3	18.8	108.5	197.5	122.5	931.3
S.MITROVICA	37.7	49.1	38	38.2	49	7.2	105.9	30.1	7.8	71.6	162.7	129.3	726.6
VALJEVO	77.1	27.7	78.3	47.1	46.6	23.1	57.1	54.4	35.3	90.2	128.9	122.9	788.7
BELGRADE	68.6	34.4	49.3	50.7	93.4	34.2	63.1	38.2	9.4	73.4	122.8	157.8	795.3
KRAGUJEVAC	92	23	76.6	44.9	27.4	51.4	84.8	36.5	22.5	42	54.2	108.4	663.7
S.PALANKA	85	31.7	50.4	62.3	50.3	22	175.4	57.5	31.3	43.6	62	124.4	795.9
V.GRADISTE	108.1	46.2	32.6	54.1	62.1	42.7	142.1	39.6	10.3	56.1	58.8	122.4	775.1
CRNI VRH	115.2	19.8	49.4	50.4	62.4	84.9	45.1	8.1	22.3	111.3	38.2	101.9	709.0
NEGOTIN	137.1	14.6	65.7	38.8	49.8	30.9	34.5	14.2	10.2	89.7	23.6	81.1	590.2
ZLATIBOR	123.9	38.2	96.4	79.3	43.1	37.1	46.3	44	44.5	114.8	106.3	136.6	910.5
SIJENICA	160.9	29.4	52.2	67.2	45	41	128.5	43.2	27.9	55.9	42	85.6	778.8
POZEGA	122.8	22.6	76.9	63.7	28	40.7	167.8	52.3	45.4	99.7	87.6	116.3	923.8
KRALJEVO	135.9	18.8	98.5	66.1	56.9	26.3	83.4	33.5	24.5	86.7	67.4	116.2	814.2
KOPAONIK	208.8	34.2	146.4	75.4	92.7	76.4	69.4	55.2	65.1	92.1	39.1	175.7	1130.5
KURSUMLIJA	153.5	30.9	78	48.1	26.3	22.9	77.1	13.3	22.8	150.3	46.1	107.1	776.4
KRUSEVAC	113.6	16.8	85.7	59.7	57.2	33.7	124.8	20	39.5	62.7	29.6	92.4	735.7
CUPRIJA	124.6	23.6	57.9	48.7	37.8	36.9	148.8	14.7	20.9	45.6	41.2	125.5	726.2
NIS	178.6	28.6	59.7	42.7	29.4	30.2	39.7	39.6	23.3	49.2	45.6	106.5	673.1
LEŠKOVAC	229.3	26	92	45	46.8	53.9	43.4	3.9	24.9	102.9	43.6	101.8	813.5
ZAJECAR	136	8.8	59.5	49.8	56	27.4	54.2	6.8	13.9	79.3	31.6	89	612.3
DIMITROVGRAD	212.9	30.8	95	78.4	64.7	14.5	150.7	20.1	27.1	77.3	35.7	94.1	901.3
VRANJE	162.5	33.7	71.8	45.3	35.1	45.2	59.7	15.7	15.3	91.4	39.7	81.6	697.0

extremely dry	very dry	dry	normal	wet	very wet	extremely wet
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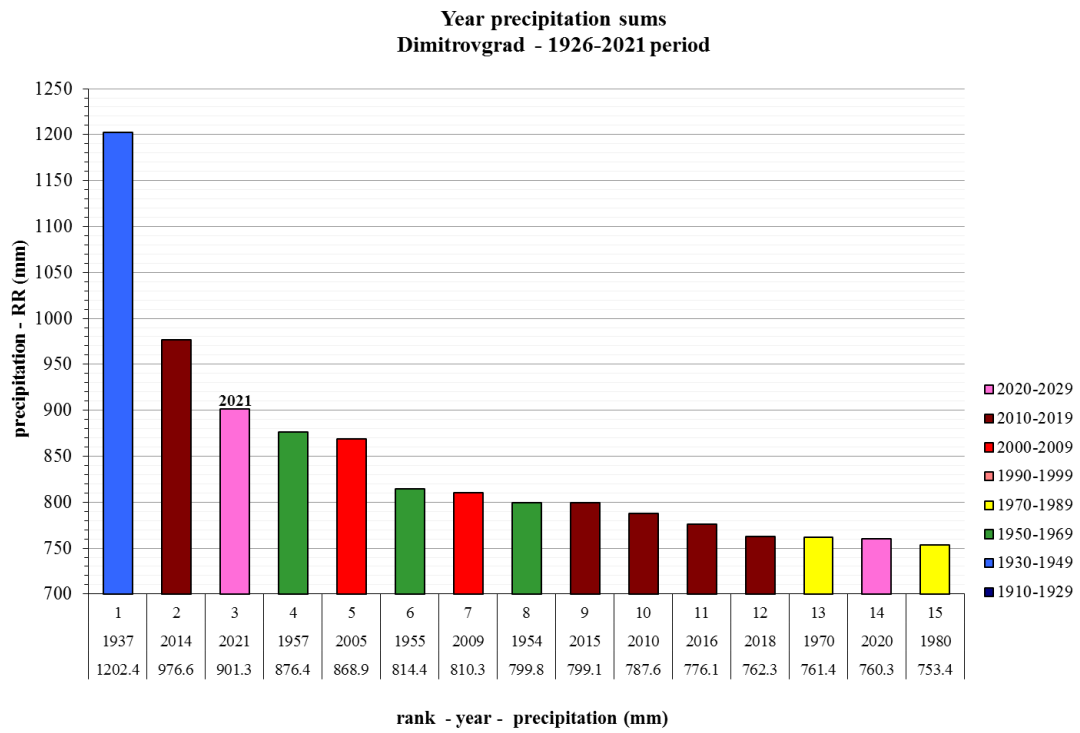


Figure 1. Rank of the wettest years in Dimitrovgrad

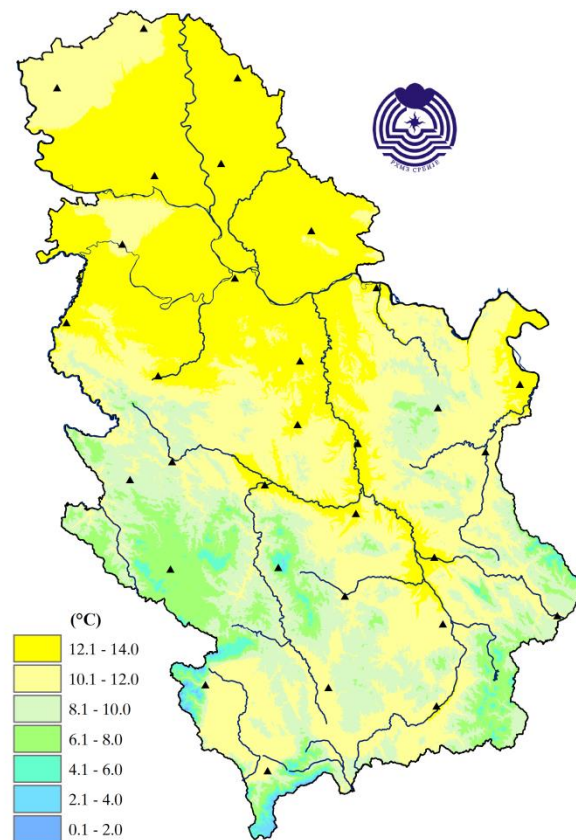


Figure 2. Spatial distribution of mean annual air temperature expressed in (°C)

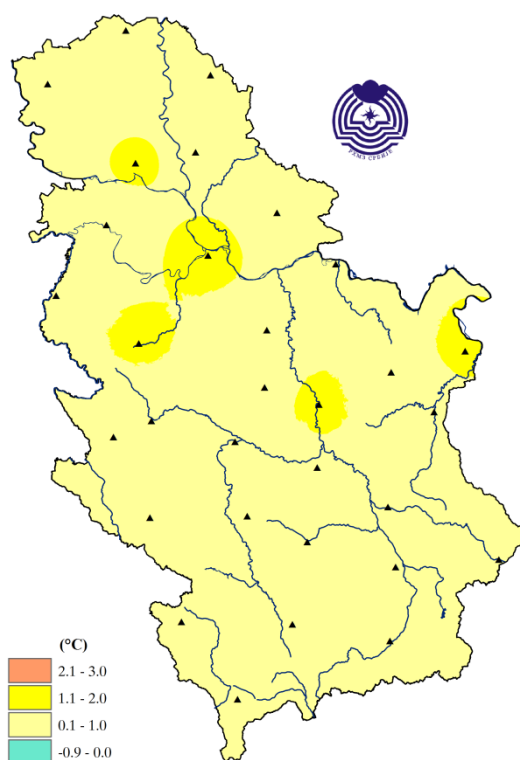


Figure 3. Spatial distribution of mean annual air temperature anomaly expressed in (°C)

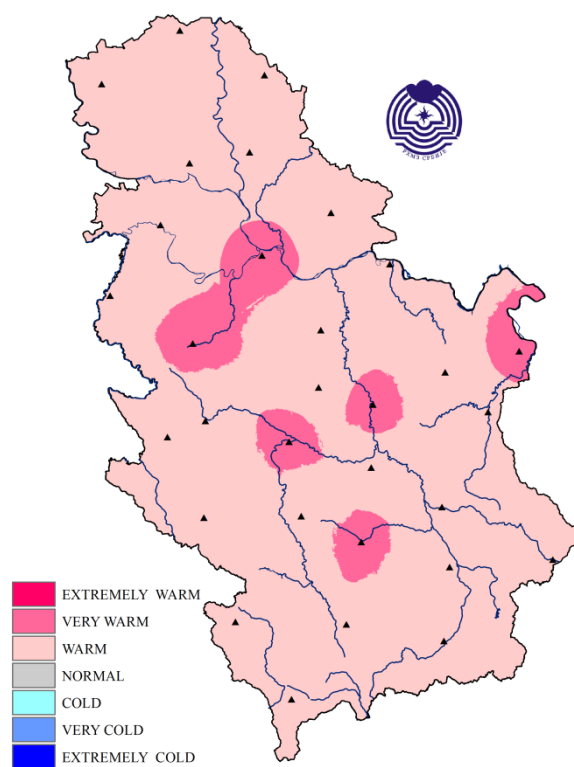


Figure 4. Spatial distribution of mean annual air temperature based on percentile method

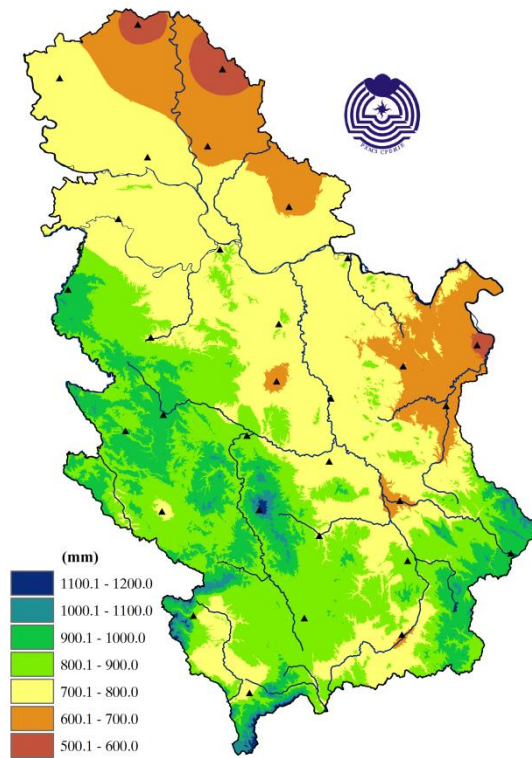


Figure 5. Spatial distribution of annual precipitation totals expressed in mm

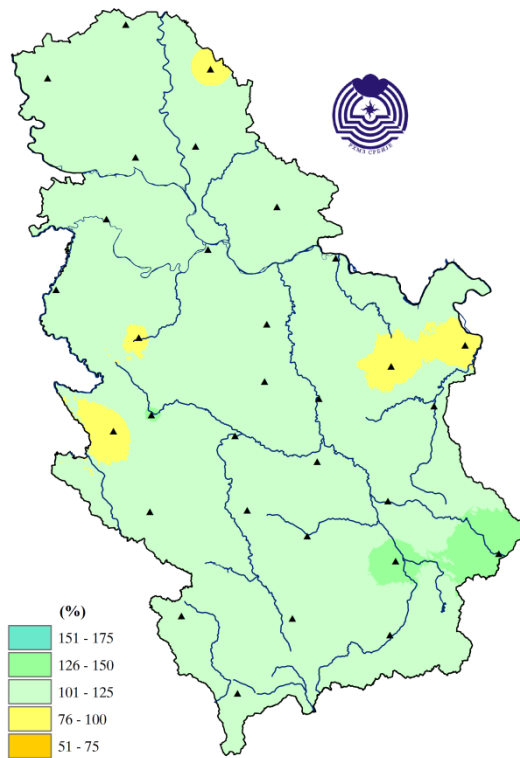


Figure 6. Spatial distribution of annual precipitation totals expressed in percentages of normal for the 1981-2010 base period

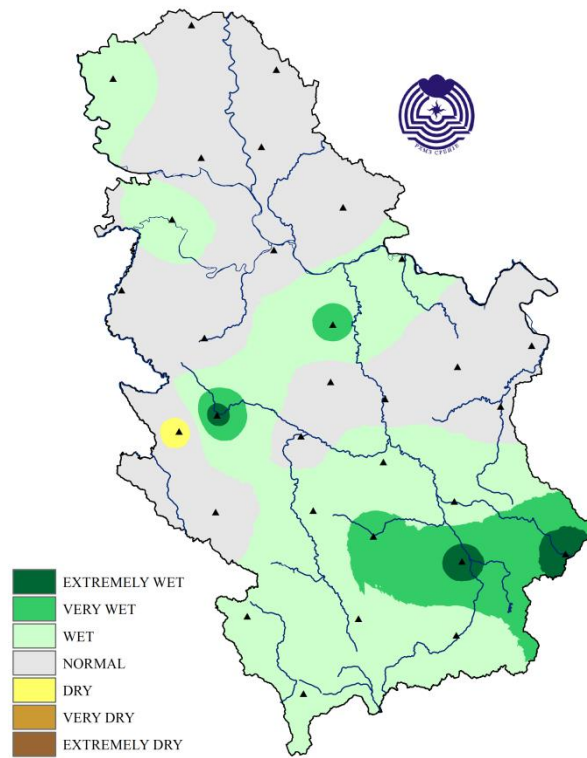


Figure 7. Spatial distribution on annual precipitation totals based on percentile method

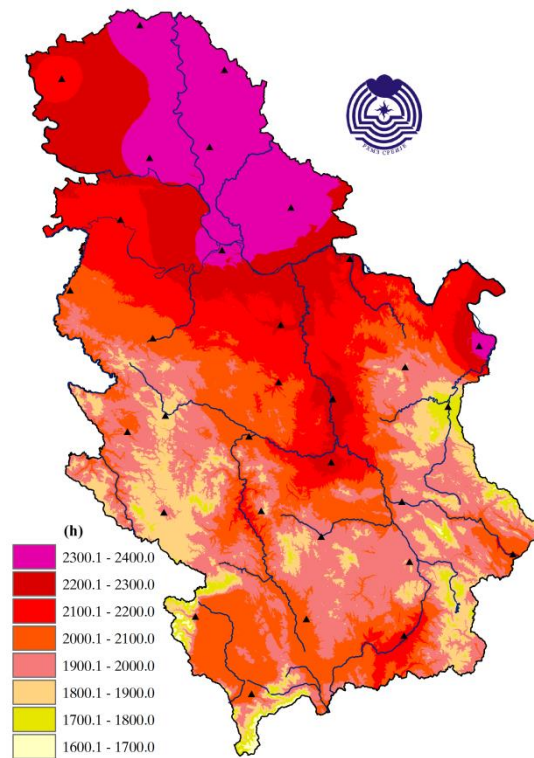


Figure 8. Insolation expressed in hours

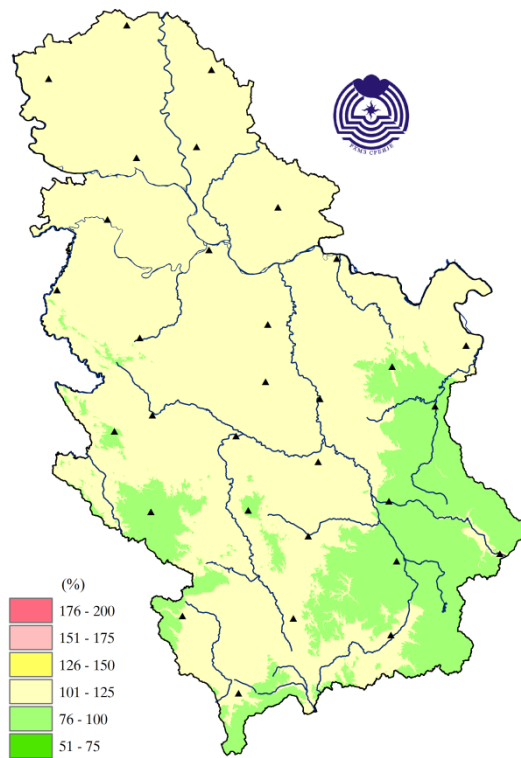


Figure 9. Insolation expressed in percentages of normal for the 1981-2010 base period