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ANNUAL BULLETIN FOR SERBIA THE YEAR OF 2018

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The year of 2018 was marked by several climatological records in Serbia

- ❖ *Warmest since the record-keeping began*
- ❖ *Warmest spring*
- ❖ *Warmest April*
- ❖ *Warmest summer based on minimum air temperature*

Air temperature

At the territory of Serbia, the year of 2018, with the mean air temperature of 12.0ºC ranks as the warmest year in the period from 1951 up-to-date, and with the mean air temperature of 14.5ºC in Belgrade, it ranks as the warmest since the meteorological station commenced work in 1888. Mean annual air temperature ranged from 10.9ºC in Pozega to 14.5ºC in Belgrade, and on the mountains from 5.2ºC at Kopaonik to 9.1ºC at Zlatibor. Departure of the mean annual air temperature relative to the 1981-2010 base period ranged from 0.6ºC in Zajecar to 2.0ºC in Belgrade. Based on the percentile distribution[1], the year of the 2018 falls under the extremely warm category in most of Serbia.

Twelve out of fifteen warmest years for Serbia were registered after 2000 (for the 1951-2018 period), and thirteen out of fifteen in Belgrade (for the 1888 – 2018 period).
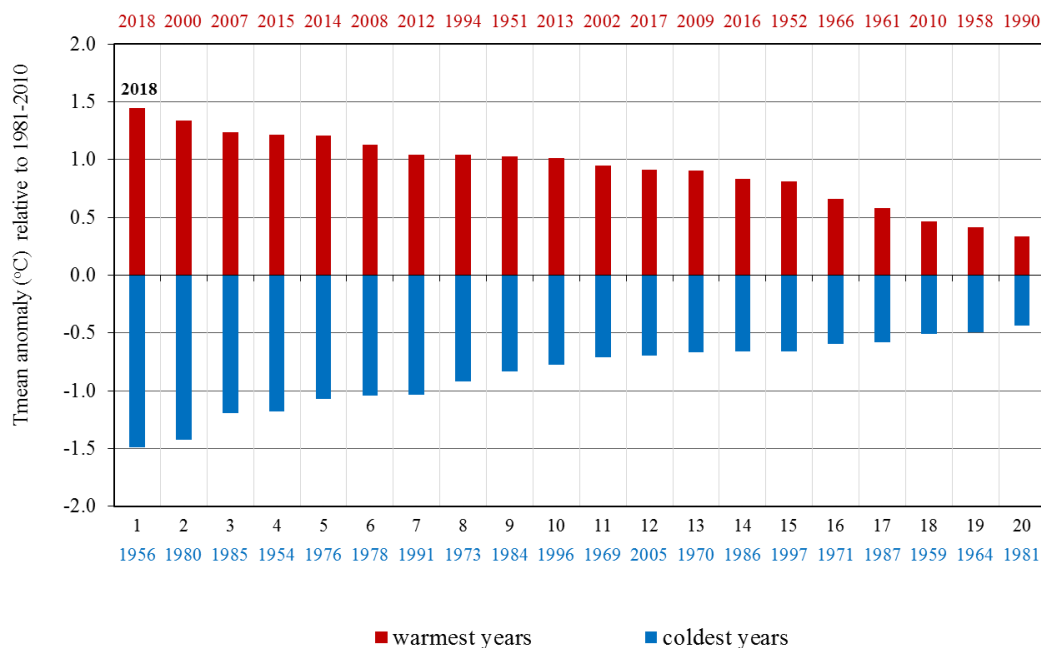

Figure 1. Rank of the warmest and coldest years for Serbia for the 1951-2018 base period

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[1] **n**- nth 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
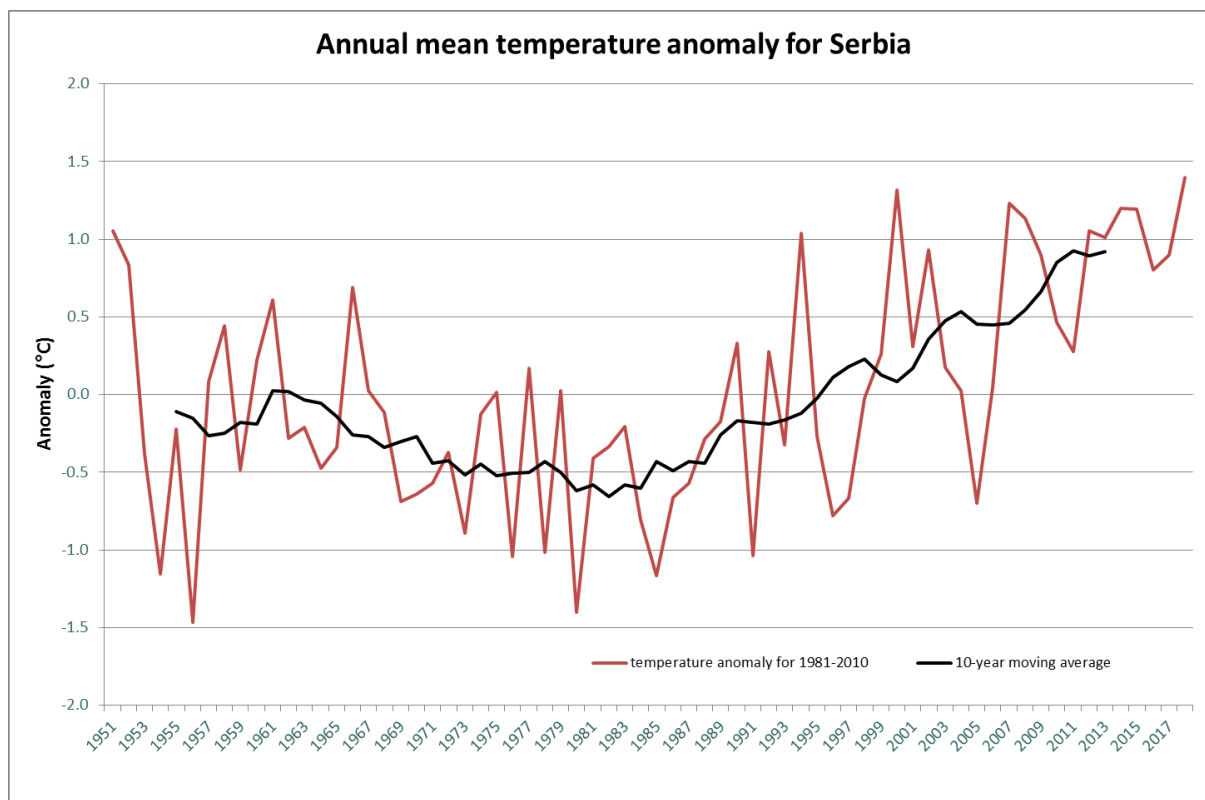
Figure 2. Trend of the mean annual air temperature anomaly for Serbia

In 2018, the highest daily air temperature of 35.4ºC was measured in Kraljevo on June 12. In most of Serbia, number of tropical days[2] was 2 to 17 days above the average number of the 1981-2010 base period. The highest number of tropical days, total of 70 days, was observed in Negotin, which is 26 days above the average number for this station.

Belgrade observed 49 tropical days which is 12 days above the average. There were 42 tropical nights[3] registered in Belgrade that is 25 days above the average. Negotin observed 15 tropical nights Palic observed 12, whereas in the remainder of the country fewer than 8 nights were registered.

In 2018, the lowest daily air temperature of -24.5ºC was measured on March 1, in Sombor. In the lowland, there were up to 5 days registered with severe frost[4], and in the mountains that number ranged from 6 days at Zlatibor to 25 days at Kopaonik. Most of Serbia recorded 2 to 14 days with severe frost less than the average.

In 2018, number of ice days[5] ranged from 7 in Loznica to 17 on Palic, and in the upland from 22 in Sjenica to 64 days at Kopaonik.

Based on the assessment of the mean minimum and mean maximum air temperature in Serbia, 2018 ranks as the 2nd warmest year. The warmest year based on the minimum air temperature was the year of 2014, whereas the warmest year based on the maximum air temperature was the year of 2000.

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[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

Serbia - Year
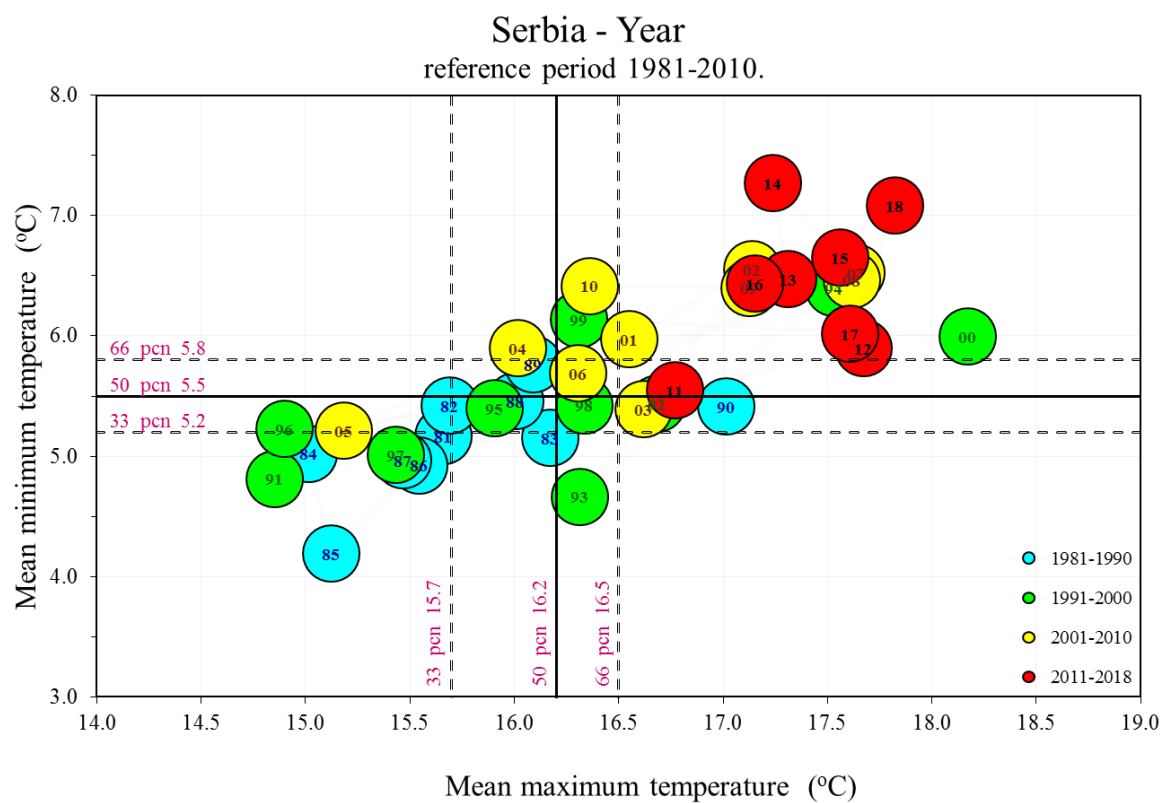### reference period 1981-2010.

Figure 3. Mean minimum and mean maximum air temperature and their accompanying terciles for Serbia for the 1981-2018 period
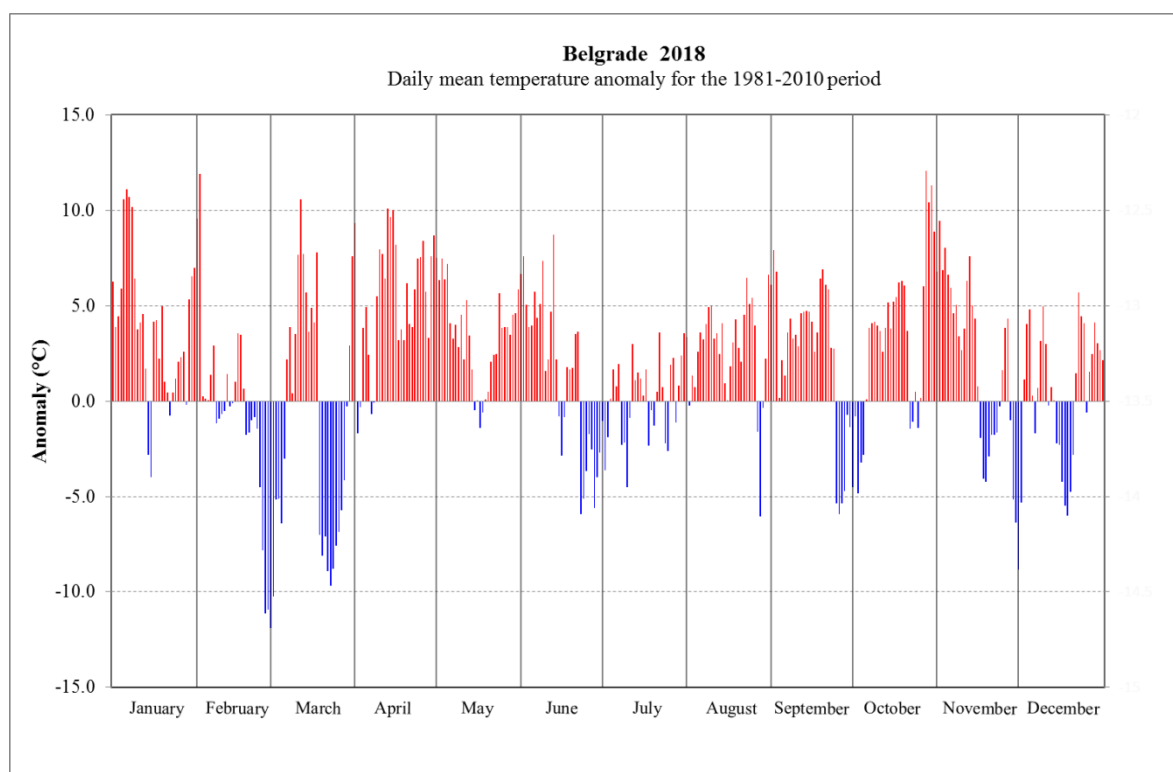

Figure 4. Daily departure of the mean air temperature from the normal 1981-2010 for Belgrade

Precipitation

In most of Serbia, 2018 was averagely rainy. In western, northeastern and parts of central Serbia, it was very rainy and extremely rainy. Precipitation sums ranged from 573.1 mm in Banatski Karlovac to 986.9 mm in Kraljevo, and on the mountains from 856.8 mm at Crni Vrh to 1205.5 mm at Zlatibor. Percentage of precipitation sums relative to the normal for the 1981-2010 ranged from 88% in Belgrade to 140% in Smederevska Palanka. In 2018, the wettest month was July which is not characteristics of the precipitation sums for the moderate-continental climate.

Number of rainy days ranged from 129 in Banatski Karlovac to 162 in Pozega, and in the mountains from 183 at Kopaonik, Zlatibor and Crni Vrh to 188 days in Sjenica.

The highest daily precipitation sum of 132.5 mm was registered at Crni Vrh on August 2 and surpassed the previous record of 100.7 mm set on June 15, 1969.

Number of days with snow cover ranged from 21 in Veliko Gradiste and Banatski Karlovac to 60 days in Zajecar, and in the upland from 87 in Sjenica to 141 days at Kopaonik. The greatest snow depth of 100 cm was measured at Crni Vrh on March 1. In the lowland, the greatest snow depth of 44 cm was registered in Kragujevac and Kursumlija on February 27.
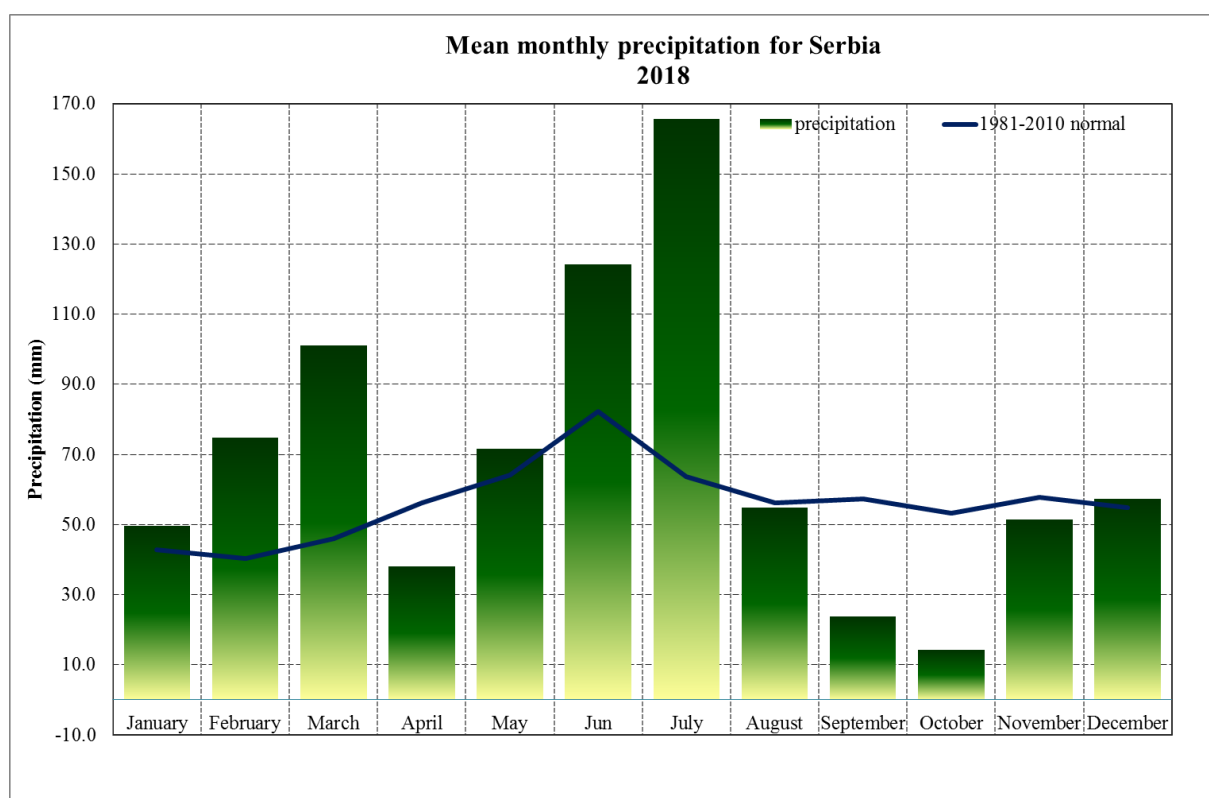

Figure 5. Mean monthly precipitation sums for Serbia

Cold waves

The first cold wave[6] had its onset on February 24, encompassing northern, eastern and parts of western Serbia until March 2. The second cold wave lasting from 19 to 26 March was observed in Belgrade, Zlatibor and Crni Vrh.

In September, one cold wave was registered, lasting from 24 to 28 September in Belgrade and Loznica, and from 25 to 29 September in Veliko Gradiste, Smederevska Palanka, Kragujevac, Kraljevo, Pozega, Curpija, Krusevac and Banatski Karlovac.

Cold wave was observed in Negotin on November 29 lasting until December 3.

Heat waves

During January, two heat waves[7] were registerd. In the period from January 4 to 8, the first heat wave was registered on Palic, Kikinda, Zrenjanin and Veliko Gradiste, and until January 9 in Sremska Mitrovica. In Pozega, this heat wave lasted from 3 to 7 January, and in Sjenica from 6 to 10 January. In most of the country, the onset of the second heat wave was recorded on January 29 with the duration until February 3.

In April, Serbia experienced three heat waves. In most of Serbia, the first heat wave lasted from 8 to 15 April apart from Valjevo and Loznica. The second heat wave lasted from 21 to 26 April at the majority of main meteorological stations, while the onset of the third heat wave was registered on April 28 with the duration until May 3, that is May 6 in north of the country. In parts of northern and western Serbia, the second heat wave during May was recorded from May 27 to June 3.

In September, one heat wave was observed in the period from 18 to 22 September in Veliko Gradiste, Kragujevac and Krusevac, and from 18 to 23 September in Sjenica and Vranje.

In October, there were two heat waves registered. The first heat wave was observed in Negotin and Vranje, lasting from 16 to 20 October. The second heat wave was registered in north and south of the country, as well as parts of central and eastern Serbia, lasting from October 27 to November 5, that is, November 8 in Kikinda and Palic. One more heat wave was observed in Sjenica, with the duration from 5 to 14 November, and at Kopaonik lasting from 9 to 14 November.

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[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

Monthly and seasonal overview of the climatological characteristics and record values of temperature and precipitation observed in 2018

January – 5th warmest January for Serbia, 2nd warmest for Sombor and Banatski Karlovac.

February – Averagely warm, in most of the country rainy and extremely rainy February. 9th wettest February for Serbia, 3rd wettest for Palic, and 4th wettest for Sjenica and Zlatibor.

March – 2nd wettest March. Record-breaking number of days with precipitation at 8 Main meteorological stations. Daily minimum air temperature for March was surpassed at 7 Main meteorological stations.
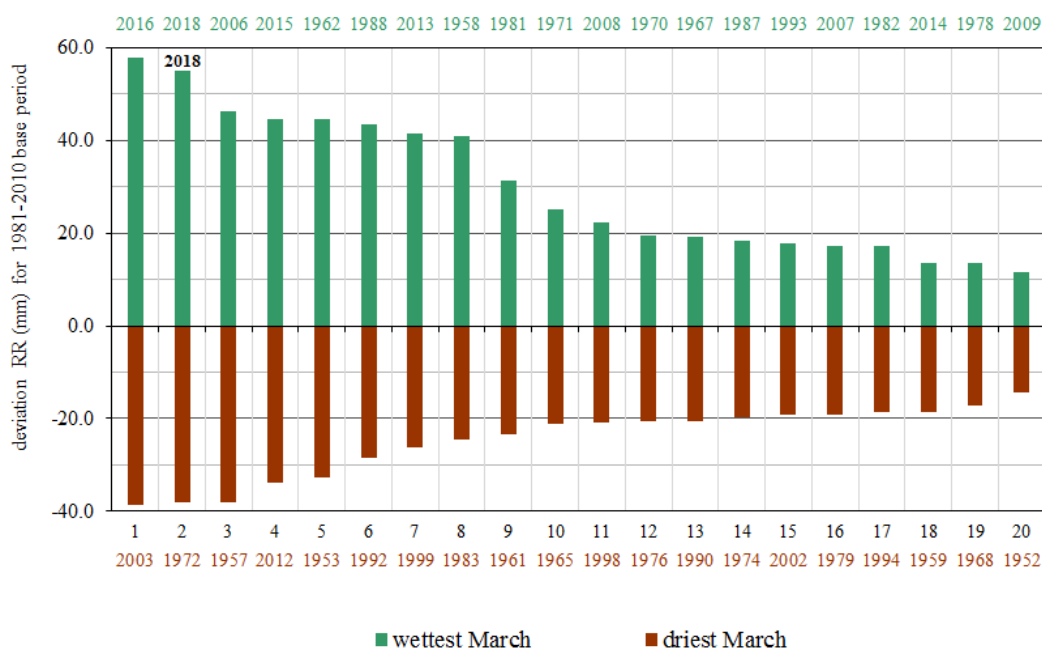

Figure 6. Rank of the wettest and driest March for Serbia for the 1951-2018 base period

Chart 1. Surpassed daily minimum air temperatures for March

MS Station	March minimum air temperature	Date	Previous record	Date of the previous record
PALIC	-19.9	1.3.2018.	-19.5	1. 3. 2005.
SOMBOR	**-24.5**	1.3.2018.	-20.3	5. 3. 1987.
NOVI SAD	-20.3	1.3.2018.	-19.9	4. 3. 1987.
KIKINDA	-20.3	1.3.2018.	-16.6	4,5. 3. 1955.
KURSUMLIJA	-19.0	1.3.2018.	-16.5	5. 3. 1955.
DIMITROVGRAD	-18.0	1.3.2018.	-16.8	5. 3. 1987.
VRANJE	-16.0	1.3.2018.	-14.8	6. 3. 1949.

April – **Warmest** April since the measurements in Serbia commenced. On a monthly basis, air temperature was on average 2 degrees above the previous record warm April observed in 2000. Record-breaking number of summer days was registered at 9 main meteorological stations, and the maximum daily air temperature in April was measured in Sombor.
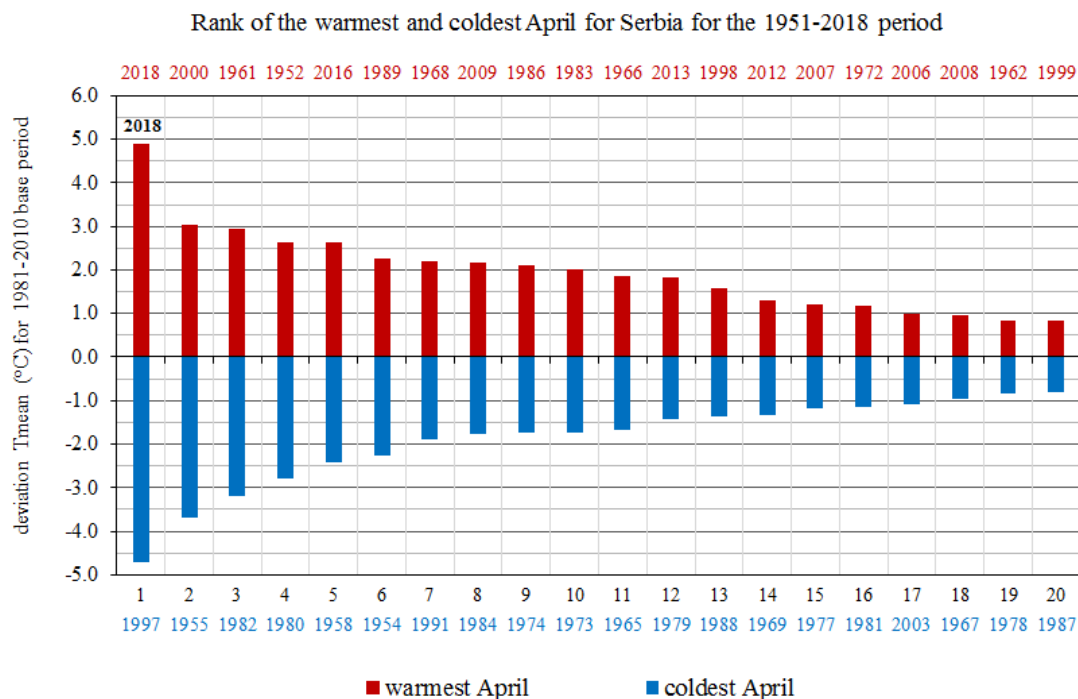

Figure 7. Rank of the warmest and coldest April for Serbia for the 1951-2018 period

Chart 2. Mean air temperature for April 2018 and previous records per station for Serbia

MStation	Tmean April 2018	surpassed maximum Tmean	year of the previous record	MStation	Tmean April 2018	surpassed maximum Tmean	Year of the previous record
Palic	16.5	14.8	2009	Negotin	17.3	15.2	2009
Sombor	16.6	14.6	1952	Zlatibor	12.8	10.7	1952
Novi Sad	17.2	14.7	2000	Sjenica	11.2	9.7	2000
Zrenjanin	17.1	15.2	1946	Pozega	14.2	12.9	1946
Kikinda	16.7	14.9	2000	Kraljevo	16.6	15.3	2000
B. Karlovac	17.3	15.3	2000	Kopaonik	7.8	6.3	2000
Loznica	16.8	15.1	2000	Kursumlija	14.8	13.4	2000
S.Mitrovica	16.6	15.5	1934	Krusevac	16.5	15.5	1934
Valjevo	16.7	14.6	2000	Curpija	16.5	14.9	2000
Belgrade	18.2	16.2	2000	Nis	17.1	15.6	2000
Kragujevac	16.4	16.4	1946	Leskovac	15.7	14.3	1946
S.Palanka	16.6	15.2	2000	Zajecar	15.8	15.2	2000
V.Gradiste	16.8	15.5	1934	Dimitrovgrad	14.8	13.2	1934
C.Vrh	11.8	10.6	2016	Vranje	15.7	15.3	2016

May – 3rd warmest May for Serbia. Warmest on record May for Belgrade, Valjevo and Sremska Mitrovica. 7 to 13 summer days above the May average were registered. Two heat waves were recorded.
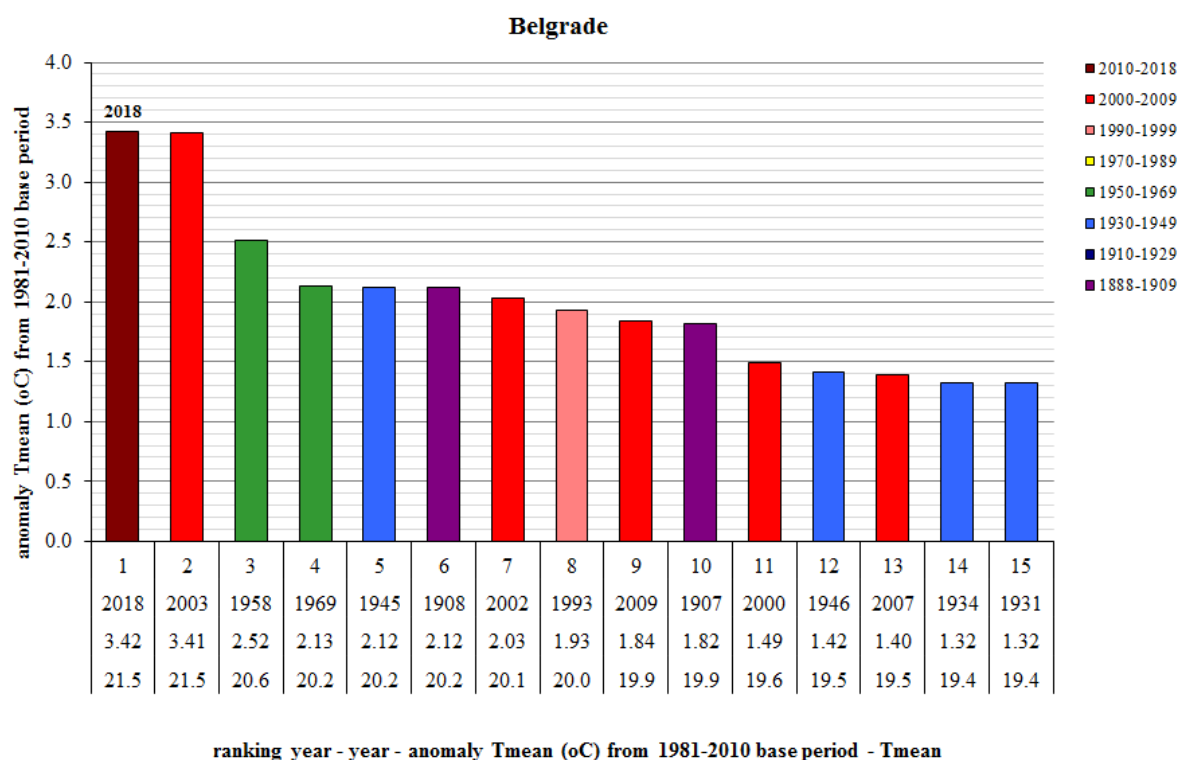
Figure 8. Warmest May in Belgrade

June – Warm in most of the country and extremely rainy in Kikinda, Smederevska Palanka, Veliko Gradiste and Zlatibor. 2nd wettest for Zlatibor, 3rd wettest for Veliko Gradiste. Novi Sad experienced record-breaking daily precipitation for June. Sjenica observed 27 rainy days thereby exceeding the previous record.

Chart 3. Stations where June 2018 ranks among the 5 wettest

STATION	work period of the station	precipitation sums for June 2018	normal for June **1981-2010**	percentage of the normal (%)	rank of 2018 (descending order RR)
ZLATIBOR	1950-2018	235.2	110.2	214	**2**
V.GRADISTE	1926-2018	205.9	81.6	252	**3**
SJENICA	1925-2018	165.6	79.3	209	4
KRALJEVO	1926-2018	169.3	92.2	184	4
NOVI SAD	1945-2018	163.2	92.1	177	5
KIKINDA	1925-2018	175.8	75.5	233	5
S.MITROVICA	1925-2018	140.2	84.1	167	5
S.PALANKA	1926-2018	180.2	78.7	229	5

The highest June daily precipitation sum of **116.2 mm was measured in Novi Sad on June 30 and surpassed the previous record of** 67.6 mm set on June 22, 2010.
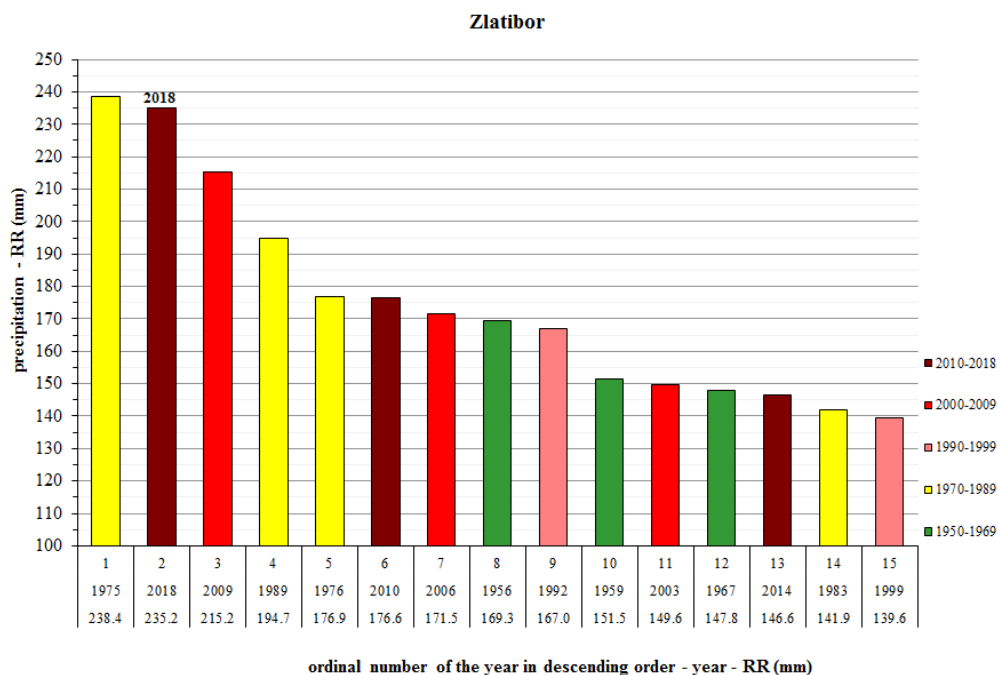
Zlatibor

Figure 9. Wettest June for Zlatibor

July - 7th wettest July for Serbia, wettest on record for Kraljevo, 2nd wettest for Pozega, Sjenica and Kopaonik. Number of days with precipitation above 0.1mm was surpassed at 6 main meteorological stations. In most of Serbia, mean minimum July air temperature was in the categories of extremely warm and very warm.
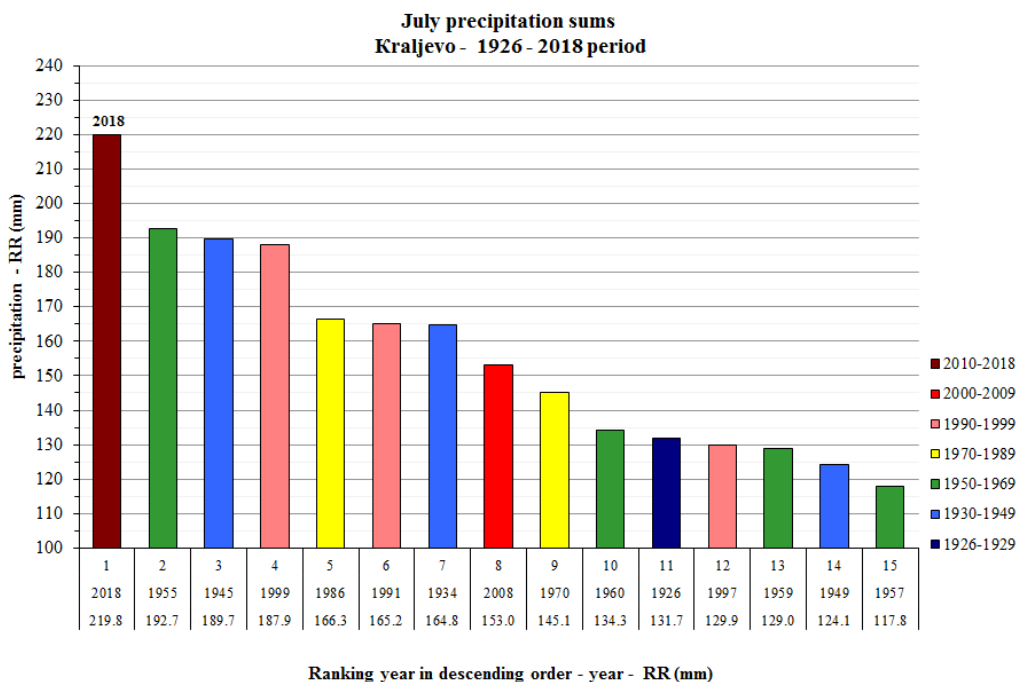
July precipitation sums
Kraljevo - 1926 - 2018 period

Figure 10. Wettest July for Kraljevo

August – 3rd warmest August for Palic, 4th warmest for Banatski Karlovac. Wettest on record for Crni Vrh. Zrenjanin and Crni Vrh observed record-breaking daily precipitation. Number of tropical nights was surpassed in Sombor, Palic and Belgrade.

The highest August daily precipitation sum of 132.5 mm was measured at Crni Vrh on August 2 thereby exceeding the previous record of 85.5 mm set on August 1, 2014. MS Zrenjanin recieved 80.7 mm of precipitation on August 4 and **surpassed the previous record of 64.7 mm set on August 1, 2010.**

September – Driest on record for Vranje since record-keeping at this station began. The lowest September air temperature was measured in Banatski Karlovac, and Leskovac experienced the highest number of frost days in September since the measurements at this station commenced. One heat wave and one cold wave were observed.
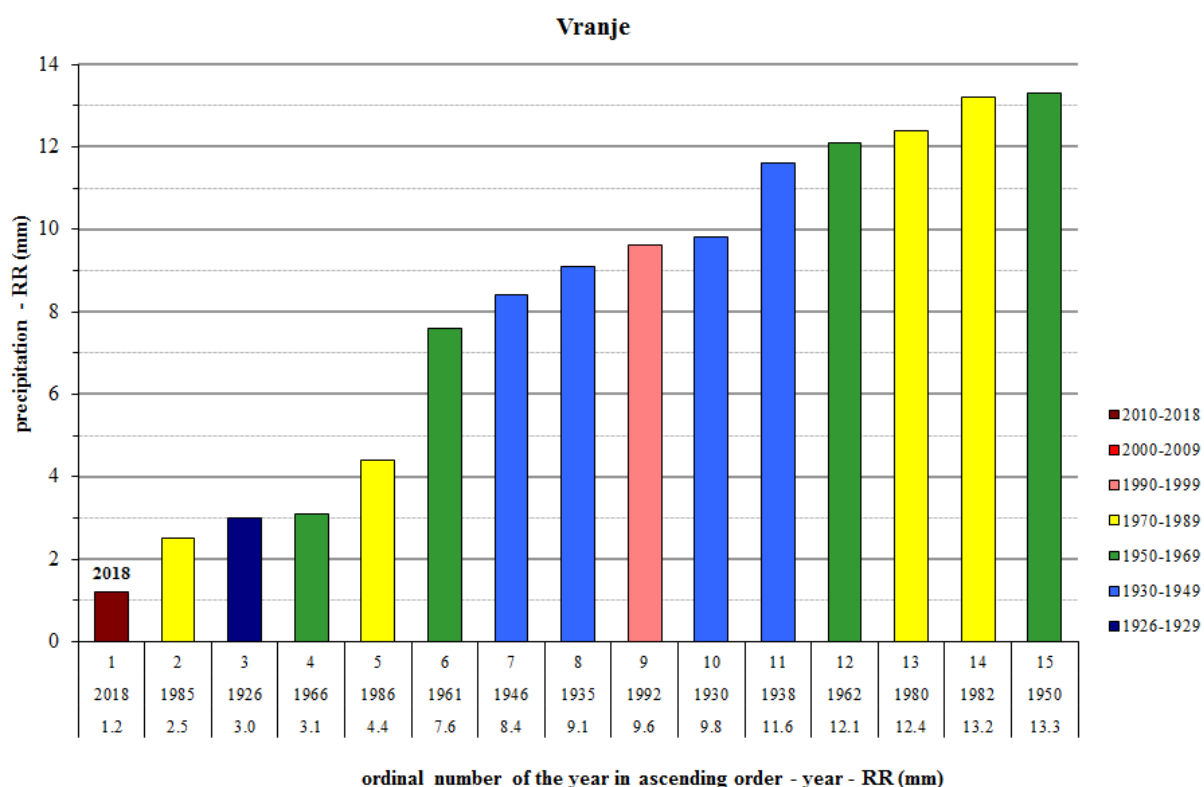

Figure 11. Driest September for Vranje

October – 3rd warmest October for Serbia in the 1951-2018 period of record, warmest ever observed for Banatski Karlovac, and 2nd warmest for Novi Sad, Kikinda, Zrenjanin, Sombor and Palic. In most of the country, dry and very dry October, and 3rd driest October for Zajecar and Negotin. Two heat waves were registered.
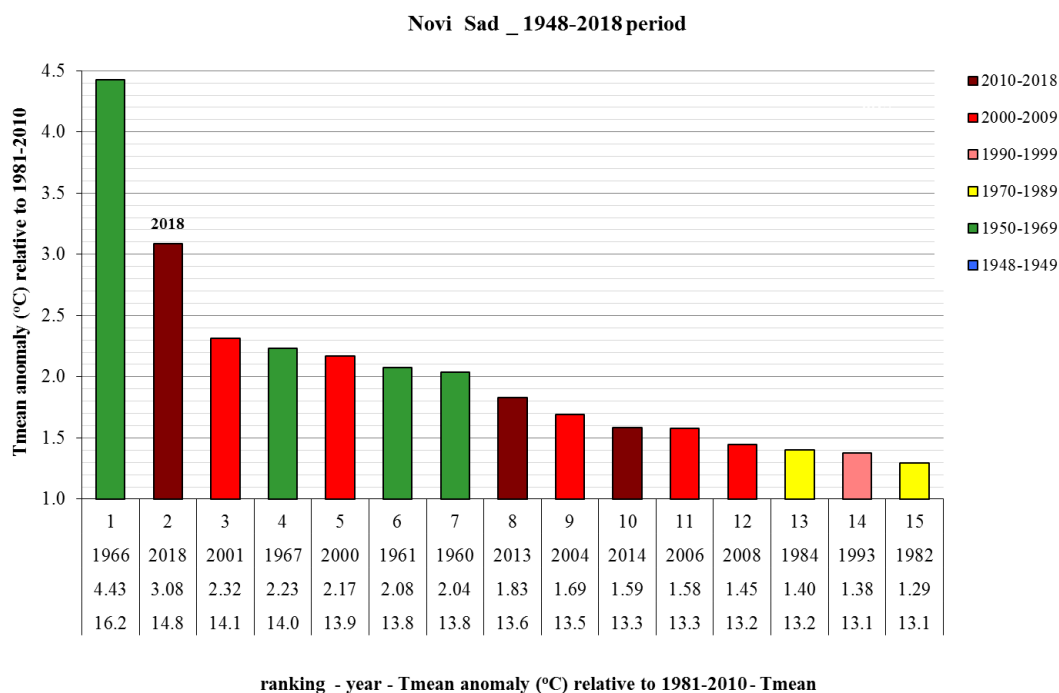
Figure 12. Warmest October for Novi Sad

November – Averagely rainy November with near- and above-average air temperature.

December – December air temperature and precipitation within the average. Cold wave in Negotin. Zrenjanin observed record-breaking snow depth on December 16.

The greatest snow depth of 49cm was measured at Crni Vrh on December 17 and 19. Zrenjanin recorded 47cm of snow on December 16 and thereby breaking the previous record snow of 46 cm set on December 10, 2012.

Winter 2017/18 – 12th warmest for Serbia, 7th warmest for Loznica and Banatski Karlovac. At the end of February, cold wave was registered. Winter of 2017/18 ranks as the 4th wettest for Serbia.

Number of days with snow cover in the lowland of Serbia ranged from 7 in Banatski Karlovac to 34 days in Dimitrovgrad, and in the hilly-mountainous regions, their number varied from 62 days in Sjenica to 90 days at Kopaonik. The registered number of days with snow cover was 8 to 23 days below the winter average in most of the country, apart from Kopaonik where there were 4 days above the winter average. The maximum snow depth of 99cm was measured on January 22 at Kopaonik.

Spring 2018 – **warmest** spring on record for Serbia, with mean air temperature on average 1°C above the previous record warm spring of 2007. Precipitation sums were within the boundary of upper tercile. Leskovac observed its 2nd wettest spring, Sjenica saw its 3rd wettest spring on record. At the beginning of the third decade of March, cold wave was registered in Belgrade, Zlatibor and Crni Vrh. Most of the country experienced four heat waves.
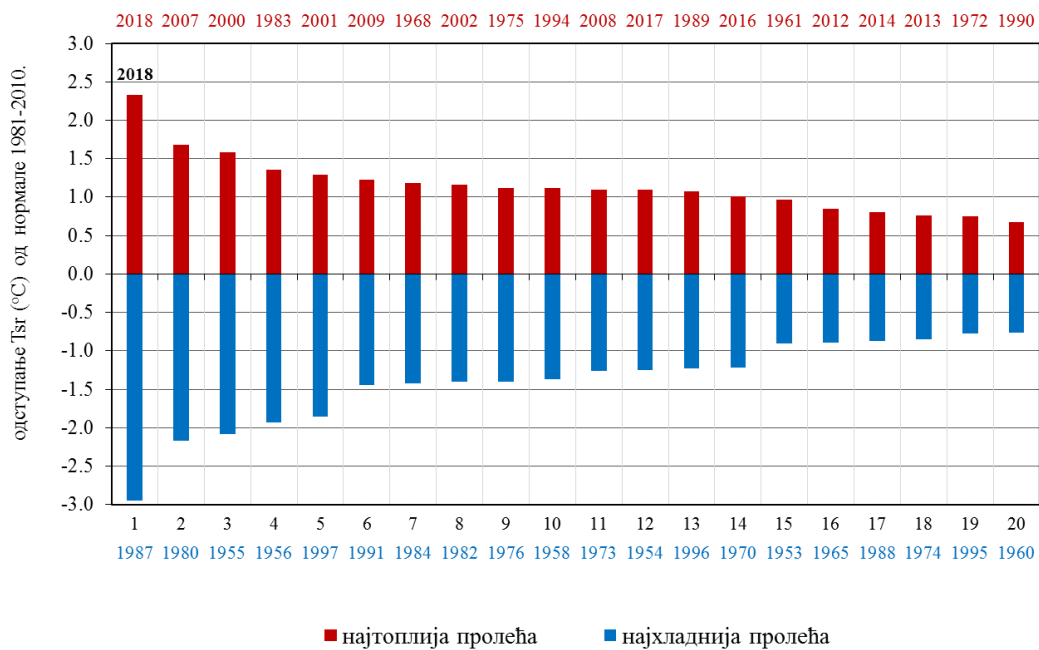
Figure 13. Rank of the warmest and coldest Spring for Serbia for the 1951-2018 period
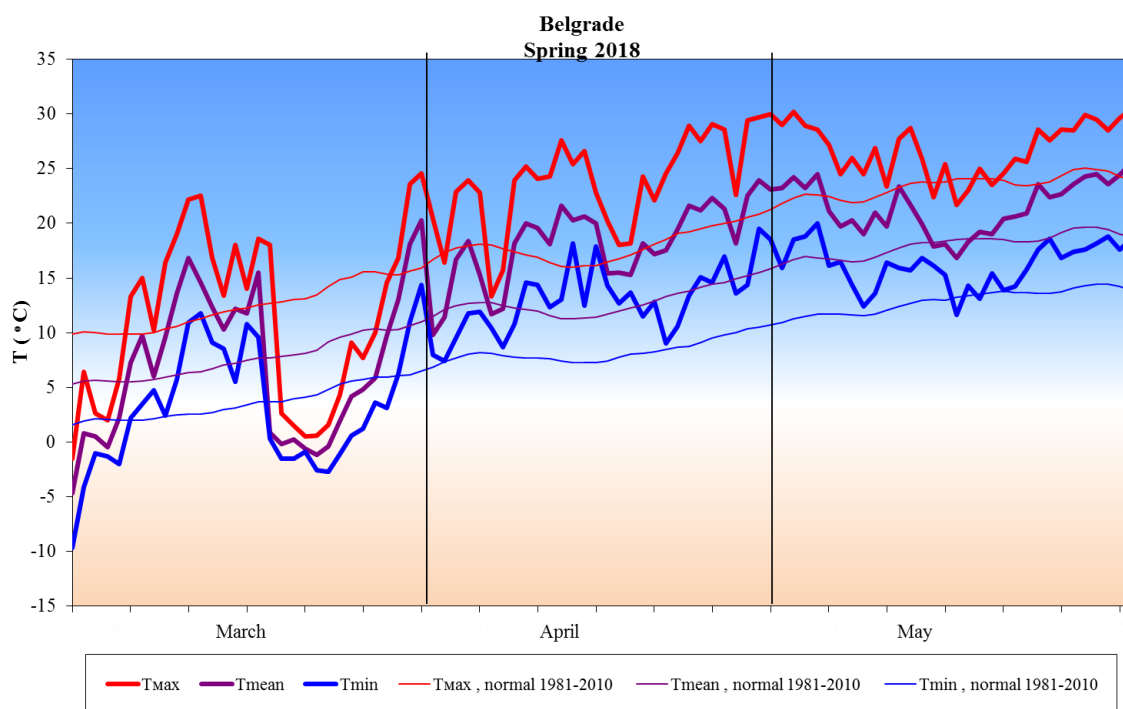

Figure 14. Three month course of the mean, maximum and minimum air temperature for Belgrade

Summer 2018 – Warm and rainy, humid summer. 10th warmest summer for Belgrade. 6th wettest summer for Serbia. **Warmest summer for Serbia based on minimum air temperature.** There were 74 days recorded with feel like temperature above 30 degrees, which is 7 days above the previous summer average which ranks as the 2nd warmest since 1951 up-to-date. The maximum number of days with precipitation was exceeded at Zlatibor, Sjenica, Leskovac, Kursumlija, Zrenjanin, Krusevac and Kragujevac.

Summer 2018 ranks as the 13th warmest for Serbia with the mean air temperature of 21.1°C. Summer of 2012 ranks as the warmest summer in Serbia with the air temperature of 23.3°C.

Summer of 2018 ranks as the 7th warmest for Loznica and Palic, 8th warmest for Cuprija, and 9th warmest for Banatski Karlovac and Crni Vrh.

Summer of 2018 was the 10th warmest for Belgrade since 1888, whereas the summer of 2012 ranks as the warmest on record with the mean seasonal air temperature of 26.0°C. Belgrade observed summer air temperature of 23.7°C.
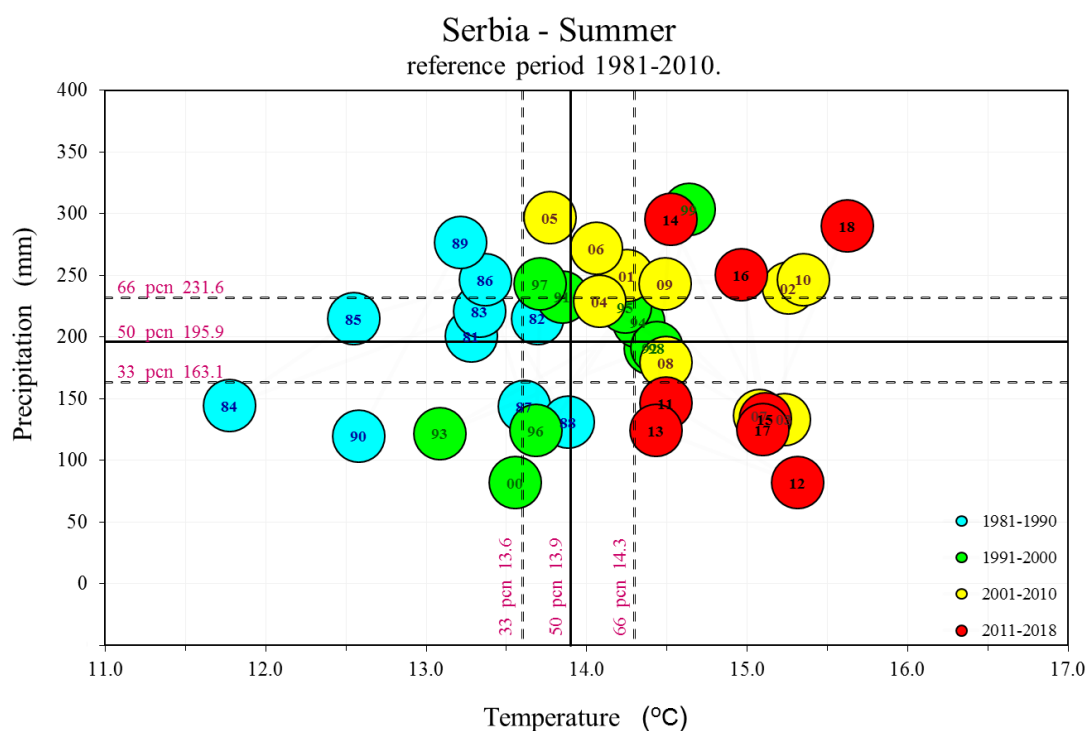
Figure 15. Mean **minimum** air temperature and precipitation sums for summer in Serbia with the accompanying terciles relative to the 1981-2010 base period
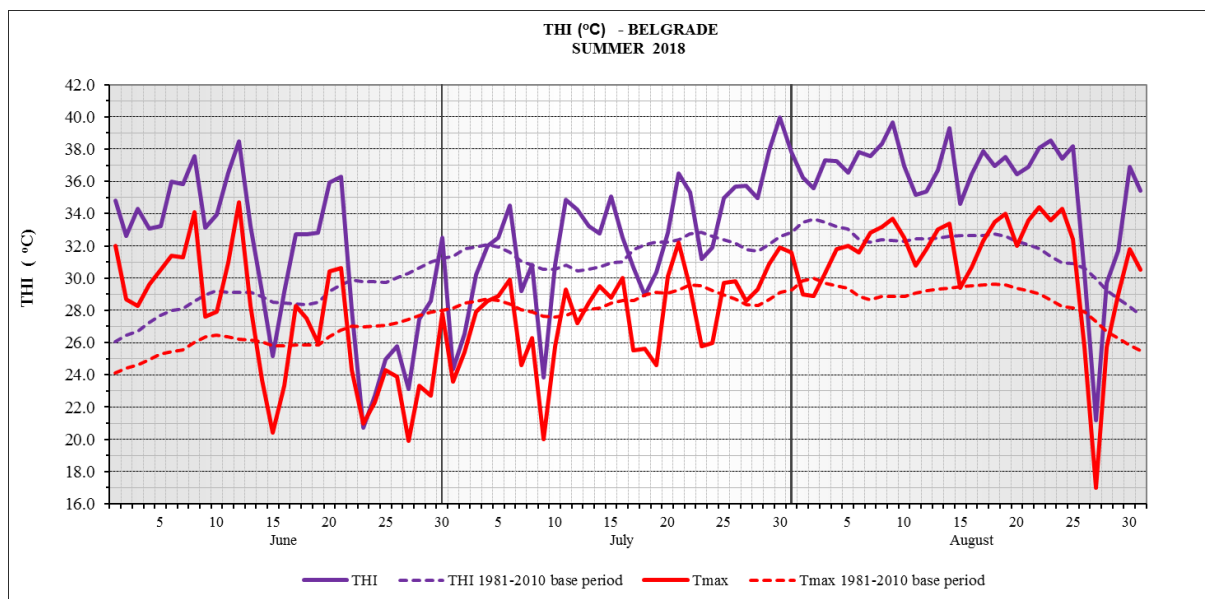
Figure 16. THI and maximum air temperature for Belgrade for summer 2018

Autumn 2018 – 7th warmest and 7th driest autumn for Serbia in a period since 1951 up-to-date. 2nd warmest autumn for Kikinda and Palic, and 3rd warmest for Belgrade. 2nd driest autumn for Sremska Mitrovica and Crni Vrh. Four heat waves were registered.

Figure 17. Driest Autumn for Sremska Mitrovica

Appendix

Chart 4.

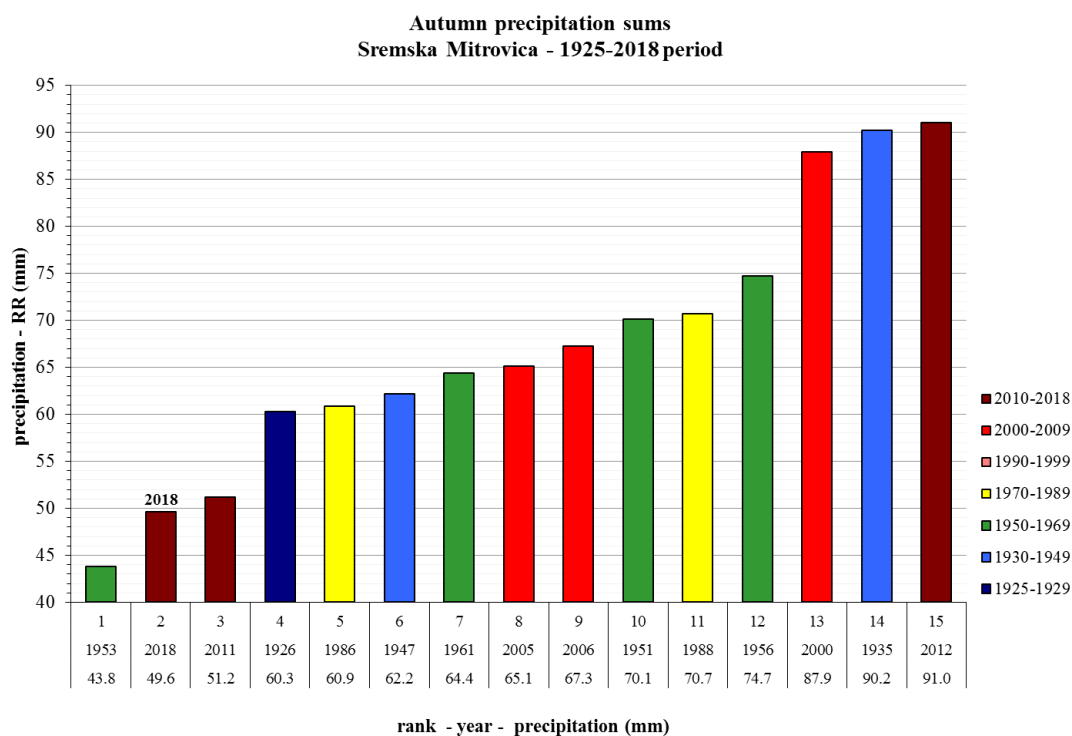| MEAN MONTHLY AND ANNUAL AIR TEMPERATURE (°C)												
station/month	January	February	March	April	May	June	July	August	September	October	November	December	Year
PALIC	3.5	0.8	4.1	16.5	20.4	21.6	23.0	24.3	18.0	14.0	7.6	1.4	12.9
SOMBOR	3.8	0.6	4.0	16.6	20.4	21.5	22.7	23.6	17.8	14.0	7.2	1.6	12.8
NOVI SAD	4.3	1.2	4.9	17.2	20.4	21.4	21.9	24.0	18.5	14.8	8.0	1.7	13.2
ZRENJANIN	4.0	1.3	5.3	17.1	20.6	21.4	22.7	24.5	18.8	15.0	8.2	1.7	13.4
KIKINDA	3.6	1.3	4.7	16.7	20.6	21.4	22.4	24.2	18.6	14.5	7.9	1.5	13.1
B.KARLOVAC	3.9	2.0	5.4	17.3	20.3	20.9	22.1	24.1	18.4	14.6	7.8	1.9	13.2
LOZNICA	4.8	1.7	6.0	16.8	19.7	21.1	22.3	23.5	18.1	14.3	7.9	3.1	13.3
S.MITROVICA	3.6	1.0	5.2	16.6	20.2	20.9	21.8	23.2	17.8	14.6	7.9	1.4	12.9
VALJEVO	3.7	1.7	6.1	16.7	19.9	20.9	21.9	23.4	18.2	13.9	7.5	2.5	13.0
BELGRADE	5.3	2.3	6.9	18.2	21.5	22.3	23.2	25.5	20.3	16.4	8.8	3.3	14.5
KRAGUJEVAC	3.7	2.0	6.6	16.4	19.5	21.1	21.8	22.9	17.6	13.9	7.6	2.6	13.0
S.PALANKA	3.9	2.1	6.5	16.6	19.8	20.9	21.9	23.5	17.4	13.8	7.5	2.3	13.0
V.GRADISTE	3.1	2.2	5.7	16.8	19.5	21.0	21.9	23.5	17.8	14.3	8.1	1.6	13.0
CRNI VRH	-0.6	-3.9	0.2	11.8	14.2	15.7	16.5	19.1	13.6	9.6	1.3	-1.8	8.0
NEGOTIN	2.2	1.7	4.7	17.3	20.0	22.3	23.9	24.7	19.4	13.1	5.7	1.8	13.1
ZLATIBOR	1.3	-2.2	2.6	12.8	14.8	15.4	17.2	18.9	14.2	10.4	5.2	-1.2	9.1
SJENICA	-0.9	-1.4	3.1	11.2	13.5	15.0	16.8	17.3	12.4	8.9	3.9	-2.3	8.1
POZEGA	0.6	0.9	5.4	14.2	17.5	19.0	20.1	20.9	15.5	11.2	5.0	0.2	10.9
KRALJEVO	2.7	1.9	6.5	16.6	19.0	20.8	21.2	22.8	17.3	13.9	7.4	1.8	12.7
KOPAONIK	-2.6	-5.0	-0.9	7.8	9.8	11.4	12.8	14.6	9.7	6.7	2.3	-4.1	5.2
KURSUMLIJA	2.8	1.8	6.0	14.8	17.3	19.3	20.2	20.9	15.8	12.1	6.0	1.5	11.5
KRUSEVAC	2.6	2.2	6.5	16.5	18.9	20.9	21.6	22.2	17.2	13.6	7.1	1.6	12.6
CUPRIJA	3.2	2.1	6.2	16.5	19.5	21.1	21.8	23.4	17.5	14.2	7.5	2.0	12.9
NIS	3.5	3.2	7.1	17.1	19.8	21.2	22.3	24.2	18.5	14.9	8.1	2.1	13.5
LESKOVAC	2.6	3.0	6.8	15.7	18.5	20.2	21.7	22.2	16.9	13.1	6.2	1.3	12.3
ZAJECAR	1.7	0.8	4.0	15.8	18.4	20.7	21.9	22.2	16.6	12.0	5.0	0.8	11.7
DIMITROVGRAD	1.4	1.9	5.5	14.8	17.2	18.9	20.2	20.8	15.9	12.8	6.2	0.6	11.3
VRANJE	1.9	3.2	6.7	15.7	18.0	19.9	21.2	22.4	17.9	14.0	7.3	0.9	12.4

extremely cold	very cold	cold	normal	warm	very warm	extremely warm
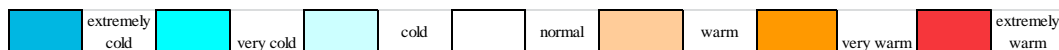
Chart 5.

MONTHLY AND ANNUAL PRECIPITATION SUM (mm)												
station/month	January	February	March	April	May	June	July	August	September	October	November	December	Year
PALIC	47.9	91.3	70.9	38.1	24.0	141.1	67.1	22.7	20.3	19.4	31.5	24.2	598.5
SOMBOR	45.9	75.8	77.9	31.4	30.1	132.1	92.5	81.2	42.5	12.7	28.1	28.8	679
NOVI SAD	47.7	81.9	60.6	49.0	63.8	163.2	81.2	51.2	27.1	7.4	24.6	59.2	716.9
ZRENJANIN	42.8	74.0	65.7	38.5	55.2	72.3	44.9	98.2	24.3	10.6	23.5	61.1	611.1
KIKINDA	52.4	73.7	99.8	32.5	35.5	175.8	108.3	38.1	22.8	7.3	18.5	44.7	709.4
B.KARLOVAC	45.4	35.7	65.4	32.9	59.0	94.3	73.5	48.2	25.4	9.0	32.6	51.7	573.1
LOZNICA	71.3	96.6	82.5	29.4	69.5	159.4	102.3	39.2	28.2	27.2	48.8	81.8	836.2
S.MITROVICA	43.5	79.6	63.0	38.4	62.5	140.2	99.4	21.0	13.4	12.0	24.2	49.3	646.5
VALJEVO	54.1	78.7	59.7	31.2	81.6	127.4	134.4	64.4	26.5	22.9	49.2	61.8	791.9
BELGRADE	39.3	58.1	64.8	39.7	56.2	121.6	53.0	44.8	11.2	18.6	35.3	65.5	608.1
KRAGUJEVAC	49.9	62.2	93.7	25.8	52.6	95.4	129.3	22.1	7.4	9.4	41.8	51.8	641.4
S.PALANKA	45.2	46.5	97.0	36.2	90.7	180.2	144.0	17.9	83.3	11.8	69.7	67.2	889.7
V.GRADISTE	51.3	21.8	83.4	40.9	105.9	205.9	90.9	27.2	20.1	12.7	46.8	58.6	765.5
CRNI VRH	35.1	82.9	91.7	40.8	85.8	100.1	50.2	246.4	11.1	15.6	38.1	59	856.8
NEGOTIN	45.1	125.7	137.7	20.0	102.0	77.4	44.7	52.9	6.2	2.4	82.5	42.6	739.2
ZLATIBOR	59.0	122.8	120.8	49.8	64.6	235.2	196.9	98.2	40.8	48.8	96.4	72.2	1205.5
SJENICA	42.5	102.9	126.2	28.5	110.0	165.6	195.6	54.1	18.8	25.5	76.0	48.9	994.6
POZEGA	48.5	76.7	109.3	19.1	48.5	94.4	243.5	43.1	44.1	30.7	67.3	69.3	894.5
KRALJEVO	51.0	80.9	111.2	40.6	84.4	169.3	219.8	50.2	51.3	13.2	60.2	54.8	986.9
KOPAONIK	98.5	55.1	121.5	57.5	96.0	155.3	240.9	60.5	17.1	29.2	55.8	77	1064.4
KURSUMLIJA	41.9	98.7	137.4	45.0	70.0	59.5	150.4	52.5	30.9	9.6	51.3	46.6	793.8
KRUSEVAC	48.0	72.5	110.3	40.9	74.4	111.1	149.3	61.3	9.4	8.5	74.6	50.3	810.6
CUPRIJA	57.4	53.6	117.6	39.7	59.7	108.3	60.0	31.5	16.1	7.7	49.3	64	664.9
NIS	60.5	47.1	153.0	42.8	62.5	72.2	53.4	33.5	10.8	9.3	35.5	64.3	644.9
LESKOVAC	47.6	55.6	131.6	76.9	89.5	87.6	84.6	45.3	17.8	4.7	57.2	79	777.4
ZAJECAR	34.3	99.1	140.4	20.4	110.0	56.3	67.0	52.6	13.2	3.2	65.5	53.5	715.5
DIMITROVGRAD	46.3	71.3	119.3	40.6	83.0	129.8	84.2	23.9	24.7	7.1	81.3	50.8	762.3
VRANJE	39.5	71.8	115.8	38.3	80.5	46.2	49.7	55.0	1.2	5.6	74.7	68.8	647.1

extremely dry	very dry	dry	normal	wet	very wet	extremely wet
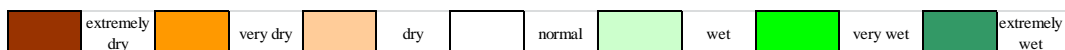
Anomaly of mean year temperature relative to 1981-2010 base period
Belgrade - 1888-2018 period

Legend:
- 2010-2018
- 2000-2009
- 1990-1999
- 1970-1989
- 1950-1969
- 1930-1949
- 1910-1929
- 1888-1909

ranking	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
year	2018	2000	2015	2012	2014	2008	2007	2017	2013	2002	2009	1994	2016	1950	2011
Tmean anomaly (°C) relative to 1981-2010	1.96	1.63	1.57	1.50	1.48	1.44	1.41	1.35	1.24	1.13	1.11	1.03	0.98	0.70	0.61
Tmean	14.5	14.2	14.1	14.0	14.0	14.0	14.0	13.9	13.8	13.7	13.7	13.6	13.5	13.3	13.2
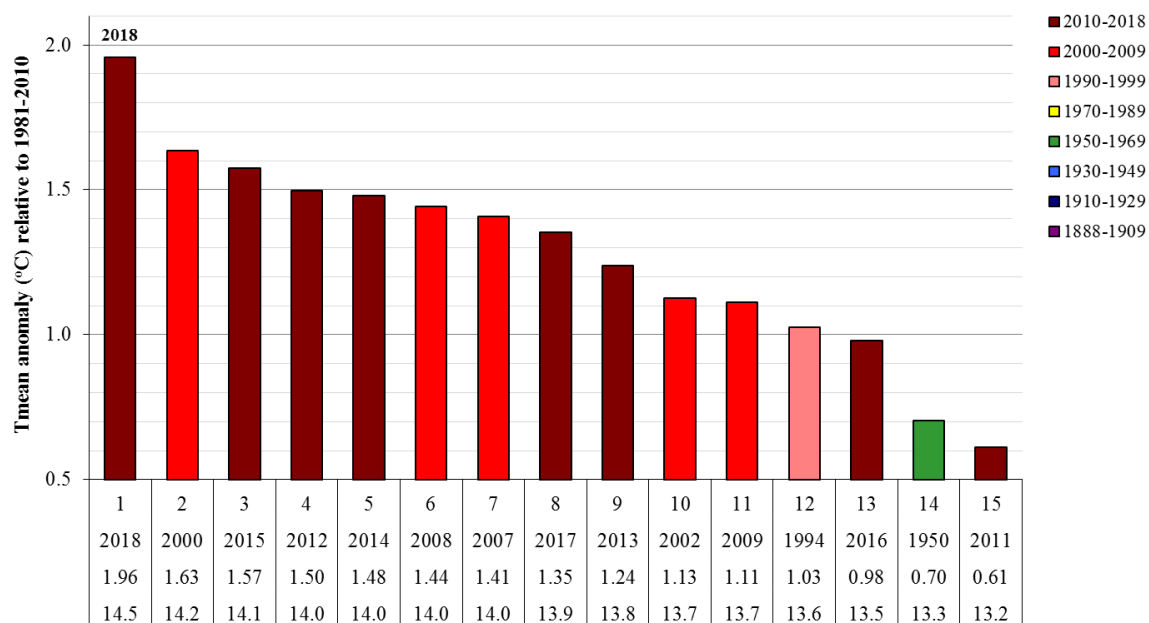
ranking - year - Tmean anomaly (ºC) relative to 1981-2010 - Tmean

Figure 18. Rank of the warmest years for Belgrade
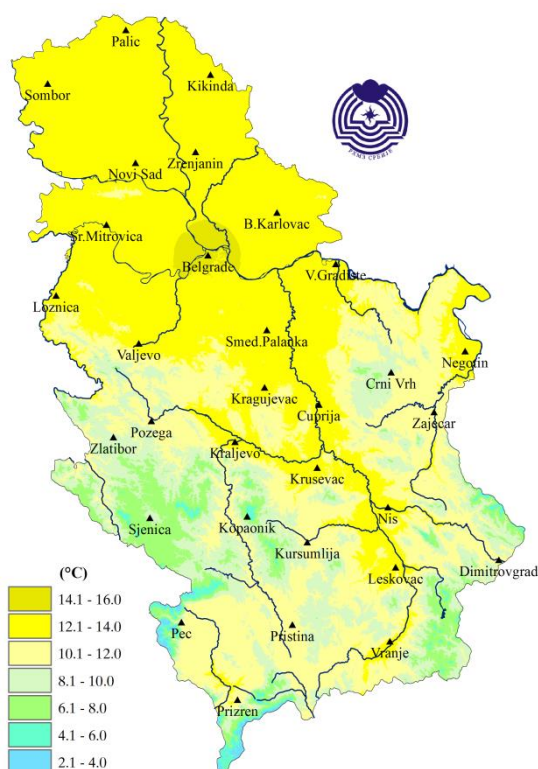
Figure 19. Spatial distribution of mean annual air temperature expressed in (°C)
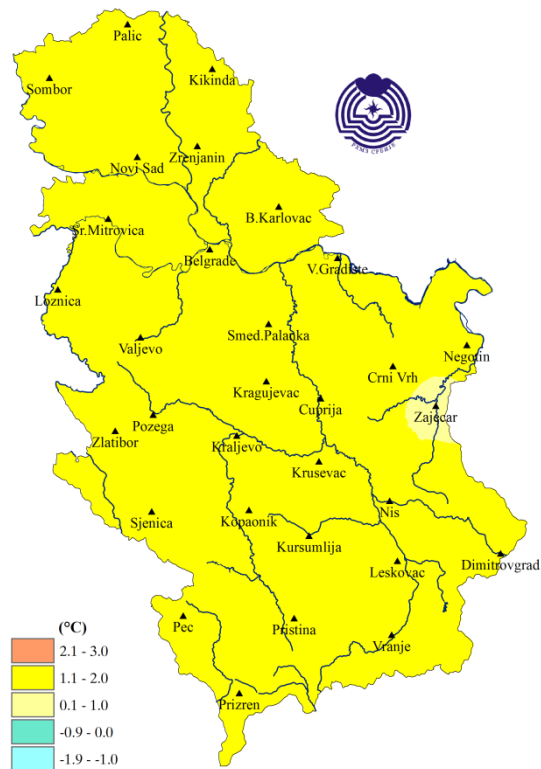
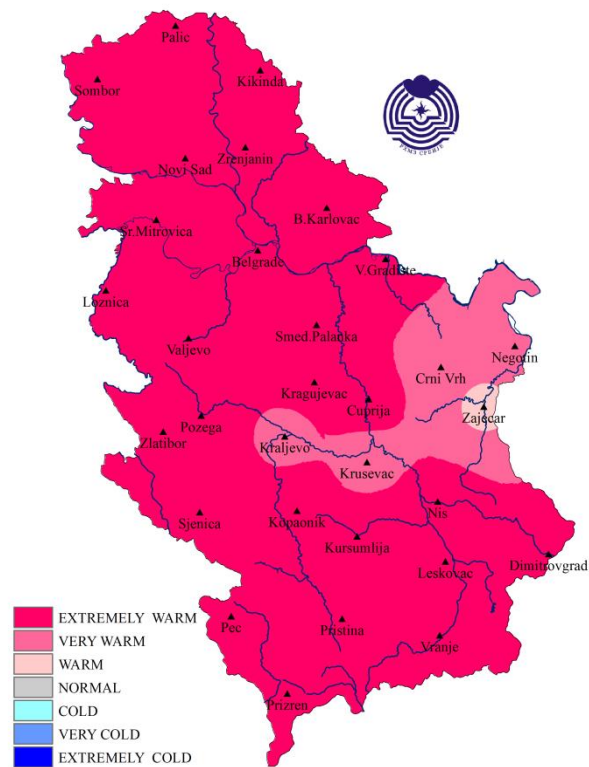Figure 20. Spatial distribution of mean annual air temperature anomaly expressed in (°C)

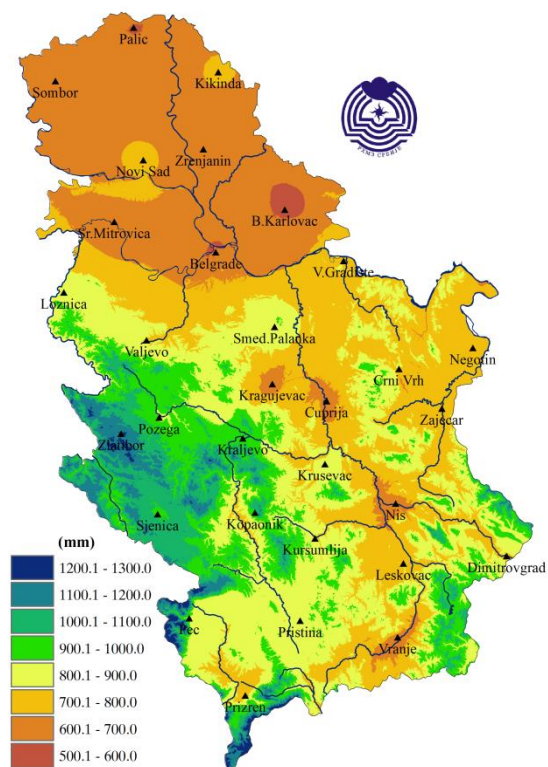Figure 21. Spatial distribution of mean annual air temperature based on percentile method

Figure 22. Spatial distribution of annual precipitation totals expressed in mm
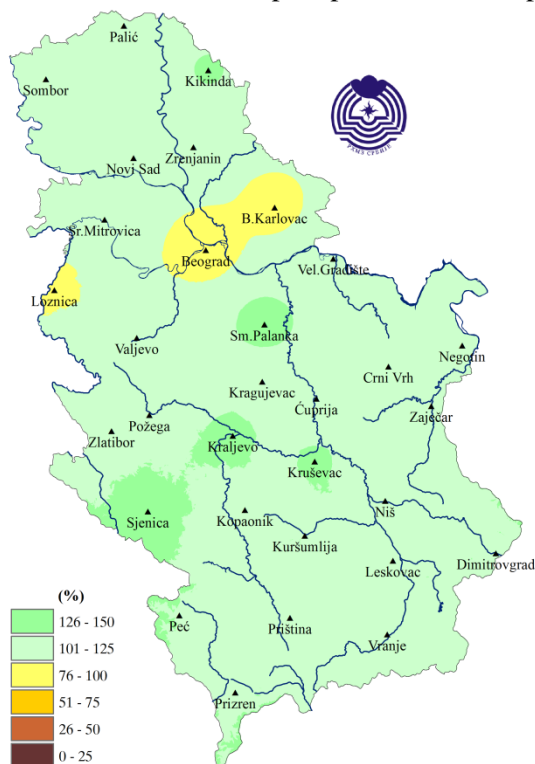

Figure 23. Spatial distribution of annual precipitation totals expressed in percentages of normal for the 1981-2010 base period
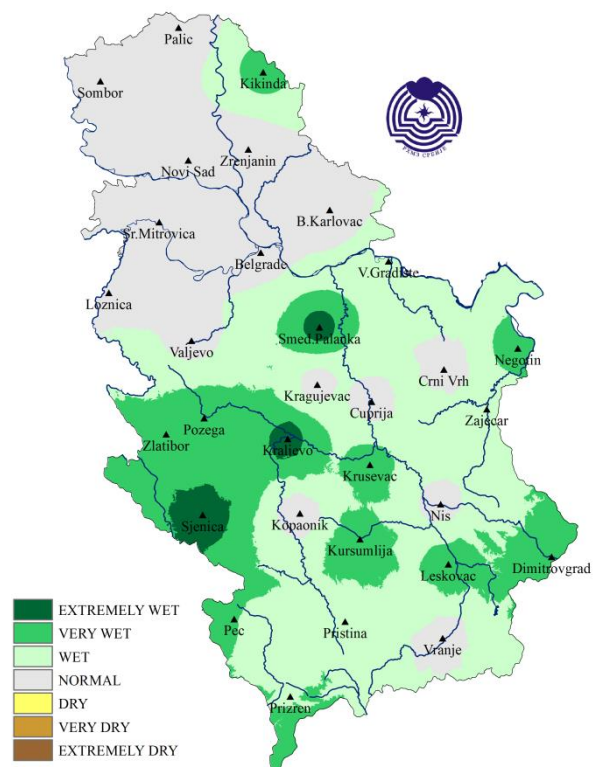
Figure 24. Spatial distribution on annual precipitation totals based on percentile method
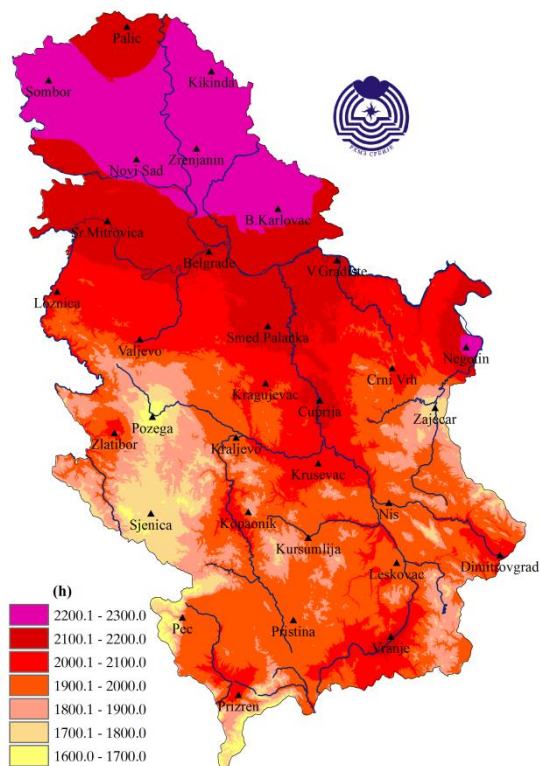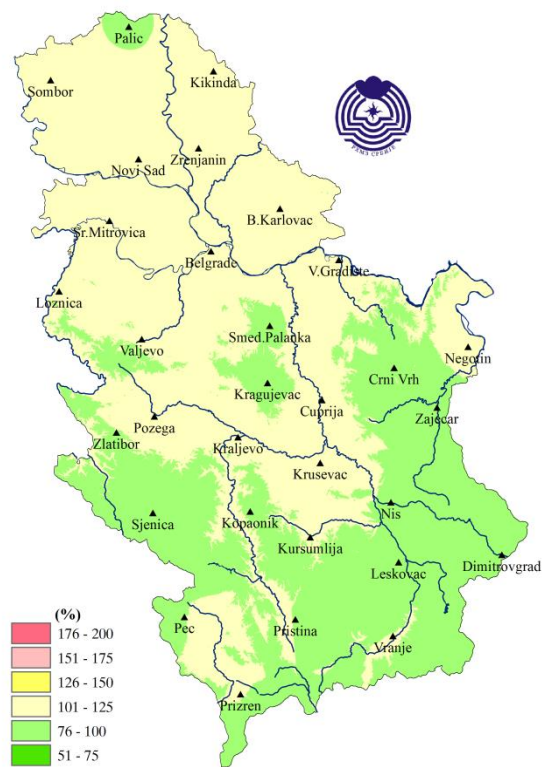

Figure 25. Insolation expressed in hours

Figure 26. Insolation expressed in percentages of normal for the 1981-2010 base period