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Republic of Serbia

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- ***The 7th driest and averagely warm February for Serbia***
- ***2 cold waves in Dimitrovgrad and 1 in Zajecar***
- ***The 3rd driest February for Kraljevo and Crni Vrh, the 4th driest for Negotin***

AIR TEMPERATURE

Mean monthly air temperature

Mean air temperature in Serbia was within the average, ranging from 0,1 ºC in Zajecar to 3,3 ºC in Belgrade, and on the mountains from -4,1 ºC at Crni Vrh and Kopaonik to -0,6 ºC at Zlatibor (*Figure 1).*

Departure of the mean air temperature from the normal[1] for the 1991–2020 base period ranged from -1,8 ºC at Crni Vrh to +0,6 ºC in Sjenica (*Figure 2*).

Mean February air temperature, based on the percentile method[2], was in the categories of normal in most of the country, and cold at Crni Vrh (*Figure 3*).

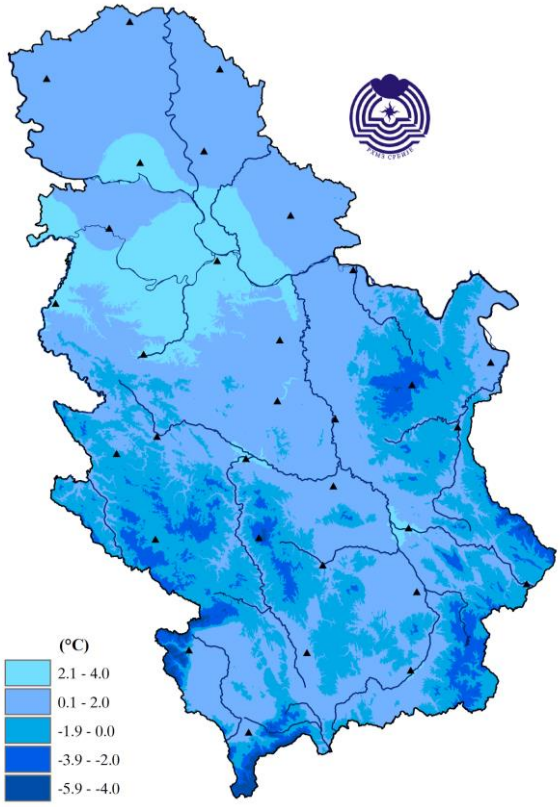


Figure 1. Spatial distribution of mean monthly air temperature (ºC)

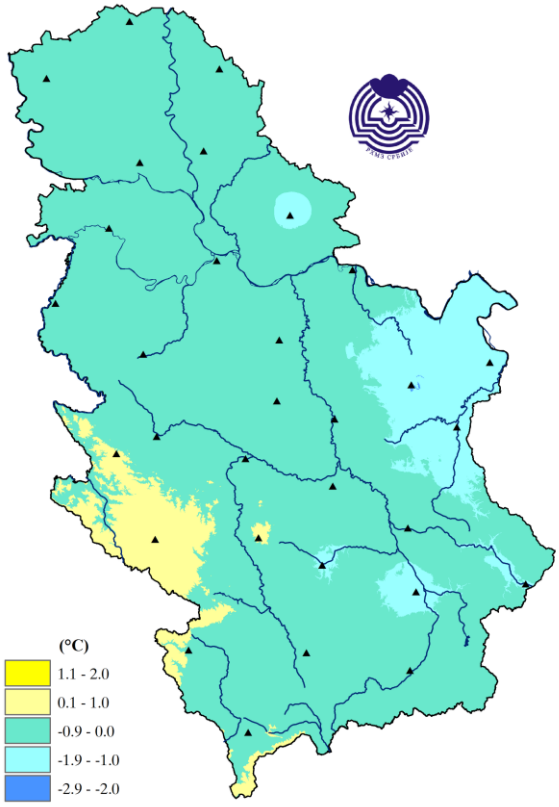


Figure 2. Spatial distribution of mean monthly air temperature anomaly (ºC)

[1] Term ***normal*** refers to ***climatological standard normal***, that is, the average value of a particular climate element, calculated for the period from January 1, 1991 to December 31, 2020

[2] **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

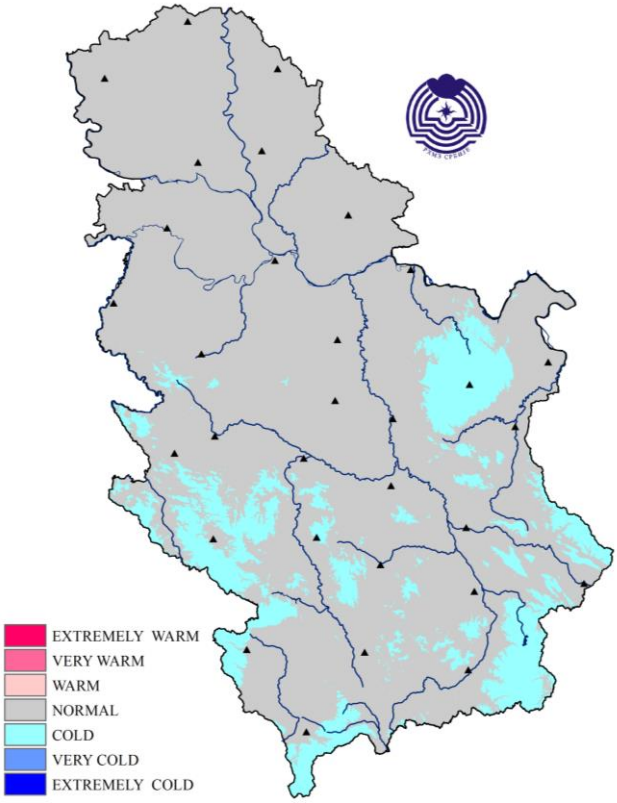


Figure 3. Spatial distribution of the mean monthly air temperature using percentile method

Mean daily air temperature in Belgrade, based on the percentile method, was in the normal category most of the month, cold category at the end of the second and beginning of the third decade and warm category at the end of the month (*Figure 4).* Daily course of the mean daily air temperature and the accompanying percentiles for the stations Sombor, Novi Sad, Loznica, Negotin, Kragujevac, Zlatibor, Nis and Vranje are given in the Appendix.

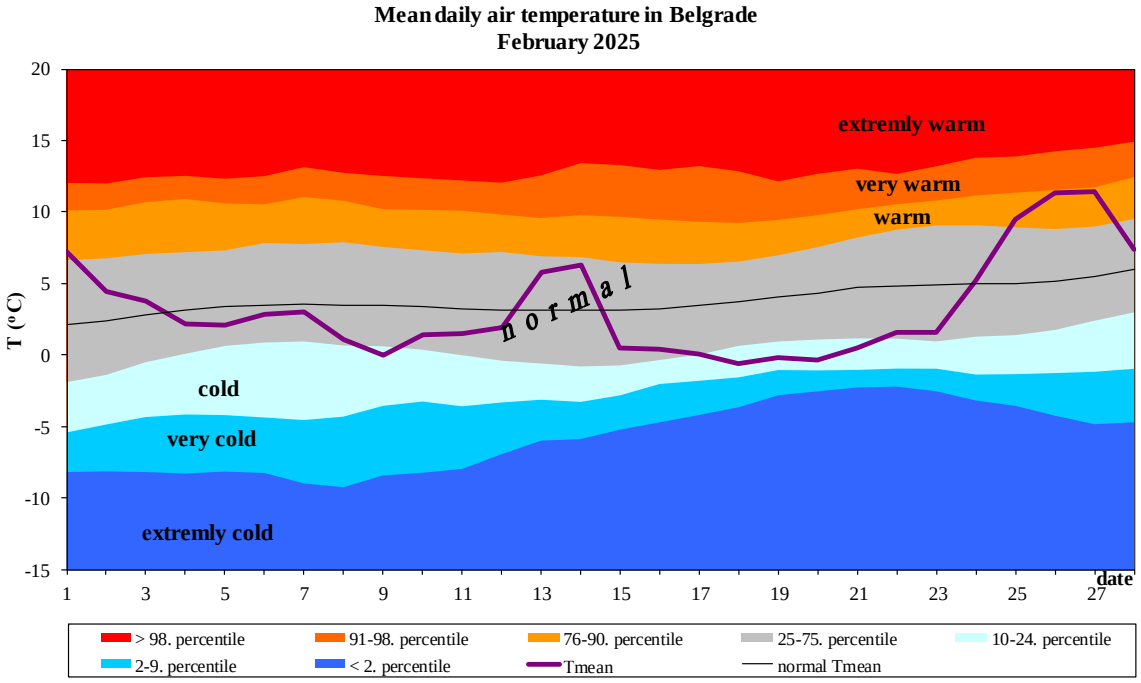


Figure 4. Daily course of the mean daily air temperature and accompanying percentiles for Belgrade

Maximum air temperature

Mean maximum air temperature in February ranged from 5,5 ºC in Negotin to 7,9 ºC in Belgrade. On the mountains, mean maximum air temperature ranged from -0,3 ºC at CrniVrh to 5,3 ºC in Sjenica.

Based on the percentile method, mean maximum air temperature was in the normal category.

The highest maximum daily air temperature of 18,3 ºC was measured in Valjevo on February 27. On February 26, Belgrade observed its highest maximum daily air temperature of 17,9 ºC.

The highest number of ice days[3] total of 15 days, was registered at Crni Vrh. Elsewhere, the number is as follows: Kopaonik -13 days, Zlatibor -5 days, Sjenica, Zajecar and Dimitrovgrad – 2 days, Negotin, Pozega and Kursumlija – 1 day. The observed number of ice days was 2 to 3 days below February average in most of the country.

At few stations, heat wave[4] began in January and continued throughout February 1; in Dimitrovgrad it lasted from 26 January to 1 February, in Pozega, Zajecar and Crni Vrh, heat wave lasted from January 27 to February 1, and in Negotin from January to 28 to February 1.

Figure 5 shows daily course of the maximum daily air temperature and the accompanying percentiles for Belgrade in February 2025 and for the stations Sombor, Novi Sad, Loznica, Negotin, Kragujevac, Zlatibor, Nis and Vranje are given in the Appendix.

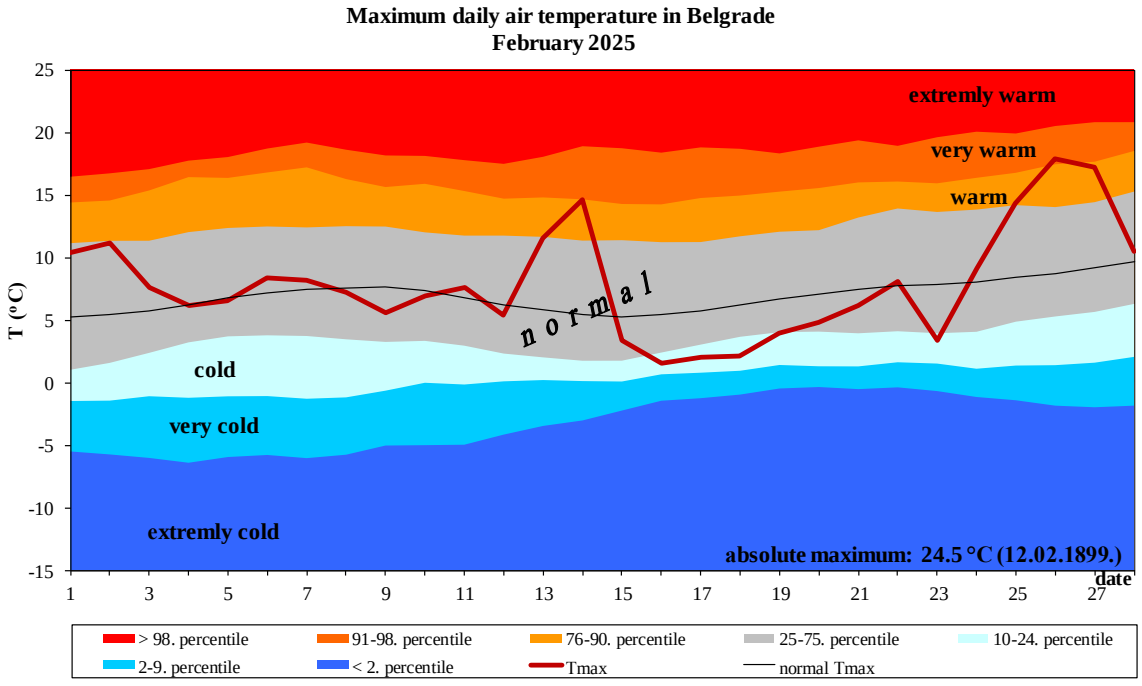


Figure 5. Daily course of the maximum daily air temperature and accompanying percentiles for Belgrade

[3] Ice day is defined as the day with maximum air temperature lower than 0 °C

[4] Heat wave is, according to the percentile method, is a period during which maximum daily air temperature is in the very warm and extremely warm categories for 5 consecutive days or longer

Minimum air temperature

Mean minimum air temperature in February ranged from -4,9 ºC in Zajecar to 0,0 ºC in Belgrade. On the mountains, mean minimum air temperature ranged from -7,0 ºC at Kopaonik to -3,5 ºC at Zlatibor.

Based on the percentile method, mean minimum monthly air temperature was in the categories of normal and cold.

The lowest minimum daily air temperature of -21,7 ºC was measured in Sjenica on February 20. In the lowland, the lowest daily air temperature of -15,5 ºC was measured in Dimitrovgrad on February 20. On the same day, Belgrade observed the lowest air temperature of -5,4 ºC.

Number of frost days[5] ranged from 16 in Nis to 25 days in Zajecar. On the mountains, number of frost days ranged from 18 days at Zlatibor to 27 days at Crni Vrh. The recorded number of frost days was up to 5 days above February average in most of the country.

Number of days with severe frost[6], was as follows: Crni Vrh – 9, Sjenica – 8, Kopaonik – 7, Zaječar and Dimitrovgrad – 6, Kursumlija – 5, Zlatiboru, Negotin, Pozega, Leskovac and Vranje – 3, Zrenjanin, Smederevska Palanka, Veliko Gradište and Cuprija – 2, Sremska Mitrovica, Kragujevac, Krusevac and Nis – 1. The recorded number of days with severe frost was around February average at most places.

Dimitrovgrad observed 2 cold waves[7] lasting from 8 to 12 February, and the second one from 19 to 23 February, corresponding with the heat wave in Zajecar.

Figure 6 shows assessment of the minimum and maximum air temperature in Serbia for February based on the tercile distribution relative to the 1991-2020 base period. It can be noted that the mean maximum air temperature was within the average, and mean minimum air temperature slightly below the lower tercile threshold.

[5] Frost day is defined as the day with minimum air temperature lower than 0°C

[6] Day with severe frost is defined as the day with the minimum air temperature -10 °C and below

[7] Cold wave is, according to the percentile method, is a period during which minimum daily air temperature is in the very cold and extremely cold categories for 5 consecutive days or longer

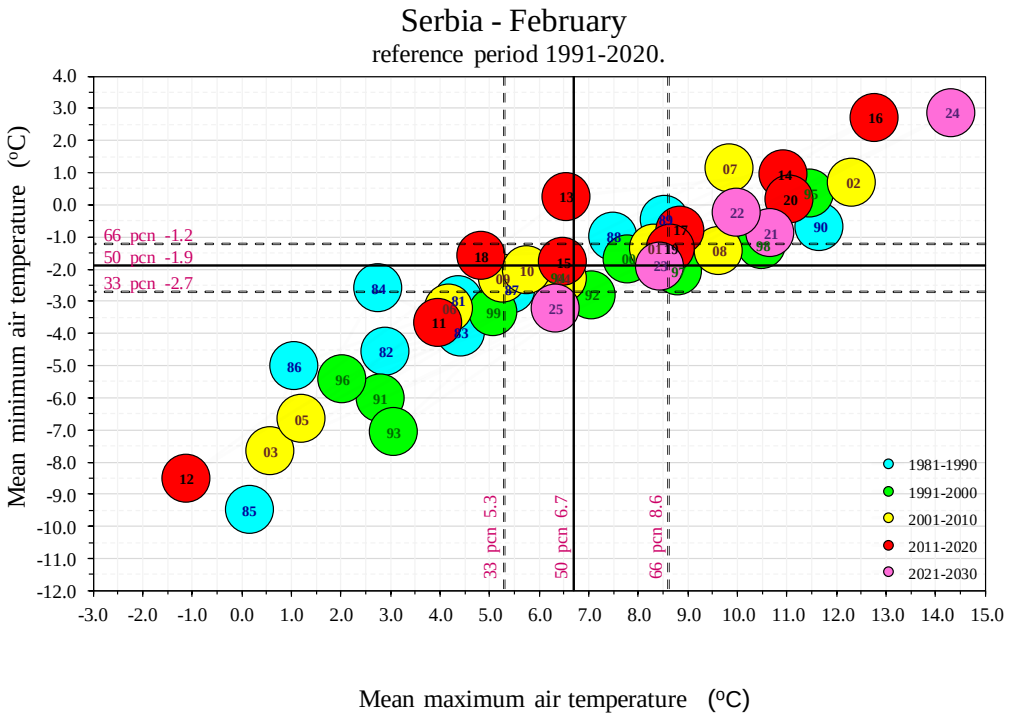


Figure 6. Assessment of minimum and maximum air temperature for Serbia with the accompanying terciles in relation to the 1991-2020 base period

Figure 7 shows daily course of the minimum daily air temperature and the accompanying percentiles for Belgrade in February 2025, and for the stations Sombor, Novi Sad, Loznica, Negotin, Kragujevac, Zlatibor, Nis and Vranje are given in the Appendix.

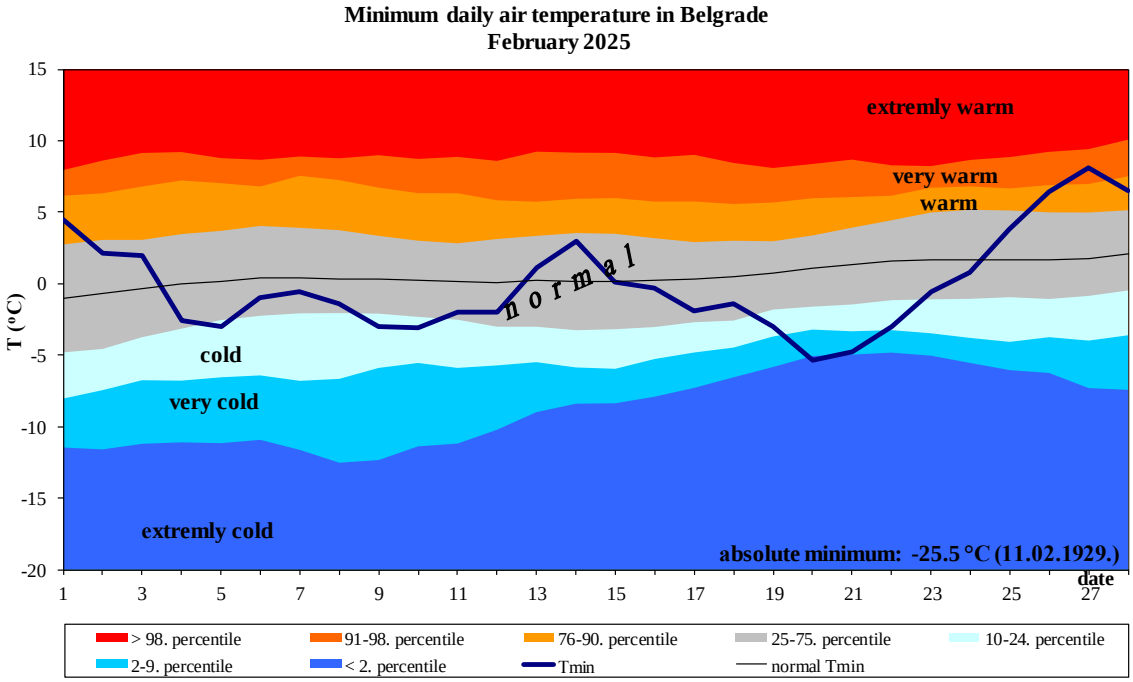


Figure 7. Daily course of the minimum daily air temperature and accompanying percentiles for Belgrade

PRECIPITATION

February 2025 ranks as **the 7th driest** for Serbia since 1951 (*Figure 8).* It was **the 3rd driest** for Kraljevo and Crni Vrh, the 4th driest for Negotin since the record-keeping began (*Table 1*). In the appendix are given 15 driest years since the record-keeping began for the stations: Crni Vrh, Kraljevo, Negotin, Kragujevac, Cuprija, Zajecar, Veliko Gradiste, Vranje, Loznica and Zlatibor.

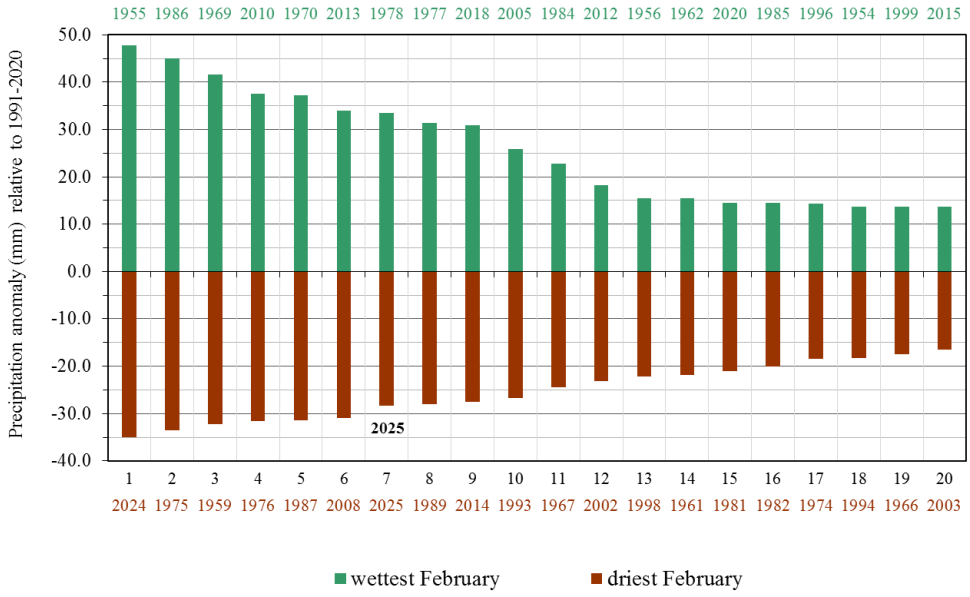


Figure 8. Rank of the wettest and driest February in Serbia for the period from 1951 to 2025

Table 1. The ranking of February 2025 in terms of precipitation, average and percentage of the 1991-2020 normal

STATION	historical period	∑RR for February 2025 (mm)	normal for February 1991-2020	percentage (%) from normal	ranking for February 2025 (ascending RR)
CRNI VRH	1967-2024	8.2	46.6	18	**3**
KRALJEVO	1926-2024	10.2	47.0	22	**3**
NEGOTIN	1941-2024	**4.3**	46.7	9	4
KRAGUJEVAC	1925-2024	10.0	40.2	25	5
CUPRIJA	1926-2024	11.0	47.8	23	5
ZAJECAR	1925-2024	5.7	40.4	14	6
V.GRADISTE	1926-2024	6.4	41.6	15	6
VRANJE	1926-2024	7.1	41.0	17	6
LOZNICA	1925-2024	12.6	54.5	23	6
ZLATIBOR	1950-2024	21.8	71.2	31	7

February precipitation sums ranged from 4,3 mm in Negotin to 37,2 mm in Sombor, whereas Belgrade received 9,6 mm of precipitation (*Figure 9*).

Precipitation totals compared to the normal for the 1991-2020 base period from 9% in Negotin to 99% in Sombor (*Figure 10*).

Based on the percentile method, precipitation sums were in the very dry category in most of Serbia, extremely dry in Loznica, Kragujevac, Kraljevo, Cuprija, Vranje and Crni Vrh, dry in Banatsku Karlovac and Kursumlija, and normal on Palic, Sombor, Novi Sad, Zrenjanin and Kikinda (*Figure 11*).

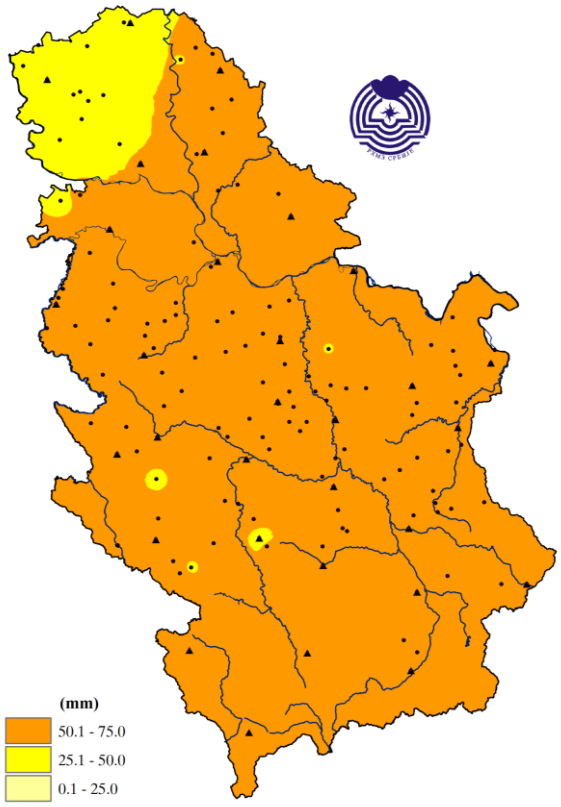


Figure 9. Spatial distribution of the monthly precipitation sums (mm) according to data from 28 major meteorological, 24 climatological and 95 rain gauge stations

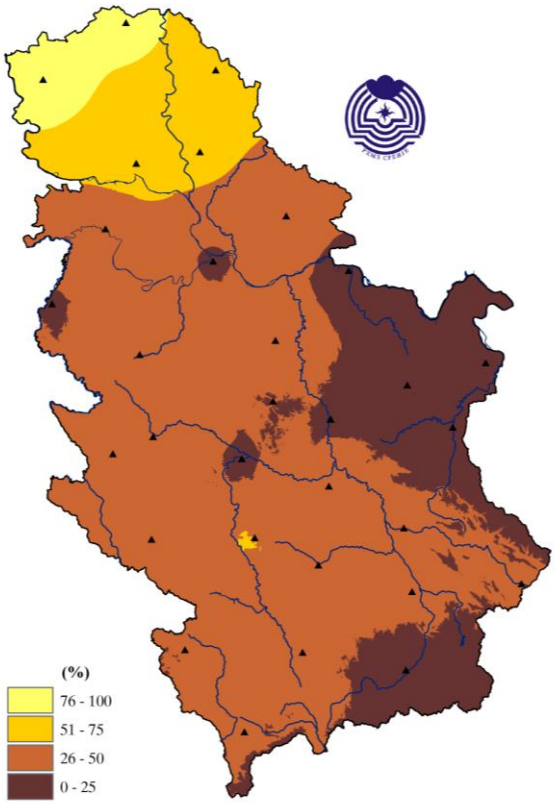


Figure 10. Spatial distribution of the monthly precipitation sums in the percentages of normal for the 1991–2020 base period

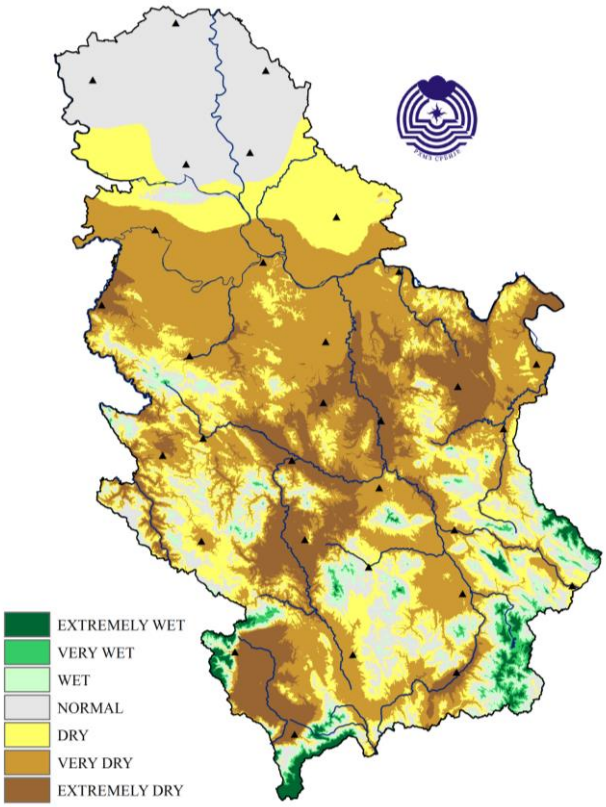


Figure 11. Monthly precipitation sums according to the percentile method

The highest daily precipitation sum of 15,8 mm was recorded in Sombor on February 15. On the same day, Belgrade observed the highest daily precipitation sum of 4,6 mm.

The highest number of days with precipitation in February ranged from 4 on Palic and Sombor to 12 at Kopaonik (*Figure 12).* The observed number of days with precipitation was 4 to 7 days below February average in most of Serbia (*Figure 13*).

Snow cover was recorded in most of Serbia, apart from Palic, Banatski Karlovac and Sremska Mitrovica. The highest snow depth of 42 cm was measured at Kopaonik on February 19. As for the lowland, snow depth of 13 cm was measured in Kursumlija on February 17.

Number of days with snow cover was as follows: Zlatibor and Sjenica -10 days, Crni Vrh – 12 days, Kopaonik – 28 days. As for the lowland, the highest number of days with snow cover was recorded in Kursumlija and Dimitrovgrad, total of 6 days. The observed number of days with snow cover was 6 to 8 days below the February average.

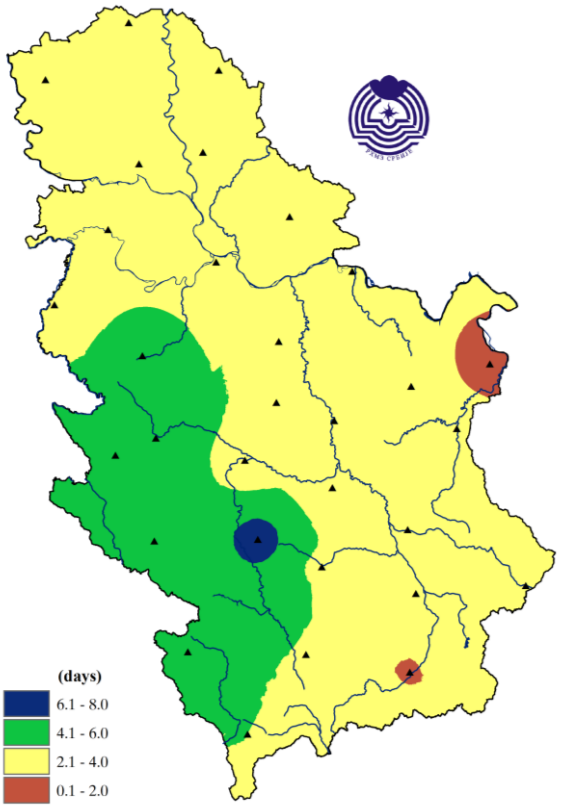


Figure 12. Spatial distribution of number of days with precipitation

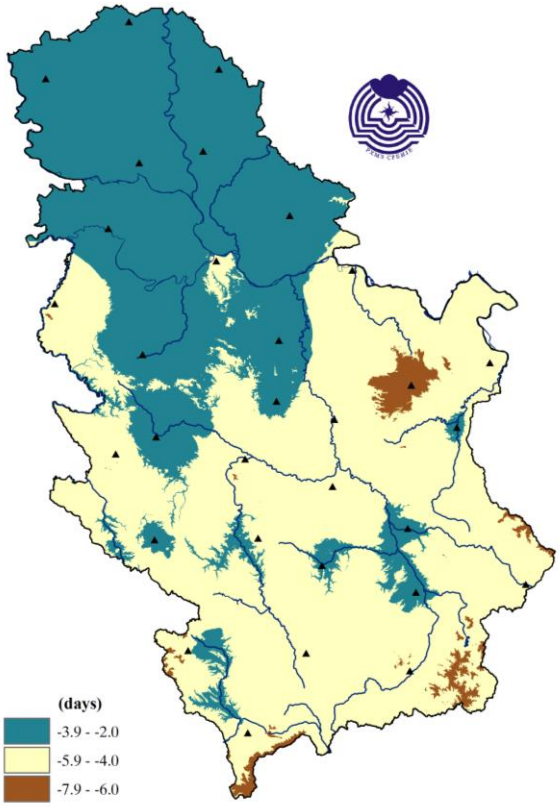


Figure 13. Spatial distribution of deviation of number of days with precipitation

Figure 14 shows assessment of air temperature and precipitation sums for Serbia for February based on the tercile distribution relative to the 1991 – 2020 base period. It can be noted that February 2025 was marked by air temperature at the lower tercile threshold and precipitation sums below lower tercile threshold.

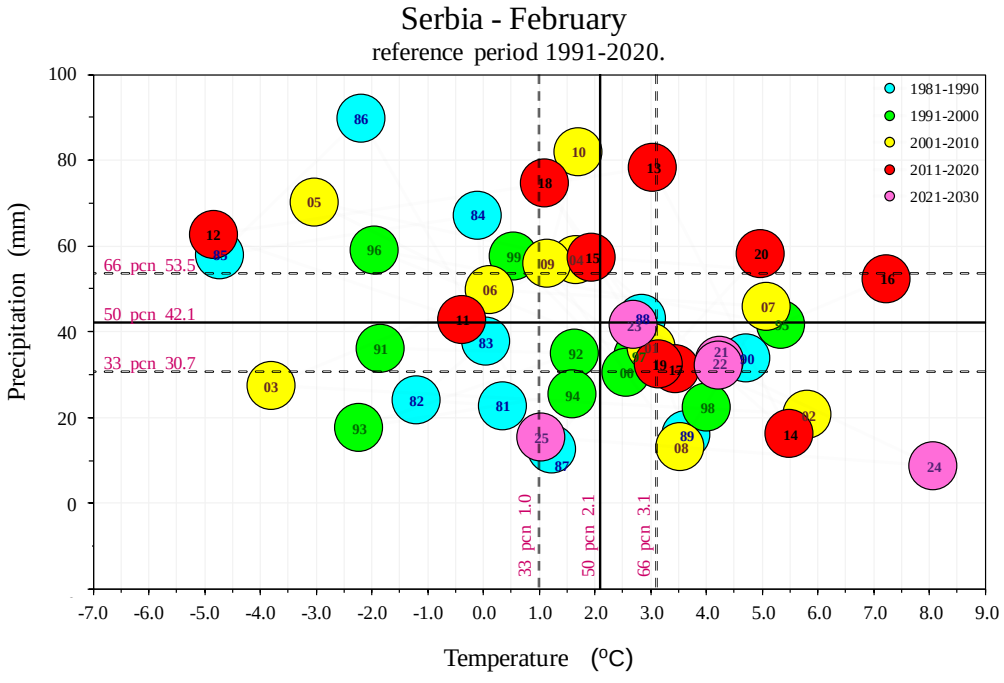


Figure 14. Assessment of air temperature and precipitation for Serbia with the accompanying terciles in relation to the 1991-2020 base period

Figure 15 show daily and cumulative precipitations sums with averaged normal 1991-2020 for February in Belgrade, and for the stations Sombor, Novi Sad, Loznica, Negotin, Kragujevac, Zlatibor, Nis and Vranje precipitation sums are given in Appendix.

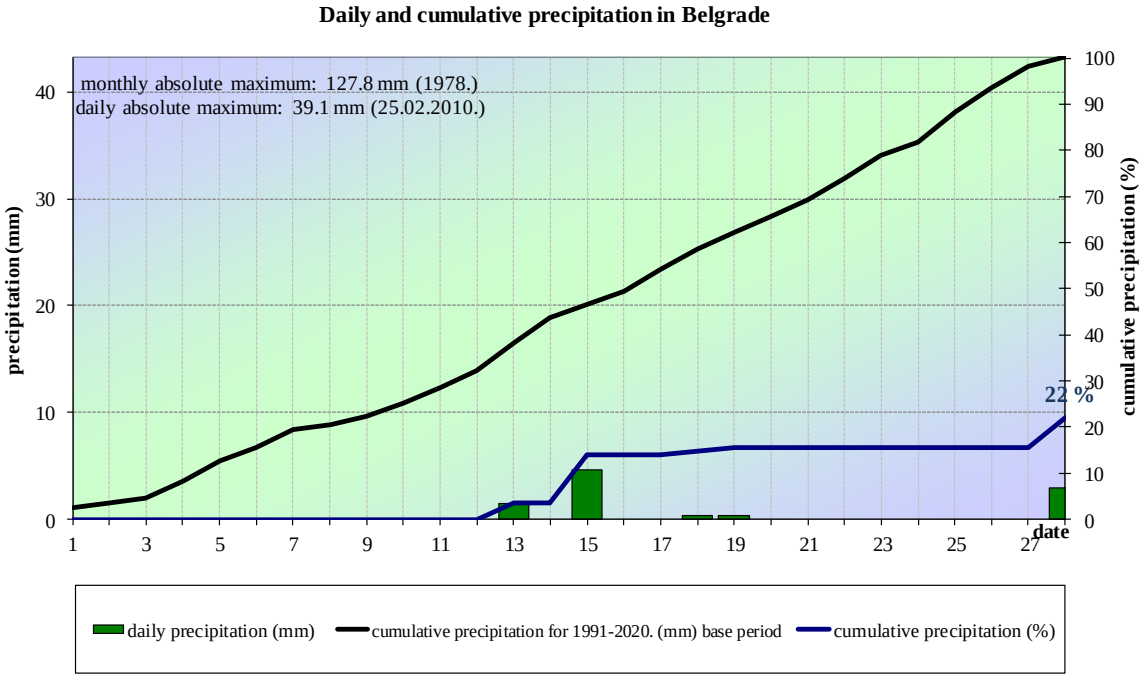


Figure 15. Daily and cumulative precipitation in Belgrade

CLOUD COVER, BRIGHT AND CLOUDY DAYS

Mean February cloud cover in Serbia was slightly below the average, ranging from 4/10 to 6/10. Average daily cloud cover in February for Belgrade, Zajecar and Veliko Gradiste is shown on Figures 16, 17 and 18.

Number of bright days[8] ranged from 4 in Zajecar to 10 in Banatski Karlovac, whereas Belgrade observed 9. The observed number of bright days was 2 to 4 days above the February average.

Number of cloudy days[9] ranged from 5 in Veliko Gradiste to 13 in Pozega, whereas Belgrade observed 10 days. Number of cloudy days was 1 to 4 days below February average.

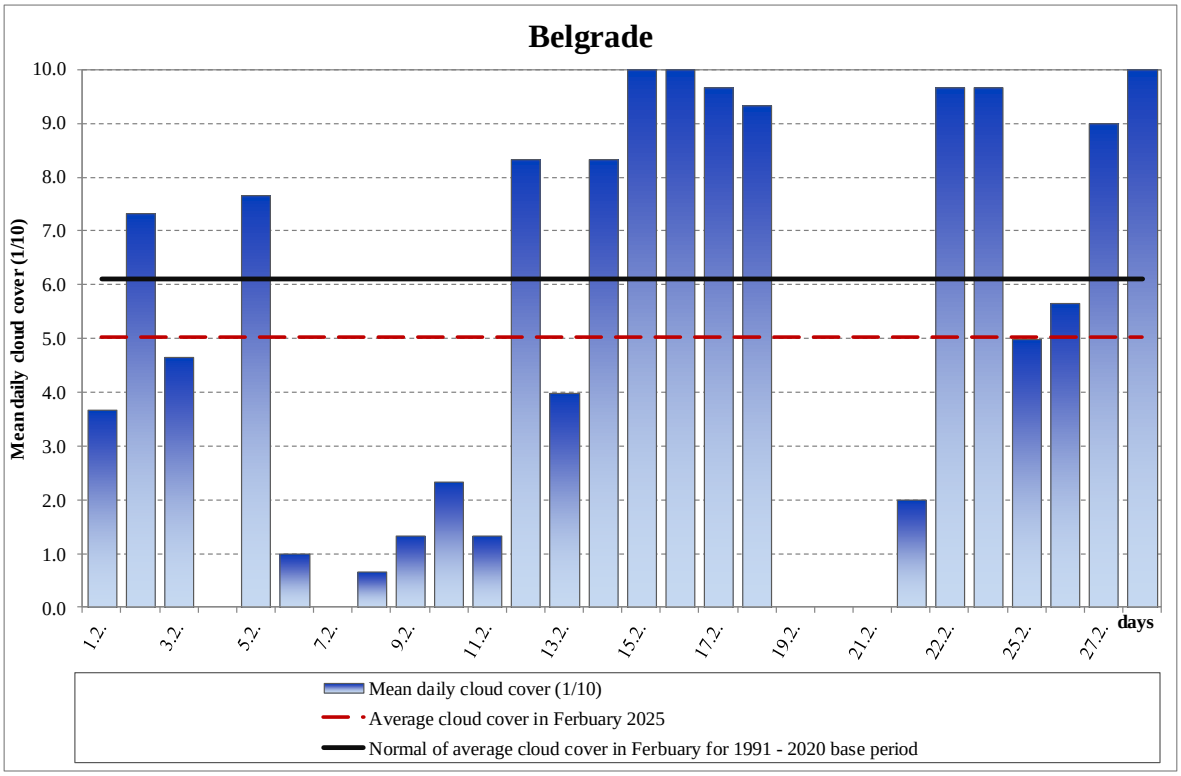


Figure 16. Mean daily cloud cover in Belgrade

[8] Bright day refers to a day with cloud cover less than 2/10
[9] Cloudy day refers to a day with cloud cover over 8/10

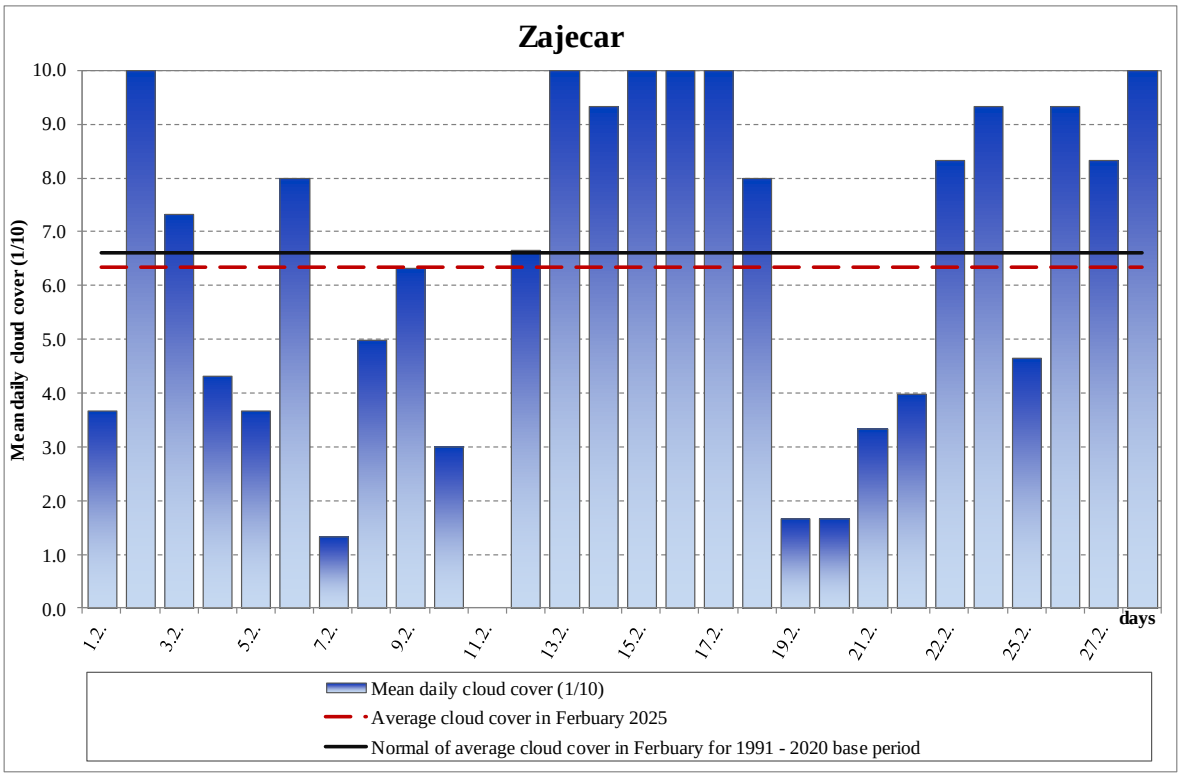


Figure 17. Mean daily cloud cover in Zajecar

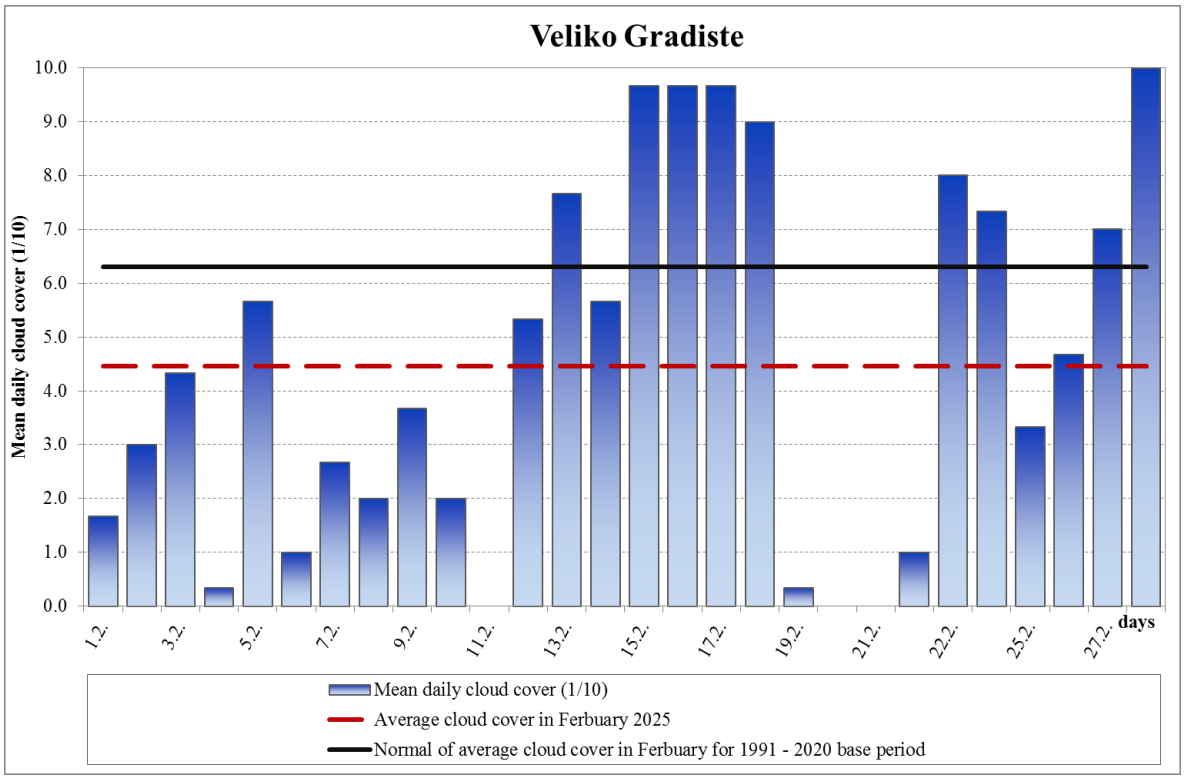


Figure 18. Mean daily cloud cover in Veliko Gradiste

SUNSHINE DURATION (INSOLATION)

February insolation ranged from 74,7 hours at Crni Vrh to 143,0 hours in Kikinda (*Figure 19*).

February insolation ranged from 80% at Crni Vrh to 143% in Veliko Gradiste compared to the normal for the 1991-2020 base period (*Figure 20*).

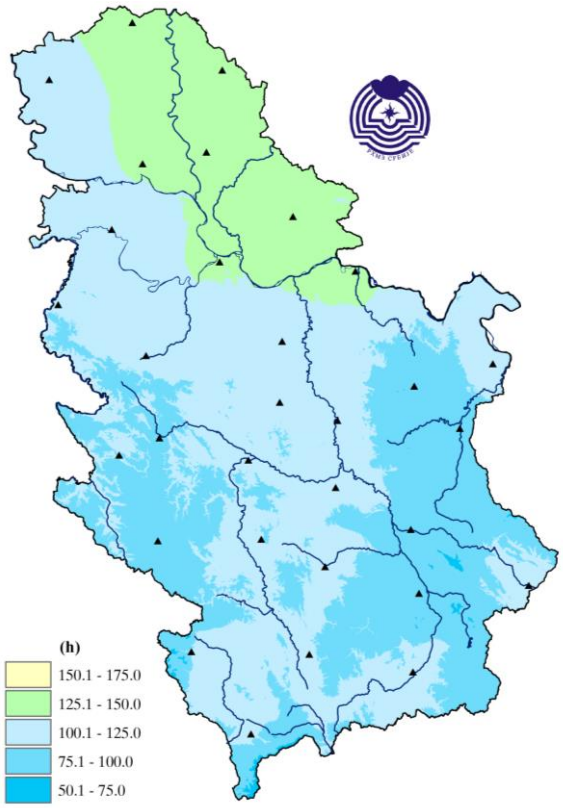


Figure 19. Insolation, expressed in hours

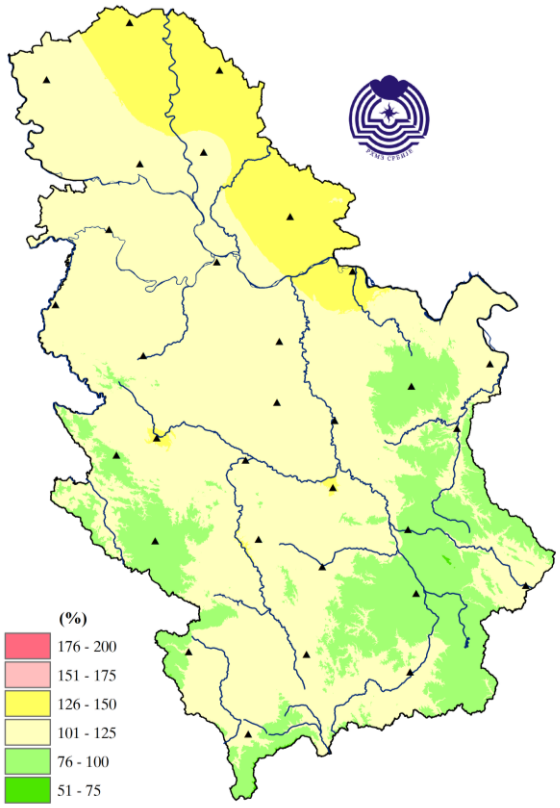


Figure 20. Insolation expressed in the percentages of normal

*** Note:** Climate analysis of meteorological elements was done based on the preliminary data obtained from 28 main meteorological stations

OVERVIEW OF THE SYNOPTIC SITUATION*

Stable and predominantly dry weather for most of the month, with the influence of anticyclone from the north and east of the continent, and moderate to strong southeast winds in the kosava region; in the middle of the month low pressure from Mediterranean, and cold air mass from the east; occasional snow, and in the low-lying areas formation of the snow cover; at the end of the month, ridge from the south and warm weather, followed by a low pressure and waves of wet air from the Mediterranean and occasional rain.

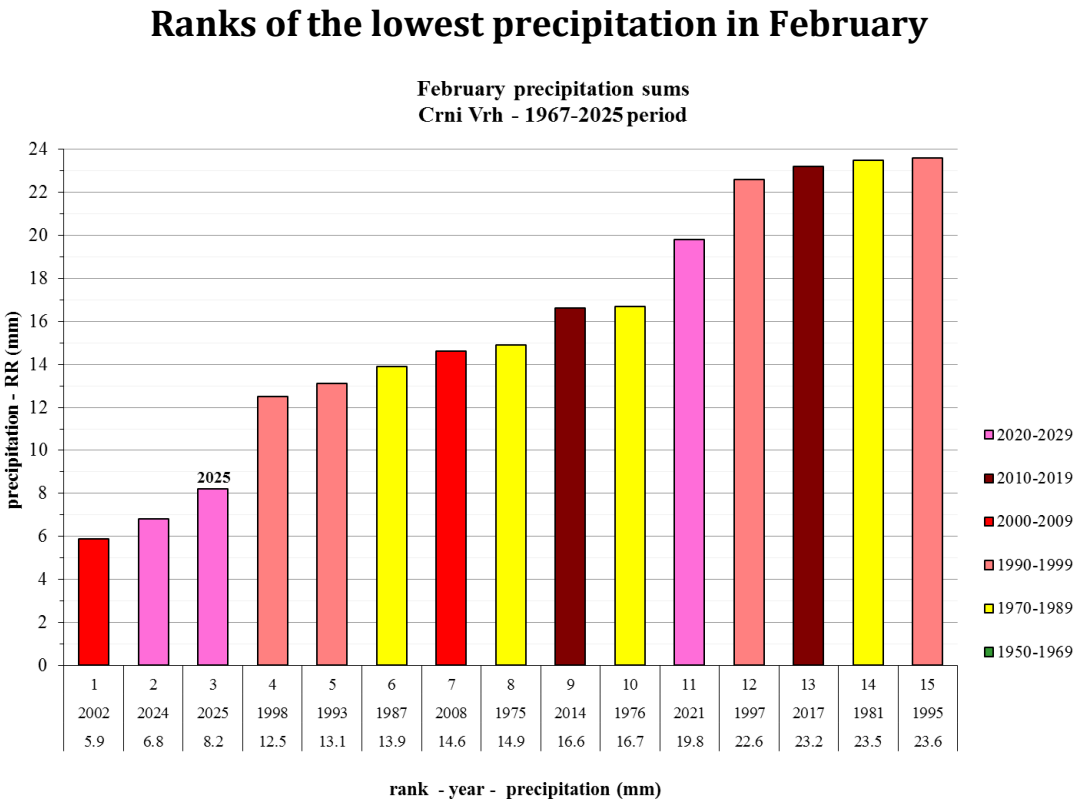
Period at the beginning of the month was characterized by a ridge in the geopotential field emanating from the central Mediterranean, relatively warm, changeably cloudy, and mostly dry weather. The subsequent period was marked by filling of low pressure from the north and northeast of the continent and cold air mass from Eastern Europe and the Carpathians. In the west and north, and later in the central parts of Europe and the east, an anticyclone was established, while in the Mediterranean, low-pressure field was formed. Gradually, the pressure gradient strengthened across the Carpathians and Dinarides, leading to moderate to strong southeast winds in the kosava region. Cloudy and colder weather pravailed in the east and northeast.

Period at the beginning of the second decade was marked by a ridge formation in the Mediterranean with warm weather. Then, the influence of moist air waves from low pressures in the western and central Mediterranean, along with a cold air mass from the north and northeast casued cloudiness and rain, followed by temperature decrease accompanied by snow and the formation of a snow cover, at first in the west and north, and later across the entire country. By the end of the second decade, cold weather persisted with ceasing of precipitation and clearing off.

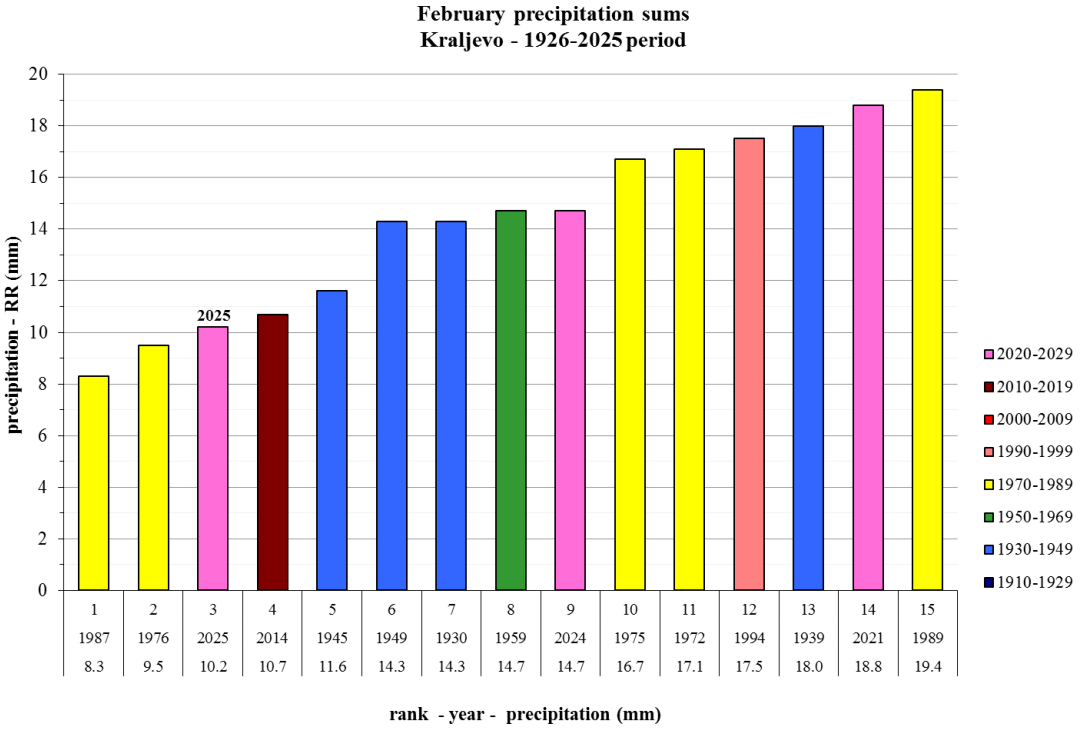
Until the middle of the third decade, dry and gradually warmer weather persisted. An anticyclone above most of the continent and its strengthening in the east with a new low pressure in the west and northwest, in the western Mediterranean and the Gulf of Genoa, caused moderate to strong southeasterly wind in kosava area, especially in the south Banat and lower Podunavlje. Period in the mid-decade was marked by gradually warmer and changeable weather, in the west and southwest, low pressure and wave of wet air from the Adriatic and northwest, intermittent patches of rain across all areas with temperature drop.

* National Center for Hydrometeorlogical Early Warning System

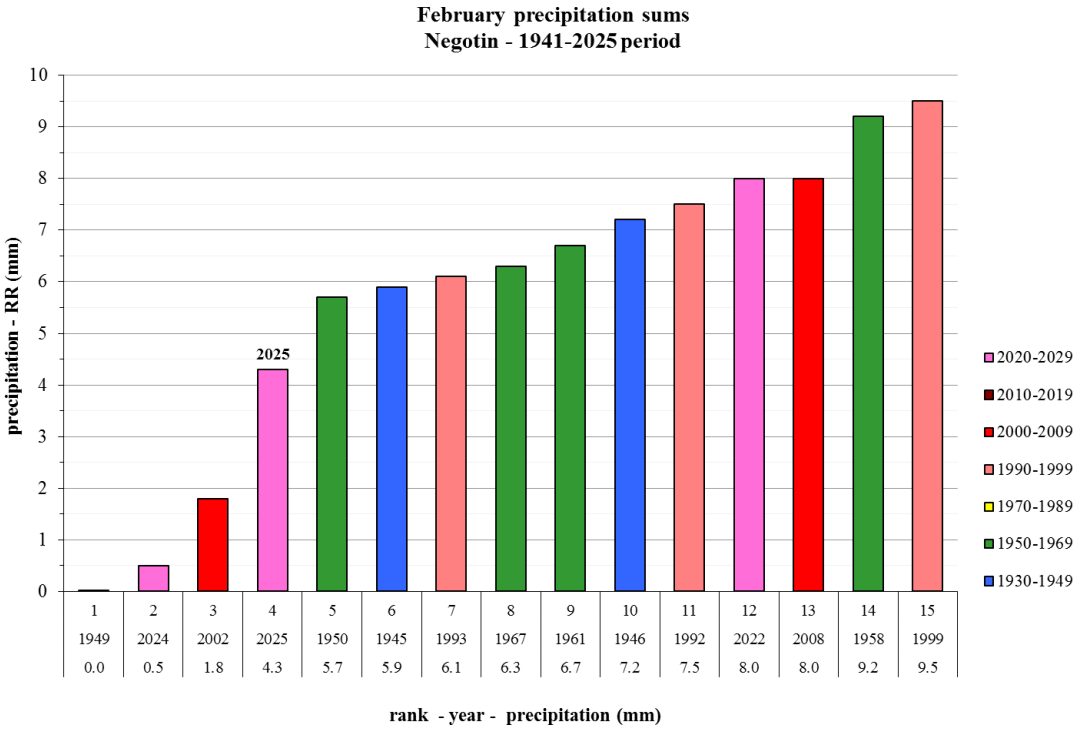
APPENDIX



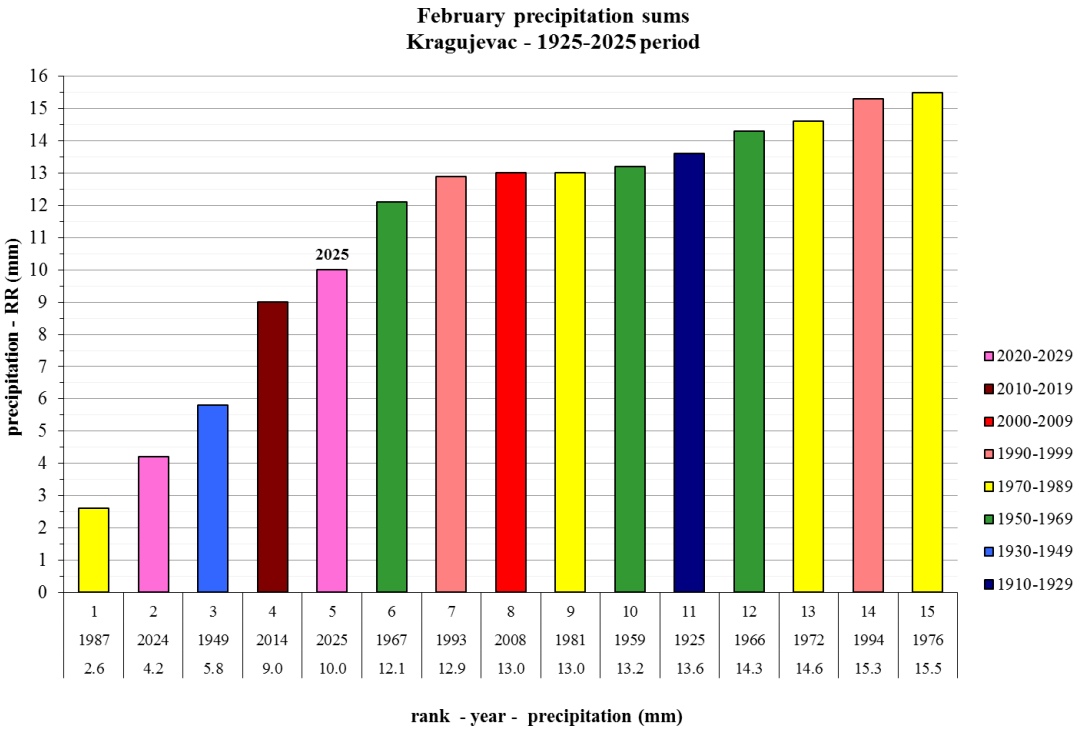
Appendix 1. Rank of the lowest precipitation on Crni Vrh



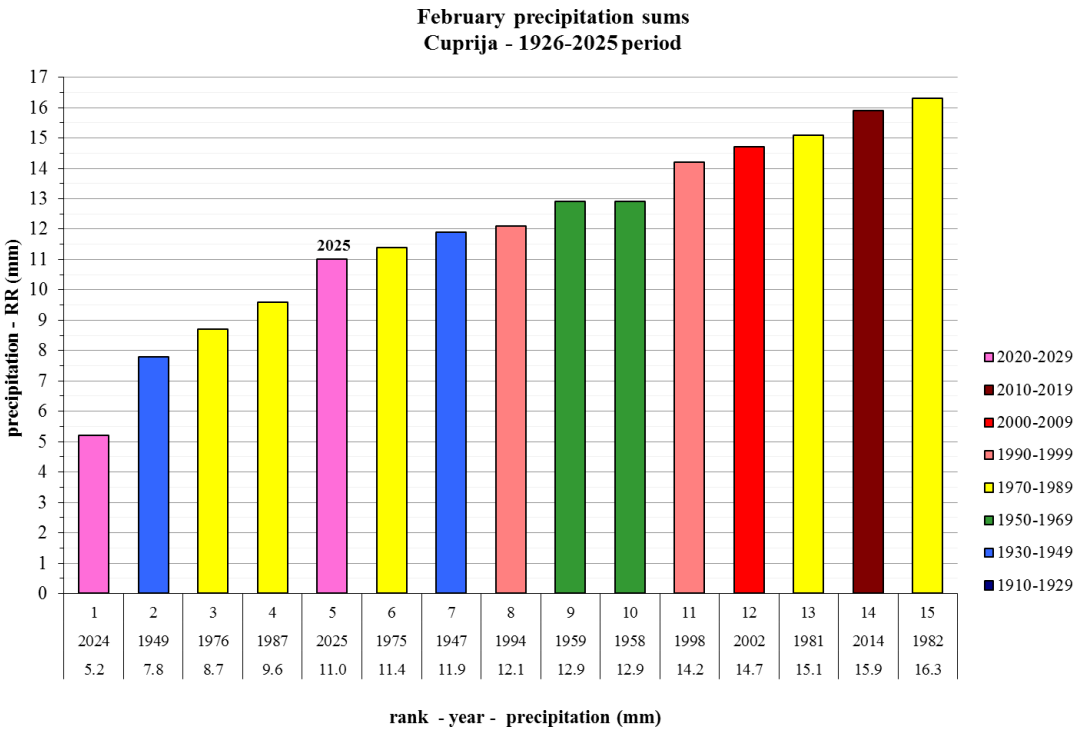
Appendix 2. Rank of the lowest precipitation in Kraljevo



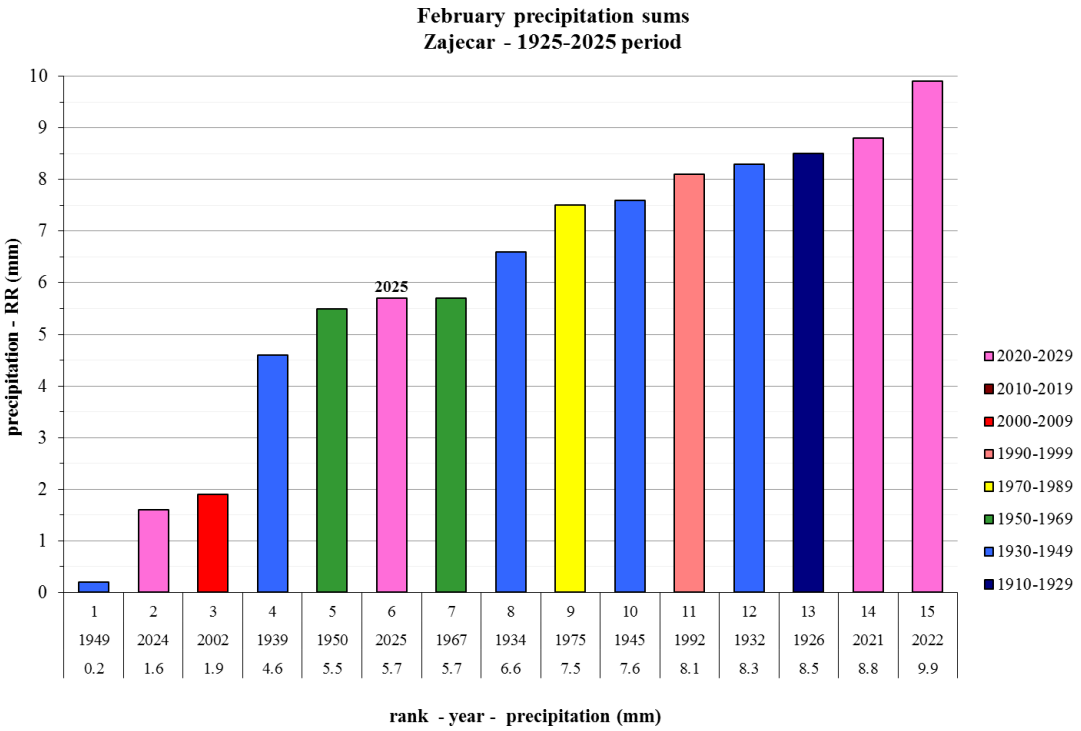
Appendix 3. Rank of the lowest precipitation in Negotin



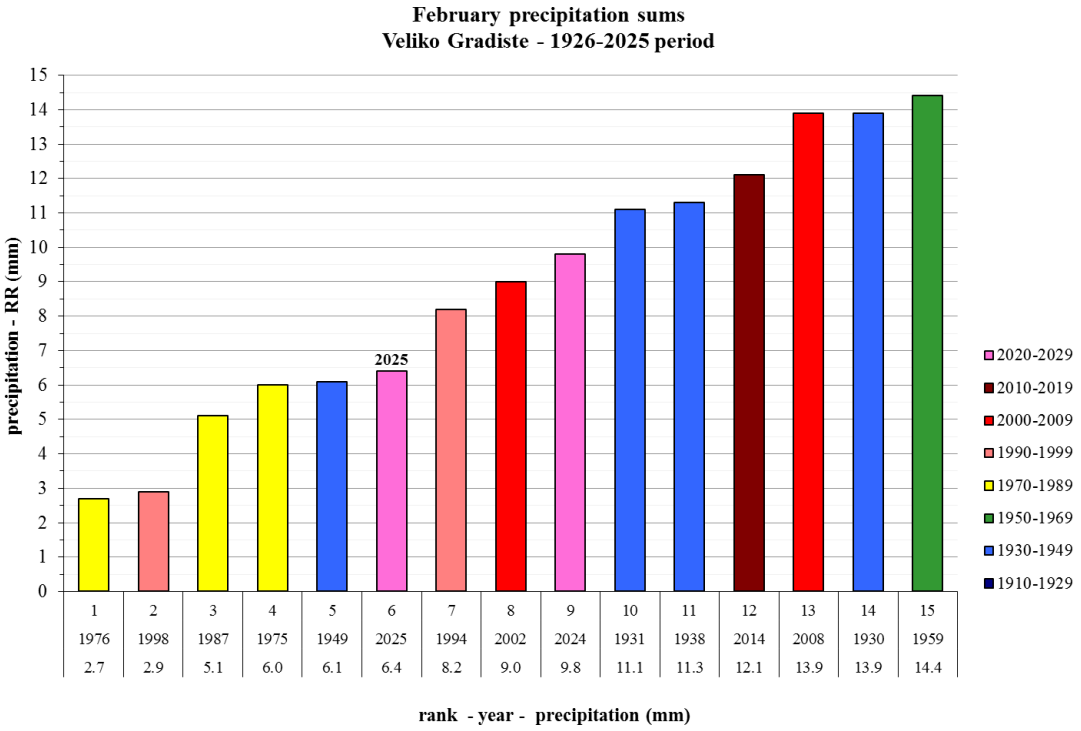
Appendix 4. Rank of the lowest precipitation in Kragujevac



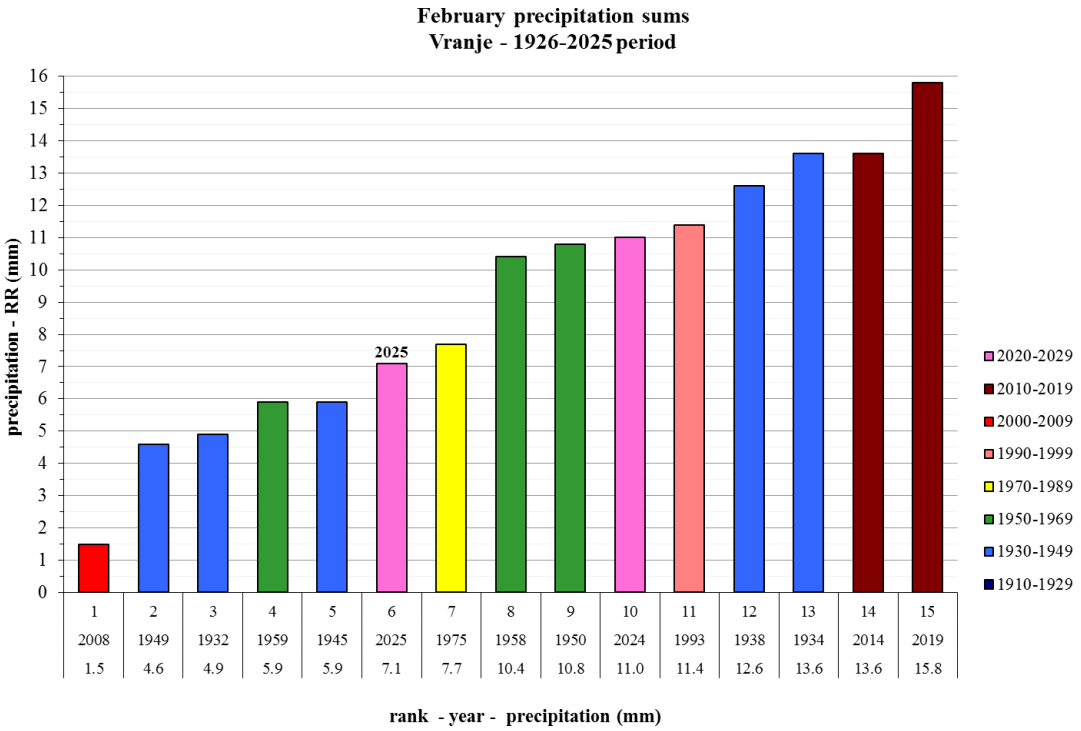
Appendix 5. Rank of the lowest precipitation in Cuprija



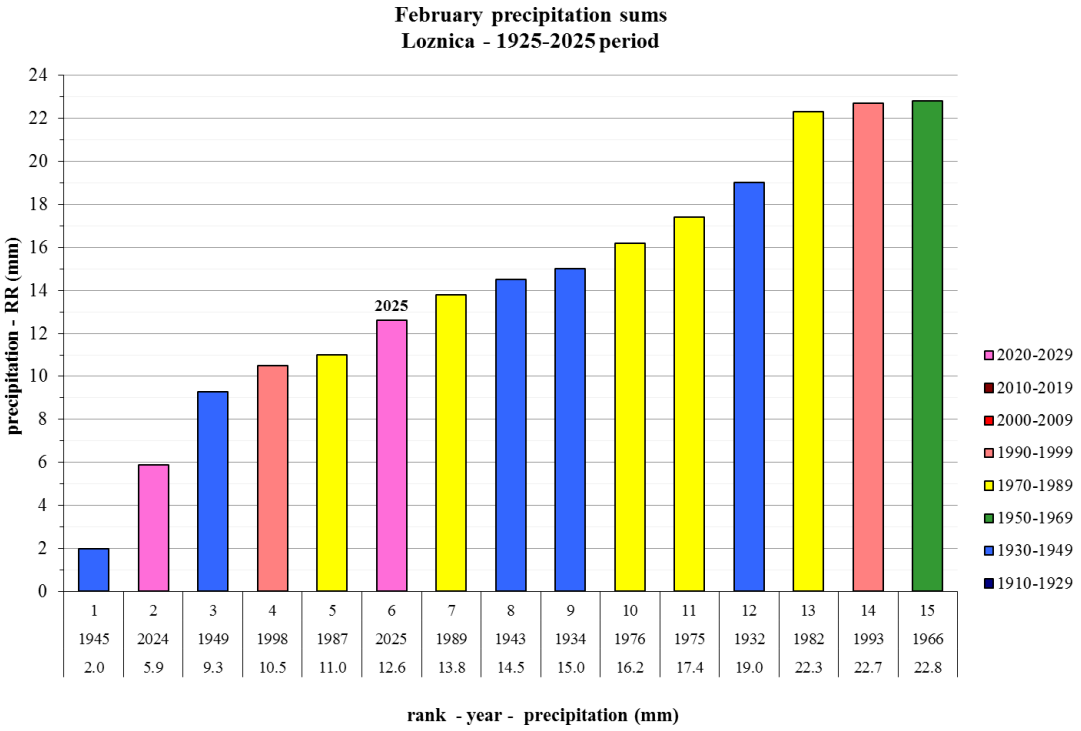
Appendix 6. Rank of the lowest precipitation in Zajecar



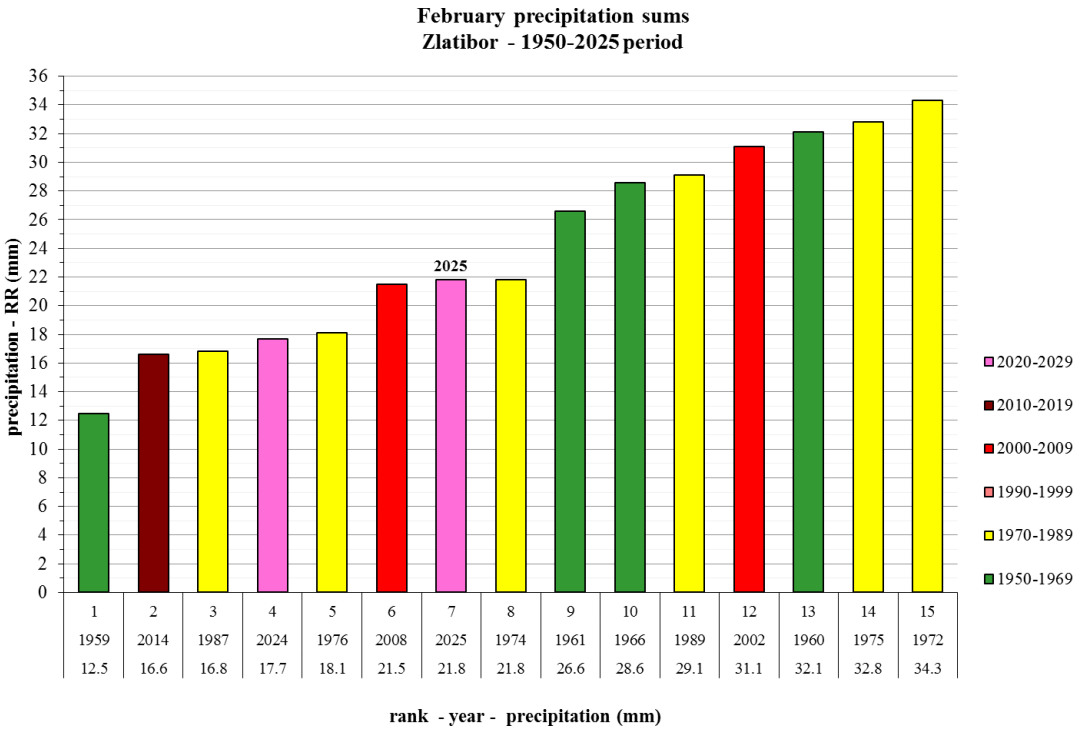
Appendix 7. Rank of the lowest precipitation in Veliko Gradiste



Appendix 8. Rank of the lowest precipitation in Vranje

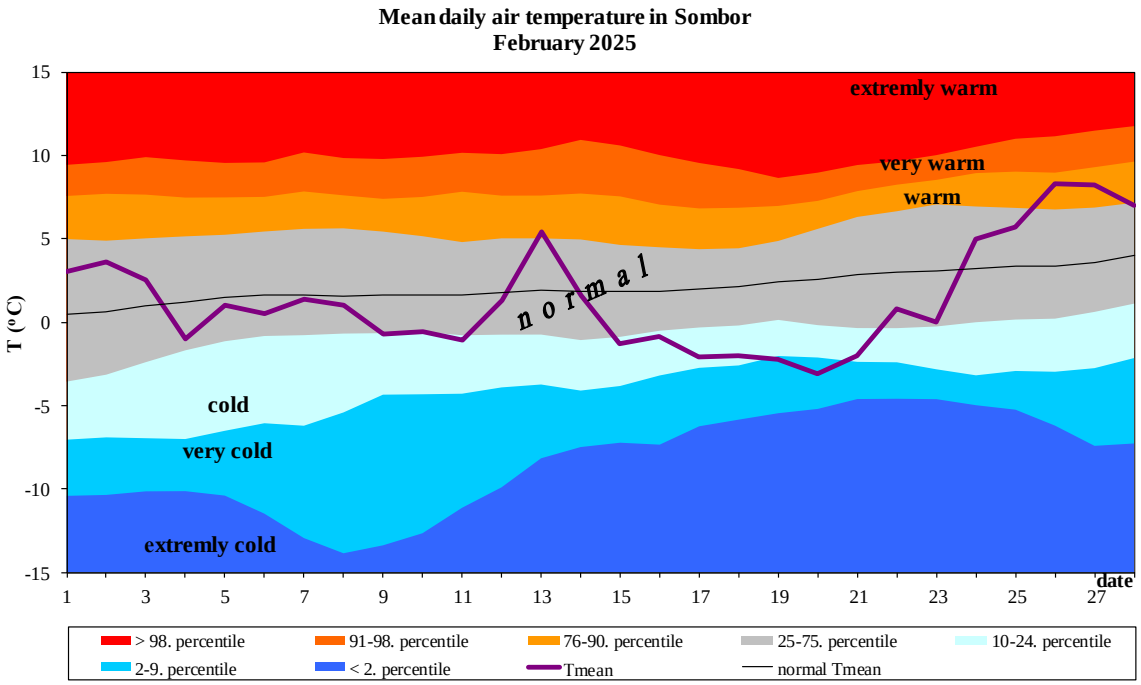


Appendix 9. Rank of the lowest precipitation in Loznica

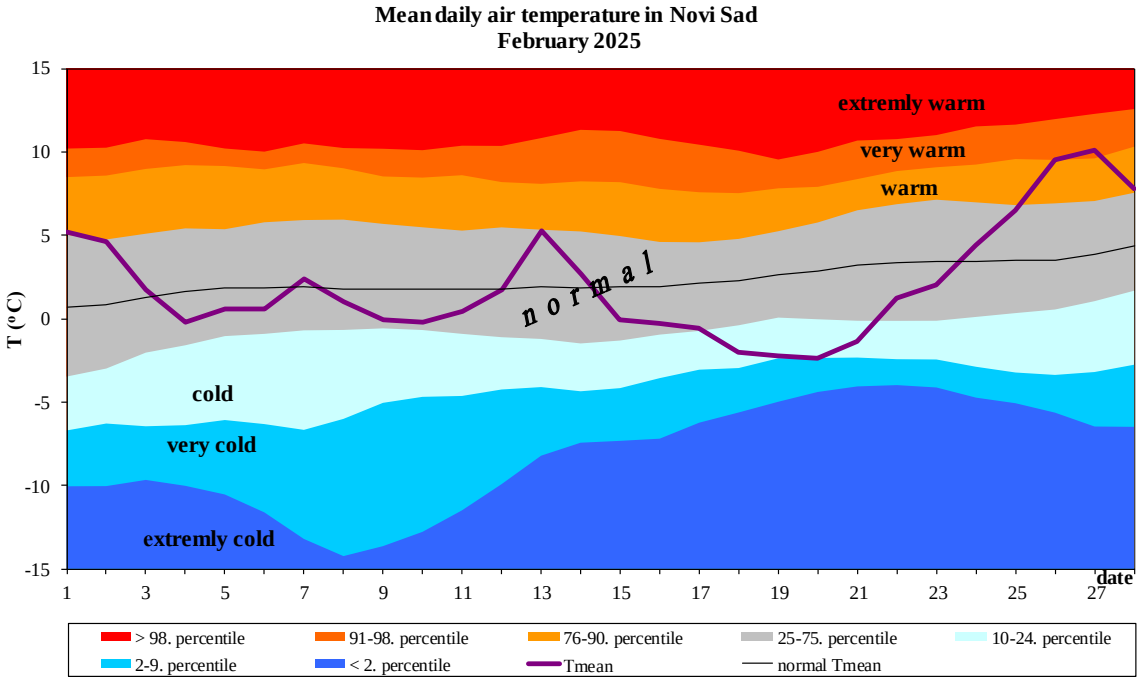


Appendix 10. Rank of the lowest precipitation on Zlatibor

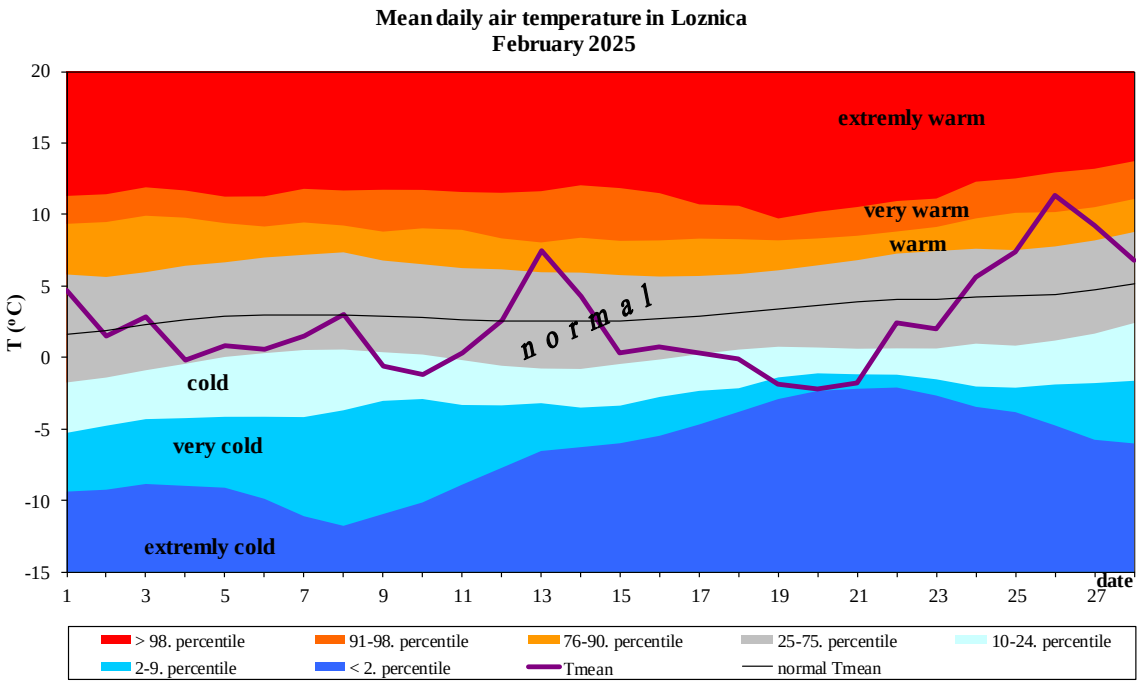
Mean air temperature



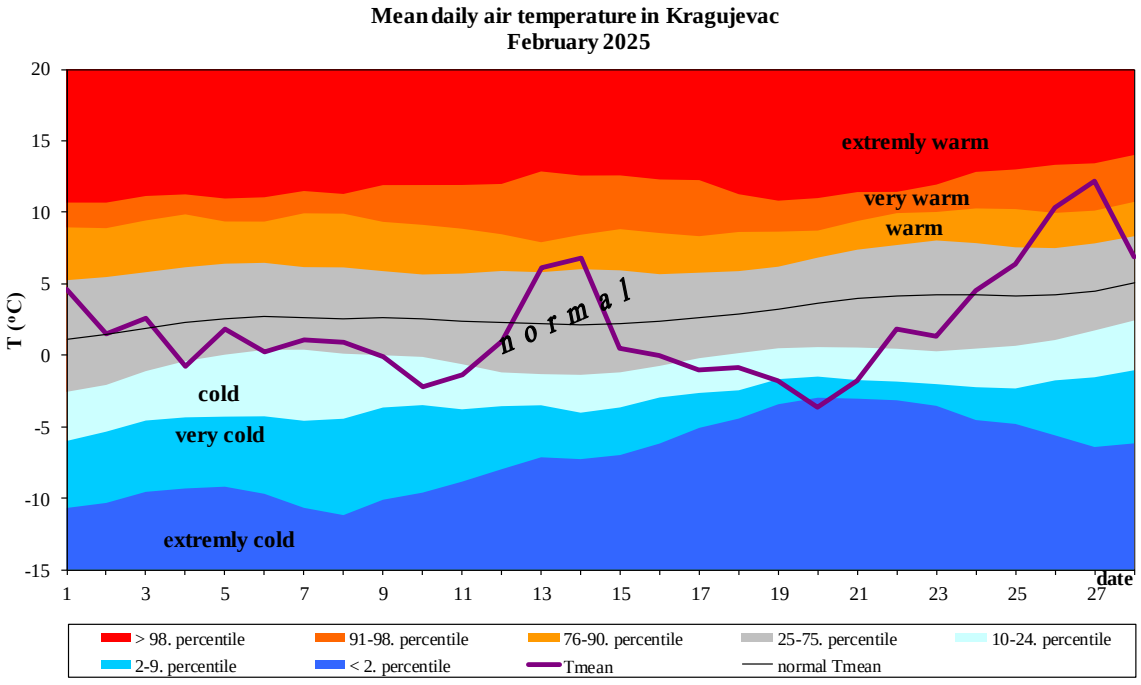
Appendix 11. Daily course of the mean daily air temperature and accompanying percentile for Sombor



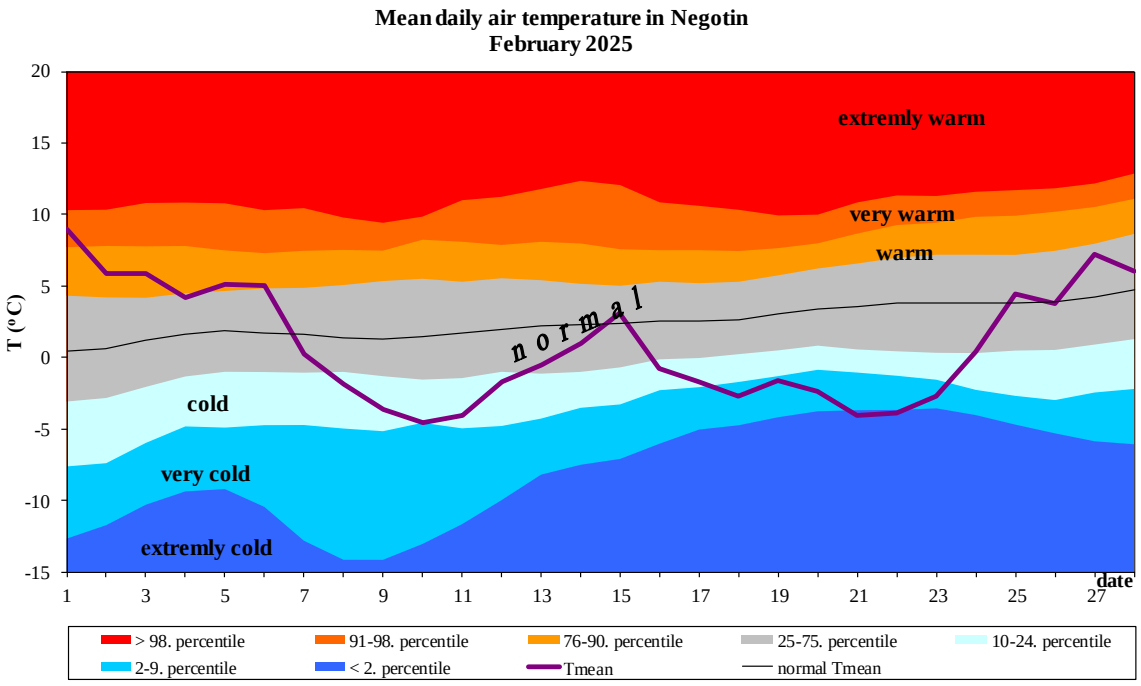
Appendix 12. Daily course of the mean daily air temperature and accompanying percentile for Novi Sad



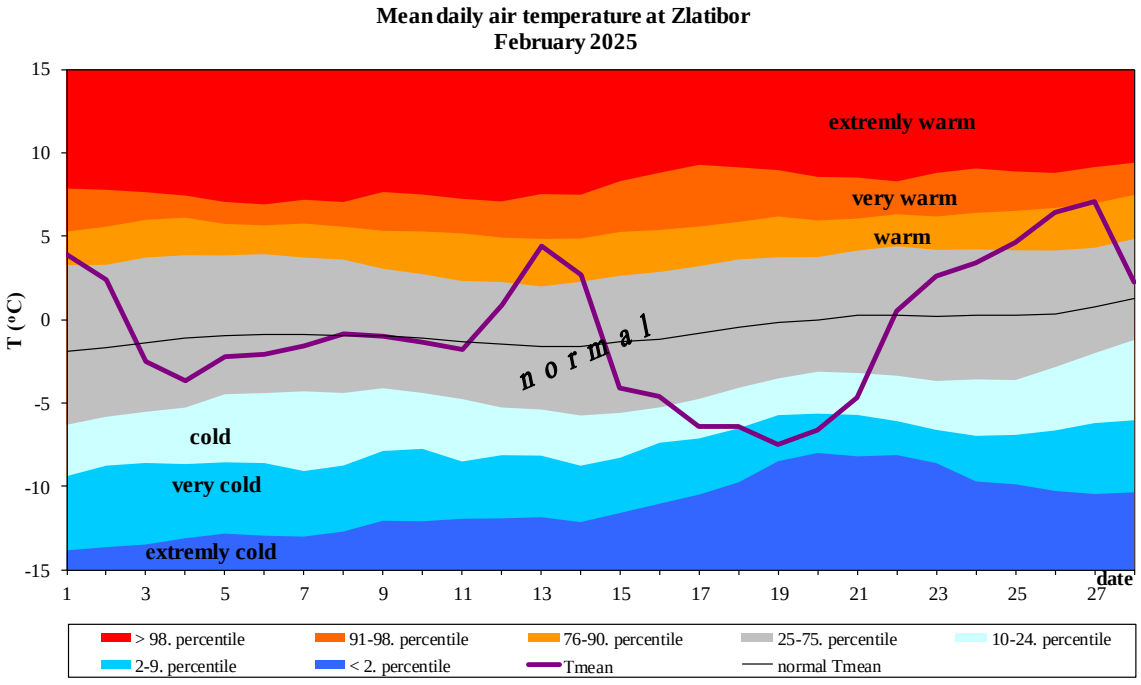
Appendix 13. Daily course of the mean daily air temperature and accompanying percentile for Loznica



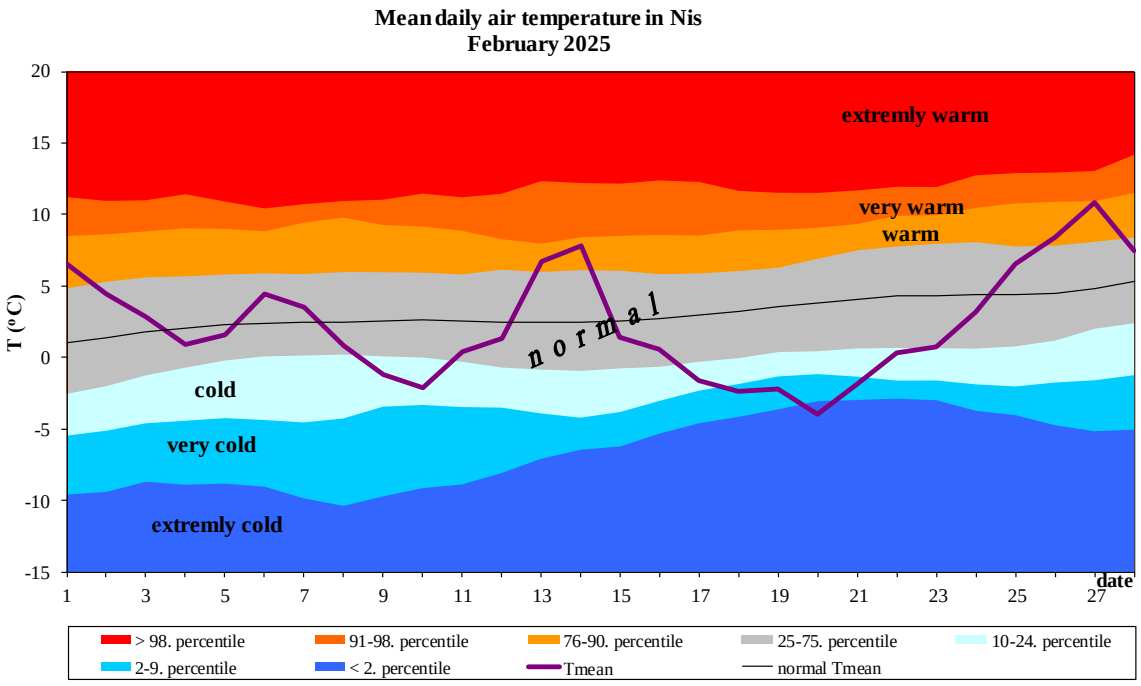
Appendix 14. Daily course of the mean daily air temperature and accompanying percentile for Kragujevac



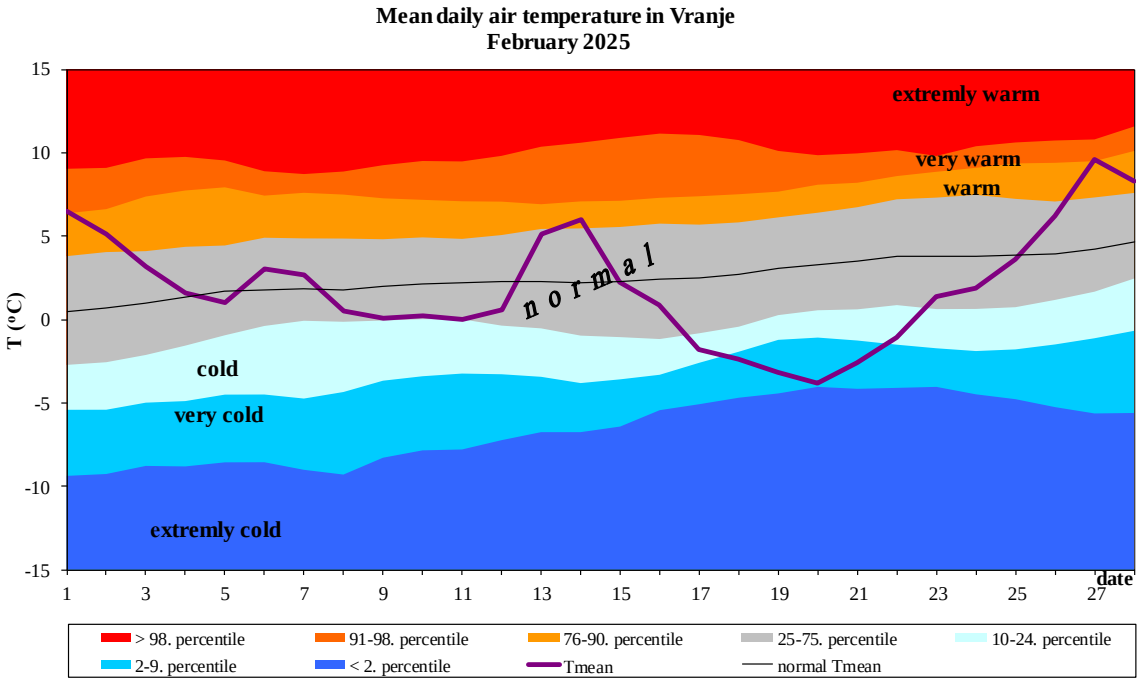
Appendix 15. Daily course of the mean daily air temperature and accompanying percentile for Negotin



Appendix 16. Daily course of the mean daily air temperature and accompanying percentile on Zlatiboru

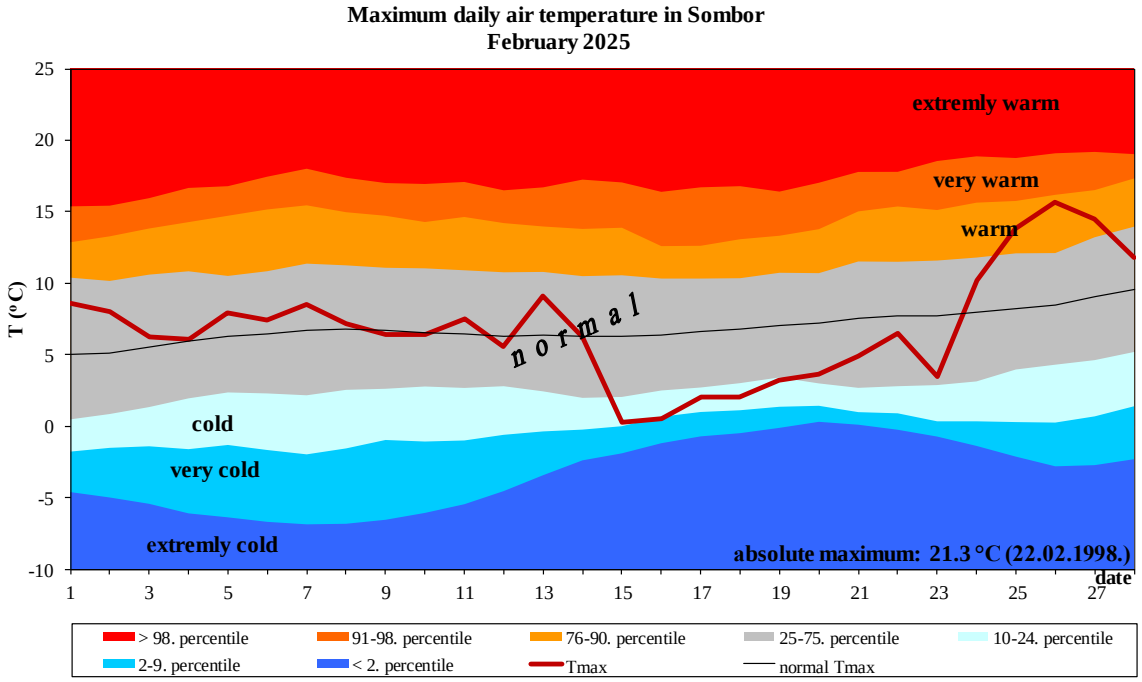


Appendix 17. Daily course of the mean daily air temperature and accompanying percentile for Nis

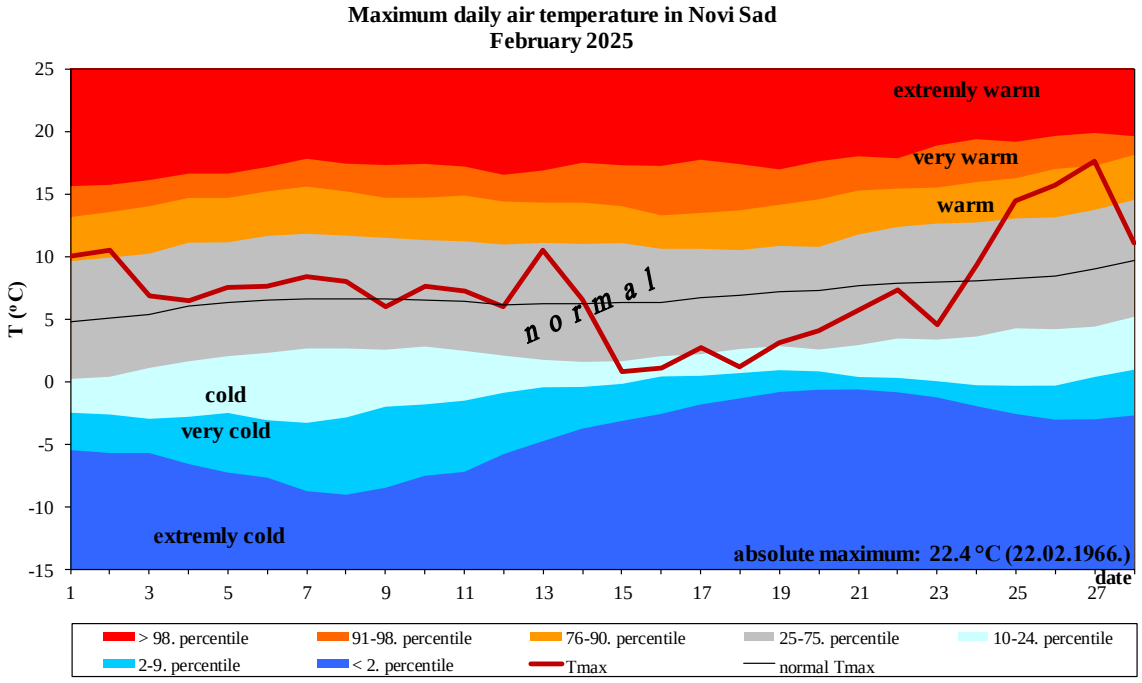


Appendix 18. Daily course of the mean daily air temperature and accompanying percentile for Vranje

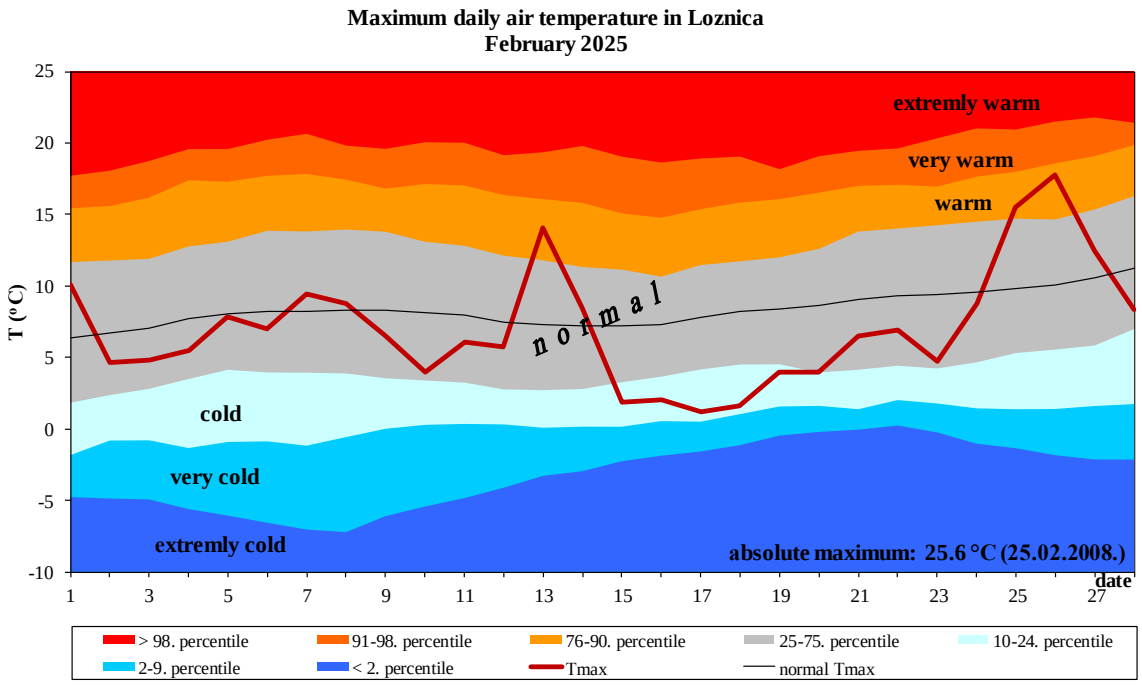
Maximum air temperature



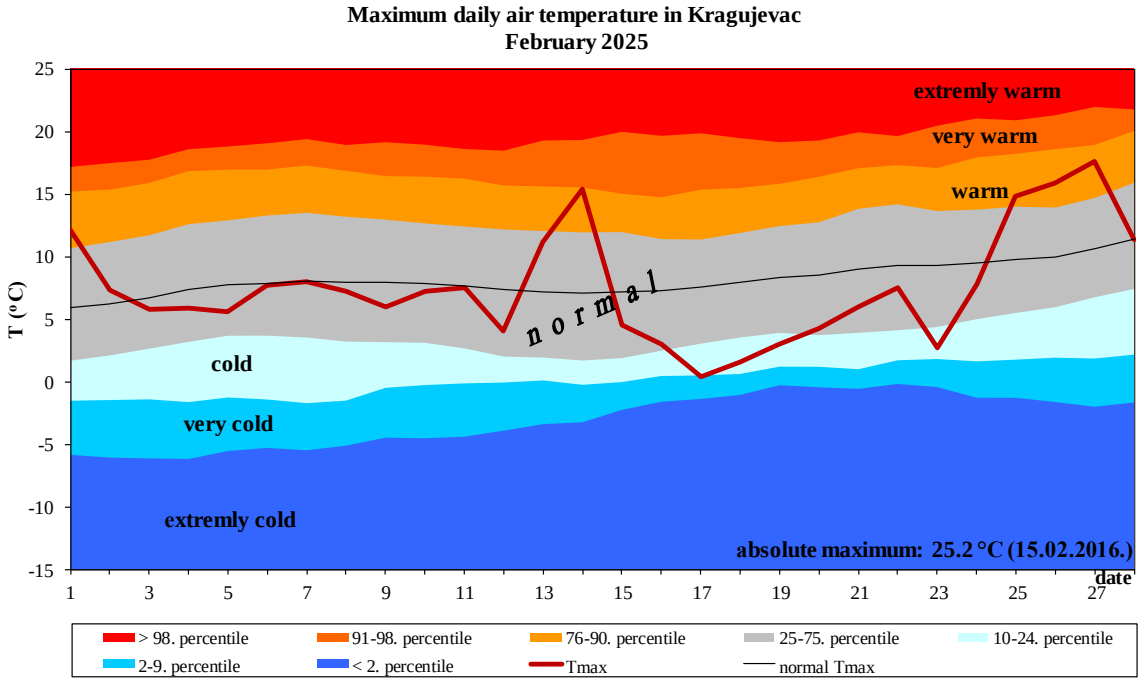
Appendix 19. Daily course of the maximum daily air temeperature and the accompanying percentile for Sombor



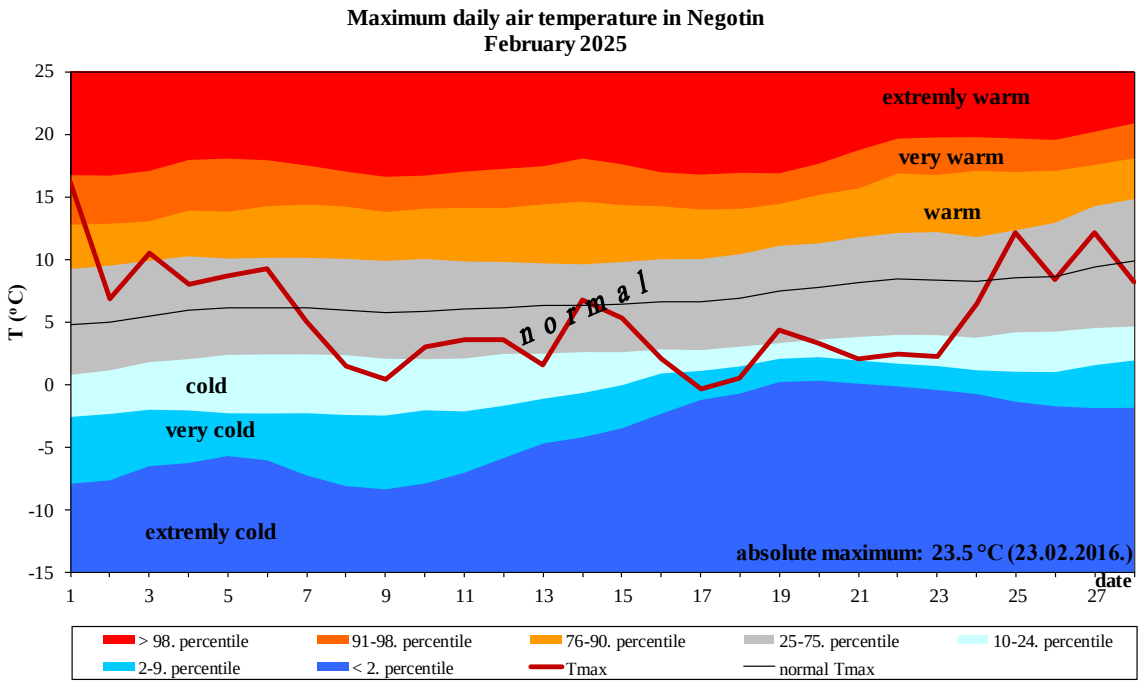
Appendix 20. Daily course of the maximum daily air temeperature and the accompanying percentile for Novi Sad



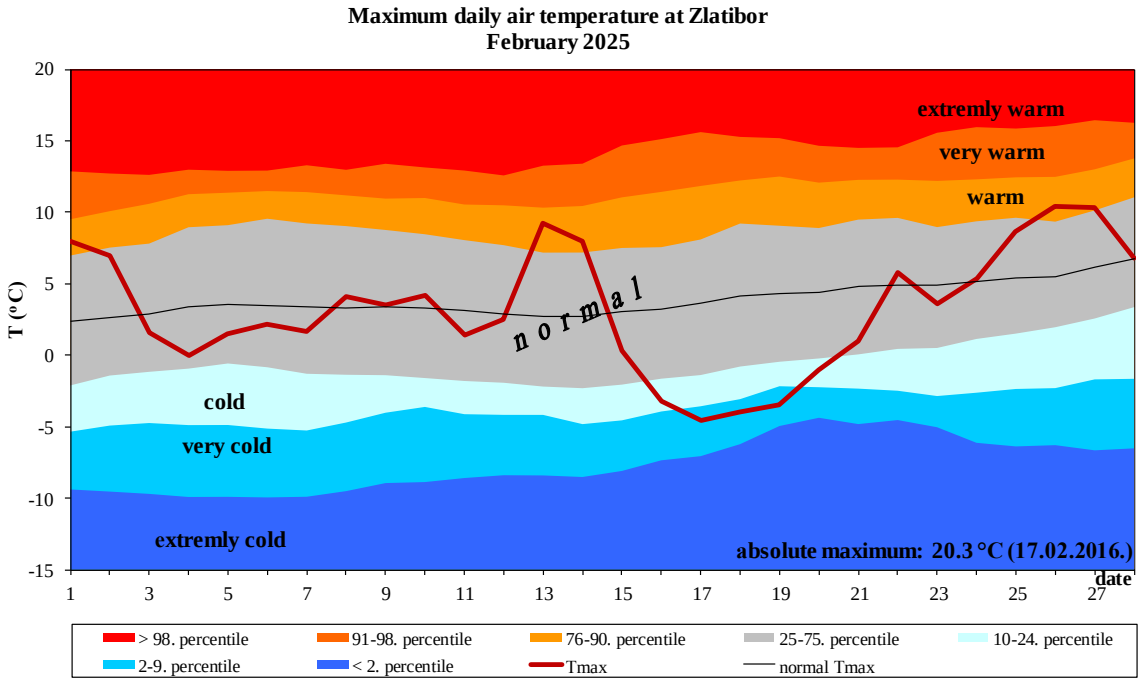
Appendix 21. Daily course of the maximum daily air temeperature and the accompanying percentile for Loznica



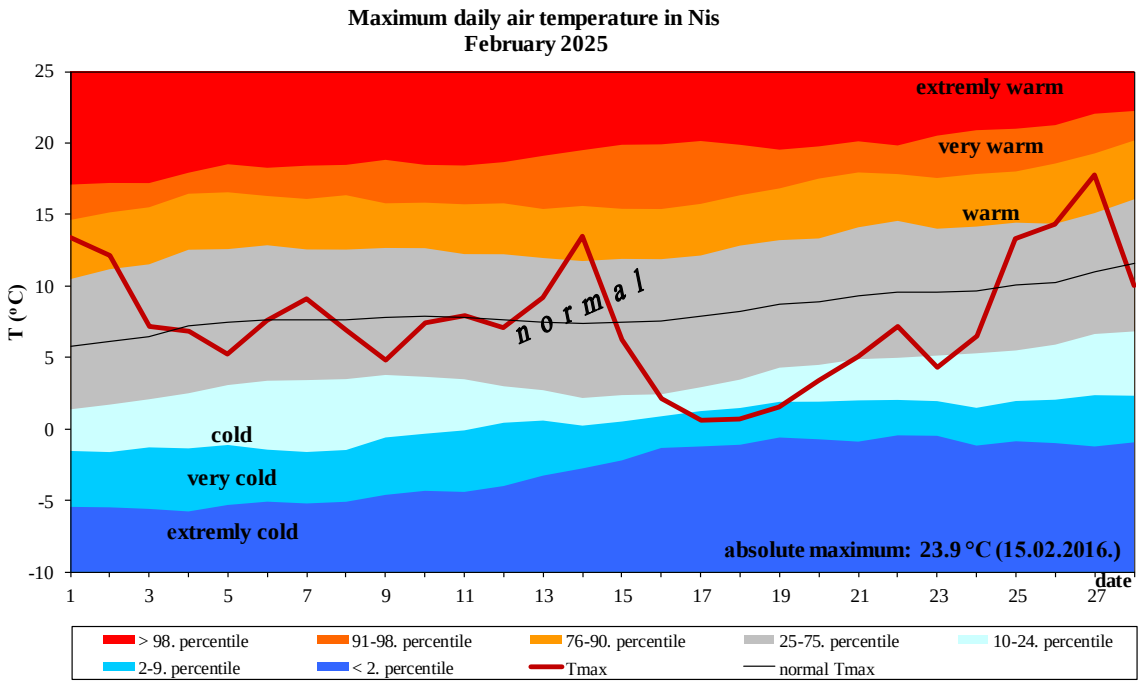
Appendix 22. Daily course of the maximum daily air temeperature and the accompanying percentile for Kragujevac



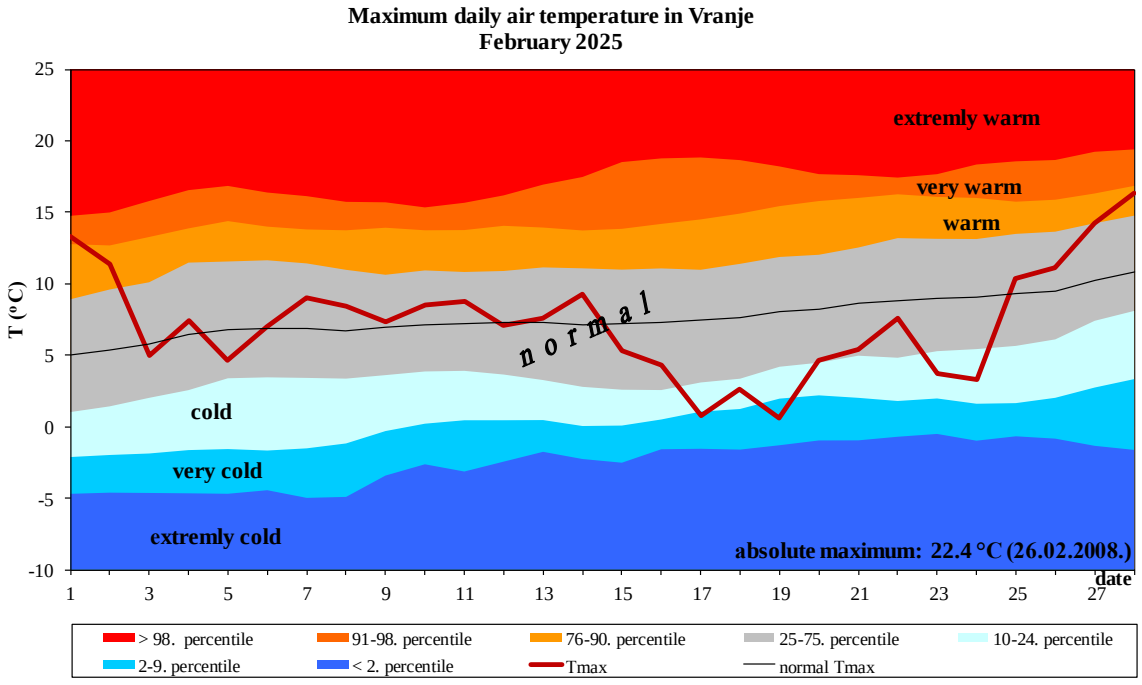
Appendix 23. Daily course of the maximum daily air temeperature and the accompanying percentile for Negotin



Appendix 24. Daily course of the maximum daily air temeperature and the accompanying percentile on Zlatibor

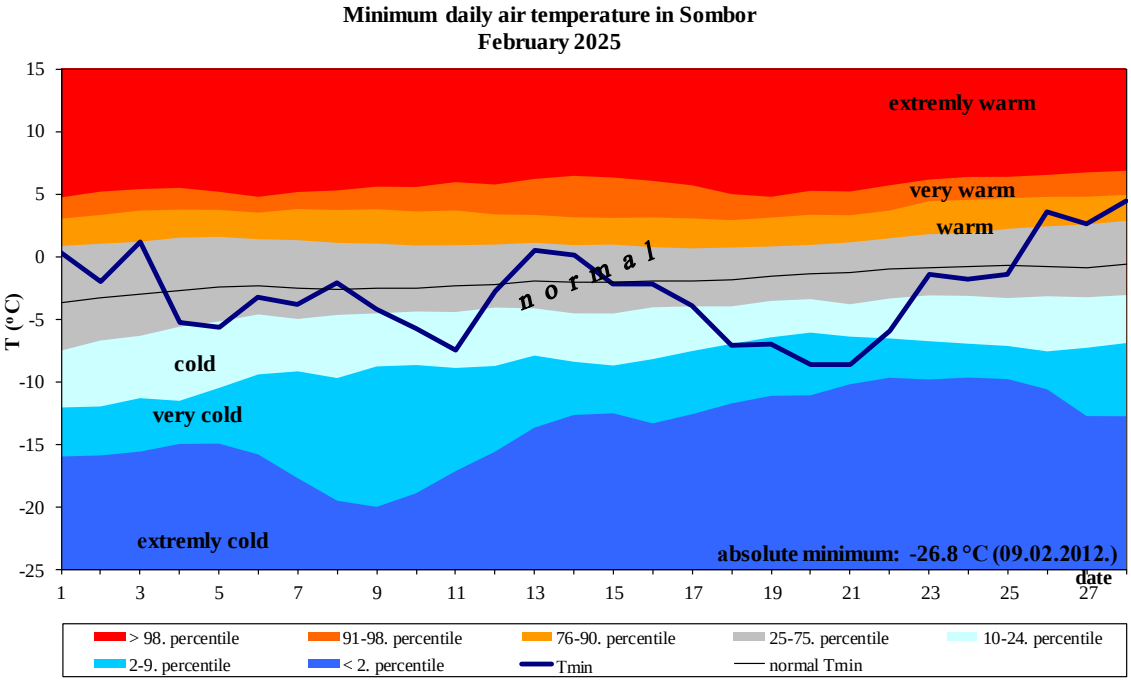


Appendix 25. Daily course of the maximum daily air temeperature and the accompanying percentile for Nis

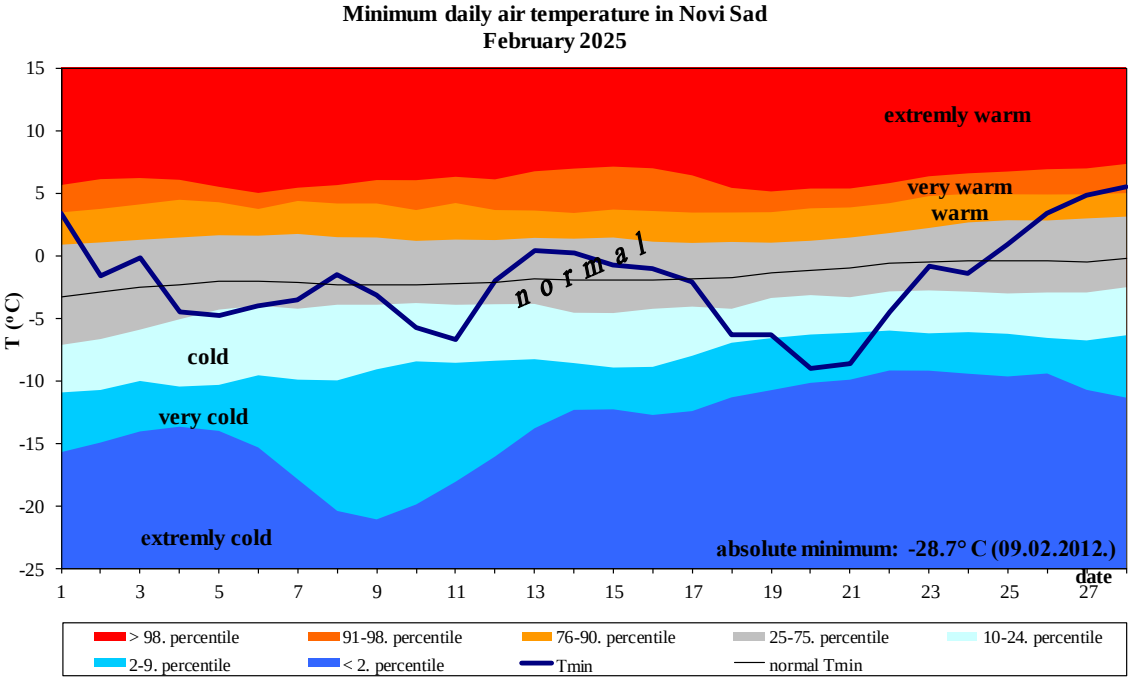


Appendix 26. Daily course of the maximum daily air temeperature and the accompanying percentile for Vranje

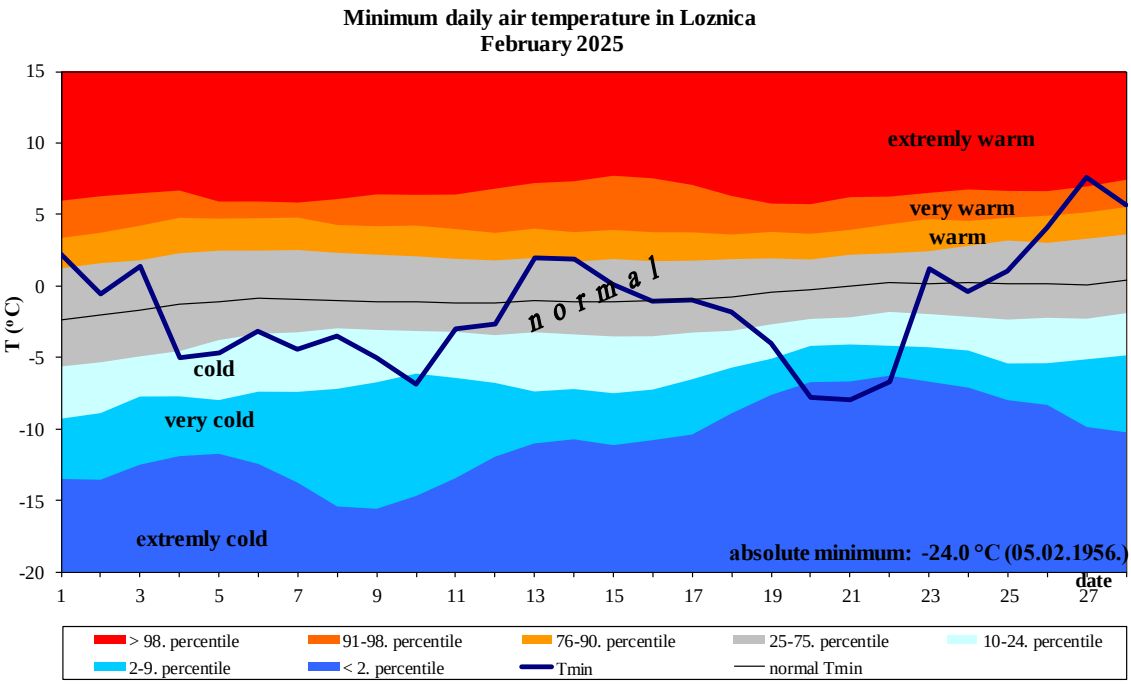
Minimum air temperature



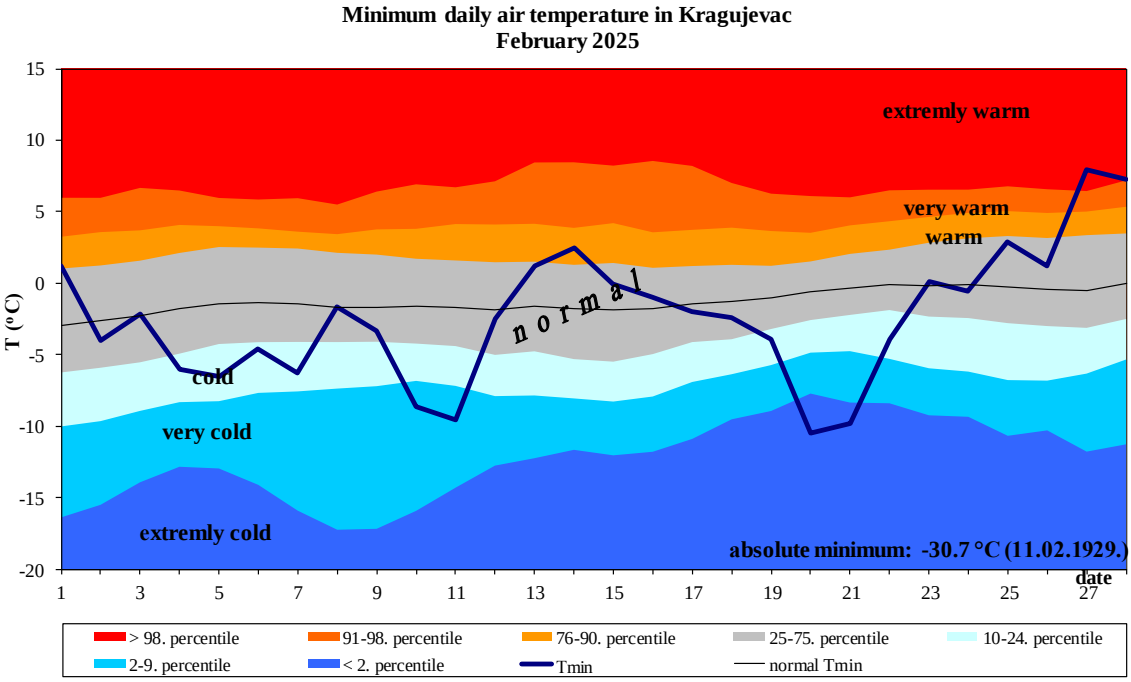
Appendix 27. Daily course of the minimum daily air temperature and the accompanying percentile for Sombor



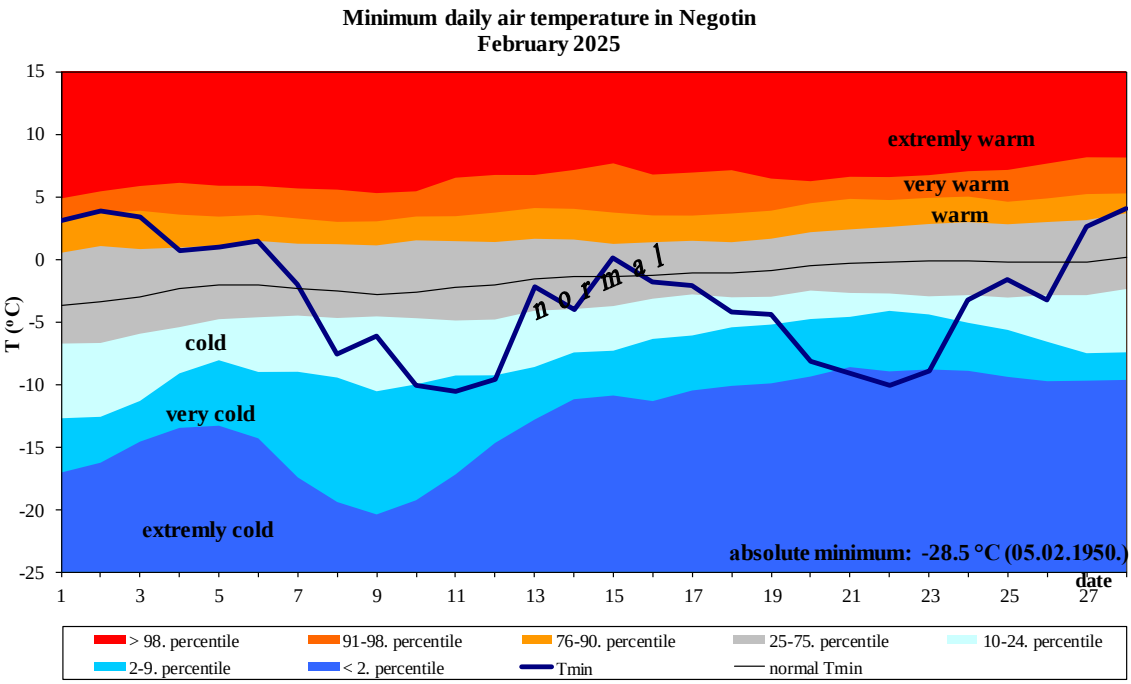
Appendix 28. Daily course of the minimum daily air temperature and the accompanying percentile for Novi Sad



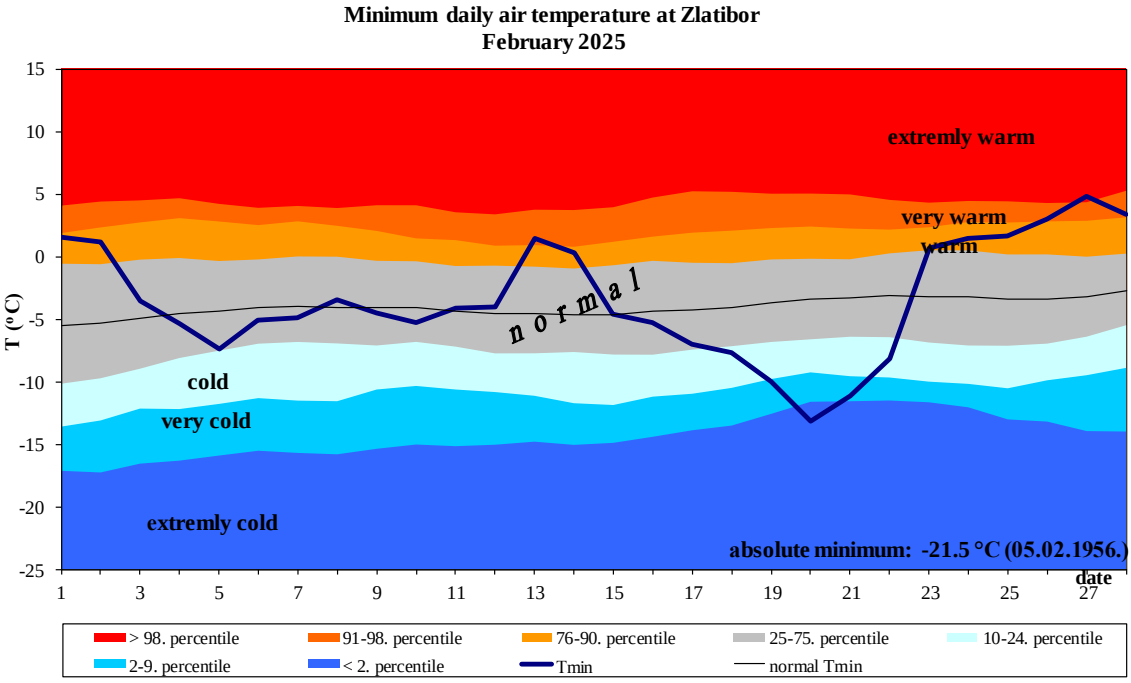
Appendix 29. Daily course of the minimum daily air temperature and the accompanying percentile for Loznica



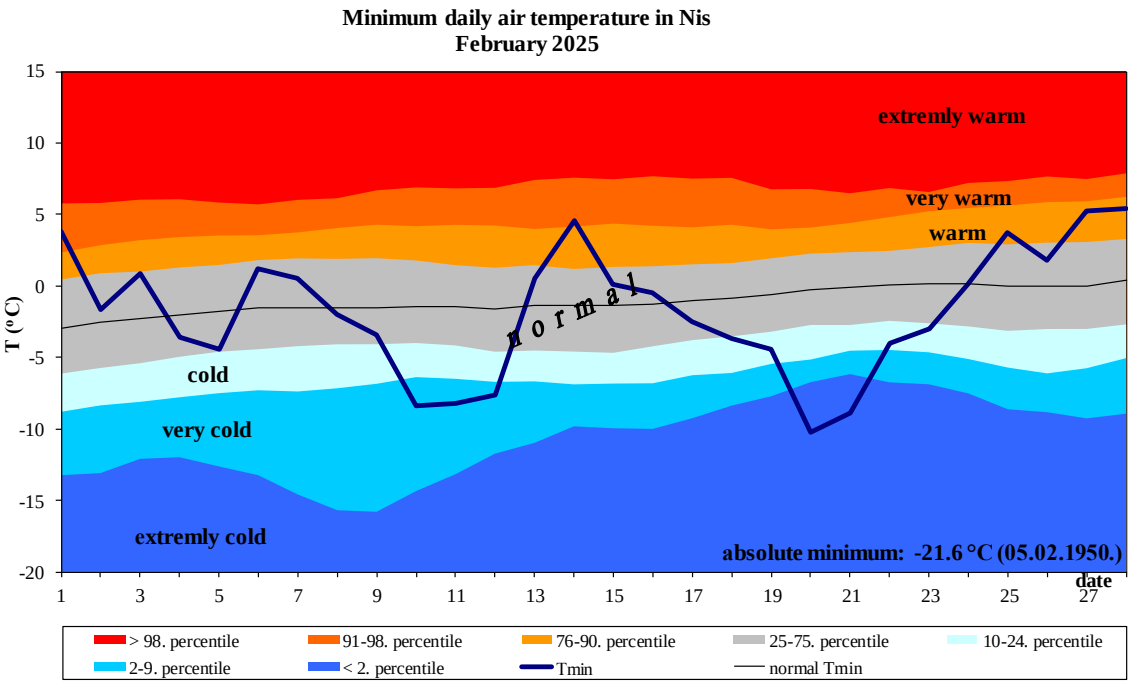
Appendix 30. Daily course of the minimum daily air temperature and the accompanying percentile for Kragujevac



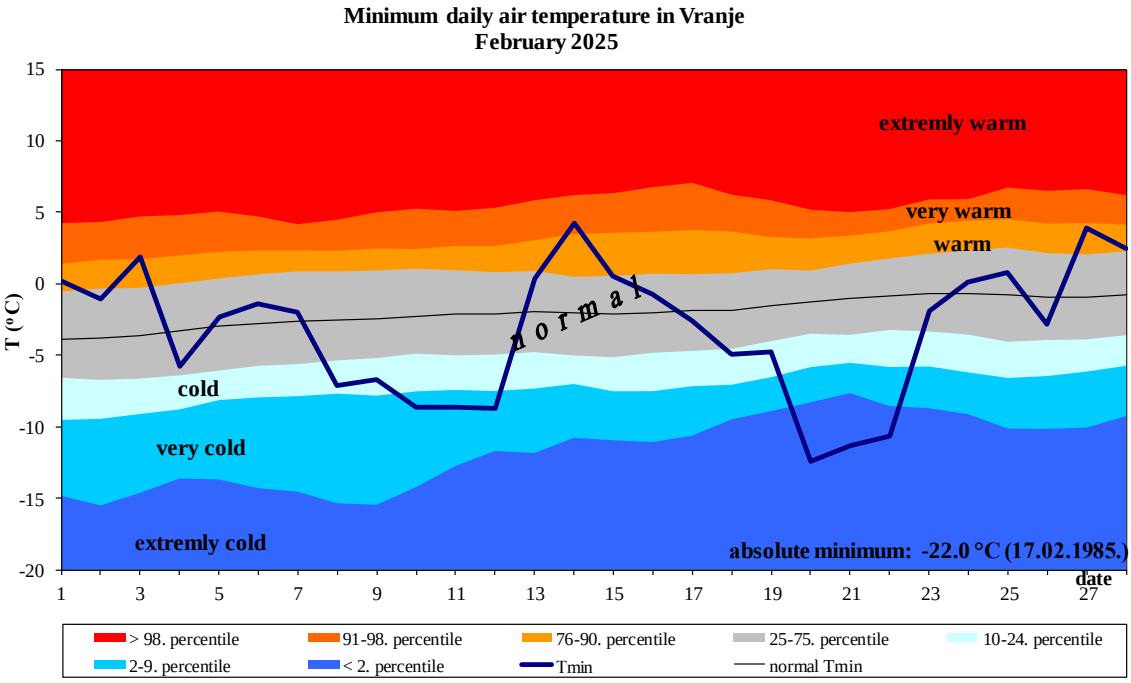
Appendix 31. Daily course of the minimum daily air temperature and the accompanying percentile for Negotin



Appendix 32. Daily course of the minimum daily air temperature and the accompanying percentile on Zlatibor

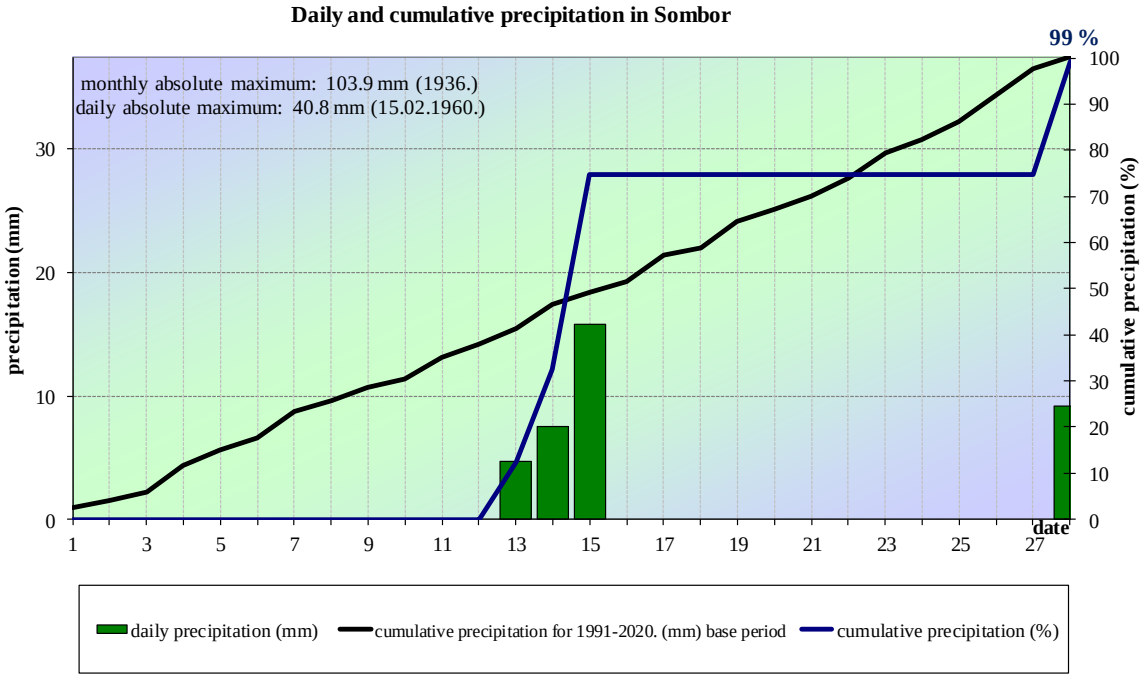


Appendix 33. Daily course of the minimum daily air temperature and the accompanying percentile for Nis

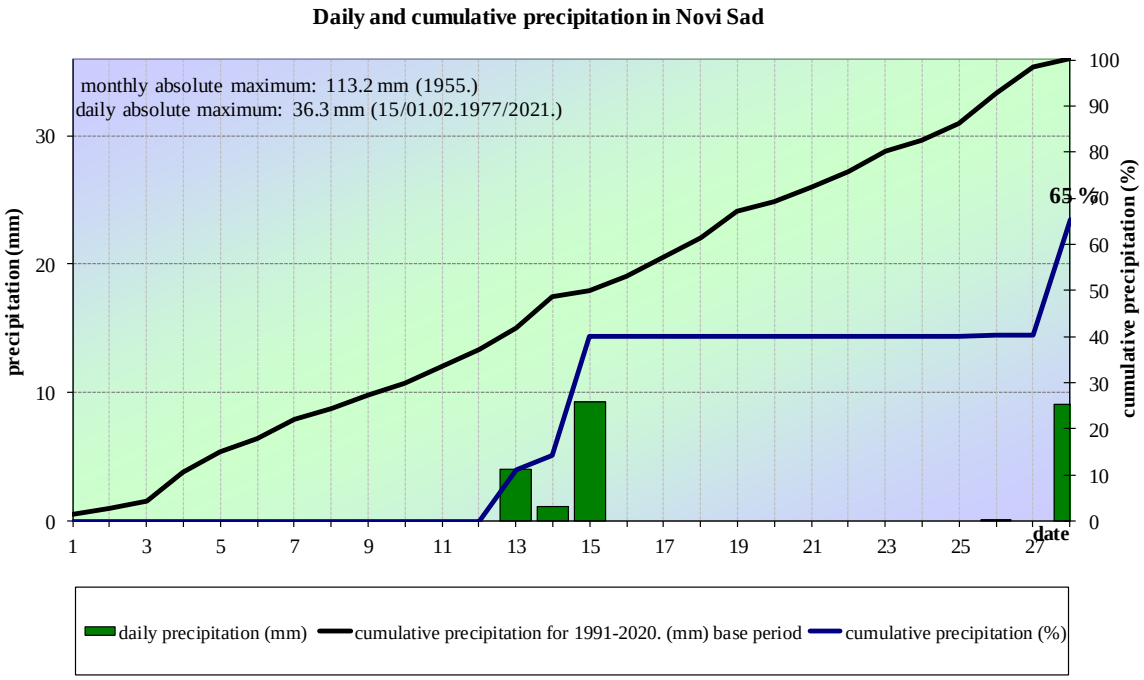


Appendix 34. Daily course of the minimum daily air temperature and the accompanying percentile for Vranje

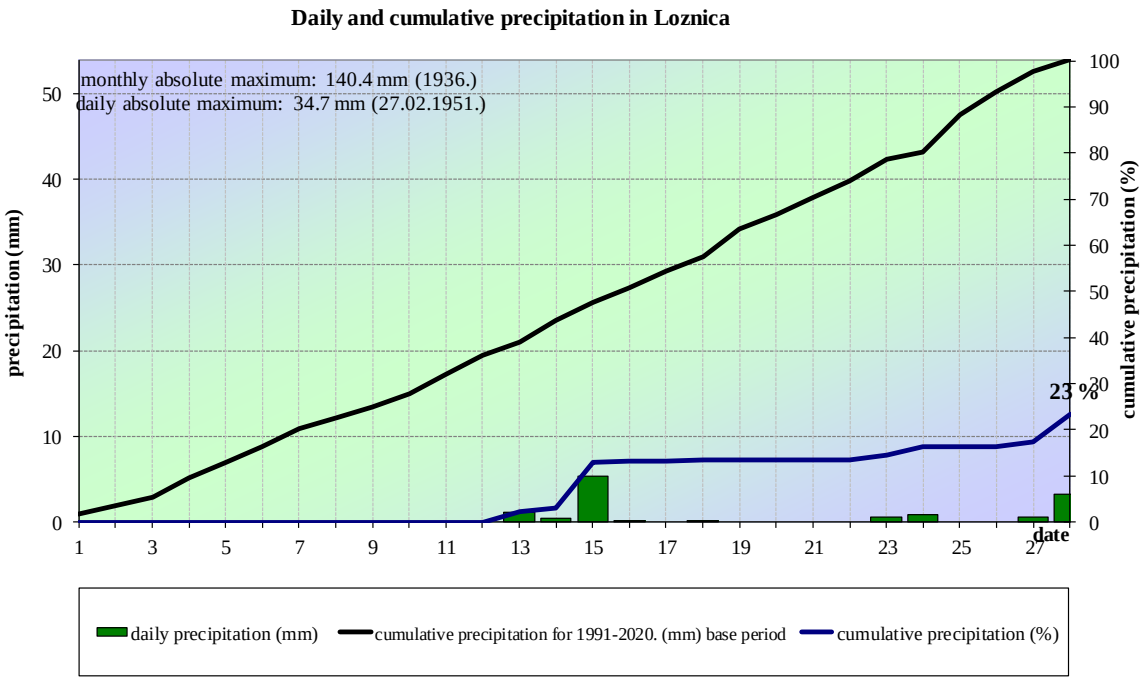
Precipitation



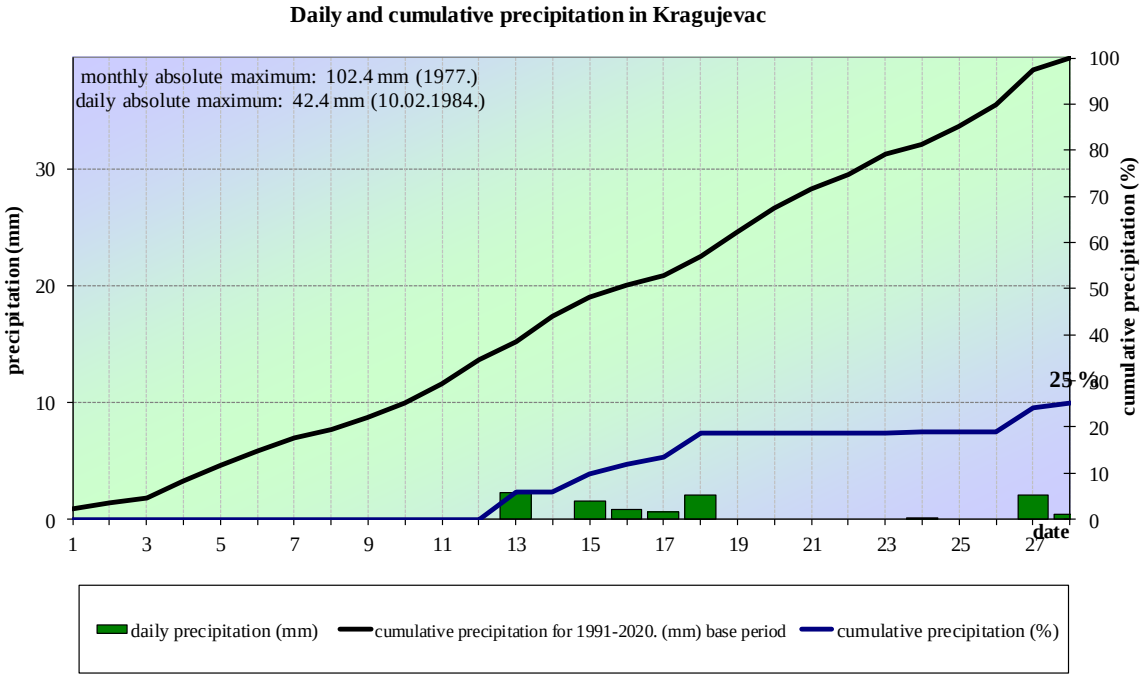
Appendix 35. Daily and cumulative precipitation sums for Sombor



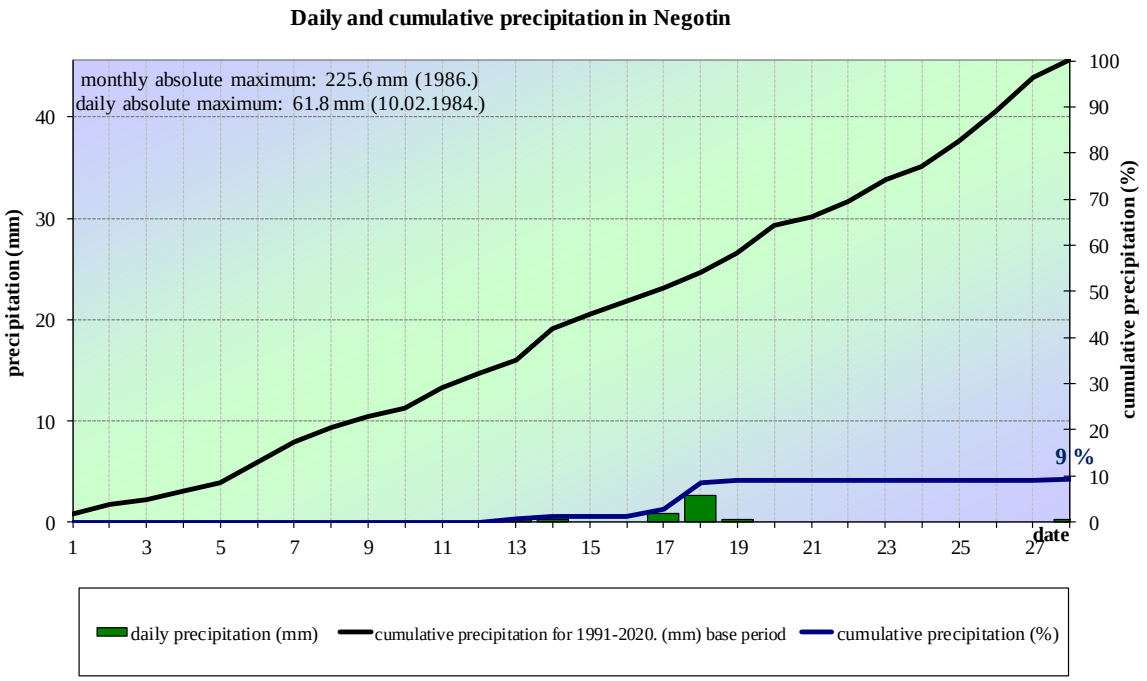
Appendix 36. Daily and cumulative precipitation sums for Novi Sad



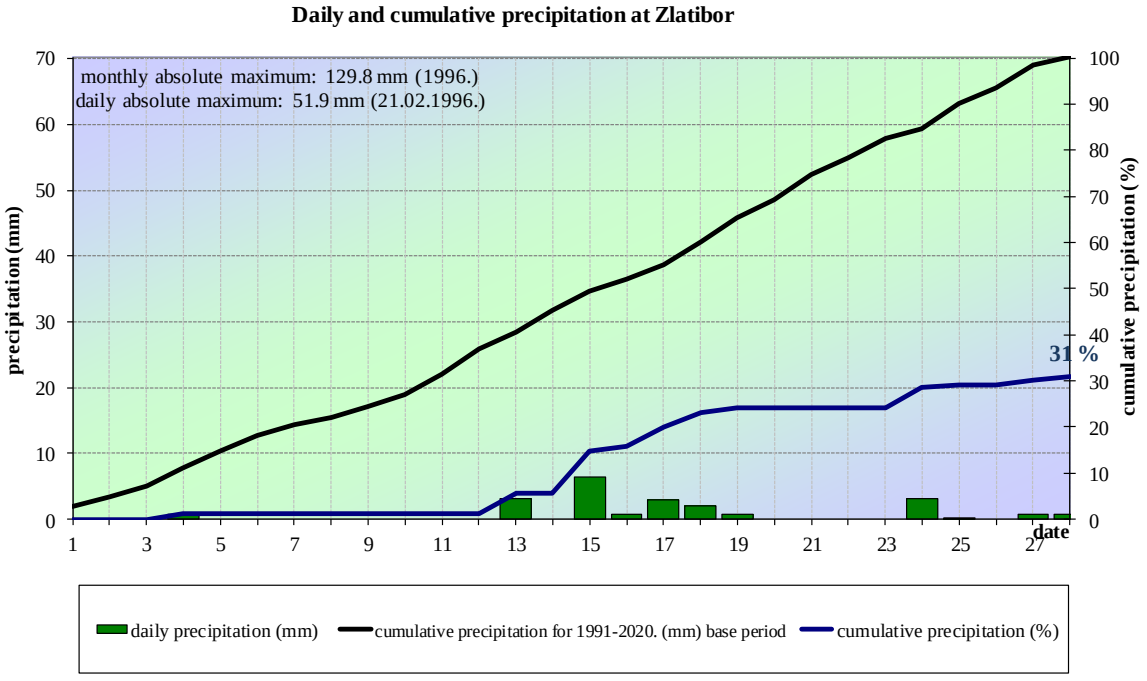
Appendix 37. Daily and cumulative precipitation sums for Loznica



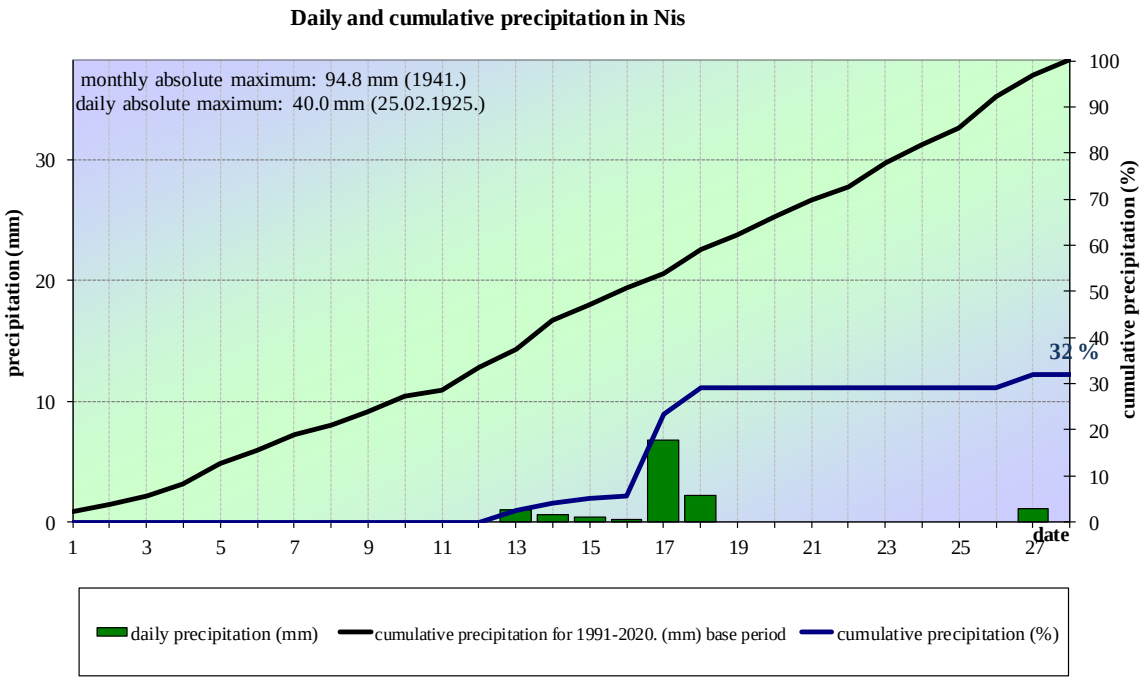
Appendix 38. Daily and cumulative precipitation sums for Kragujevac



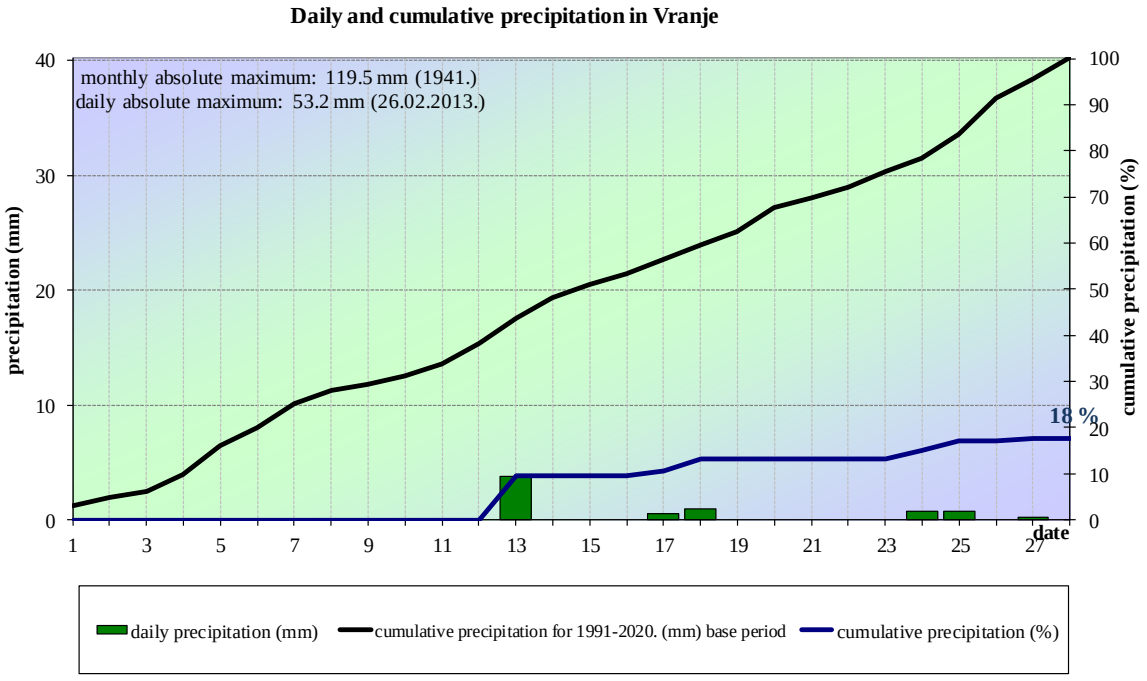
Appendix 39. Daily and cumulative precipitation sums for Negotin



Appendix 40. Daily and cumulative precipitation sums on Zlatibor



Appendix 41. Daily and cumulative precipitation sums for Nis



Appendix 42. Daily and cumulative precipitation sums for Vranje