

CLIMATOLOGICAL ANALYSIS OF THE YEAR 2012 FOR THE TERRITORY OF THE REPUBLIC OF SERBIA



Republic Hydrometeorological Service of Serbia
Kneza Višeslava 66, 11 000 Beograd, Republika Srbija
web: <http://www.hidmet.gov.rs>
mail: office@hidmet.gov.rs

The year 2012 was extremely warm throughout Serbia. In most of the country it was very dry, in westernmost parts even extremely dry in relation to the 1961-1990 base period. Summer 2012 was extremely warm and dry. It was the warmest and one of the driest summers since the beginning of meteorological measurements in Serbia. The autumn was extremely warm and for the majority of locations in Serbia even the warmest one on record. Moreover, there was a record-breaking number of tropical and summer days as well as tropical nights.

In the territory of Serbia, 2012, ranked as the second warmest year since the records began in 1951, with a mean maximum air temperature of 17.7°C. Only the year of 2000, was warmer with a mean maximum air temperature of 18.2°C. In Belgrade, in the period from 1888 to present, only the year of 2000 was warmer than 2012 by 0.2°C. The highest daily air temperature was measured in the central part of the country, in Cuprija (41.5°C), on July 15. The summer of 2012 was the warmest summer on record at 19 out of 28 main meteorological stations in Serbia. Furthermore, the number of tropical days was surpassed. There were 62 tropical days recorded in Belgrade, which is 40 days above average. Also, 52 tropical nights were recorded in Belgrade, which is the new all-time record. Record maximum daily air temperatures were surpassed for June in the west of Serbia, in Loznica (on June 30), for August at five main meteorological stations (on August 24), and for October at thirteen main meteorological stations (on October 1).

February was the coldest month on record at 15 main meteorological stations in Serbia. Record daily minimum air temperature was broken at Banatski Karlovac (-28.1°C) and was surpassed in the north of the country, at Rimski Sancevi (-28.7°C) for February 2012.

The absolute daily precipitation maximum was surpassed in the northeasternmost part of the country on July 25, with 152.8 mm registered at the Veliko Gradiste. The absolute snow cover height was surpassed in the southwest of Serbia on February 13. Snow cover reached 100 cm on Zlatibor Mountain, and 107 cm in Sjenica.

Cold Wave in February

During February 2012, throughout Serbia, a cold wave¹ lasted from January 29 to February 15. The anomalies of minimum daily air temperatures from normal reached up to -26.7°C. During the cold wave intensive precipitation occurred and snow cover formed throughout Serbia: up to 60 cm high in lowland areas and around 1.5 m high in altitudes over 1,000 m, while strong wind formed up to 2- 3 meter high snow drifts. 16 to 20 consecutive ice days were recorded, with up to 24 ice

¹ A cold wave is defined as period of at least 6 consecutive days with minimum daily air temperature in the very cold and extremely cold categories according to the percentile statistical method.

days in the mountains. The second cold wave, lasting six days, was registered in the south of the country in the second and third weeks of December.

Heat waves

The number of heat waves registrated during 2012, in most parts of the country, ranged from five up to eight in certain places. The heat waves lasted from six to ten days on average. The first one was recorded in the second half of March and the second one, lasting ten days, at the end of April and at the beginning of May. During the summer, heat waves occurred during the first twenty days of June, at the end of June until the middle of July, and at the beginning and at the end of August. Heat waves then continued at the beginning and at the end of September and into October.

Drought during summer

At the beginning of summer, long-lasting high air temperatures and small precipitation quantities caused severe to extreme drought in the whole territory of Serbia. The most unfavourable period for the majority of agricultural crops lasted from mid-June until July 25, when it was briefly interrupted by a cooling followed by precipitation. Very weak precipitation, high air and ground temperatures along with increased water consumption in August caused further aggravation of the soil moisture condition, so that drought was again recorded at the end of the summer.

Appendix

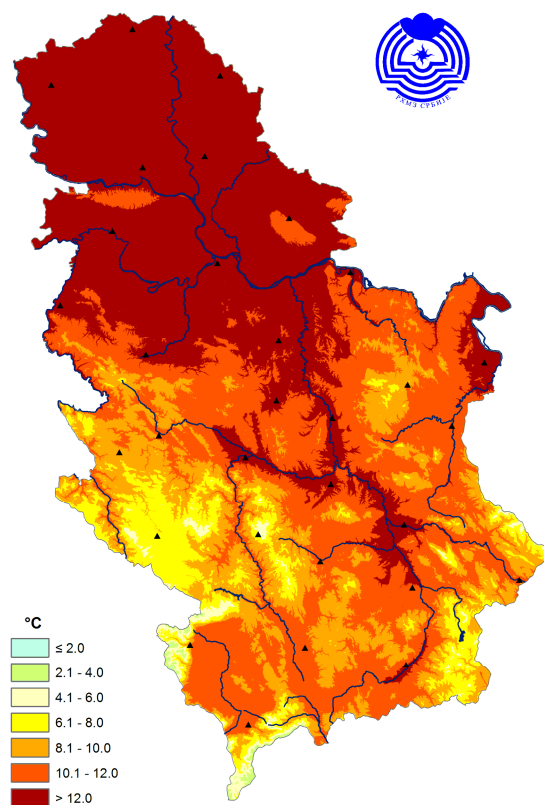
2012 MEAN MONTHLY AIR TEMPERATURE °C

station/month	January	February	March	April	May	June	July	August	September	October	November	December	year
Palic	1.8	-4.5	8.2	12.9	17.5	22.9	25.0	24.1	19.1	11.9	8.1	-0.1	12.2
Sombor	2.0	-4.3	8.1	12.6	17.4	22.6	25.1	24.2	19.0	11.8	8.4	0.2	12.3
Kikinda	1.2	-5.4	7.6	13.3	17.3	22.9	25.3	24.0	19.8	12.4	8.4	-0.2	12.2
Becej	1.8	-4.7	8.8	14.1	18.4	24.0	26.2	24.6	20.4	13.0	8.8	0.1	13.0
Zrenjanin	1.5	-5.0	7.6	13.2	17.2	23.2	25.5	24.4	20.3	12.9	9.2	0.3	12.5
Novi Sad	1.7	-5.0	8.1	13.0	17.4	22.9	25.2	24.6	19.8	12.7	9.3	0.3	12.5
Sr. Mitrovica	1.5	-4.4	7.9	12.9	17.2	22.6	24.9	23.7	19.5	12.8	9.1	0.4	12.3
Zlatibor	-3.6	-7.9	4.3	8.3	11.6	19.2	20.9	21.0	16.7	11.2	6.6	-1.5	8.9
B. Karlovac	0.9	-5.1	7.4	13.5	17.3	22.5	24.5	22.5	19.6	12.5	9.0	0.5	12.1
Belgrade	2.1	-3.0	10.1	14.5	17.9	24.6	26.9	26.2	21.5	14.6	10.5	2.0	14.0
Loznica	2.0	-3.5	9.2	13.0	16.2	23.2	25.1	24.4	19.5	13.1	9.8	1.4	12.8
Valjevo	0.8	-3.8	8.8	12.3	16.5	23.2	25.7	24.8	19.8	13.4	9.4	0.9	12.6
V. Gradiste	0.7	-4.0	7.3	13.2	16.6	22.6	25.3	22.2	19.3	12.5	9.2	0.7	12.1
Sm. Palanka	0.7	-4.2	7.7	13.0	16.4	23.1	25.4	23.3	19.9	13.0	9.3	1.4	12.4
Kragujevac	0.5	-4.0	8.3	12.9	16.0	22.9	25.6	23.9	19.9	13.3	9.5	1.4	12.5
Kraljevo	-0.1	-4.2	8.6	12.6	16.0	23.1	25.8	24.6	20.5	13.7	9.1	0.4	12.5
Pozega	-1.8	-5.2	6.2	10.7	14.5	21.0	22.9	21.4	17.5	11.3	7.2	-1.7	10.3
Cuprija	-0.1	-4.5	7.3	12.9	16.0	23.0	25.4	23.2	19.7	12.9	8.7	0.7	12.1
Krusevac	-0.2	-4.6	8.3	13.1	16.0	23.3	25.5	24.2	20.1	13.9	9.1	0.6	12.4
Negotin	0.9	-4.2	9.7	14.4	18.1	24.4	27.2	25.7	20.7	13.7	7.9	-0.7	13.2
Zajecar	0.0	-4.3	7.2	13.1	16.1	22.5	25.1	23.0	19.1	11.7	7.2	-1.3	11.6
Kopaonik	-7.3	-7.5	-1.1	3.1	6.8	14.1	16.8	15.9	12.5	7.5	3.1	-4.4	5.0
Sjenica	-5.2	-7.1	2.0	7.7	10.7	18.1	20.3	19.0	14.9	10.1	5.7	-2.7	7.8
Crni Vrh	-4.6	-9.3	3.2	8.3	11.4	17.9	20.7	20.2	15.7	9.7	4.2	-3.5	7.8
Nis	0.1	-4.0	8.2	13.4	16.5	23.8	26.5	25.1	21.3	14.2	9.7	1.1	13.0
Vranje	-1.5	-3.7	7.1	12.2	15.5	22.4	25.5	24.3	19.8	14.2	8.9	0.1	12.1
Dimitrovgrad	-1.6	-3.8	5.8	11.5	14.8	21.4	23.9	22.3	18.7	12.9	8.3	-0.2	11.2
Leskovac	-0.3	-4.5	7.2	12.3	15.8	23.1	25.5	23.7	19.7	12.9	8.1	0.3	12.0
Kursumlija	-0.6	-4.3	6.5	11.5	14.7	21.4	24.5	23.4	18.5	12.9	8.6	-0.1	11.4

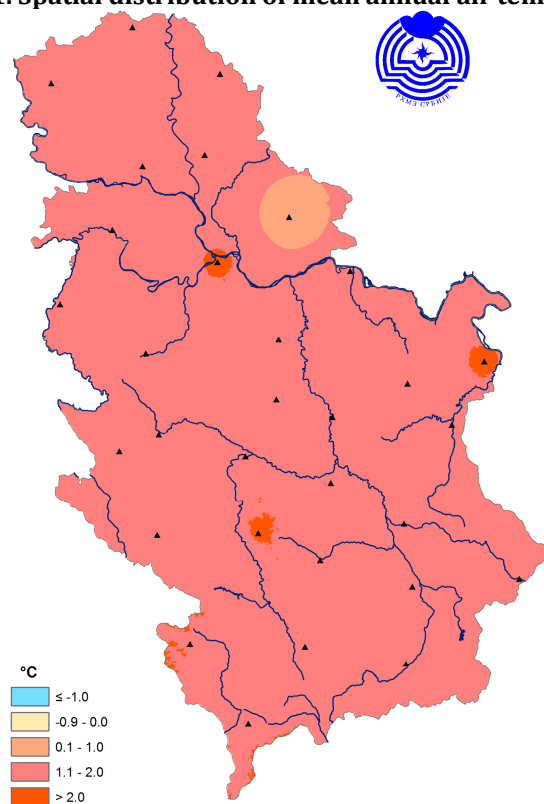
2012

MONTHLY RAINFALL IN mm

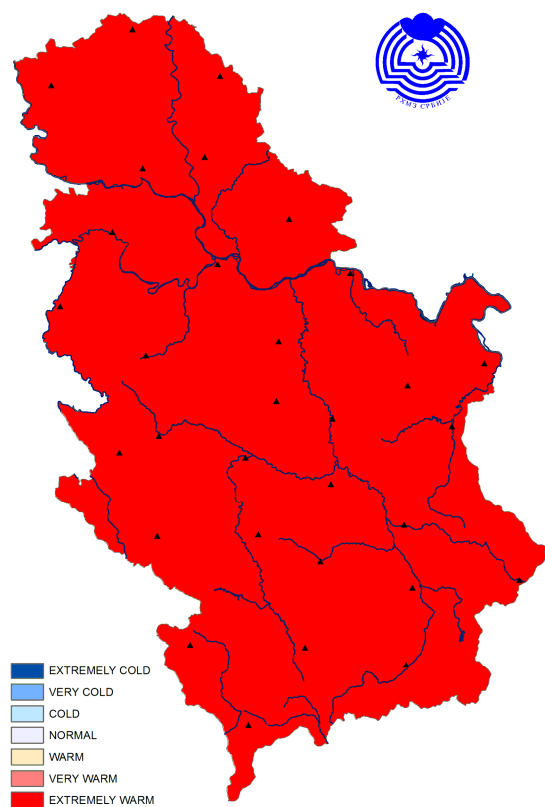
station/month	January	February	March	April	May	June	July	August	September	October	November	December	year
Palic	24.2	49.5	5.4	42.0	64.7	18.2	40.4	2.6	27.5	78.6	35.6	44.8	433.5
Sombor	36.5	57.3	3.4	40.2	56.5	24.3	22.2	6.9	30.1	51.3	50.8	73.1	452.6
Kikinda	39.0	52.3	4.0	61.9	51.2	19.6	55.5	6.6	15.1	67.6	27.3	48.7	448.8
Becej	36.4	59.3	6.3	71.8	66.5	35.2	41.8	6.2	14.0	58.5	39.1	47.2	482.3
Zrenjanin	57.5	65.7	5.2	57.7	44.4	53.1	47.3	1.0	30.3	52.0	20.5	70.8	505.5
Novi Sad	44.9	67.3	4.1	82.8	52.2	27.5	47.7	3.5	13.1	51.4	31.3	56.2	482.0
Sr. Mitrovica	40.6	53.2	3.9	84.4	71.1	26.8	39.6	0.4	13.2	48.3	25.8	39.7	447.0
Zlatibor	112.6	86.5	27.2	89.4	161.7	18.6	81.7	9.2	27.3	54.9	60.6	111.5	841.2
B. Karlovac	80.8	63.3	5.1	73.7	92.8	12.8	115.7	1.6	38.7	72.0	20.3	49.2	626.0
Belgrade	87.4	61.5	2.4	66.9	127.9	16.0	39.0	4.5	29.4	44.9	29.2	54.6	563.7
Loznica	81.7	84.2	7.8	116.9	169.2	28.5	32.9	1.6	16.3	70.4	46.9	103.3	759.7
Valjevo	95.4	65.7	14.6	86.5	115.1	28.2	19.4	2.3	24.5	31.0	21.2	105.6	609.5
V. Gradiste	71.7	57.1	16.0	104.4	144.2	8.3	186.8	5.0	29.1	61.4	27.3	75.7	787.0
Sm. Palanka	81.6	59.4	4.4	83.0	117.6	49.6	75.1	0.0	11.7	49.5	23.2	85.0	640.1
Kragujevac	95.4	60.4	6.3	74.6	87.3	57.8	35.4	0.0	10.4	56.2	14.7	91.1	589.6
Kraljevo	107.1	54.9	24.5	69.1	94.4	17.8	45.3	0.0	7.7	56.7	11.1	78.8	567.4
Pozega	88.5	53.8	17.0	64.9	90.3	50.3	52.3	1.8	10.7	38.8	39.7	82.6	590.7
Cuprija	114.2	53.8	15.4	99.2	131.9	3.7	50.2	0.0	19.7	62.4	22.2	87.4	660.1
Krusevac	122.9	63.7	22.1	70.9	136.6	28.3	32.8	0.0	14.3	55.0	12.2	61.0	619.8
Negotin	57.2	63.7	0.5	64.9	108.0	31.0	27.0	1.2	6.8	45.3	40.5	89.7	535.8
Zajecar	74.2	50.5	3.1	70.8	137.6	16.6	93.9	0.0	10.2	49.3	20.9	82.6	609.7
Kopaonik	138.9	86.6	47.6	111.3	113.5	47.8	65.4	0.2	22.5	109.3	19.3	104.4	866.8
Sjenica	77.2	92.0	11.5	60.2	82.1	11.5	44.7	1.1	33.9	100.5	44.0	95.4	654.1
Crni Vrh	86.1	63.2	15.4	116.1	172.3	33.4	56.5	13.9	11.7	67.1	49.2	69.3	754.2
Nis	88.4	61.0	13.5	85.8	162.9	5.9	36.7	10.6	12.0	53.3	8.5	78.9	617.5
Vranje	85.7	54.3	13.2	60.6	114.9	23.4	30.1	1.6	41.8	47.9	10.6	64.7	548.8
Dimitrovgrad	101.2	45.2	16.8	66.2	169.0	10.0	23.7	8.8	14.5	18.1	10.0	47.2	530.7
Leskovac	101.7	47.9	13.5	56.1	124.1	20.7	90.1	1.5	12.0	39.3	16.6	75.1	598.6
Kursunlija	69.7	70.1	15.9	49.2	107.3	21.3	9.2	0.4	14.7	59.3	10.0	101.1	528.2



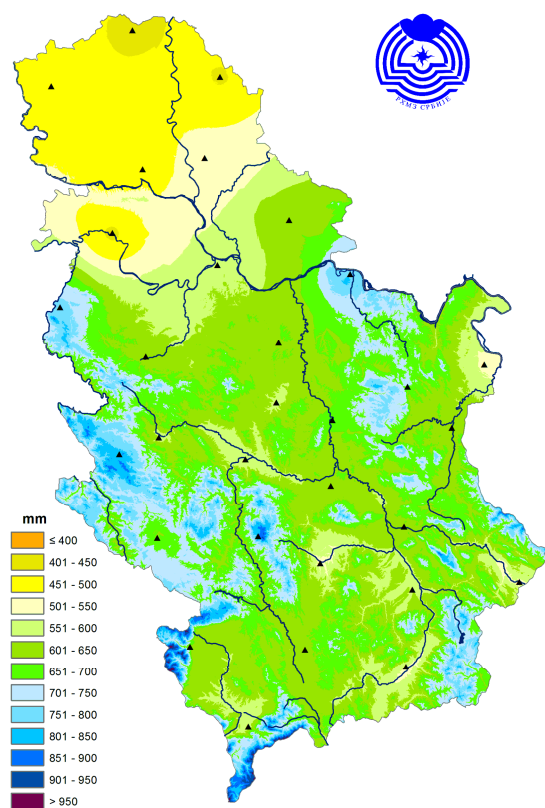
1. Spatial distribution of mean annual air temperature in (°C) during the year 2012



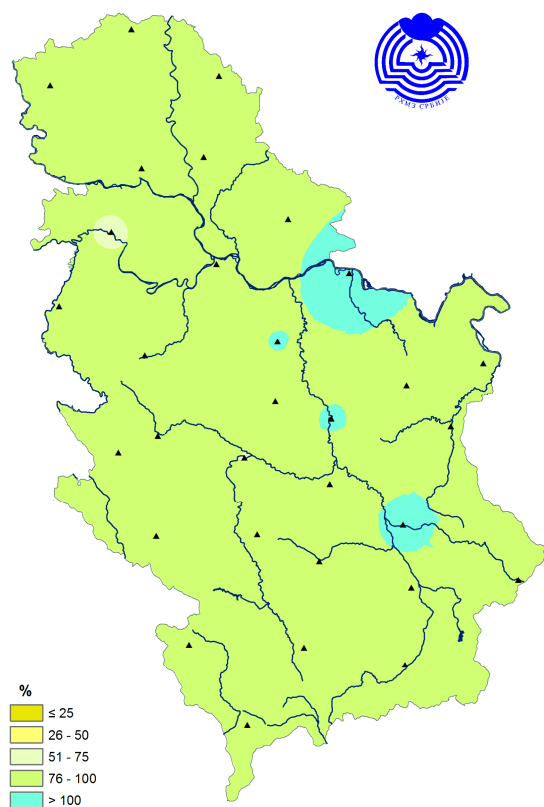
2. Spatial distribution of mean annual air temperature anomaly in (°C) during the year 2012



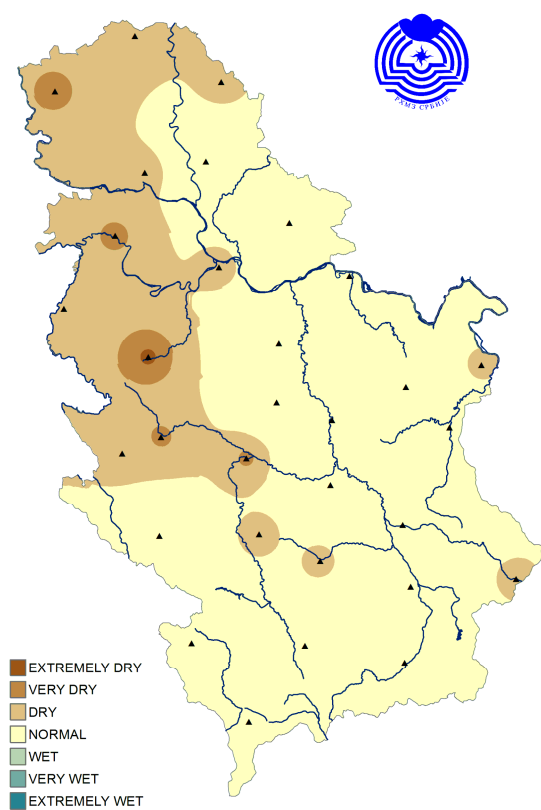
3. Spatial distribution of mean annual air temperature according to the percentile method during the year 2012



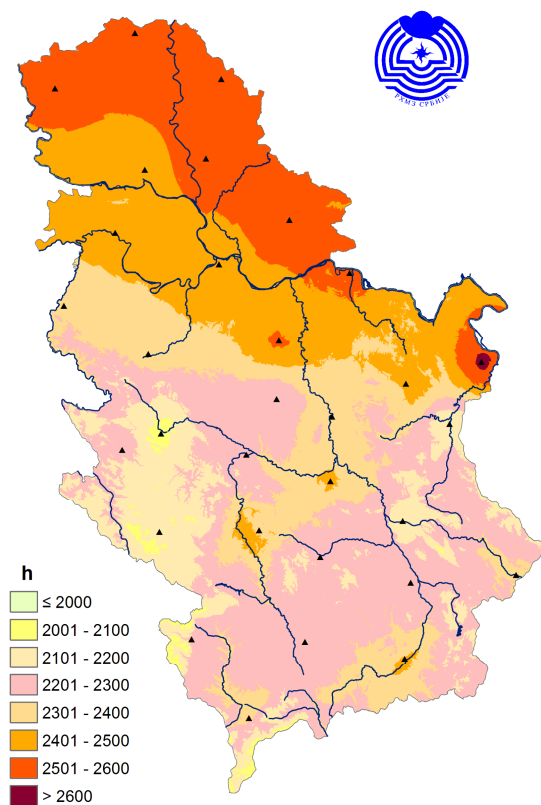
4. Spatial distribution of annual rainfall in millimeters during the year 2012



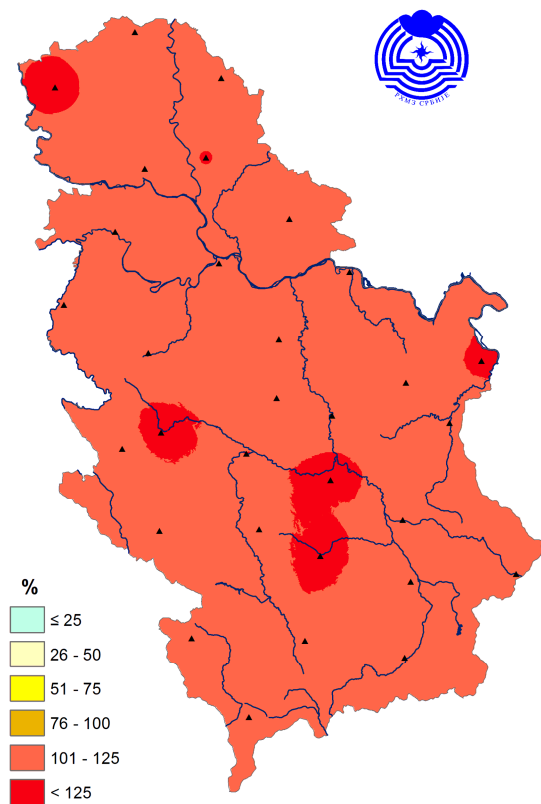
5. Spatial distribution of annual rainfall as a percentage of normal from the 1961-1990 normal, during the year 2012



6. Annual rainfall according to the percentile method during the year 2012



7. Insolation in hours during the year 2012



8. Insolation in percentages of normal during the year 2012