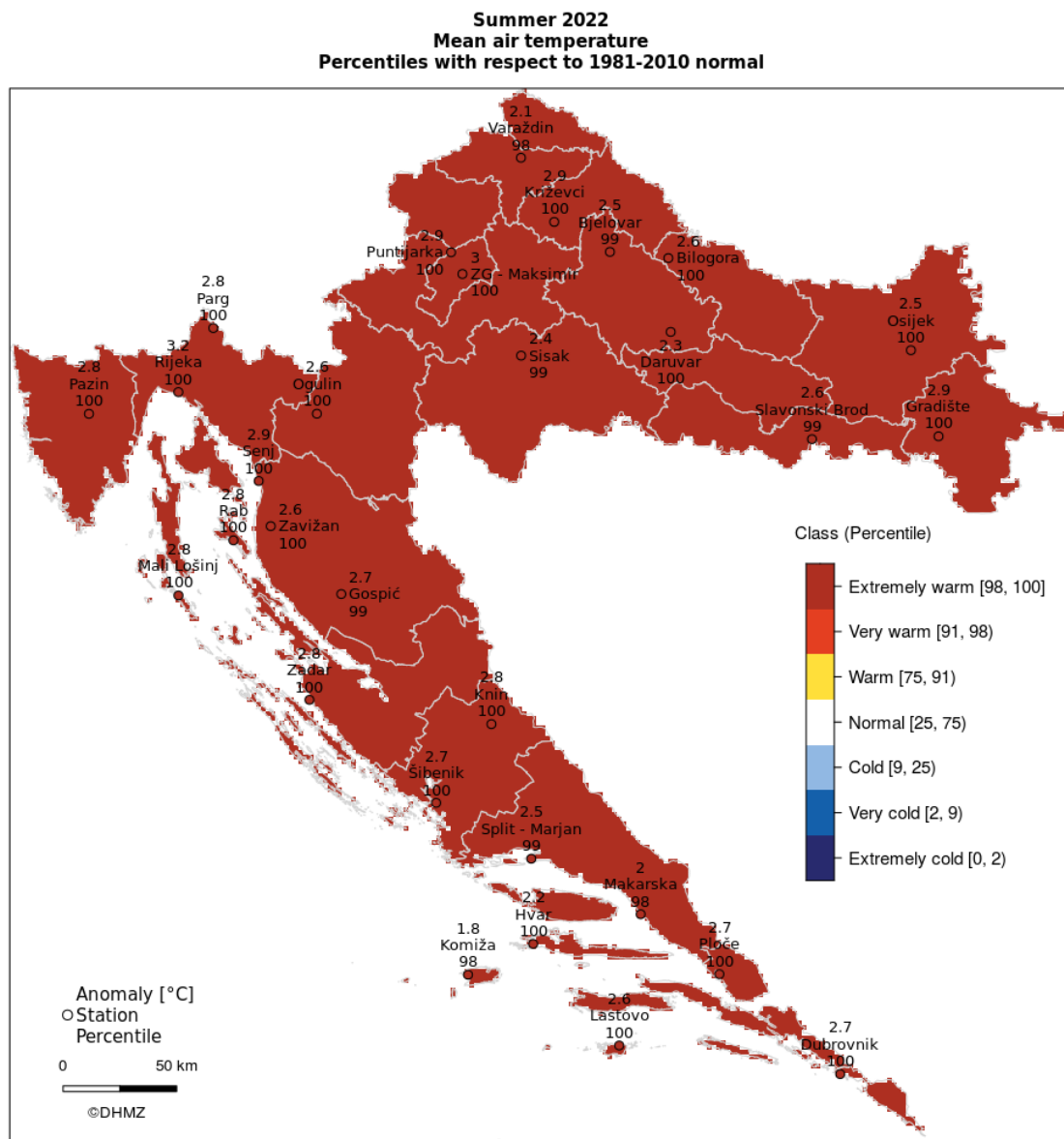


CLIMATE REPORT FOR CROATIA FOR SUMMER 2022

Air temperature anomalies for Croatia in summer 2022

Anomalies of the mean air temperature for summer 2022 with respect to the normal 1981 - 2010 are in the range from 1.8 °C (Komiža) to 3.2 °C (Rijeka). At all stations, the air temperature was significantly higher than the multi-annual average.

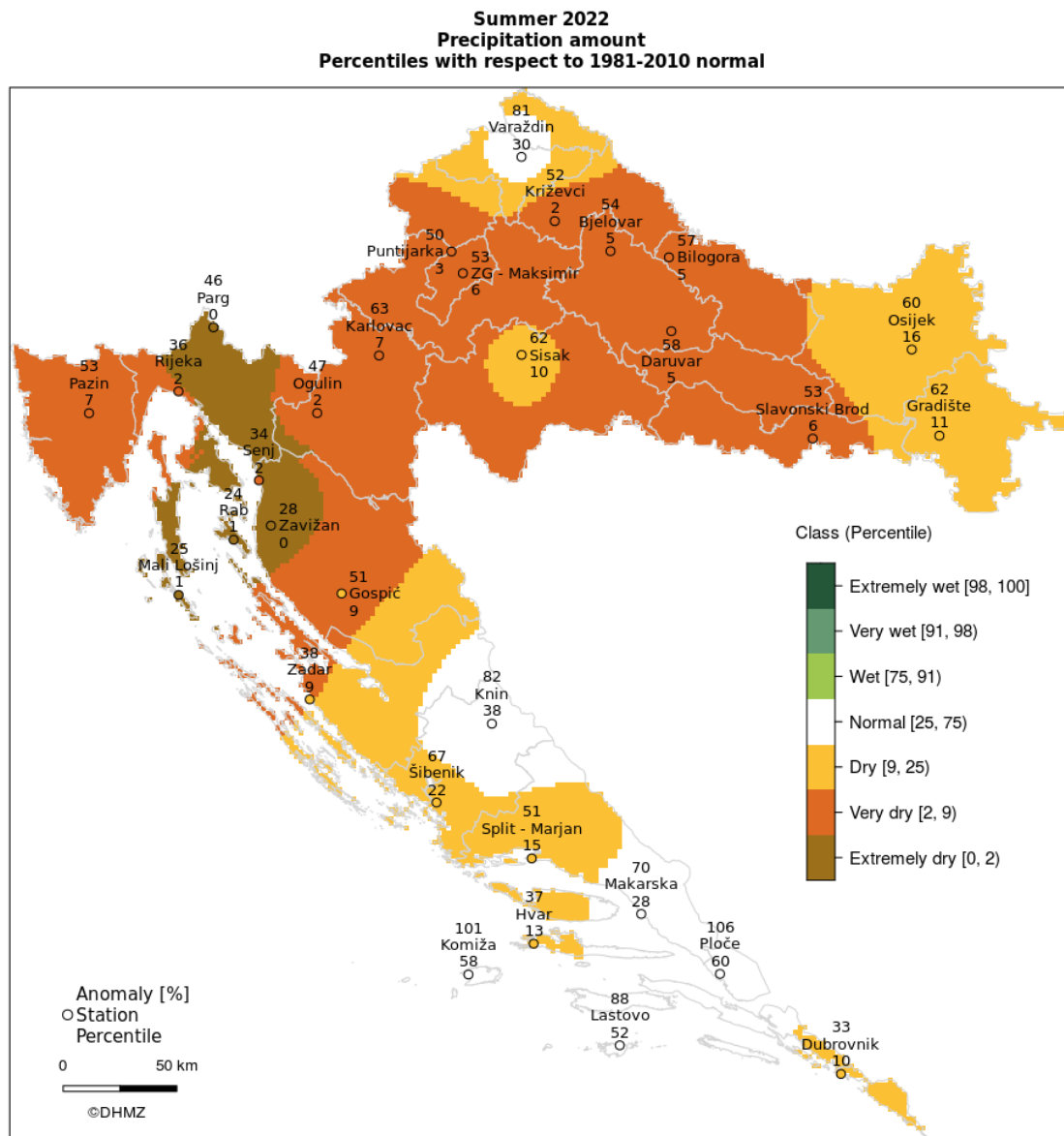
According to the percentile ranks and classification ratings, thermal conditions in Croatia for summer 2022 is described in the following categorie: **extremely warm** for whole Croatia.



Precipitation amounts for Croatia in summer 2022

The anomalies of the precipitation amount in summer 2022 compared to the normal 1981-2010 are in the range from 24 % of the multi-year average in Rab (40.0 mm) to 106 % in Ploče (136.5 mm). The analysis of anomalies in precipitation amounts, expressed as a percentage (%) of the multi-annual average (1981-2010), shows that precipitation amounts for summer 2022 were below multi-annual average in most of Croatia.

Precipitation conditions are described in more detail in the following categories: **extremely dry** (north part of mountainous Croatia and Kvarner – part of the north Adriatic), **very dry** (parts of central and eastern Croatia, part of mountainous Croatia, Istra), **dry** (part of eastern Croatia, north part of central Croatia, wider area of town Sisak, part of mountainous Croatia, northern Dalmatia, part of central Dalmatia and south part of southern Croatia) and **normal** (wider area of town Varaždin, hinterland of north Dalmatia, part of central and southern Dalmatia).



Air temperature anomalies for Croatia in June 2022

The anomalies of the mean air temperature in June 2022 with respect to the normal 1981 - 2010 were within the range from 3.0 °C (Varaždin) to 4.3 °C (Parg and Rijeka). At all stations air temperature values were significantly higher than the respective multi-annual average. Absolute maximum temperatures were recorded at eight stations in June (Table 1).

According to the percentile ranks and classification ratings, thermal conditions in Croatia for June 2022 are described in the following categories: **warm** (area around Makarska), **very warm** (area around Slavonski Brod, hinterland of Istra and mostly whole Dalmatia and its hinterland) and **extremely warm** (almost whole eastern, central and mountainous part of Croatia and north Adriatic).

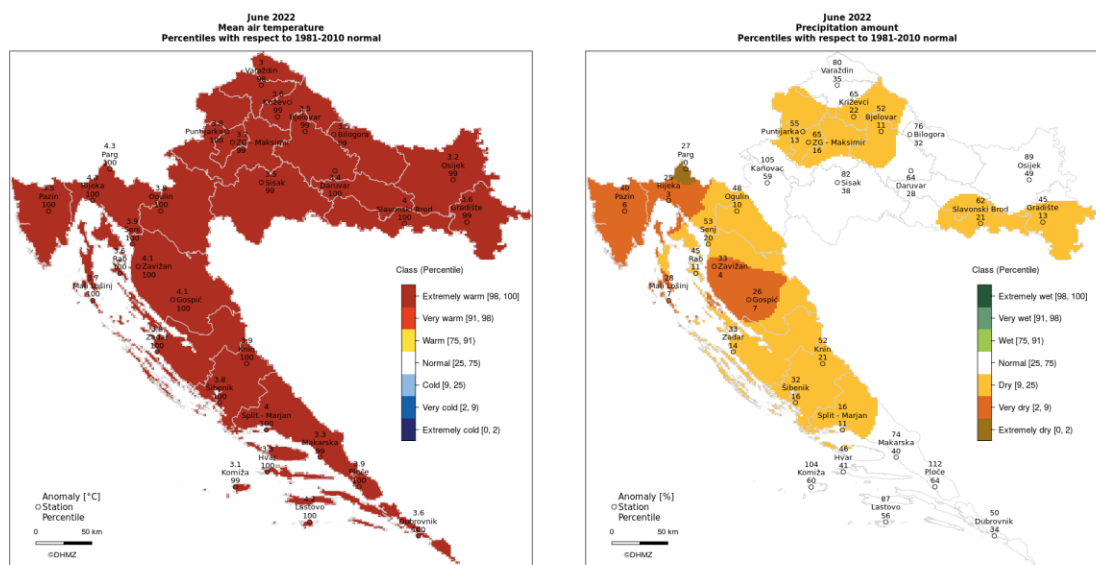
Table 1 - Absolute maximum temperature in June 2022 and comparison with available series of measurement (these stations are included in the analysis of climate anomalies in Croatia)

station	year since data are available	the highest temperature (°C) in June (till 2021) in period when data are available	the date when maximum was reached (*incomplete series of measurement)	the highest temperature measured in June 2022 (C)	the date when the maximum temperature was measured in June 2022
Dubrovnik	1961.	37.5	28.6.2019.*	34.1	14.6.
Senj	1948.	36.3	12.6.2003.*	37.6	28.6.
Šibenik	1949.	37.6	25.6.2007.	35.0	28.6.
Slavonski Brod	1963.	37.6	24.6.2021.	36.3	29.6.
Knin	1949.	39.3	29.6.2006.	40.4	28.6.
Rijeka	1948.	36.7	12.6.2003.	38.4	28.6.
Karlovac	1949.	39.2	30.6.1950.	34.3	27.6.
Osijek	1899.	39.6	20.6.1908.*	34.7	29.6.
Hvar	1858.	38.0	28.6.2019.*	33.4	5.6.
Pazin	1961.	35.8	27.6.2019.	36.8	28.6.
Split - Marjan	1948.	38.1	14.6.2003.	35.2	28.6.
Ogulin	1949.	35.6	30.6.1950.	34.3	27.6.
Komiža	1981.	37.2	29.6.2006.	37.1	28.6.
Sisak	1949.	38.1	30.6.1950.	34.3	29.6.
Daruvar	1978.	35.7	24.6.2021.	37.0	29.6.
Mali Lošinj	1961.	35.6	12.6.1996.	34.3	28.6.
Poreč	1981.	33.6	27.6.2019.*	34.3	27.6.
Zagreb - Maksimir	1949.	37.6	30.6.1950.	34.9	29.6.
Bjelovar	1949.	36.7	24.6.2003.	36.0	29.6.
Varaždin	1949.	36.0	23.6.2003.	34.6	29.6.
Gospić	1872.	35.4	28.6.1935.*	35.8	28.6.
Lastovo	1948.	36.2	24.6.2002.*	37.3	28.6.
Zadar	1961.	35.1	28.6.2019.	34.2	28.6.
Parg	1950.	32.4	27.6.2019.*	30.2	27.6.
Puntijarka	1981.	29.6	27.6.2019.	28.5	29.6.
Zavižan	1953.	26.4	14.6.2019.*	25.6	28.6.

Precipitation anomalies for Croatia in June 2022

Precipitation anomalies expressed as a percentage (%) of the multi-annual average were in June 2022 within the range from 16 % in Split-Marjan (with precipitation amount of 7.7 mm) to 112 % at Ploče (55.8 mm). Analysis of precipitation anomalies in June 2022, expressed as a percentage (%) of the multi-annual average shows that precipitation amounts at most station were below average and only at three slightly above average.

Precipitation conditions in June 2022 are described in more detail in the following categories: **extremely dry** (wider area of Parg – mountainous Croatia), **very dry** (part of Gorski kotar and Lika, part of Kvarner and islands of north Adriatic, Istra), **dry** (south part of eastern Croatia, north part of central Croatia, parts of islands of north Croatia, north and part of central Dalmatia and part of hinterland) and **normal** (parts of eastern and central Croatia, central and south Dalmatia).



Mean air temperature (left) and precipitation amount (right) - June 2022 - percentiles with respect to 1981-2010 normal

Air temperature anomalies for Croatia in July 2022

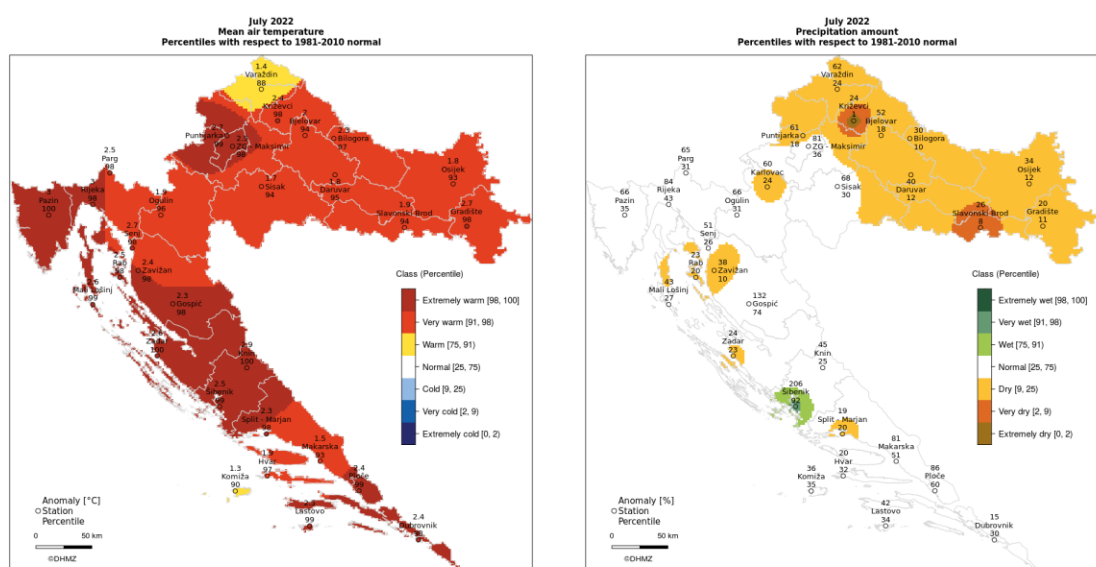
The anomalies of the mean air temperature in July 2022 with respect to the normal 1981 - 2010 were within the range from 1.3 °C (Komiža) to 3.0 °C (Pazin and Rijeka). At all stations air temperature were significantly higher than the respective multi-annual average. Absolute maximum temperature was recorded at Zadar station on 26th of July - 36.2 °C (measurement since 1961, previous record 36.1 °C on 22nd July 2015).

According to the percentile ranks and classification ratings, thermal conditions in Croatia for July 2022 are described in the following categories: **warm** (north part of central Croatia, Vis), **very warm** (eastern, parts of central and mountainous Croatia, the great part of central Dalmatia) and **extremely warm** (the rest of the territory – surroundings of town Gradište, west part of central Croatia, parts of mountainous Croatia, Istra, parts of Kvarner with islands, north Dalmatia and hinterland and south Croatia).

Precipitation anomalies for Croatia in July 2022

Precipitation anomalies expressed as a percentage (%) of the multi-annual average were in July 2022 within the range from 15 % in Dubrovnik (with precipitation amount of 4.0 mm) to 206 % in Šibenik (52.2 mm). Analysis of precipitation anomalies in July 2022, expressed as a percentage (%) of the multi-annual average shows that precipitation amounts were mostly below normal, and just at Gospić and Šibenik above the multi-annual average.

Precipitation conditions in July 2022 are described in more detail in the following categories: **extremely dry** (town Križevci), **very dry** (wider area of town Slavonski Brod and Križevci), **dry** (eastern Croatia, surroundings of Karlovac, Zavižan, Zadar and Split, and parts of Kvarner islands - north Adriatic), **normal** (parts of central and mountainous Croatia, Kvarner, Istra, Dalmatia except surroundings of Zadar, Šibenik and Split), **wet** (wider area of town Šibenik) and **very wet** (Šibenik).



Mean air temperature (left) and precipitation amount (right) - July 2022 – percentiles with respect to 1981-2010 normal

Air temperature anomalies for Croatia in August 2022

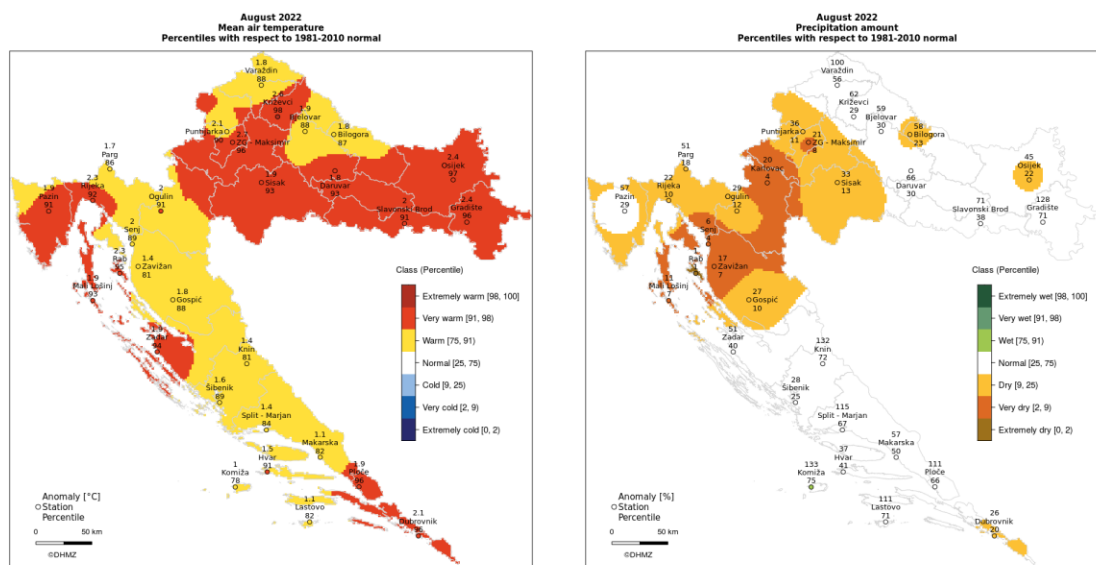
The anomalies of the mean air temperature in August 2022 with respect to the normal 1981 - 2010 were within the range from 1.0 °C (Komiža) to 2.7 °C (Zagreb-Maksimir). At all stations air temperature values were above the respective multi-annual average. Absolute maximum temperature were recorded at Zadar (39.0 °C on 6th August) and Dubrovnik (38.6 °C on 7th August - measurement since 1961, previous record in Zadar 36.3 °C on 4th August 2017 and in Dubrovnik 38.4 °C on 7th August 2012.).

According to the percentile ranks and classification ratings, thermal conditions in Croatia for August 2022 are described in the following categories: **warm** (north and mountainous Croatia, part of Kvarner and central Dalmatia with hinterland), **very warm** (part of east and central Croatia, Istra, part of north Dalmatia, town Ogulin and Hvar and south Croatia) and **extremely warm** (wider area of town Križevci).

Precipitation anomalies for Croatia in August 2022

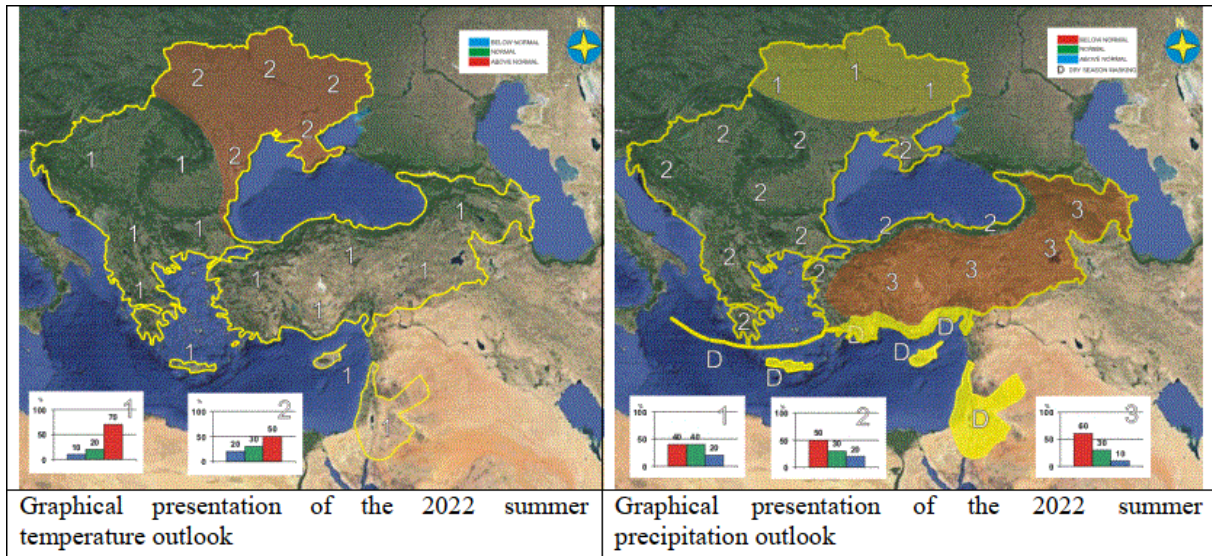
Precipitation anomalies expressed as a percentage (%) of the multi-annual average were in August 2022 within the range from 1 % in Rab (with precipitation amount of 0.8 mm) to 133 % in Komiža (51.3 mm). Analysis of precipitation anomalies in August 2022 expressed as a percentage (%) of the multi-annual average shows that precipitation amounts were below normal and at 7 stations above the multi-annual average.

Precipitation conditions in August 2022 are described in more detail in the following categories: **extremely dry** (island Rab), **very dry** (area around Zagreb, parts of central and mountainous Croatia and part of Kvarner), **dry** (area around Osijek and Bilogora, parts of central and mountainous Croatia, coast of Istra and wider area of Dubrovnik), **normal** (east Croatia and part of central Croatia, part of mountainous Croatia and most of Dalmatia) and **wet** (area of town Komiža on island Vis).



Mean air temperature (left) and precipitation amount (right) - August 2022 – percentiles with respect to 1981-2010 normal

VERIFICATION OF SEECOF-27 CLIMATE OUTLOOK FOR THE 2022 SUMMER SEASON



Air temperature anomalies for Croatia in summer 2022

According to the SEECOF-27 climate outlook, for all Croatian territory, there were chance for above normal summer temperatures. Probability for exceeding the average summer season temperature was high - 70%. Probability of temperature being lower than normal was 10% and being normal was 20%.

The summer season in Croatia according to multi-annual average 1981-2010 concerning the temperature for the whole territory was above normal (from 1.8 °C to 3.2 °C).

We can conclude that the outlook for the summer 2022 according the temperature was very good.

Precipitation amounts for Croatia in summer 2022

According to the SEECOF-27 climate outlook, summer precipitation in whole Croatia was forecasted below-average with probability of 50%, normal with probability of 30% and above-average with probability of 20%.

The actual precipitation amounts in the most of Croatia were mainly below the multi-annual average (1981-2010).

We can conclude that the outlook for the summer 2022 according the precipitation in the largest part of the territory was good.

Country	Seasonal temperature (JJA)		Seasonal precipitation (JJA)		High Impact Events
	Observed	SEECOF-27 climate outlook for temperature	Observed	SEECOF-27 climate outlook for precipitation	
Croatia	Above normal	Above normal (10,20,70)	Below normal (the largest part of the territory) Normal (wider area of town Varaždin, part of hinterland of Dalmatia and south Croatia)	Below normal (50,30,20)	<p>Summer 2022 was extremely warm.</p> <p>In all three months heat waves were observed (one in June, two in July and August). In all three months absolute maximum temperature were recorded.</p> <p>In all three months convective related severe weather phenomena (thunderstorms, hail, heavy rains, flash floods, waterspouts) were observed mostly all over Croatia.</p> <p>Regardless of locally high amount of precipitation in short time, the consequences of the long-term drought were visible in agriculture and at the record low water levels of the Drava river.</p> <p>In June, north part of Croatia was hit by severe thunderstorms and hail (height of hail somewhere was around 70 cm.) Flood damage and corps damage due to hail were reported and traffic on many local road were interrupted.</p> <p>In June, severe thunderstorms were more common in continental part of Croatia.</p> <p>In July convective activity was very frequent all over Croatia. Urban floods as a result of large amounts of precipitation in a short time were</p>

					<p>common. Flood damage and corps and infrastructural damage were also frequent. Severe thunderstorms were recorded in large part of Croatia on 26th July.</p> <p>In August, a few convective episodes hit mostly Dalmatia. Flash floods caused damage on houses and roads.</p>
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