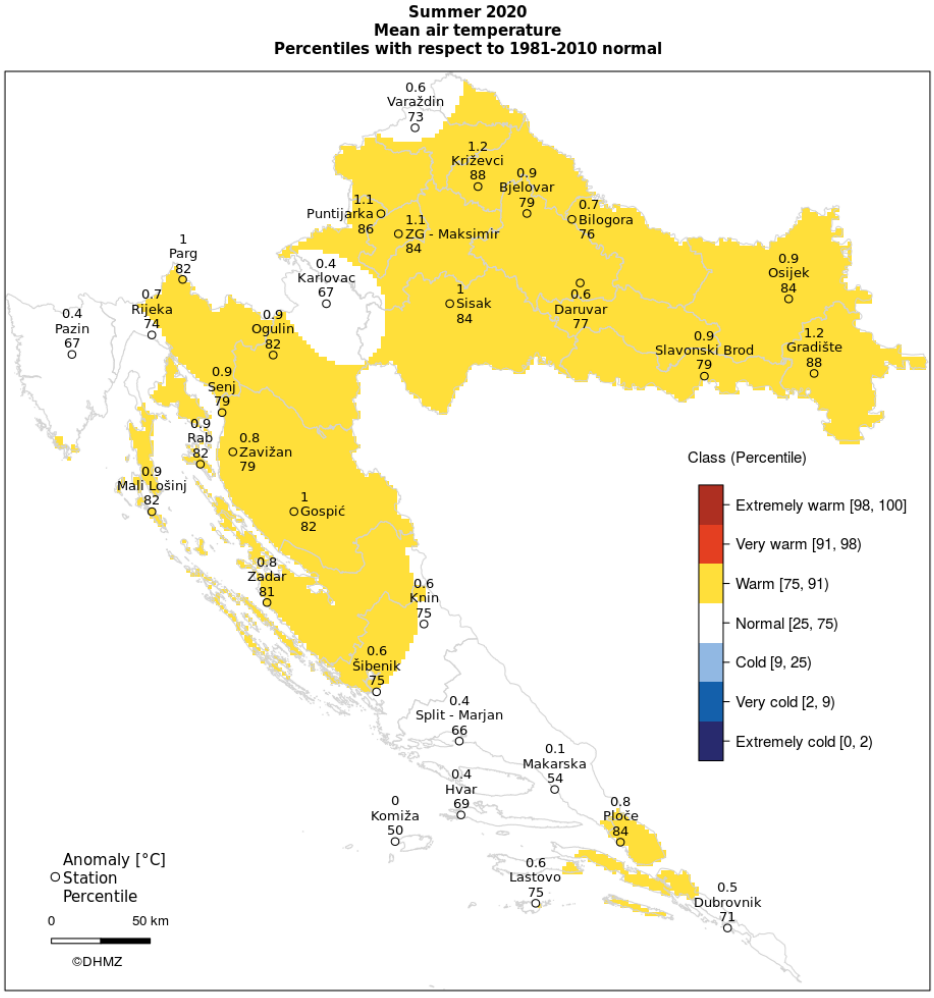
Climate Report for Croatia for Summer 2020

Air temperature anomalies for Croatia in summer 2020

Anomalies of the mean air temperature for summer 2020 with respect to the normal 1981 - 2010 are in the range from 0.0 °C (Komiža) to 1.2 °C (Gradište and Križevci). At all stations, the air temperature was higher than or equal to the multi-annual average.

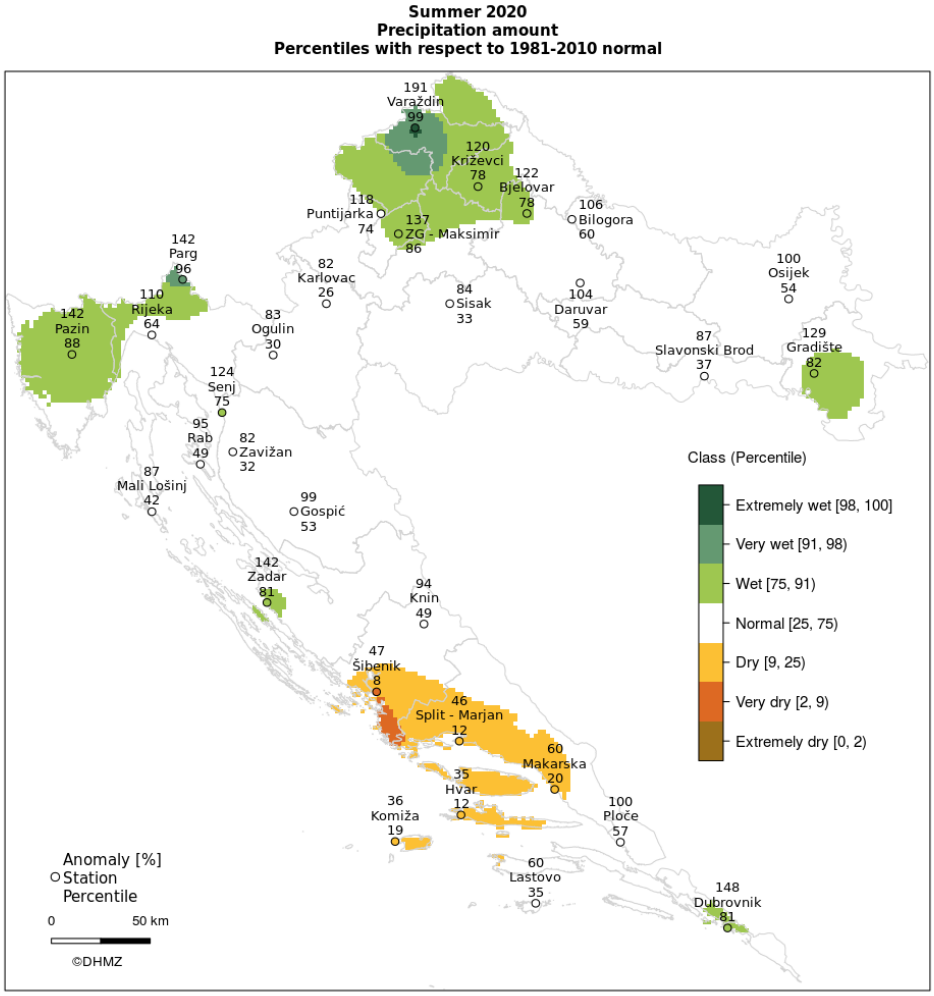
According to the percecntile ranks and classification ratings, thermal conditions in Croatia for summer 2020 are described in the following categories: **normal** (area around Varaždin and Karlovac, Istria and part of Kvarner, most of middle Dalmatia except areas around Ploče, parts of southern Dalmatia) and **warm** (eastern and larger part of central Croatia, mountainous Croatia, Kvarner, northern Dalmatia and the hinterland, the area of middle Dalmatia around Ploče, Pelješac and Mljet).



Precipitation amounts for Croatia in summer 2020

The anomalies of the precipitation amount in summer 2020 compared to the normal 1981-2010 are in the range from 35 % of the multi-year average in Hvar (36.9 mm), to 191 % at the Varaždin station (505.7 mm). The analysis of anomalies in precipitation amounts for summer 2020, expressed as a percentage (%) of the multi-annual average (1981-2010), shows that precipitation amounts were above the multi-annual average at about half of the stations, and below at the rest of the stations.

Precipitation conditions expressed in percentiles for the summer of 2020 were normal in most parts of the territory, but also very dry to extremely wet in smaller parts of the territory. Precipitation conditions are described in more detail in the following categories: **very dry** (near Šibenik), **dry** (south of northern Dalmatia, middle Dalmatia with islands), **normal** (most of the territory), **wet** (southeastern Slavonia, northwestern central Croatia, part of Gorski Kotar, Istria, Senj, surroundings of Zadar and Dubrovnik), **very wet** (wider Varaždin area, surroundings of Parg) and **extremely wet** (surroundings of Varaždin).



Air temperature anomalies for Croatia in June 2020

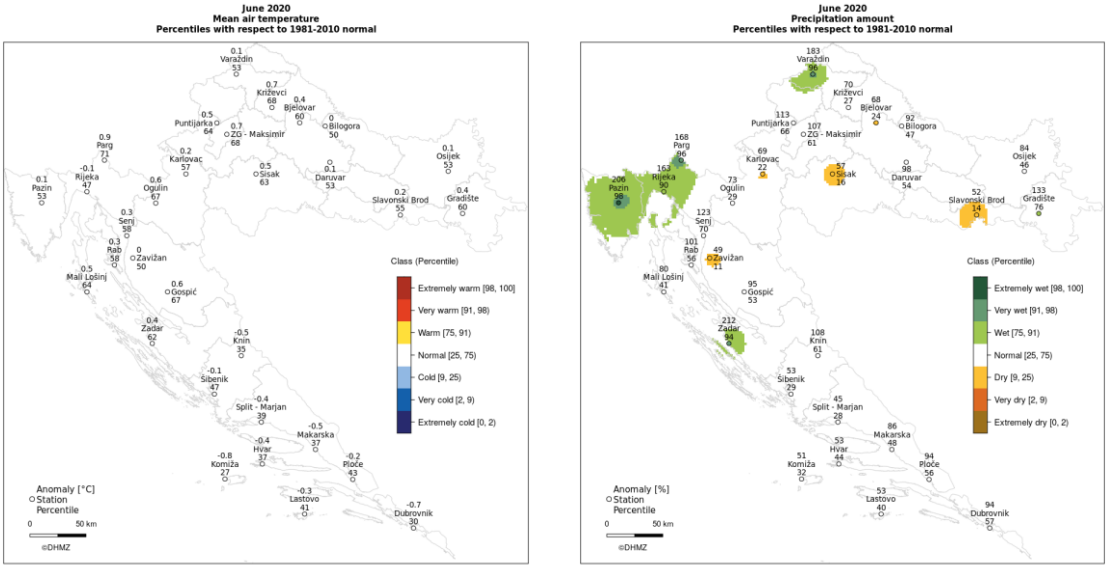
The anomalies of the mean air temperature in June 2020 with respect to the normal 1981 - 2010 were within the range from -0.8 °C (Komiža) to 0.9 °C (Parg). At the stations of eastern, central and mountainous Croatia, in Istria, Kvarner region and at some stations in northern Dalmatia air temperature values were average or slightly higher than the respective multi-annual average. The exception in these regions is Rijeka, where the temperature was slightly lower than average. At some stations in northern Dalmatia, as well as at all stations in central and southern Dalmatia, the air temperature was slightly lower than average.

According to the percentile ranks and classification ratings, thermal conditions in Croatia in June 2020 are described as **normal**.

Precipitation anomalies for Croatia in June 2020

Precipitation anomalies expressed as a percentage (%) of the multi-annual average were in June 2020 within the range from 45 % in Split - Marjan (with precipitation amount of 21.7 mm) to 212 % at Zadar (103.4 mm). Analysis of precipitation anomalies in June 2020, expressed as a percentage (%) of the multi-annual average shows that precipitation amounts were above the multi-annual average at the stations Gradište, Varaždin, Puntijarka, Zagreb - Maksimir, Parg, Pazin, Rijeka, Senj, Rab, Zadar and Knin while at all other stations they were below the average.

Precipitation conditions in Croatia in June 2020, expressed in percentiles were normal in most parts of the territory. In details, the following categories are present: **dry** (around Slavonski Brod, in Bjelovar, around Sisak, Karlovac and Zavižan), **wet** (Gradište, northwest of central Croatia, most of Istria, parts of Kvarner and Gorski Kotar, wider Zadar area), **very wet** (Varaždin, around Parg and Pazin, Zadar), **extremely wet** (Pazin) and **normal** (rest of the territory).



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

Air temperature anomalies for Croatia in July 2020

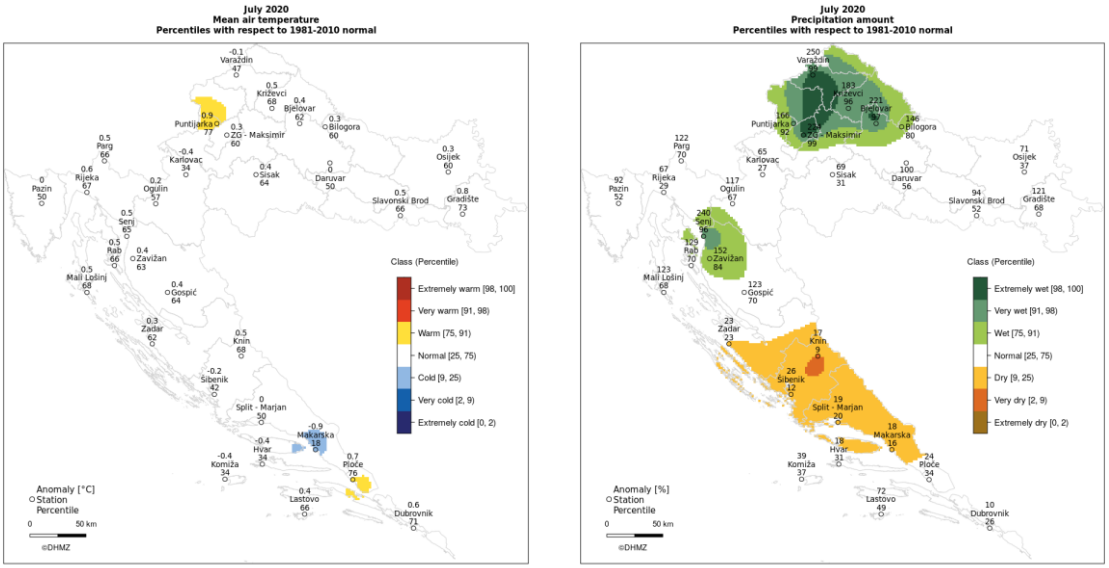
The anomalies of the mean air temperature in July 2020 with respect to the normal 1981-2010 were within the range from -0.9 °C (Makarska) to 0.9 °C (Puntijarka). At most stations, the air temperature values were average or slightly higher than the respective multi-annual average, except for the stations Varaždin, Karlovac, Šibenik, Makarska, Hvar and Komiža, where the air temperature was mostly slightly lower than average.

Temperature conditions in Croatia in July 2020, expressed in percentiles, were **normal** in most parts of the territory. They are described in more detail with the following categories: **cold** (Makarska area), **normal** (the majority of the territory) and **warm** (area north-west of Puntijarka and Ploče area).

Precipitation anomalies for Croatia in July 2020

Precipitation anomalies expressed as a percentage (%) of the multi-annual average were in July 2020 within the range from 10 % in Dubrovnik (with precipitation amount of 2.7 mm) to 250 % in Varaždin (205.2 mm). Analysis of precipitation anomalies in July 2020, expressed as a percentage (%) of the multi-annual average shows that precipitation amounts were above the average at the stations Gradište, Bilogora, Bjelovar, Križevci, Varaždin, Puntijarka, Zagreb-Maksimir, Parg, Ogulin, Senj, Zavižan, Rab, Mali Lošinj and Gospić. At other stations, precipitation amounts were average or below average.

Precipitation conditions in Croatia in July 2020, expressed in percentiles, are described in more detail with the following categories: **very dry** (Knin area), **dry** (northern Dalmatia and part of central Dalmatia and hinterland), **we**t to **extremely wet** (northern part of central Croatia), **wet** to **very wet** (northern Velebit and coastal area in the vicinity) and **normal** (eastern Croatia, the southern part of central Croatia, a large part of mountainous Croatia, northern Croatian coast and part of central and southern Dalmatia with hinterland).



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

Air temperature anomalies for Croatia in August 2020

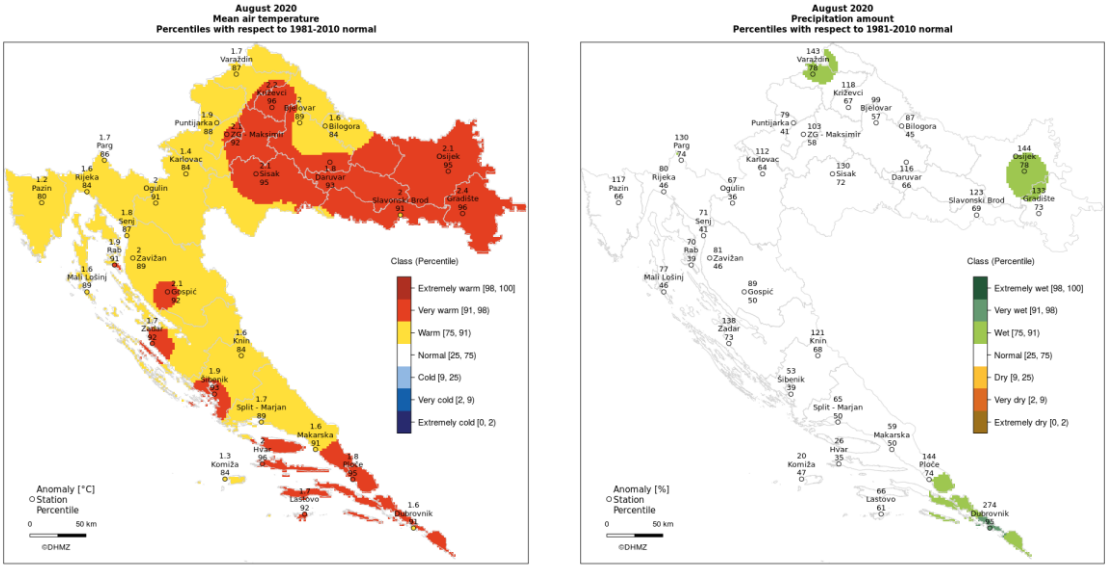
The anomalies of the mean air temperature in August 2020 with respect to the normal 1981 - 2010 were within the range from 1.2 °C (Pazin) to 2.4 °C (Gradište). At all stations, the air temperature was significantly higher than the multi-annual average.

According to the percentile ranks and classification ratings, thermal conditions in Croatia in August 2020 are described with the following categories: **warm** (part of central Croatia, most of mountainous Croatia except Gospić area, northern Croatian coast except Rab, northern Dalmatia and hinterland except around Zadar and Šibenik, part of middle Dalmatian coast and hinterland, Vis) and **very warm** (eastern and part of central Croatia, Gospić area, Rab, parts of northern Dalmatia around Zadar and Šibenik, middle Dalmatian islands and part of middle Dalmatian coast, southern Dalmatia).

Precipitation amounts for Croatia in August 2020

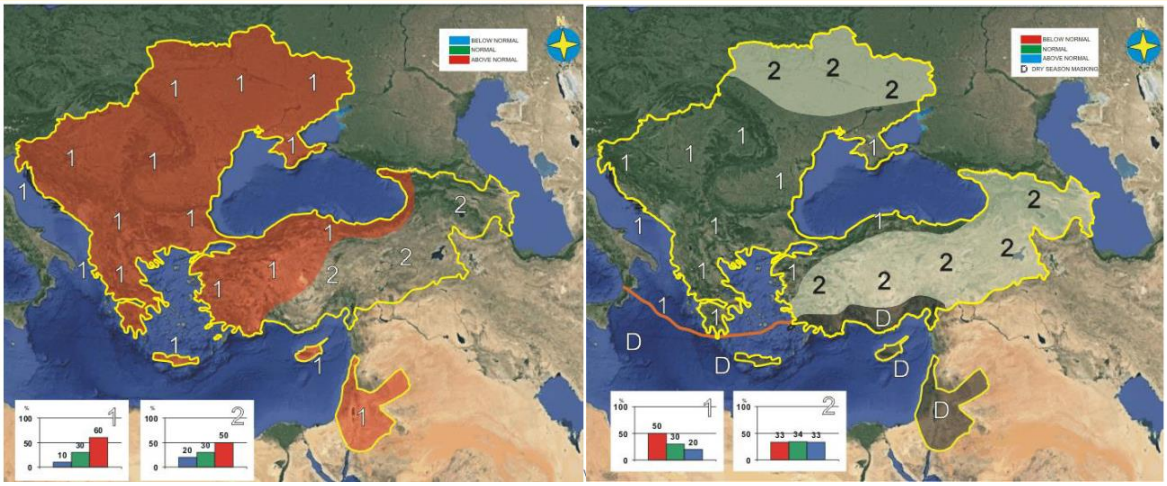
Precipitation anomalies expressed as a percentage (%) of the multi-annual average were in August 2020 within the range from 20% in Komiža (with precipitation amount of 7.7 mm) to 274% in Dubrovnik (146.6 mm). The analysis of precipitation anomalies in August 2020, expressed as a percentage (%) of the multi-annual average, shows that the precipitation amounts at approximately half of the analyzed stations were above, and at the rest below the multi-annual average.

Precipitation conditions in Croatia in August 2020, expressed in percentiles, were normal in most parts of the territory. In details, the following categories are present: **normal** (most of the territory), **wet** (areas around Osijek and Varaždin, the coast from Ploče to the south, part of Pelješac, Mljet) and **very wet** (near Dubrovnik).



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

SEECOF-23 CLIMATE OUTLOOK VALIDATION



Graphical presentation of the 2020 summer temperature (left) and precipitation (right) outlook.

Air temperature anomalies for Croatia in summer 2020

According to the SEECOF-23 climate outlook, for all Croatian teritory, there were chance for above normal summer temperatures. Probability for exceeding the average summer season temperature was 60%.

At all stations, the air temperature was higher than average or equal to the multi-annual average (1981-2010).

We can conclude that the outlook for the summer 2020 according the temperature was satisfactory.

Precipitation amounts for Croatia in summer 2020

According to the SEECOF-23 climate outlook, summer precipitation sum for all Croatian teritory was forecasted below-average with probability of 50%, normal with probability of 30% and above-average with probability of 20%.

The actual precipitation amounts shows that at about half of the stations precipitation were above the multi-annual average (1981-2020) and below at the rest of the stations.

Precipitation conditions expressed in percentiles for the summer of 2020 were normal in most parts of the territory, but also very dry to extremely wet in smaller parts of the territory.

We can conclude that for the most parts of the territory the outlook for the summer 2020 was not correct.

Country	Seasonal temperature (JJA)		Seasonal precipitation (JJA)		High Impact Events
	Observed	SEECOF-23 climate outlook for temperature	Observed	SEECOF-23 climate outlook for precipitation	
Croatia	**Normal and Above normal**	**Above normal** (10,30,60)	**Normal** (in the most part of Croatia) **Below normal** (part of Dalmatia) **Above normal** (part of the Istra, Gorski Kotar, northwestren and small part of eastern Croatia)	**Below normal** (50,30,20)	**Summer 2020** Two heat waves were observed during summer – the first one at the end of July and the second one around the middle of August. Along the Adriatic coast the heat wave was mainly due to the high minimum temperature. There were no temperature records observed. In all three months convective related severe weather phenomena (thunderstorms, hail, heavy rains, flash floods, waterspouts) were observed mostly all over Croatia: - on June 8th, the maximum daily amount of precipitation was observed in Istra (82 mm of rain fell in just 5 hours in Pazin) - on July 24th the extreme 1 hour amount of precipitation was recorded at Zagreb Grič (58,9 mm). An urban flood occured in Zagreb during the night (24/25 July). In the period from June 24th at 12 UTC till June 25th at 12 UTC the amount of precipitation was greater than multi-annual average in July (which is 77 mm) - on August 5th (at 06 UTC)

					the large aumunt of precipitation (in 24 hours) was measured in almost whole Croatia