State of the Climate 2020
Republic of North Macedonia

Geographical distribution of the meteorological stations used for analyzing the climate in N. Macedonia for year 2020, from the network of the Hydrometeorological is shown in Table 1.

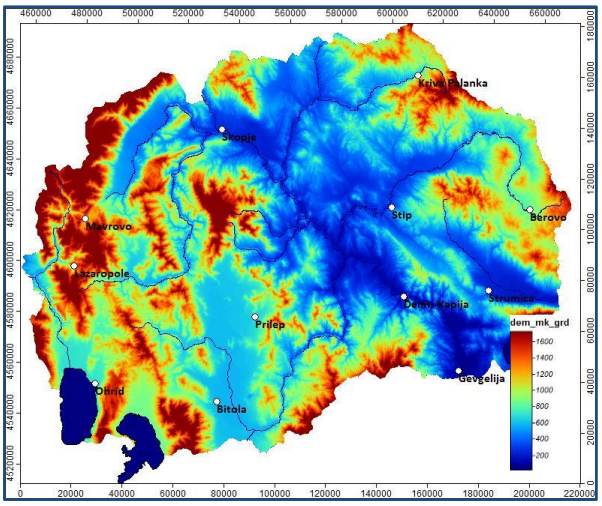

Figure 1: Main meteorological station network in Republic of N. Macedonia

N°	Latitude	Longitude	Elevation	Name
1.	42°00'59"	021°12'59"	302	**Skopje**
2.	41°43'00"	022°25'56"	842	**Berovo**
3.	41°02'30"	021°12'13"	590	**Bitola**
4.	41°08'48"	022°23'09"	60	**Gevgelija**
5.	41°24'34"	022°21'14"	112	**Demir Kapija**
6.	42°12'13"	022°21'52"	693	**Kriva Palanka**
7.	41°32'15"	020°04'45"	1340	**Lazaropole**
8.	41°42'09"	020°04'26"	1280	**Mavrovo**
9.	41°06'53"	020°04'50"	757	**Ohrid**
10.	41°20'02"	021°13'14"	675	**Prilep**
11.	41°26'00"	022°23'00"	224	**Strumica**
12.	41°45'13"	022°21'49"	336	**Stip**

Table 1: Geographical characteristics for meteorological stations

➢ Temperature

The air temperatures in 2020 in Republic of N. Macedonia continued to reflect trends of a warming planet, with positive anomaly from the normals. The mean air temperatures anomaly in 2020 was from 0.4° to 1.4°C above the reference period 1981-2010. The anomaly of the mean maximum air temperatures in 2020 was from 0.2° to 3.8°C above the reference period 1981-2010, while the mean minimum air temperatures anomaly was from -0.9°C to 1.9°C. The annual average temperatures anomalies are shown in Figure 2.

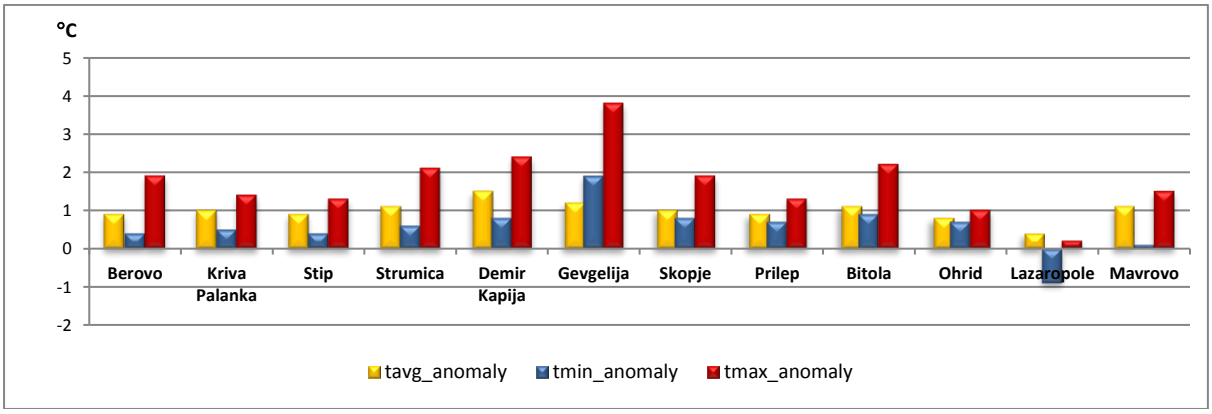

Figure 2: The anomaly of annual mean temperature, annual mean minimum and annual mean maximum air temperature of 2020, reference period 1981-2010

The mean air temperature measured in 2020 was from 7.7°C in Lazaropole to 16.0°C in Gevgelija. Mean maximum air temperature range was from 13.7°C in Lazaropole to 22.6° in Gevgelija and mean minimum air temperature was from 2.8°C in Berovo to 9.4°C in Gevgelija.

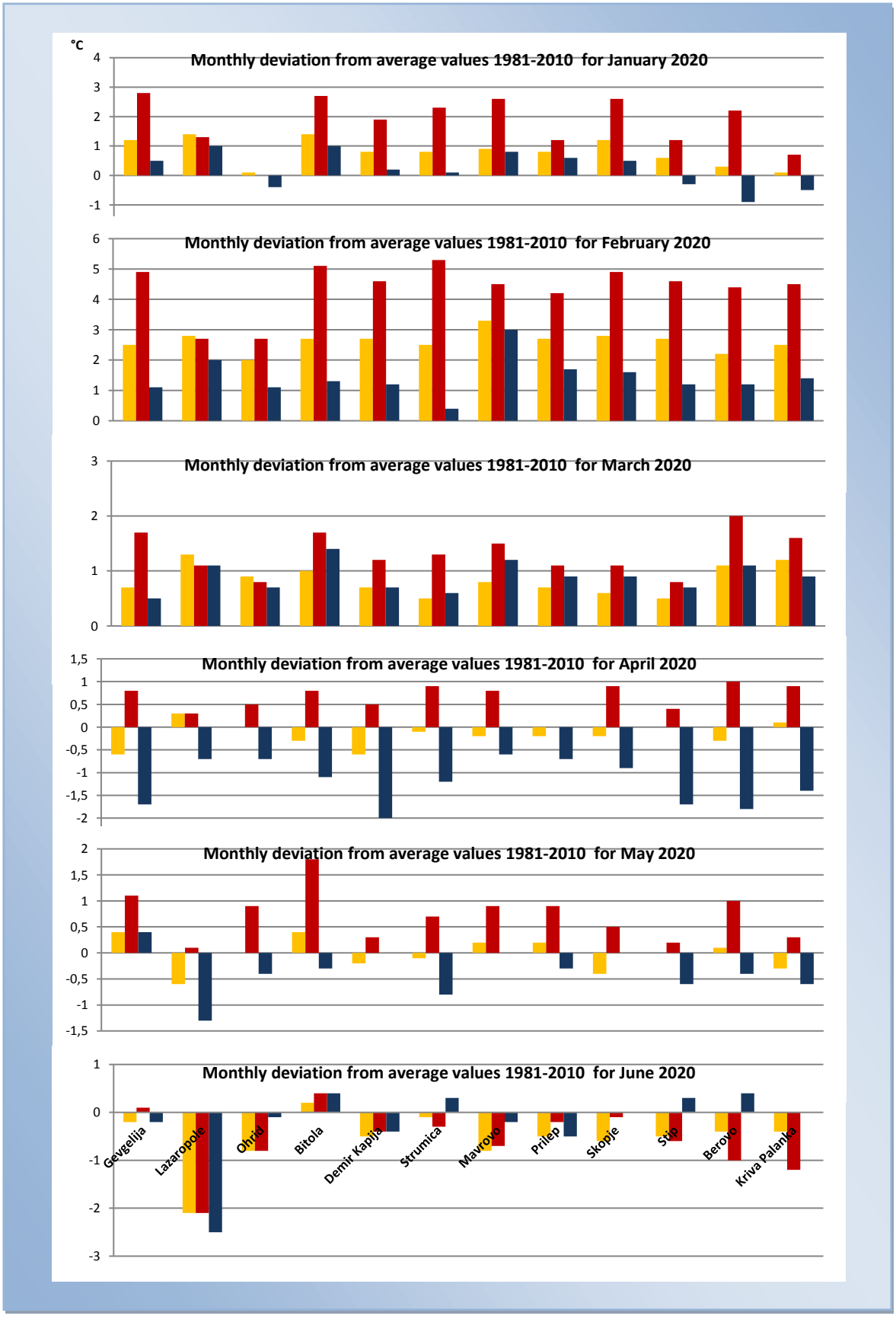

Figure 3: Deviation of the mean monthly maximum, mean monthly minimum and mean monthly temperature for January-June 2020 from the referenced period 1981-2010y

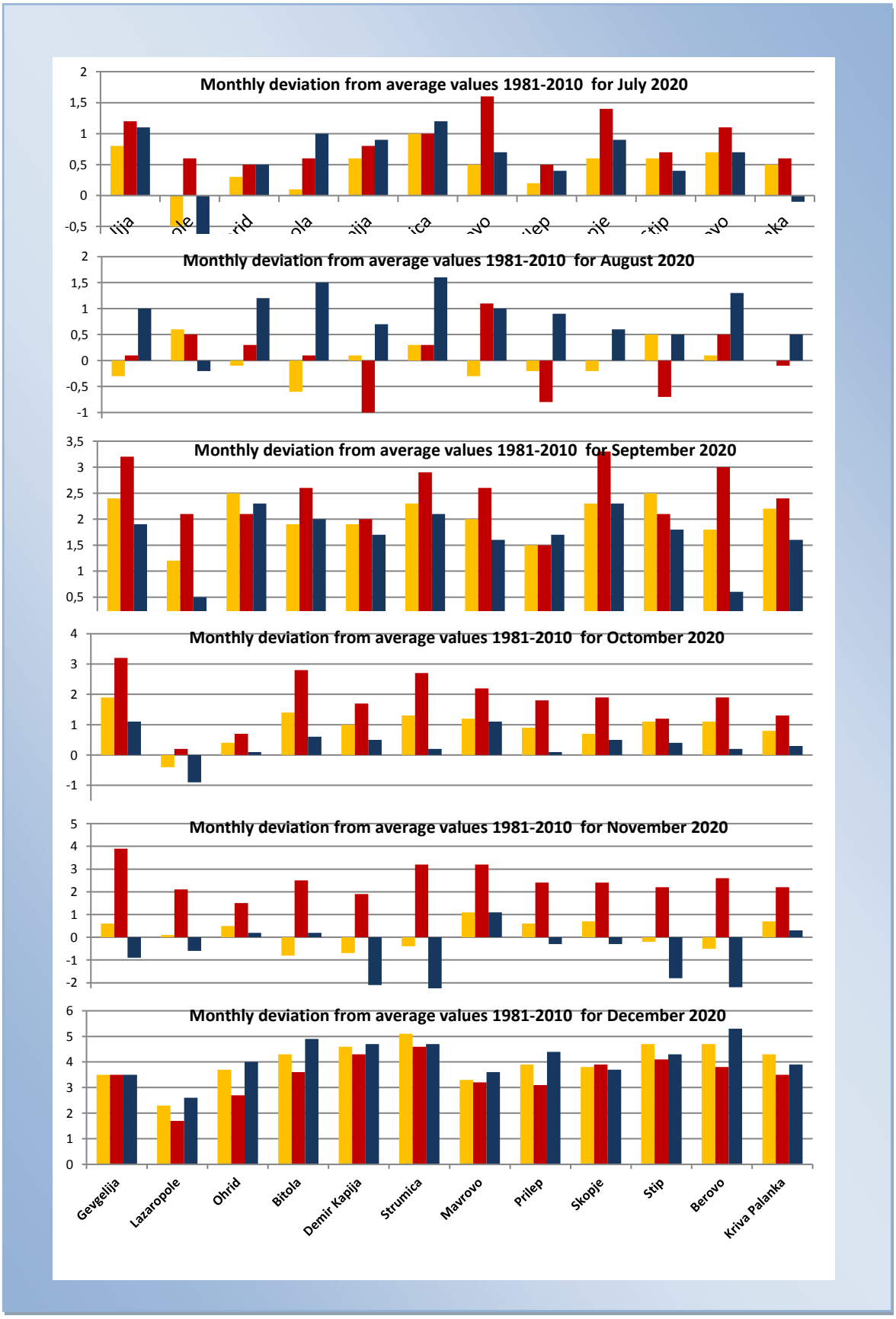

Figure 4: Deviation of the mean monthly maximum, mean monthly minimum and mean monthly temperature for July - August 2020 from the referenced period 1981-2010y

Monthly air temperature anomaly was positive or near normal for all twelve months. Remarkable positive temperature anomalies from the referenced period were observed in February, September and December (Figure 3 and 4). After unusually warm February and March, temperatures under 0°C were measured at the first decade of April that was unfavorable for the crops. The summer was classified as normal, according to percentile, but the warm weather continued in September, also. The temperatures continued to fall and November temperatures were around the normal, but then temperatures started to rise again and reached the highest positive deviation from the mean monthly temperature registered this year, for December (tavg anomaly in Strumica reached +5.1°C).

The highest temperature was measured in Demir Kapija 40.5°C on 31st of July. Temperature extremes were not exceeded this year.

2020 is characterized as warm to extremely warm year, according to percentile method, with reference period 1981-2010 (Table2).

	Tavg	R24
Berovo	very warm	dry
Kriva Palanka	very warm	wet
Stip	warm	dry
Strumica	very warm	dry
Demir Kapija	extremely warm	wet
Gevgelija	extremely warm	dry
Skopje	very warm	normal
Prilep	very warm	normal
Bitola	warm	normal
Ohrid	extremely warm	dry
Lazaropole	warm	very dry
Mavrovo	warm	dry

Table2: Categorization of mean air temperature and precipitation according to percentile method for 2020, reference period 1981-2020

➢ Precipitation

The distribution of the precipitation in 2020 was irregular with inadequate spatial and time patterns. The largest monthly amounts of precipitation were recorded in August and lowest in November. The precipitation anomaly (%) of 2020 according to the reference period 1981-2010y is shown in Figure 5.

January was characterized with snowfall only at the mountainous areas. The maximum height of the snow cover was 24cm, measured on 13th of January in Mavrovo. In March above-average amounts of monthly sums of precipitation were measured at all measuring points. The rain pattern continued in April, also, but with lower intensity. May, June and July precipitation sums were under the normal. Unusually high precipitation sum were measured in August (reaching anomaly of +700% in Demir Kapija). Although June and July were under the normal, the August precipitation allowed us to classify the summer as normal to extremely wet according to percentiles. The extreme of the daily sum of precipitation 53.6mm was exceeded in Bitola on 5th of July. In July and August the weather was unstable and the conditions for hail were created, so the plane hail suppression programe acts

more than 10 times, this summer. The largest daily amount of rainfall 62mm was measured in Strumica on 7th of August. November was classified as extremely dry month.

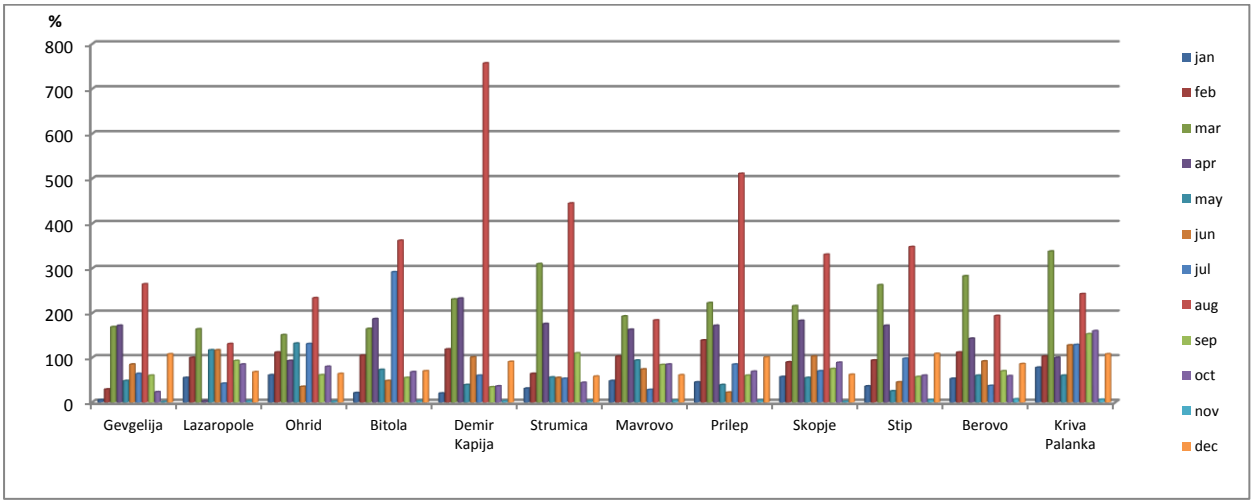

Figure 5: Precipitation anomaly for 2020, reference period 1981-2010y

Monthly sums of precipitation are from 470mm in Stip to 870mm in Mavrovo. According to the referenced period 1981-2010y, they are between 75-130%.

According to percentile method 2020 is characterized as dry in the western and southern part and normal to wet for the rest of the territory (Table2).