

## VERIFICATION OF THE SEECOF -17 SUMMER 2017 CLIMATE OUTLOOK FOR REPUBLIC OF MACEDONIA COMPARED TO THE 1981-2010 BASE PERIOD

Hydrometeorological Service of Republic of Macedonia prepares regular seasonal climate analysis, based on the products of SEECOF seasonal forecasts and the forecast products from the SEVCCC. The present analysis is for the summer 2017, June, July and August, and it is based on the means of the climatological period 1981-2010.

### ➤ SUMMER 2017

The mean seasonal air temperature during summer 2017 ranged between 17.9°C in Lazaropole to 26.6°C in Gevgelija. Spatial distribution of the mean seasonal air temperature is shown on Figure1. The mean air temperature anomaly was above normal at all main meteorological stations, from 1.2°C in Berovo and Strumica to 2.4°C in Mavrovo (Figure2).

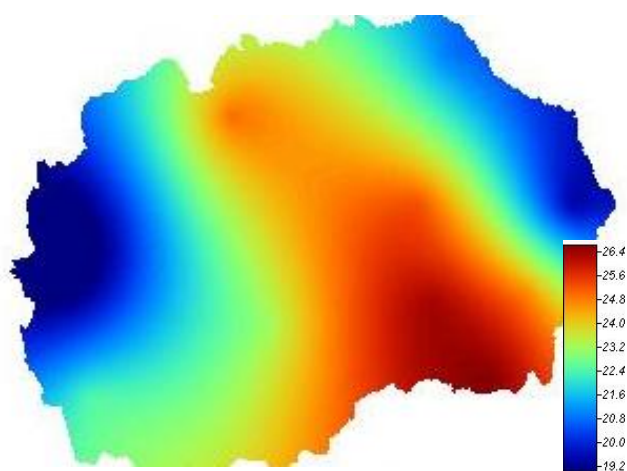


Figure 1: Spatial distribution of the mean seasonal air temperature (°C) during summer 2017

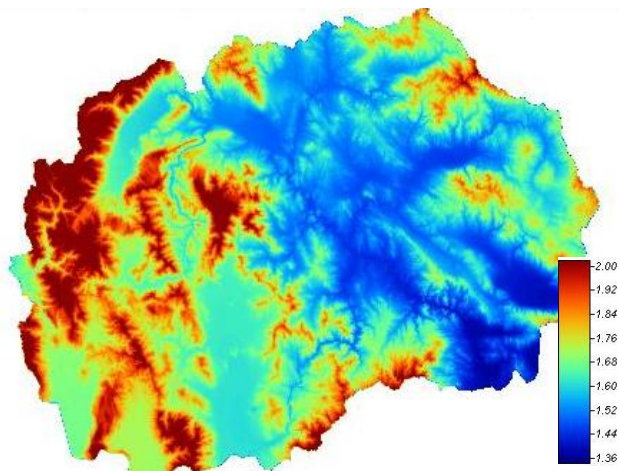


Figure 2: Mean seasonal air temperature anomaly (°C) compared to the period 1981-2010 during summer 2017

The mean maximum seasonal air temperature was also above normal, with positive anomaly from 1.6°C in Strumica to 2.8°C in Mavrovo. The mean minimum seasonal air temperature was above normal reaching positive anomaly of 2.3°C in Mavrovo. The highest daily air temperature during summer 2017 was measured 42.3°C observed on 30<sup>th</sup> of June in Demir Kapija. The lowest air temperature during summer 2017 was measured 2.0°C observed on 25<sup>th</sup> of August in Berovo.

According to percentile calculation method the whole territory was very warm but the north-west mountain region was classified as extremely warm (Table1).

Rainfall totals were below the average for this summer season, with exception in Gevgelija. Spatial distribution of the precipitation sums is shown on Figure 3 and the anomaly compared to 1981-2010 base period on Figure 4.

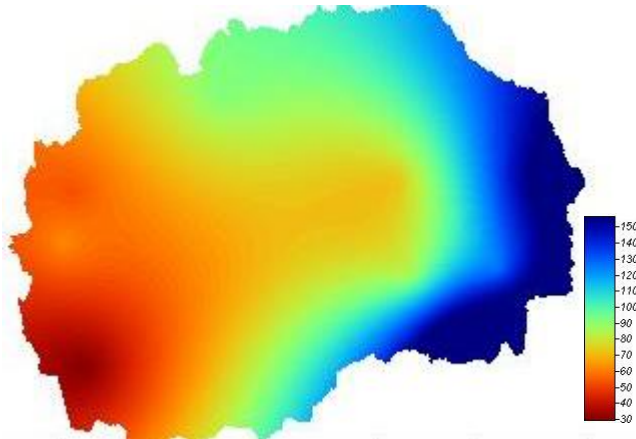


Figure 3: Spatial distribution of the precipitation sums (mm) during summer 2017

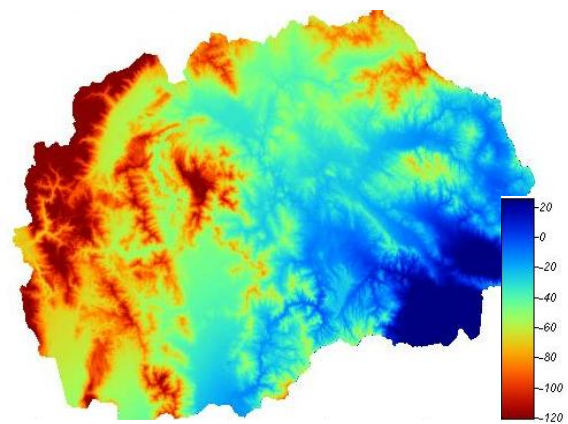


Figure 4: Spatial distribution of the precipitation sums anomaly (mm) during summer 2017

The wettest day was 4<sup>th</sup> of June with 71.1mm which was measured in Gevgelija.

According to percentile calculation method the precipitation regime was variable, with evident extremely dry west part of the country (Table1).

Meteorological station	Temperature	Precipitation
<b>Berovo</b>	very warm	normal
<b>Kriva Palanka</b>	very warm	dry
<b>Stip</b>	very warm	normal
<b>Strumica</b>	very warm	normal
<b>Demir Kapija</b>	extremely warm	normal
<b>Gevgelija</b>	warm	wet
<b>Skopje</b>	very warm	normal
<b>Prilep</b>	very warm	normal
<b>Bitola</b>	very warm	normal
<b>Ohrid</b>	very warm	extremely dry
<b>Mavrovo</b>	extremely warm	extremely dry
<b>Lazaropole</b>	extremely warm	extremely dry

Table1: Air temperature and precipitation classification in Republic of Macedonia for summer 2017 using percentile method compared to 1981-2010 base period

The values of distribution of tercile for the air temperature and the precipitation sums are shown in table 2 and 3, respectively.

Air Temperature (°C)	summer	1981-2010	
	2017	33	67
Berovo	19.4	17.8	18.6
Kriva Palanka	20.9	19.3	20.0
Stip	25.2	23.0	24.0
Strumica	24.7	23.0	23.8
Demir Kapija	26.3	24.1	24.9
Gevgelija	26.6	25.0	26.0
Skopje	24.9	23.0	23.8
Prilep	23.1	21.3	22.1
Bitola	23.2	21.4	22.0
Ohrid	22.4	20.4	21.0
Lazaropole	17.9	15.7	16.2
Mavrovo	18.7	15.9	16.7

Table 2: Values of distribution of tercile for temperature for period 1981-2010

Precipitation sums (mm)	summer	1981-2010	
	2017	33	67
Berovo	168.2	138.8	162.8
Kriva Palanka	117.3	132.4	142.2
Stip	71.6	87.6	104.1
Strumica	126.9	85.1	180.3
Demir Kapija	85.6	75.0	210.3
Gevgelija	213.6	61.9	269.5
Skopje	91.4	86.8	110.6
Prilep	70.5	75.3	128.5
Bitola	71.3	77.6	200.8
Ohrid	29	65.6	238.3
Lazaropole	61.6	138.8	162.8
Mavrovo	52.2	103.2	329.8

Table 3: Values of distribution of tercile for precipitation for period 1981-2010

The SEECOF-17 forecast product for the mean temperatures for summer season puts Republic of Macedonia in a zone 2, which is likely to experience above normal summer temperatures (Figure 5). Forecast for the precipitation for JJA 2017 categorized our country in zone 1 (Figure 6). Zone 1 is with high uncertainties, probabilities for below-, near-, or above- average conditions are approximately equal.

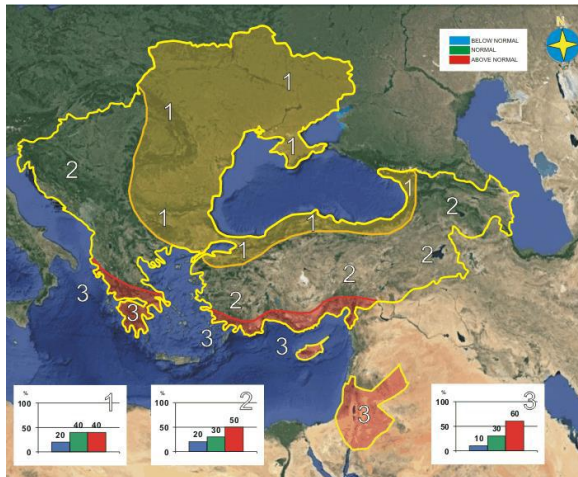


Figure 5: Graphical presentation of the 2017 summer temperature outlook

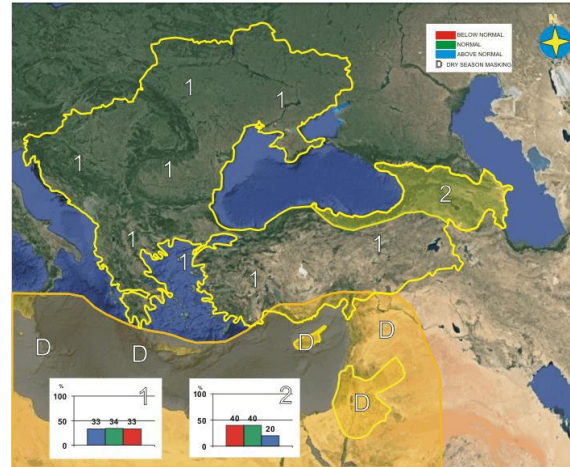


Figure 6: Graphical presentation of the 2017 summer precipitation outlook

A general judgment for the models evaluation for summer season is that the model performed good both qualitatively and quantitatively concerning the temperature. Concerning the precipitation, evaluation of the model is difficult because of the variable regime.

Find also below a table presenting the general anomalies of SEECOF products and extreme events of the recorded summer weather.

Country	Seasonal temperature (JJA)		Seasonal precipitation (JJA)		High Impact Events
	Observed	SEEVCCC climate outlook for temperature	Observed	SEEVCCC climate outlook for precipitation	
<b>REPUBLIC OF MACEDONIA</b>	Above normal	Above to near normal (20, 30, 50)	Very variable precipitation regime	No predictive signal (33, 34, 33)	<p><b>June</b></p> <ul style="list-style-type: none"> <li>- Extremely warm 3<sup>rd</sup> decade</li> <li>- Exceeded upper limit of minimal air temperature</li> </ul> <p>22.4°C on 30<sup>th</sup> in Ohrid 21.6°C on 30<sup>th</sup> in Mavrovo 18.3°C on 30<sup>th</sup> in Lazaropole</p> <p><b>August</b></p> <ul style="list-style-type: none"> <li>- Extremely warm 1<sup>st</sup> decade with heat waves</li> </ul>

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