

VERIFICATION OF THE SEECOF -13 SUMMER 2015 CLIMATE OUTLOOK FOR REPUBLIC OF 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 from the SEEVCCC. The present analyze is for the summer 2015, June, July and August, and it is based on the means of the climatological period 1981-2010.

➤ SUMMER 2015

Overall conditions in Republic of Macedonia this summer season did not exceed a lot from the long term average 1981-2010. During summer 2015, mean air temperature ranged between 22.5°C in Mavrovo and 33.8°C in Gevgelija. Spatial distribution of the mean seasonal air temperature is shown on Figure1. The mean air temperatures anomaly was slightly above normal, around 1°C at nearly all main meteorological stations. The mean air temperature anomaly from the normal 1981-2010 base period during summer 2015 ranged from 0.3°C in Mavrovo to 1.7°C in Skopje (Figure2).

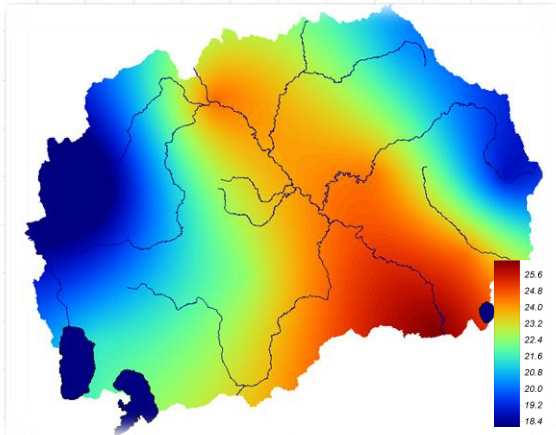


Figure 1: Spatial distribution of the mean seasonal air temperature (°C) during summer 2015

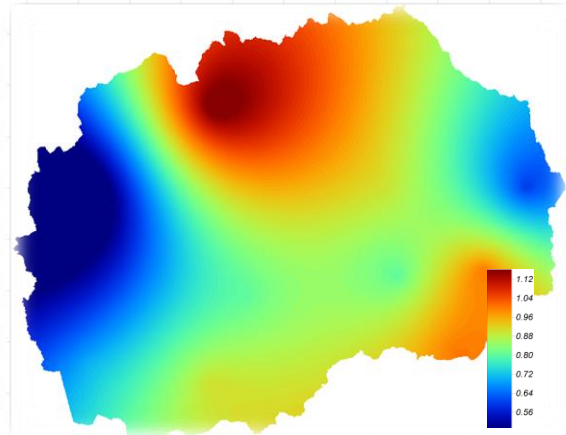


Figure 2: Mean seasonal air temperature anomaly (°C) compared to the period 1981-2010 during summer 2015

According to percentile calculation method, the east and southeast part were classified in normal boundaries. The rest of the territory was warm, especially in Skopje surrounding with extremely warm characteristics (Table1).

The highest daily air temperature during summer 2015 was measured 40.5°C observed on 21st of July in Gevgelija. The lowest air temperature during summer 2015 was measured 3.8°C observed on 26th of June in Berovo.

Rainfall totals were variable for this summer season. The northeast part of Republic of Macedonia was below normal 1981-2010 and the rest of the territory was normal and slightly above the normal. Spatial distribution of the precipitation sums is shown on Figure 3 and the anomaly compared to 1981-2010 base period on Figure 4.

The wettest day was 3th of August in Berovo with 95.0mm.

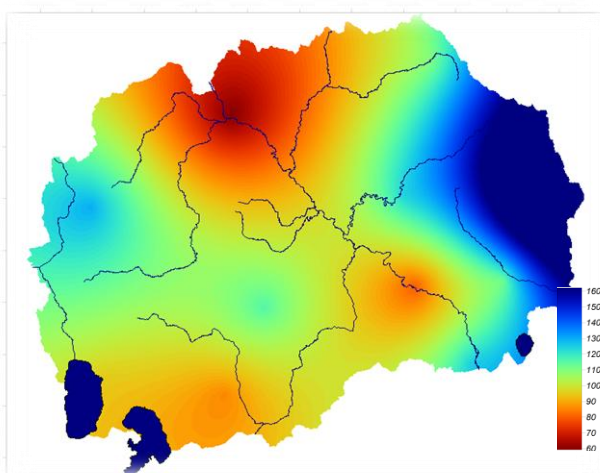


Figure 3: Spatial distribution of the precipitation sums (mm) during summer 2015

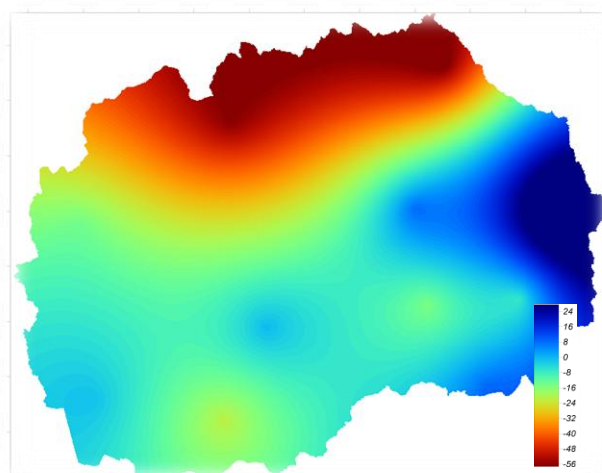


Figure 4: Spatial distribution of the precipitation sums anomaly (mm) during summer 2015

According to percentile calculation method north and northeast part of Republic of Macedonia were dry, while the rest is classified normal with exclusion of the central east part which had wet characteristics (Table1).

Meteorological station	Temperature	Precipitation
Berovo	normal	wet
Kriva Palanka	warm	dry
Stip	warm	normal
Strumica	warm	normal
Demir Kapija	normal	normal
Gevgelija	normal	normal
Skopje	very warm	dry
Prilep	warm	normal
Bitola	warm	normal
Ohrid	warm	normal
Mavrovo	normal	normal

Table1: Air temperature and precipitation classification in Republic of Macedonia for summer 2015 using percentile method compared to 1981-2010 base period

The SEECOF-13 forecast for the mean temperatures for summer season put Republic of Macedonia in a zone 2, which means to have lower probability of exceeding the above-average conditions (Figure 5). Forecast for the precipitation for JJA 2015 categorized our country in

zone 3 (Figure6). Zone 3 is with high uncertainties, probabilities for below-, near-, or above-average conditions are approximately equal.

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

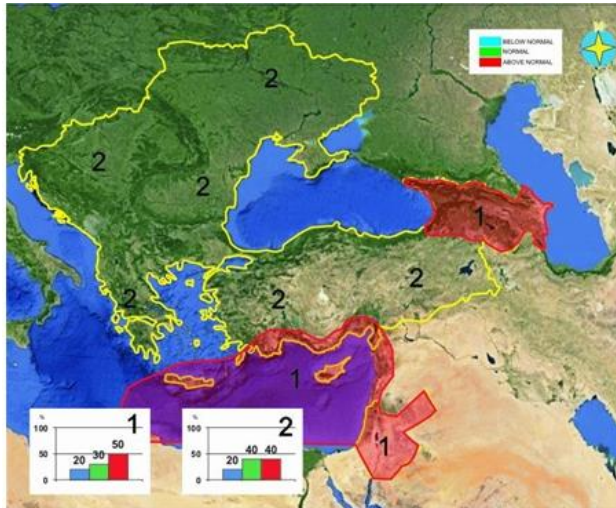


Figure 5: Graphical presentation of the 2015 summer temperature outlook

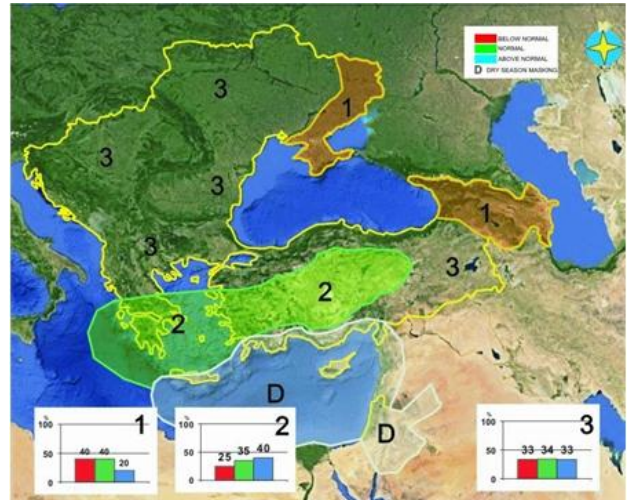


Figure 6: Graphical presentation of the 2015 summer precipitation outlook

➤ JUNE 2015

Nearly all stations reported mean temperatures for June below long term average, the majority with differences around -0.8°C . Daily maximum temperatures were measured in 14th and 15th June. Mean monthly maximum temperatures in June were measured below long term average for nearly all meteorological stations in Republic of Macedonia, with difference from -0.5°C to -1.5°C . Daily minimum temperatures were measured in the last week of June. The difference of the mean monthly minimum temperatures from normal value is from -0.5°C to 0.5°C . The absolute temperature range is from 3.8°C in Berovo to 36.5°C in Gevgelija.

Precipitations for June were slightly below long term average 1981-2010. Higher values were measured at mountains. Mavrovo had 48mm on 18th of June, with total monthly sum precipitation 109.2mm.

The forecast from the Southeast Europe Virtual Center for Climate Change in Serbia for June was not efficient neither for temperature or precipitation (Figure 7 and 8).

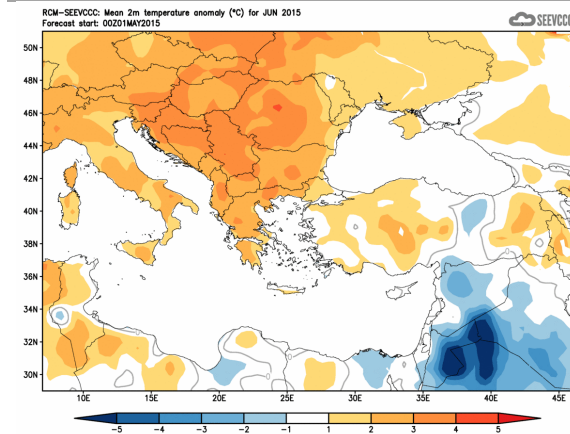


Figure 7: Divergence of the mean monthly temperature (°C) from the normal 1981-2010 in June

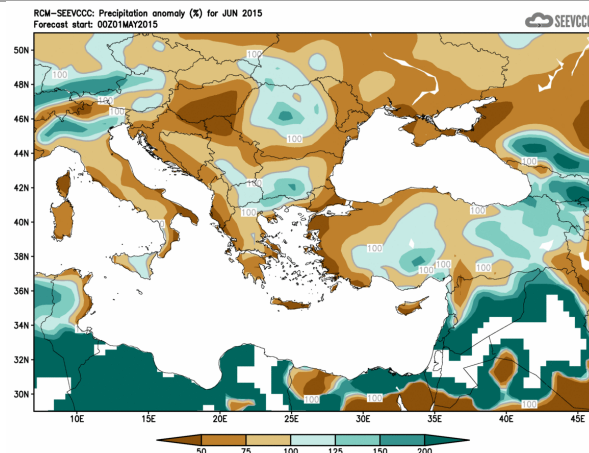


Figure 8: Percentage of the mean monthly precipitation (%) from the normal 1981-2010 in June

➤ **JULY 2015**

July was completely opposite of June, with mean monthly temperature above the long term average around 2°C. The absolute temperature range was from 7.0°C in Berovo and Kriva Palanka to 40.5° in Gevgelija. Mean monthly maximum temperatures were above long term average for 2-3°C. The highest daily maximum temperatures were recorded at the end of the month. Mean monthly minimum temperatures were above long term average for 1-2°C. The upper boundary for the minimal values was especially high for this month. The maximum for the minimum temperature was preceded in Skopje 26.8°C on 21st of July, since 1950 for the whole territory.

The precipitation regime for the whole month showed fewer amounts from the long term average. Highest amount was 62.1mm measured in Gevgelija on 1st of July, with total monthly sum precipitation 62.8mm.

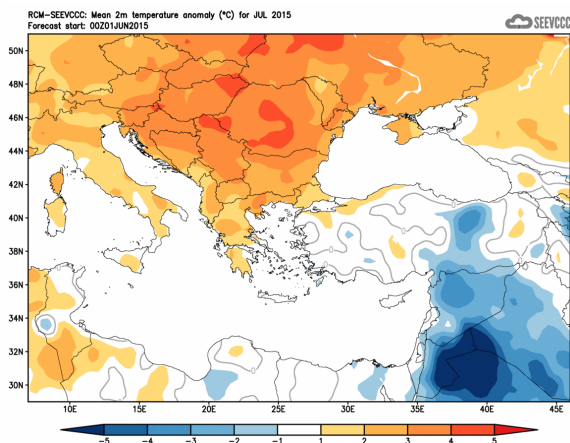


Figure 9: Divergence of the mean monthly temperature (°C) from the normal 1981-2010 in July

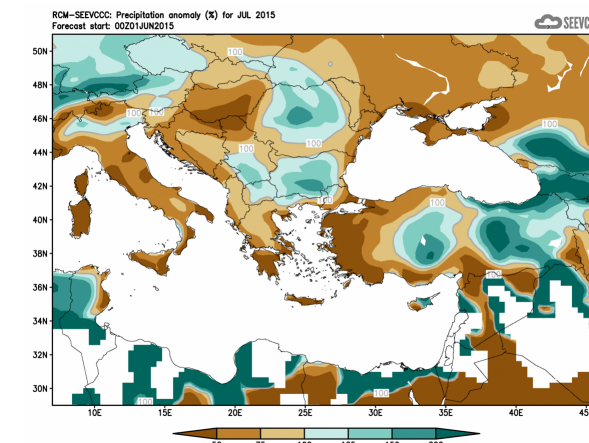


Figure 10: Percentage of the mean monthly precipitation (%) from the normal 1981-2010 in July

The forecast from the Southeast Europe Virtual Center for Climate Change in Serbia for the month of July was efficient for temperature, but not for precipitation (Figure 9 and 10).

➤ AUGUST

August is characterized with positive difference from the long term average for the mean, maximum and minimum temperatures. The absolute temperature range was from 7.8°C in Berovo to 38.6°C in Gevgelija. Mean monthly maximum temperature was above normal 1-2°C, mean monthly minimum and mean monthly temperature were around 1°C. The upper boundary for the minimal temperature was exceeded in Berovo and the maximum value for the minimal temperature was measured 17.3°C on 3th of August.

The precipitation regime was variable. Rainfall totals were higher with positive difference in the east part of Republic of Macedonia. Extreme daily precipitation sum was measured in Berovo on 1st of August with 95mm. Though no extreme rarities of precipitations were found in August in the northwest part, there were evidenced floods on 3th of August with damages and human victims.

The forecast from the SEEVCCC for the month of August was efficient for temperature and for precipitation (Figure 11 and 12).

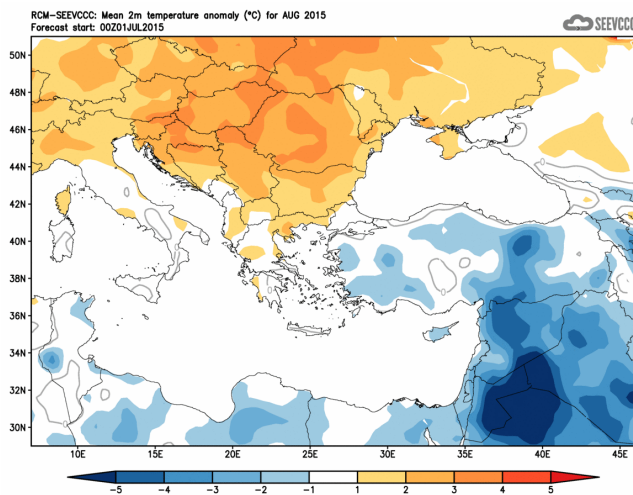


Figure 11: Divergence of the mean monthly temperature (°C) from the normal 1981-2010 in August

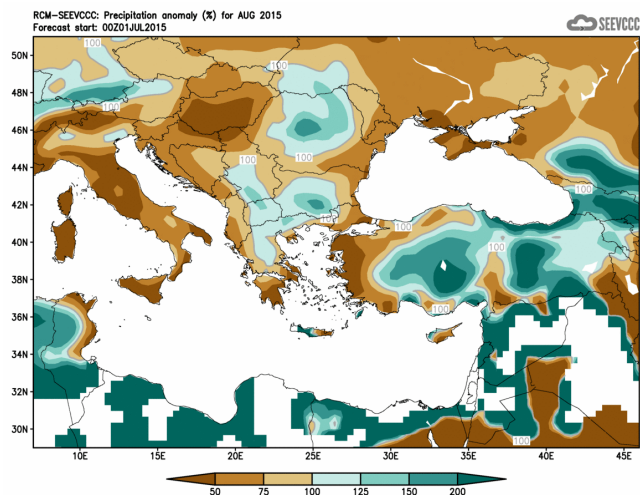


Figure 12: Percentage of the mean monthly precipitation (%) from the normal 1981-2010 in August

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	
REPUBLIC OF MACEDONIA	Slightly above normal	Above to near normal (20, 40, 40)	Northeast below normal the rest of the country was normal and slightly above normal	No predictive signal (33, 34, 33)	July Maximum value for minimum temperature in Skopje 26.8°C, since 1950 for Republic of Macedonia August preceded maximum value for minimum temperature in Berovo 17.3°C, since 1950; extreme daily precipitation sum in Berovo 95.0mm on 1 st ; evidenced floods with no extreme values for precipitations.