

VERIFICATION OF THE SEECOF -20

WINTER 2018 /2019 CLIMATE OUTLOOK FOR THE REPUBLIC OF NORTH MACEDONIA

Hydrometeorological Service of Republic of North Macedonia prepares regular seasonal climate analysis, based on the products of SEECOF seasonal forecasts and the forecast from the SEEVCCC.

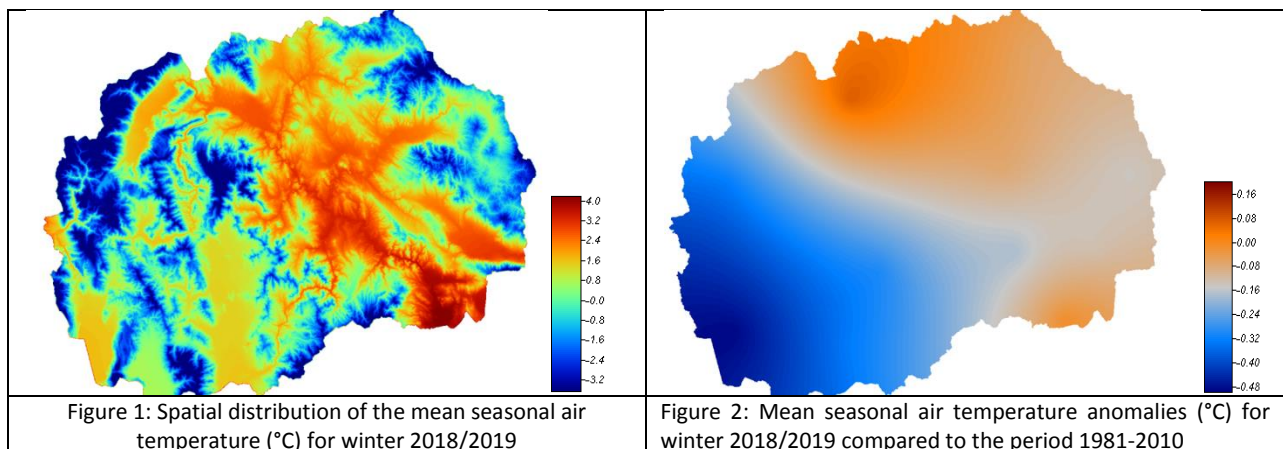
The present analysis is for the winter 2018/2019, namely summary of winter months climate - December 2018, January and February 2019, and its comparison with winter climatology for period 1981-2010.

➤ WINTER 2018/2019

According to measurements and observations at main meteorological stations in the Republic of North Macedonia, the average winter air temperature was in the range from -1.9°C in Mavrovo to 5.2°C in Gevgelija.

This winter season in the Republic of North Macedonia air temperature deviations from the long term average 1981-2010 were in the range from -0.6°C to $+0.3^{\circ}\text{C}$.

Spatial distribution of the mean seasonal air temperature is shown in Figure 1. The mean air temperature anomalies are presented Figure 2.



According to percentile calculation method, the entire territory of the county was classified with normal winter temperature (Table1). Slightly colder than average (-0.4°C) it was in the western part of the country, while slightly warmer (+0.2°C) in the eastern.

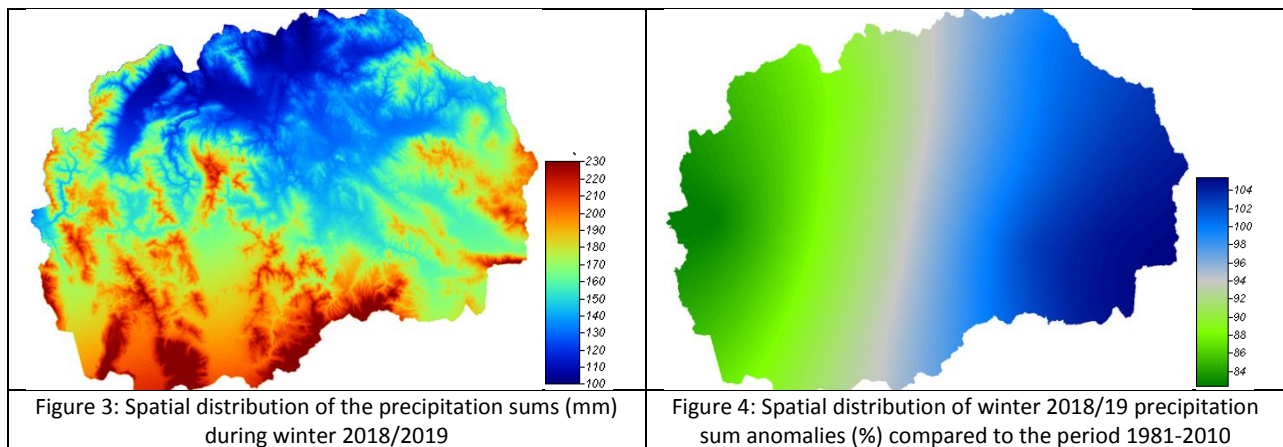
Minimum air temperatures for winter 2018/19 are lower up to 1°C than the average, while maximum air temperatures are higher than the multiannual average for the same value.

The absolute minimum temperature for winter 2019 was observed in January, in the eastern mountainous part of the country (Berovo -21.0°C) and highest daily winter air temperature was observed in February in southeast sub-mediterranean region (Gevgelija 21.5°C).

Rainfall totals during winter season 2018/19 were in the range from 80mm in Skopje up to 286mm in Mavrovo. These values are around (from 73% up to 124%) of the average values for winter season precipitations.

Monthly precipitation were very unequally distributed during the winter season, December was quite dry (precipitations were in half amount of the average), January unusually wet (double to more than triple amounts), while February was very dry (with one third of average amounts).

Spatial distribution of the winter season precipitation sums is shown on Figure 3 and the anomaly compared to 1981-2010 base period on Figure 4.



The wettest day was 26th of January in Demir Kapija with 89mm.

According to percentile calculation method, the winter 2018/19 temperature and precipitation on the territory of Republic of North Macedonia were classified as normal (Table1).

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

Table1: Air temperature and precipitation classification in the Republic of North Macedonia for winter 2018/2019 using percentile method compared to 1981-2010 base period

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

Air Temperature (°C)	2018/2019	1981-2010	
		33	67
Berovo	-0.5	-1.2	0.6
Kriva Palanka	0.8	0.4	1.4
Stip	2.5	1.8	3.2
Strumica	2.2	1.4	3.2
Demir Kapija	2.8	2.3	4.1
Gevgelija	5.2	4.5	5.6
Skopje	2.3	1.6	2.7
Prilep	0.9	0.5	2.3
Bitola	0.6	-0.5	2.0
Ohrid	2.0	2.1	3.1
Mavrovo	-1.9	-2.7	-0.5

Table 2: Values of winter season 2018/2019 temperature and tercile values for period 1981-2010

Precipitation sums (mm)	2018/2019	1981-2010	
		33	67
Berovo	142.2	109.5	662.9
Kriva Palanka	141.9	106.9	665.4
Stip	87.5	71.3	500.0
Strumica	169.7	120.9	602.8
Demir Kapija	207.6	125.7	597.7
Gevgelija	240.7	111.8	776.0
Skopje	80.2	87.5	521.6
Prilep	96.7	80.5	531.7
Bitola	171.0	145.0	675.7
Ohrid	169.3	178.8	749.9
Mavrovo	286.4	246.7	1064.5

Table 3: Values of winter season 2018/2019 precipitation and tercile values for period 1981-2010

The SEECOF-20 forecast for the mean winter temperature placed Republic of North Macedonia in zone 2, which means to have more chances for normal and warmer than normal conditions (Figure 5). Forecast for the precipitation for DJF 2018/2019 categorized our country in zone 2 (Figure 6), which means that there are higher possibility for normal and wetter winter.

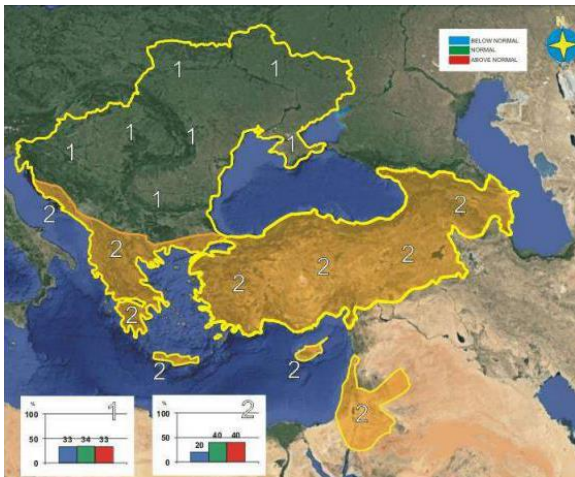


Figure 5: Graphical presentation of the winter 2018/2019 temperature outlook

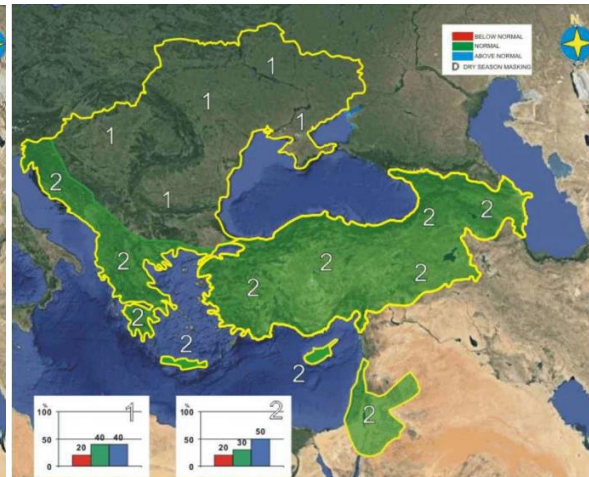


Figure 6: Graphical presentation of the winter 2018/2019 precipitation outlook

Find also below a table 4 presenting the general anomalies of SEECOF products and extreme events of the recorded winter weather.

Country	Seasonal temperature (DJF)		Seasonal precipitation (DJF)	
	Observed	SEECOF climate outlook for temperature	Observed	SEECOF climate outlook for precipitation
REPUBLIC OF NORTH MACEDONIA	Normal	Above normal (20, 40, 40)	Normal	Above normal (20, 30, 50)
High Impact Events	<p style="text-align: center;">January 2019</p> <p>Prolonged period with cold weather and low temperatures (almost twenty days with minimum temperatures below 0°C). New record values for January monthly sums were measured in Gevgelija-202mm and Strumica-127mm (south-eastern part of the country). Also new record values were measured for maximum daily precipitation on Jan.26th for D.Kapija-89mm and Strumica-54mm (south-eastern part of the country).</p>			