

VERIFICATION of the SEECOF-18 WINTER 2017/2018
CLIMATE OUTLOOK FOR GREECE

DIVISION of CLIMATOLOGY – APPLICATIONS
HELLENIC NATIONAL METEOROLOGICAL SERVICE

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Introduction

This report consists of two parts. In part A, an analysis of the observed mean temperature for Winter 2017/18 as well as an assessment - verification of SEECOF-18 temperature outlook for Winter 2017/18 were performed, at first on monthly basis and then for the entire Winter 2017/2018 season. The reference period for comparison was the base period of 1971-2000.

In part B, an analysis of the observed precipitation for Winter 2017/18 as well as an assessment - verification of SEECOF-18 precipitation outlook for Winter 2017/18 were performed, initially on monthly basis and then for the whole Winter 2017/18 season. The reference period for comparison was the base period of 1971-2000.

Part A

1. Temperature

1.1. Analysis of the Winter 2017/18 air temperature anomalies for Greece

The analysis of seasonal mean air temperature in Greece is based on data from 30 meteorological stations distributed evenly in the country. The Winter 2017/18 in Greece was warmer than normal compared to the 1971-2000 climatology. The mean seasonal air temperature in winter ranged from +5 °C to +15 °C. The greatest mean temperature values were found in south Aegean islands (Figure 1).

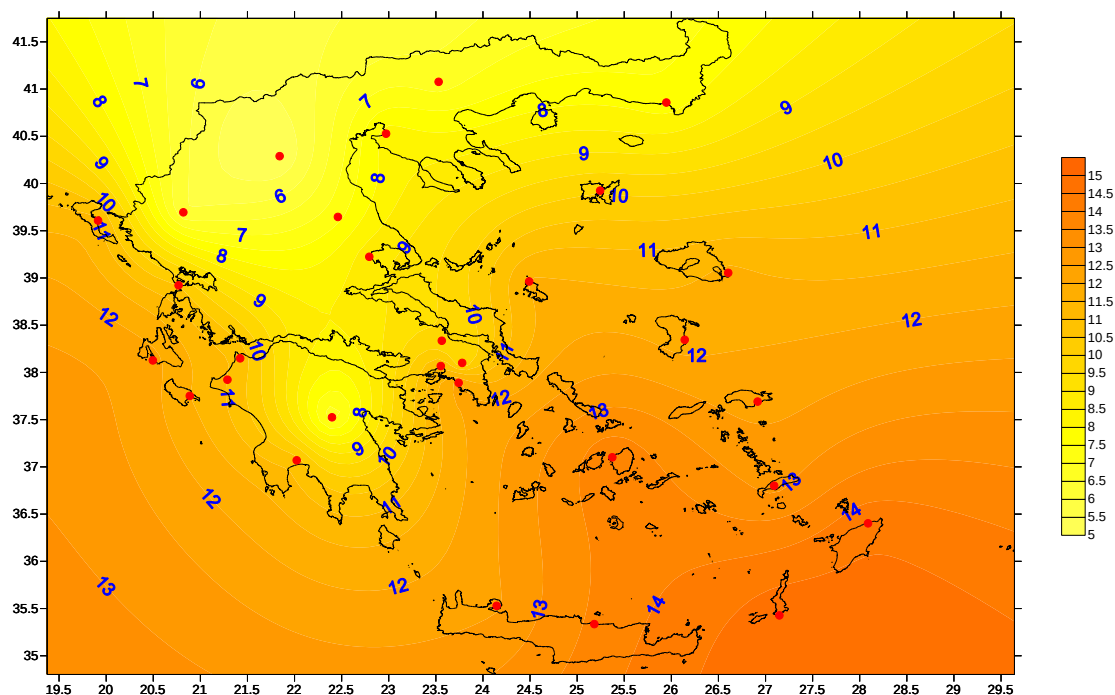


Figure 1. Mean winter air temperature (°C) in Greece.

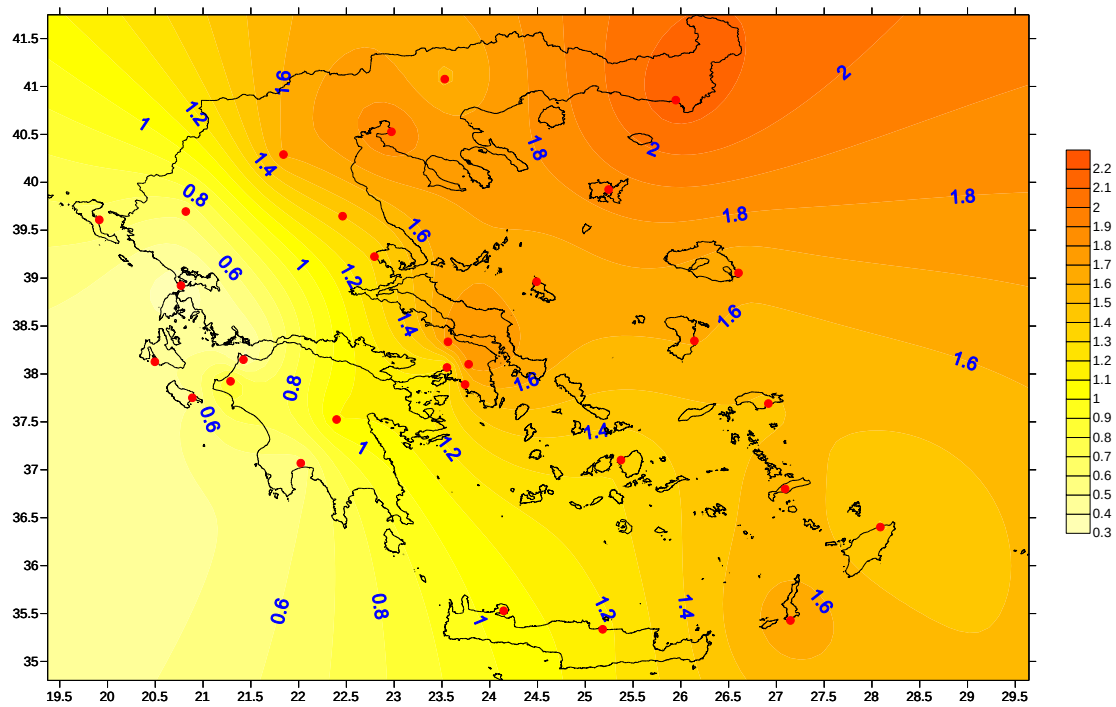


Figure 2. Mean temperature anomalies (°C) for Winter 2017/18 in Greece according to the 1971-2000 climatology.

The departure of mean air temperature from the normal values (1971-2000), in winter ranged from +1.2 °C to +2.2 °C in eastern Greece and from +0.3 °C to +1.0 °C in western areas (Figure 2).

December 2017 was in general a warmer than average month. The first half of the month was characterized by higher air temperatures than normal, while a cold period with low temperature values occurred at the beginning of the third period of ten days. However by the end of the month, air temperature reached its normal value. The departures of mean monthly air temperature from the normal values 1971-2000 ranged from nearly 1.0 °C to nearly 3.0 °C in the eastern Greece, while slightly negative departures ranging from 0.0 °C to -0.8 °C were found in the western Greece.

January 2018 was a warmer than average month. The first ten days were characterized by normal to higher than normal temperatures and during the last ten days air temperature rose significantly. The departures of mean monthly air temperature from the normal values 1971-2000 ranged from 0.4 °C to nearly 2.0 °C.

February 2018 was also a warmer than average month. The departures of mean monthly air temperature from the normal values 1971-2000 ranged from 1.4 °C to nearly 3.0 °C in the eastern mainland of Greece and in Aegean islands, while the lowest positive departures ranging from 0.7 °C to nearly 1.2 °C were found in the Ionian islands and in the western mainland of Greece.

In order to quantify the observed seasonal temperatures in terms of cold, warm and normal we have used the percentile method. The percentiles were calculated for each station and are based on homogenized mean temperature series for the period 1960-2004.

According to percentile ranks (Figure 3) **very warm and extremely warm** conditions prevailed in eastern Greece and in the Aegean islands (70 % of the examined stations) during Winter 2017/18, while warm or normal conditions prevailed in western Greece and Ionian islands.

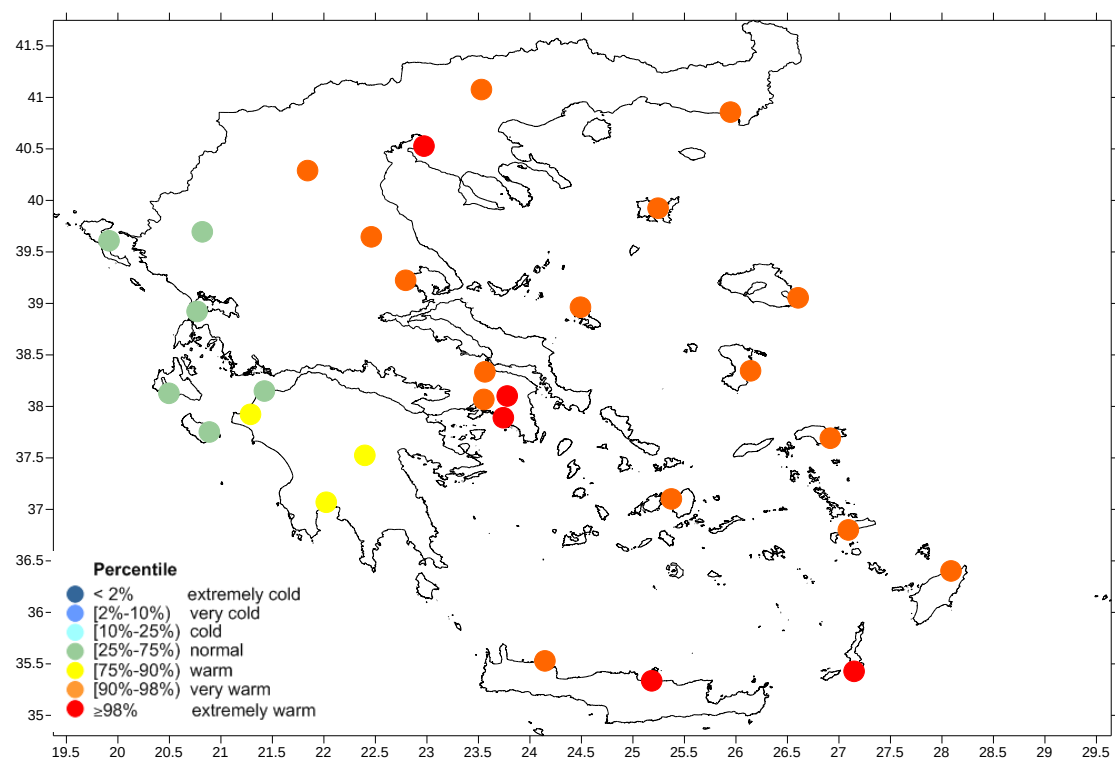


Figure 3. Mean temperature percentiles for Winter 2017/2018.

1.2. Verification of the SEECOF-18 Winter 2017/18 temperature outlook for Greece

The consensus statement of SEECOF-18 mentioned that above normal thermal anomalies were likely to dominate the whole SEECOF region in the Winter 2017/18. The probabilities for above-normal temperature in Greece was 50% above normal, 30% around normal and 20% below normal (zone 2) (Figure 4).

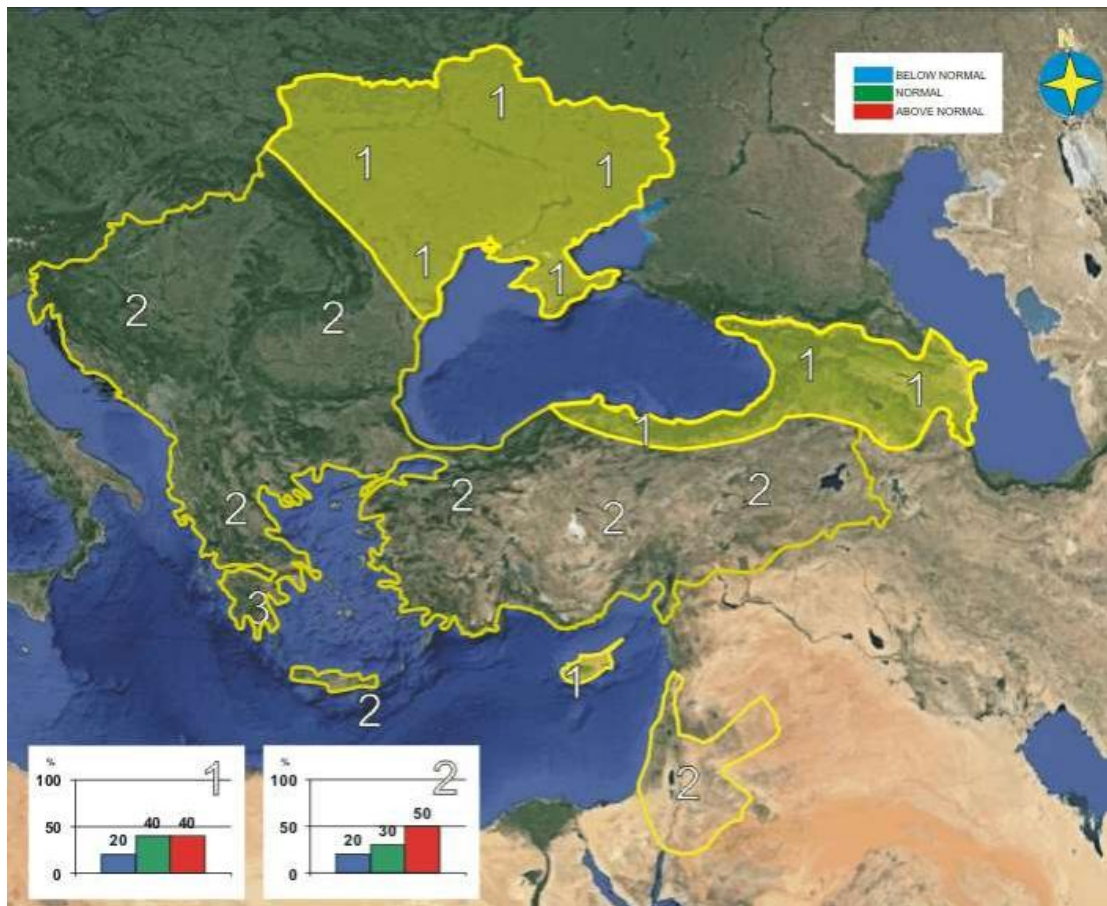


Figure 4. Graphical presentation of the Winter 2017/18 temperature outlook.

Verifying the SEECOF's temperature outlook (although this is relative to the 1981-2010 normal values): the SEECOF's prediction can be considered as successful since Greece experienced a warm winter.

Part B

2. Precipitation

2.1. Analysis of the Winter 2017/18 precipitation anomalies in Greece

The analysis of seasonal precipitation amounts throughout Greece is based on data from 30 meteorological stations distributed evenly in the country. Winter precipitation totals were above average (relative to the normal base period 1971-2000) across the north and northeastern Aegean islands and the west and central Greece, ranging from 250.0 mm in the central areas up to nearly 550.0 mm in the Ionian islands and the western coastal regions (Figure 5).

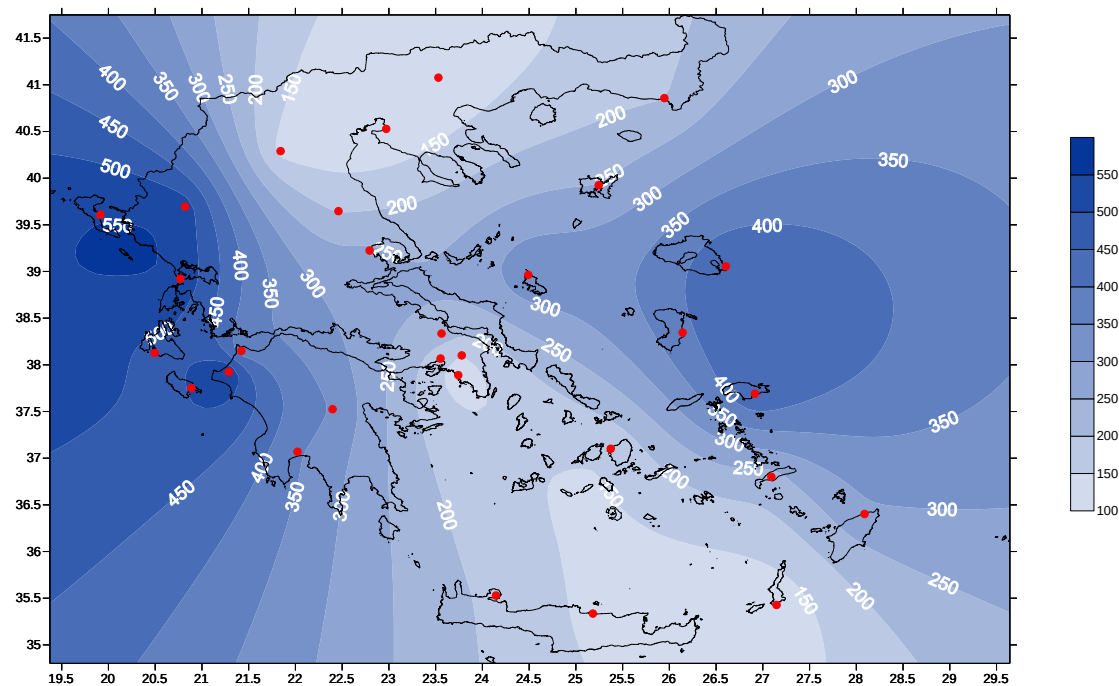


Figure 5. Spatial distribution of winter precipitation totals expressed in mm.

The winter precipitation ratios to the normal values (1971-2000) (the normal values are based on homogenized data series) were computed and are given in percentages in Figure 6. The analysis showed that the winter of 2017/18 was wetter for the west and central areas as well as for the north and northeastern Aegean islands. The winter precipitation anomalies in these areas ranged from 130 % to 230 % (Figure 6). The winter precipitation anomalies in the southern areas ranged from 50 % to 110 % (Figure 6).

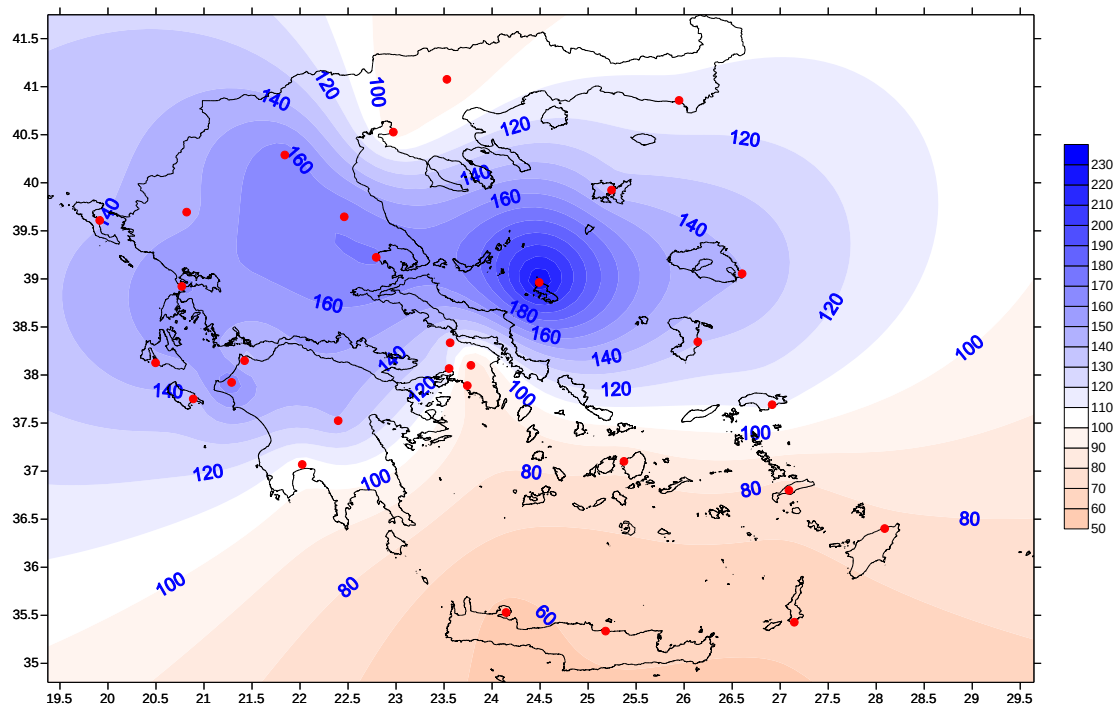


Figure 6. Winter 2017/18 precipitation anomalies (1971-2000) given in percentages.

During the first days of December 2017 heavy rainfall hit west Greece, where extensive floods and landslides occurred. The precipitation amounts for December 2017 varied from 117 to 209 % of normal values (1971-2000) for the west Greece and north Aegean islands, while it was below or near normal values in the remaining areas.

January of 2018 was a rather dry month for the greatest part of the country except for a few central parts of Greece and the north Aegean islands where the accumulated monthly precipitation accounted for 118 % to 230 % of normal values 1971-2000.

February of 2018 was a wet month for almost the entire country, since the accumulated monthly precipitation was above normal values. The accumulated monthly precipitation accounted for more than 130 % up to nearly 320 % of normal values 1971-2000 for almost the entire country, with the only exception of Crete, where monthly precipitation accounted for 60 % to 80 % of normal values 1971-2000. The area of eastern Pelion and especially the region of Zagora received very high amounts of precipitation during February 2018 that caused many landslides, road destructions and problems in the transportation.

In order to quantify the observed precipitation height in terms of wet, dry and normal, we have used the percentile method. The percentiles were calculated for each station and are based on homogenized precipitation series for the period 1970-2004.

According to percentile ranks (Figure 7), accumulated precipitation for Winter 2017/18 has been described by the following categories:

- very dry conditions were found in only 3 stations located in Crete and south Aegean (10 % of the examined stations)
- normal conditions were found in 13 stations located in the eastern continental Greece and in the southern Aegean islands (43% of the examined stations)
- wet to very wet conditions were found in 14 stations distributed in west Greece (47% of the examined stations)

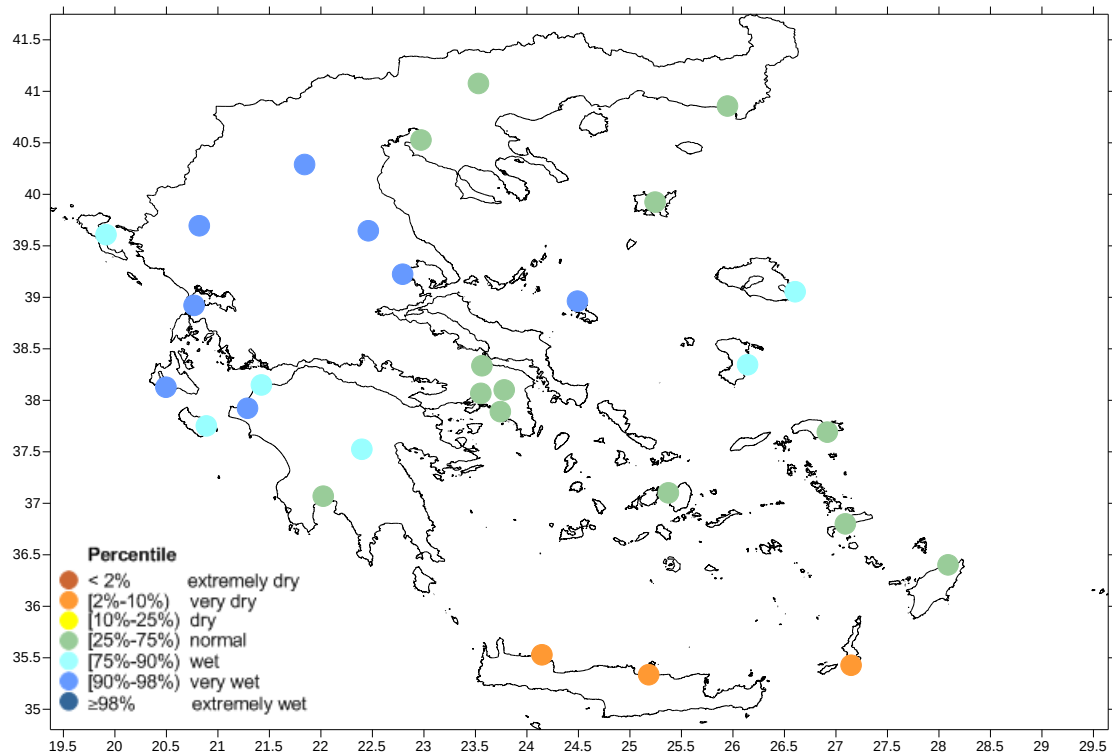


Figure 7. Total precipitation percentiles for Winter 2017/2018.

2.2. Verification of the SEECOF-18 Winter 2017/18 precipitation outlook for Greece

According to SEECOF–18 precipitation outlook drier-than-normal conditions prevail on Southernmost of the Balkan Peninsula, along the coasts of the Eastern Mediterranean, Ionian, as well as the coasts of central and Southern Adriatic Sea (zone 3 in Figure 8) while in the rest part of the SEECOF domain there is no clear signal for precipitation (zone 2 in Figure 8).

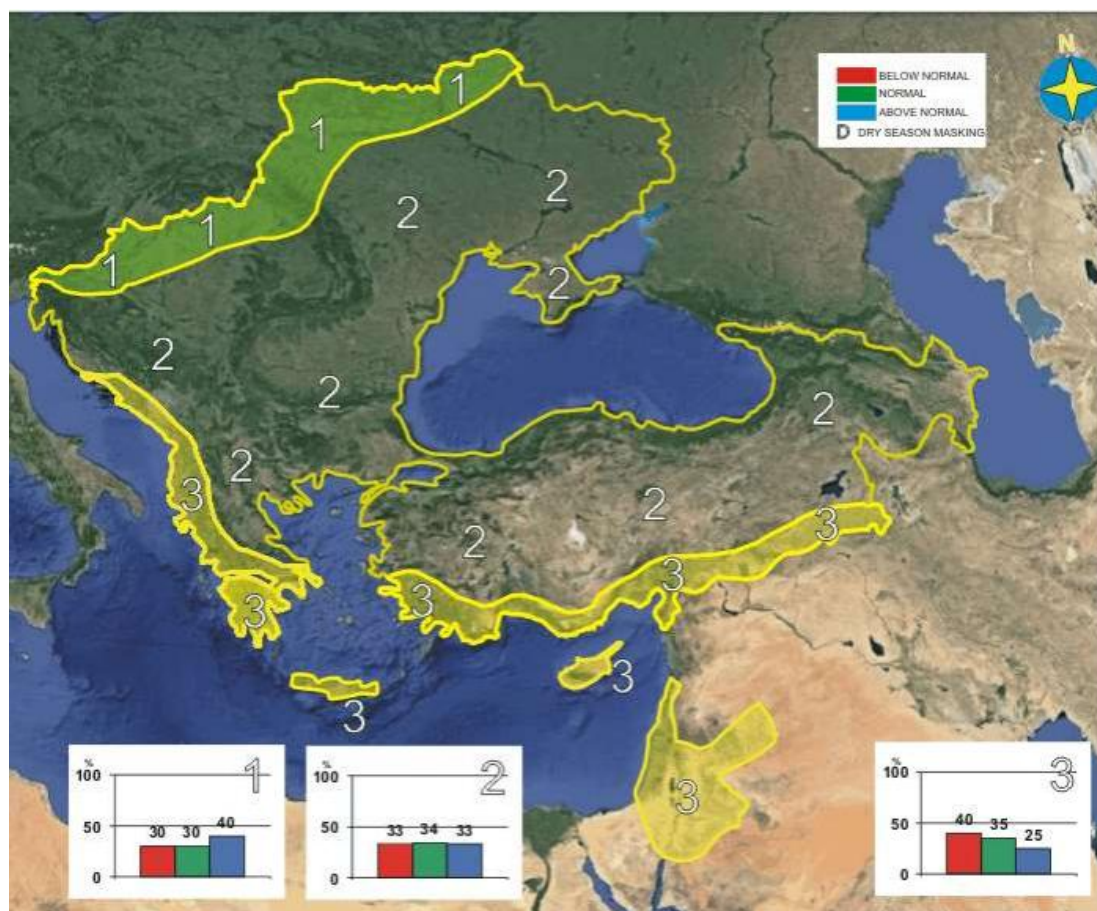


Figure 8. Graphical presentation of the 2017/18 Winter precipitation outlook.

Verifying the SEECOF–18 precipitation outlook (although this is relative to the 1981-2010 normal values): the prediction failed, since this outlook did not forecast the wetter than climate averages season.

Country	Seasonal temperature (DJF)		Seasonal precipitation (DJF)	
	Observed	SEECOF-18 climate outlook for temperature	Observed	SEECOF-18 climate outlook for precipitation
Greece	Above normal	Above normal (50% above normal, 30% around normal and 20% below normal) for the whole area of Greece	Wetter than normal in most parts of the country (except regions of the south - southeastern Greece)	Drier than normal (40% drier than normal, 35% around normal, 25% wetter than normal) in western and southern parts of Greece. No clear signal in the rest of the country.

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