

**National Climate Bulletin and Verification of the SEECOF-31 summer  
2024 forecast**

DIVISION of CLIMATOLOGY – APPLICATIONS  
HELLENIC NATIONAL METEOROLOGICAL SERVICE

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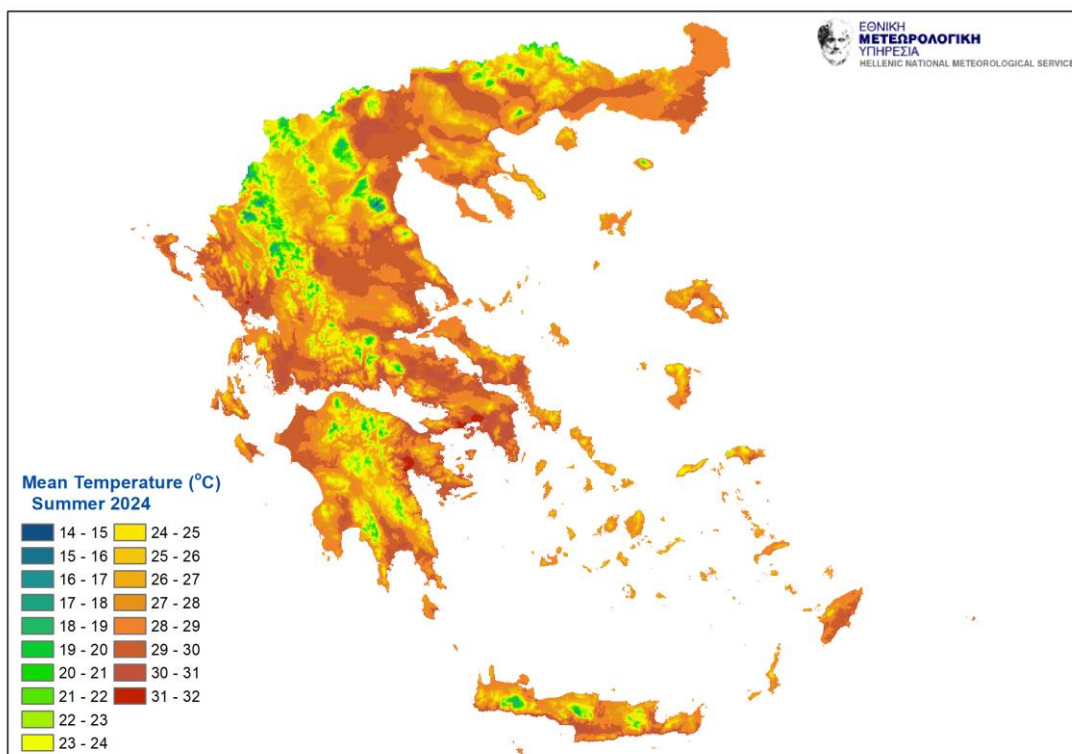
## Part A

### 1. Temperature

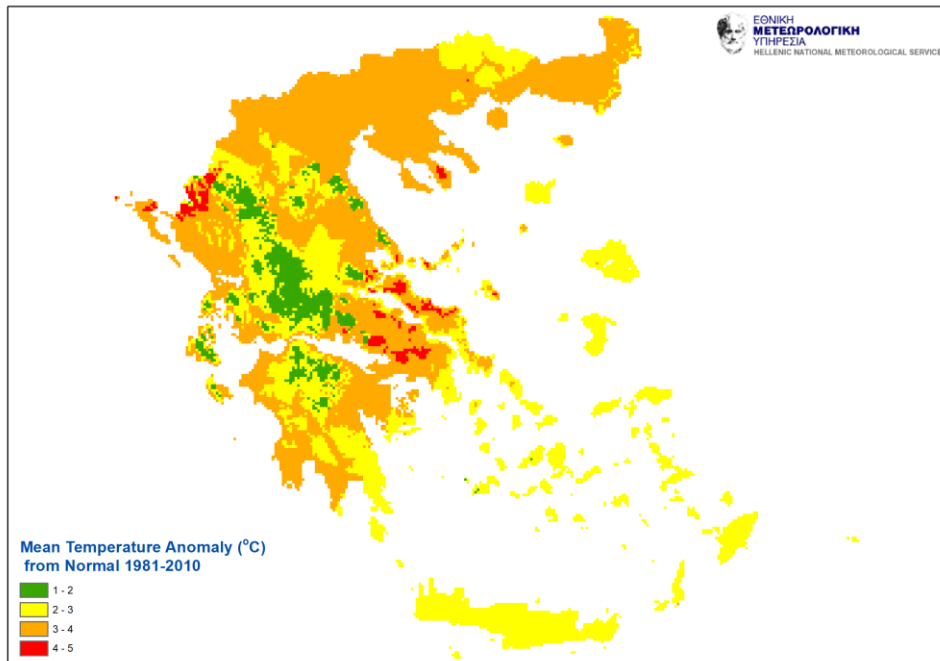
#### 1.1. Analysis of the 2024 summer air temperatures anomalies for Greece

**Summer 2024** was characterized by two strong heatwaves and prolonged heat. The average seasonal temperature in Greece (Figure 1), taking into account about 200,000 points of the Greek territory where the temperature was estimated (ie every 750 meters), was on average 27 °C.

The summer of 2024 was the hottest summer in Greece since 1960. The average summer temperature was 3-5°C higher than the 1981-2010 normal value over the greatest part of mainland and 2-3°C higher than the 1981-2010 normal value over Aegean islands, east Attica and central mountainous regions (Figure 2). Also, the average temperature this summer was 1 °C higher than the previous warmest summer of 2012.

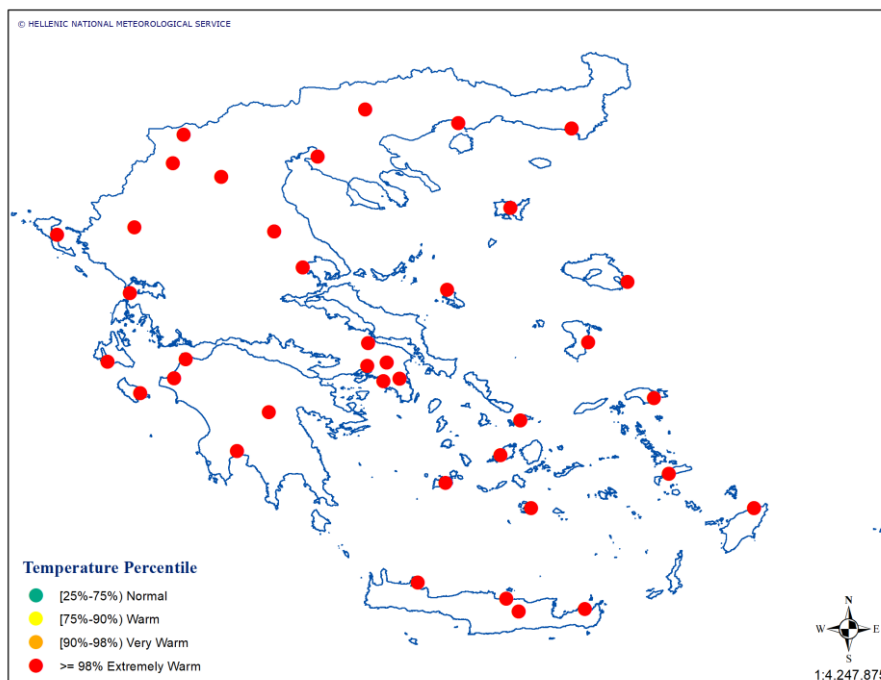


**Figure 1.** Mean seasonal (summer 2024) temperature (°C).



**Figure 2.** Mean temperature anomalies (°C) for summer 2024 in Greece according to the 1981-2010 climatology.

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 data for the period 1960-2010. According to percentile ranks all stations experienced **extremely warm** conditions (Figure 3).



**Figure 3.** Mean temperature percentiles for summer 2024 (based period 1960-2010).

## 1.2. Verification of the SEECOF-31 summer 2024 temperature outlook for Greece

The seasonal forecast for summer suggested that the mean temperature would be above normal in mainland areas with the greatest temperature anomaly (3-5°C) occurring in north Greece (Figure 4). The consensus statement of SEECOF-31 mentioned that in the entire Greek region, summer temperature was likely to be above-normal with 70% probability (Zone 1 in Figure 5). Verifying the seasonal forecast for summer the prediction was generally successful, because the summer mean temperatures varied above normal across the country.

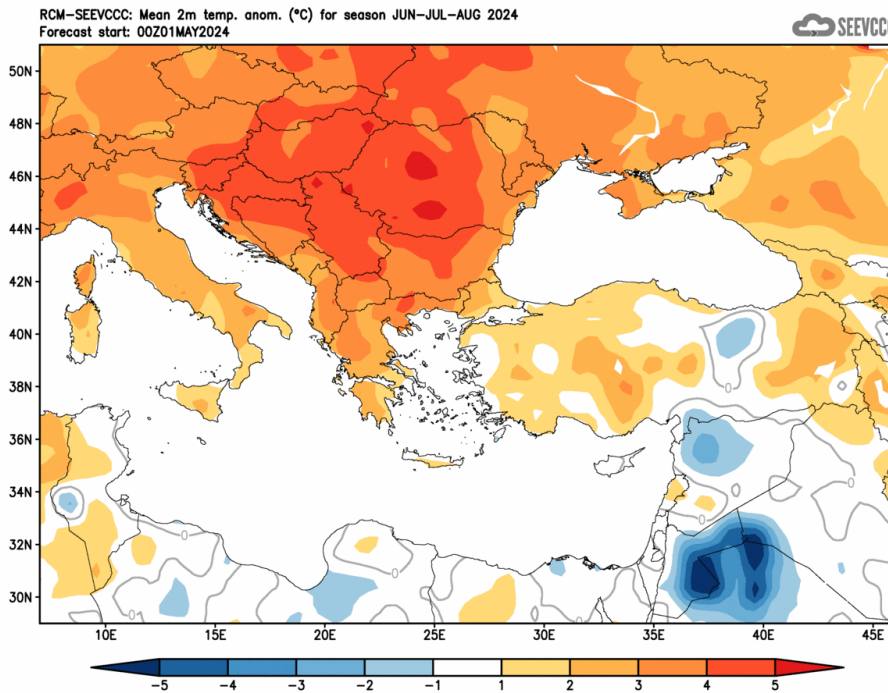


Figure 4. Mean temperature anomaly for summer 2024.

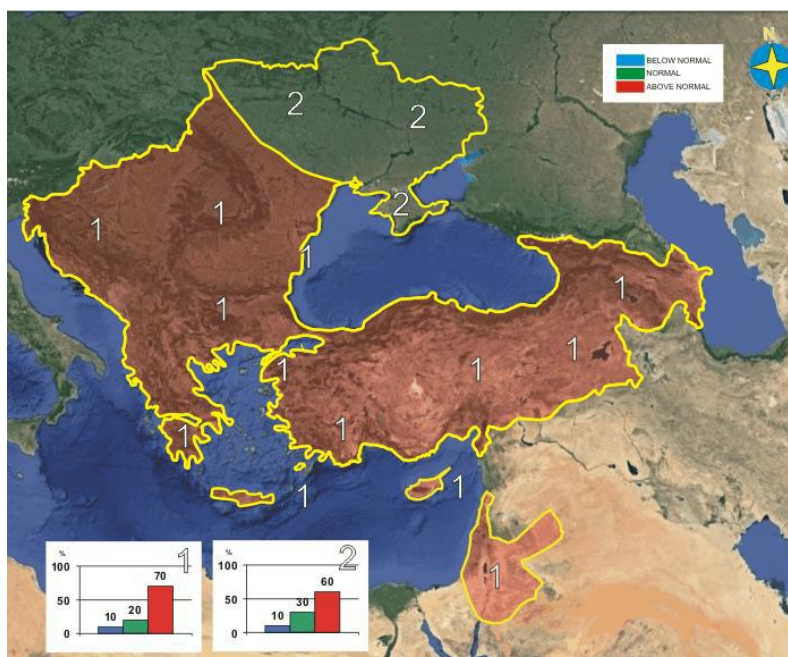


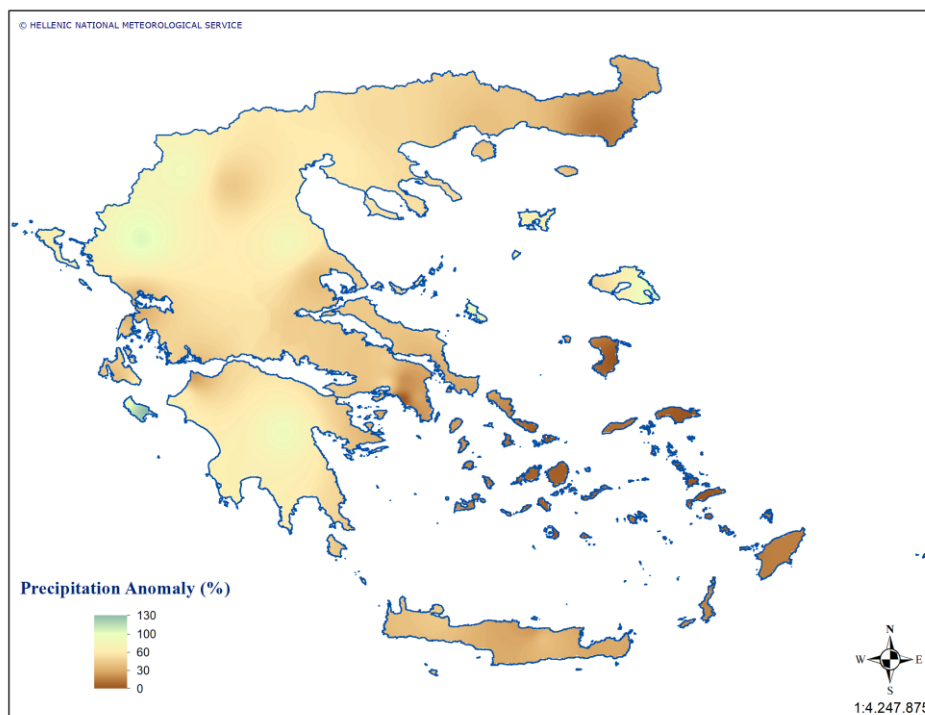
Figure 5. Graphical presentation of the 2024 summer temperature outlook.

## Part B

### 2. Precipitation

#### 2.1. Analysis of the 2024 summer precipitation anomalies in Greece

Summer 2024 was drier than average over most of Greece, with areas in the southeast and northeast experiencing the most severe drought, where total precipitation accounted for less than 60 % of 1981-2010 normal values (Figure 6). Few regions in northwest mainland, south Ionian and Peloponnese were wetter than average with total precipitation accounting for more than 100 % of 1981-2010 normal values.

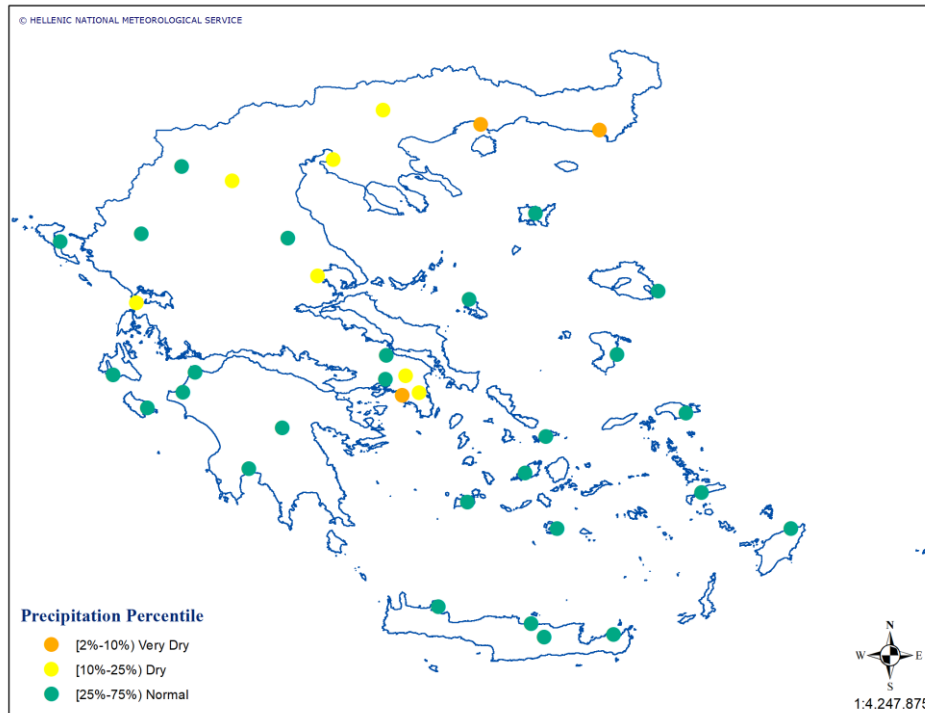


**Figure 6.** Summer 2024 precipitation anomalies (1981-2010) given in percentages.

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 1960-2010.

According to percentile ranks (Figure 7) precipitation amounts for summer 2024 have been described by the following categories:

- Dry and very dry conditions prevailed in 10 stations (27 % of the examined stations).
- Normal conditions prevailed in the rest of the stations (73% of the examined stations).
- None station experienced wet, or very wet or extremely wet conditions.

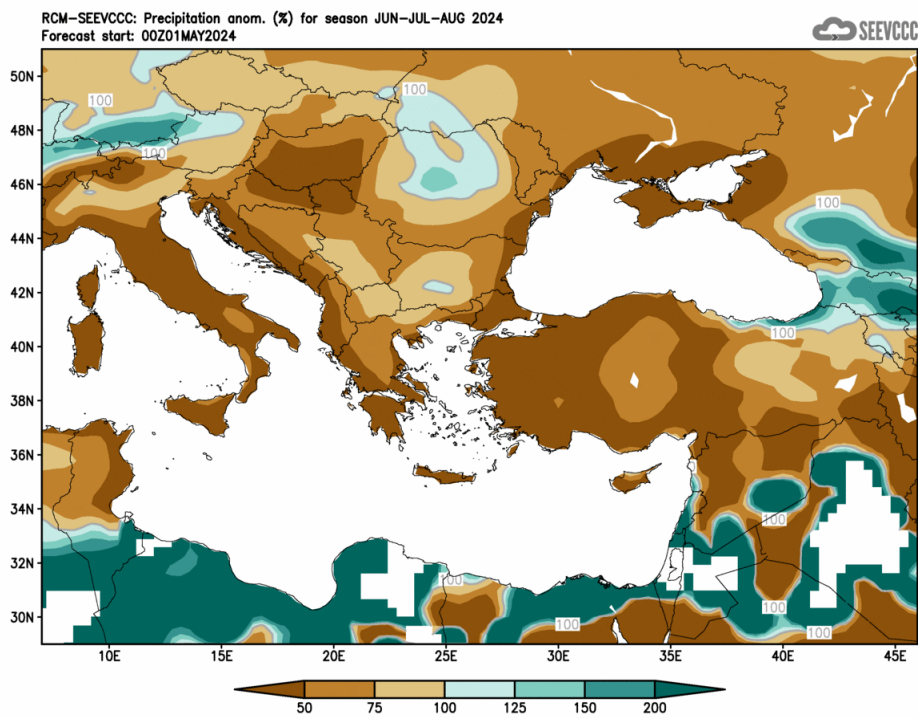


**Figure 7.** Precipitation percentiles for summer 2024 (based period 1981-2010).

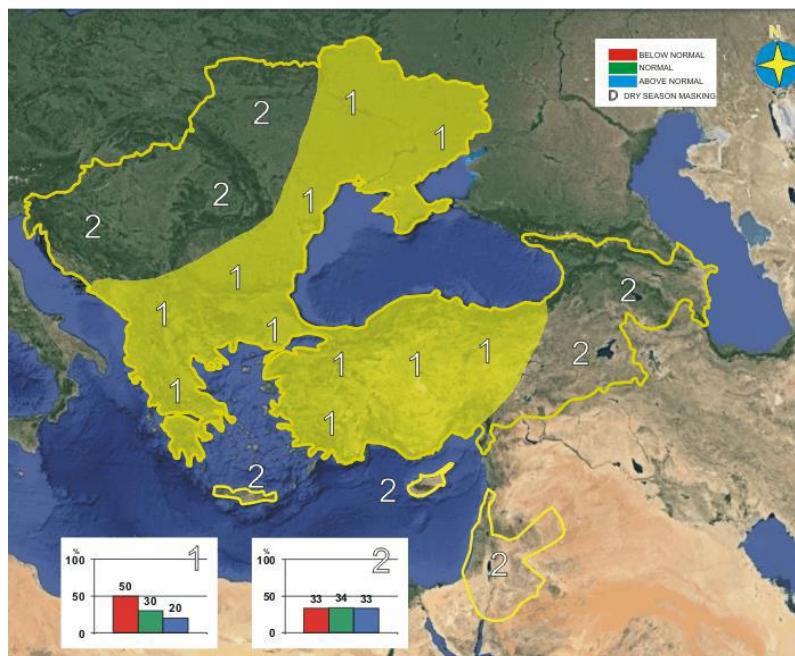
## 2.2. Verification of the SEECOF-29 summer 2024 precipitation outlook for Greece

The seasonal forecast for precipitation predicted a dry summer in Greece, with areas in the west and south most likely to experience severe drought (Figure 8). According to SEECOF–31, in Greece except Crete, as well as the southern and eastern parts of Balkans and Turkey were likely to experience below-normal conditions in terms of summer precipitation sums (Zone 1 in Figure 9) while in Crete there were equal probability for summer precipitation (Zone 2 in Figure 9).

Verifying the seasonal forecast for summer, the seasonal forecast was partially successful, since below normal conditions prevailed over most of Greece.



**Figure 8.** Precipitation anomaly for summer 2024.



**Figure 9.** Graphical presentation of the 2024 summer precipitation outlook.

**Table 1. Seasonal air temperature and precipitation sums - Ranks**

Summer 2024		Seasonal air temperature (°C)					Seasonal precipitation sums (mm)			
Station	Rank*	33	50	67	Observed value	Rank**	33	50	67	Observed Value
Thessaloniki	1	25.6	25.9	26.3	29.7	40	50.6	63.7	87.95	46
Helliniko	1	26.8	27.2	27.7	30.9	50	6.8	14.4	20.95	0
Souda	1	25.7	26.0	26.4	28.4	23	0.1	1.4	3.9	2.4
Argostoli	1	25.1	25.4	25.7	29.1	36	11.25	15.1	25.9	11

\* Rank: period 1960-2010 (warmest season)

\*\* Rank: period 1960-2010 (highest seasonal precipitation)

**Table 2. Verification of the SEECOF-31 Climate Outlook in Greece for Summer 2024.**

Country	Seasonal temperature		Seasonal precipitation		High Impact Events
	Observed	SEECOF-31 climate outlook for temperature	Observed	SEECOF-31 climate outlook for precipitation	
Greece	Above normal for the whole area of the country.	Above normal with 70% probability.	Drier than normal conditions prevailed over most of Greece.	Below normal (zone 1, 50% below normal, 30% around normal, 20% above normal).	The <b>heat wave of July 2024</b> was <b>the longest heat wave on record</b> . Lasted 11 days on average and affected mainland and Ionian islands.

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