



Thirty-fourth Session of the SOUTH EAST EUROPEAN CLIMATE OUTLOOK FORUM

SEECOF-34 ONLINE MEETING

ANALYSIS AND VERIFICATION OF THE SEECOF-33 CLIMATE OUTLOOK FOR THE 2025 SUMMER FOR SOUTH-EAST EUROPE

CLIMATE OUTLOOK FOR 2025 SUMMER SEASON FOR THE SEECOF REGION

As stated in the SEECOF-33 Consensus Statement on the Seasonal Climate Outlook for the 2025 Summer Season over South-East Europe (SEECOF) document:

<http://www.seevccc.rs/SEECOF/SEECOF-33/STEP-3/Consensus%20Statement%20SEECOF-33%20-final.pdf>

Observed neutral ENSO and Indian Ocean Dipole conditions were expected to continue in the following months. Positive temperature anomalies were forecasted in the northeastern part. Forecasting systems tended to under-represent the Greenland Anticyclone and Atlantic Low regimes, while over-representing the Zonal regime.

Analysis shows neutral ENSO conditions, slightly positive Indian Ocean Dipole and positive NAO phase were well anticipated. Zonal Atlantic Ridge was well forecasted with anomalies underestimated by the models.

Summer temperature was likely to be above-normal, with the probability up to 70% (Zone 1 in Figure 1). Uncertainties in regional predictions are higher for precipitation than for temperature. Most parts of the SEECOF region was likely to experience below-normal conditions in terms of summer precipitation sums (Zone 1 in Figure 2) while in the southern Balkans, Eastern Mediterranean, Cyprus and Middle East there was equal probability for summer precipitation (Zone 2 in Figure 2). It is noteworthy that certain parts of the region, particularly mountainous areas, could be observe near- or above-normal summer precipitation totals due to the episodes of enhanced convection accompanied by heavy precipitation.

It was noted that seasonal averages cannot provide details about short spells of weather during the season. It is possible that even in an average season spells of severe summer weather (for example: summer storms, very warm episodes, very dry spells) could occur and lead to significant local socio-economic impacts.

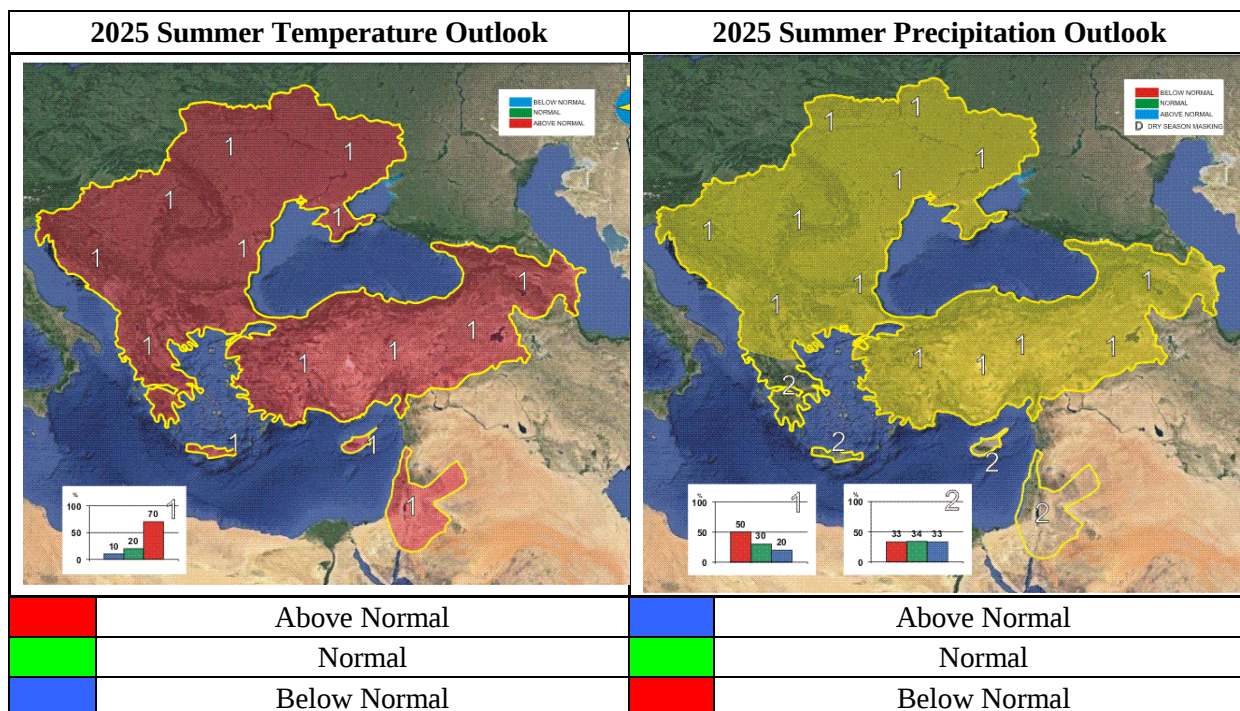


Figure 1. Graphical presentation of the Climate Outlook for the 2025 Summer Season for the SEECOF Region

ANALYSIS OF THE SUMMER 2025 FOR THE SEECOF REGION

Analyses of the winter season temperature and precipitation anomalies are based on:

- Operational products of the RCC Node-CM (Regional Climate Centre on Climate Monitoring) provides maps for the World Meteorological Organization (WMO) Region VI (Europe and Middle East), http://rcccm.dwd.de/DWD-RCCCM/EN/products/europe/europe_node.html
- Climate monitoring products of the South East European Virtual Climate Change Center – SEEVCCC (Member of the WMO RA VI RCC Node-CM), http://www.seevccc.rs/imgsrc/clim_mon/202508/
- National climate monitoring reports of the following SEECOF-34 participating countries: Armenia, Federation of Bosnia and Herzegovina / Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Georgia, Greece, Republic of Moldova, Republic of North Macedonia, Republic of Srpska / Bosnia and Herzegovina, Serbia, Slovenia, Turkey and Ukraine are available on: <http://www.seevccc.rs/SEECOF/SEECOF-34/STEP-1/>

Summer 2025 seasonal mean temperature was in a range from around 15 °C in the mountainous areas of northeastern Turkey, Armenia, Georgia and the western Balkans, as well as in Carpathian region, to over 30 °C in southeastern Turkey and most of Middle East. In most of the low-lying regions it was between 20 °C and 25 °C, except in Azerbaijan, southern Turkey and the southern Balkans where it was upper than 25 °C while in western Ukraine, parts of central and northern Romania, northern and southern Georgia and some locations in northern Turkey mean air temperature was below 20 °C (Figures 2 and 3, left panel). The entire SEECOF region observed above-normal winter temperatures (Figures 4 and 5, left panel). Temperature anomalies reached up to +3 °C above normal, relative to the 1991-2020 base period, in parts of the eastern and southern Balkans as well as part of western Turkey.

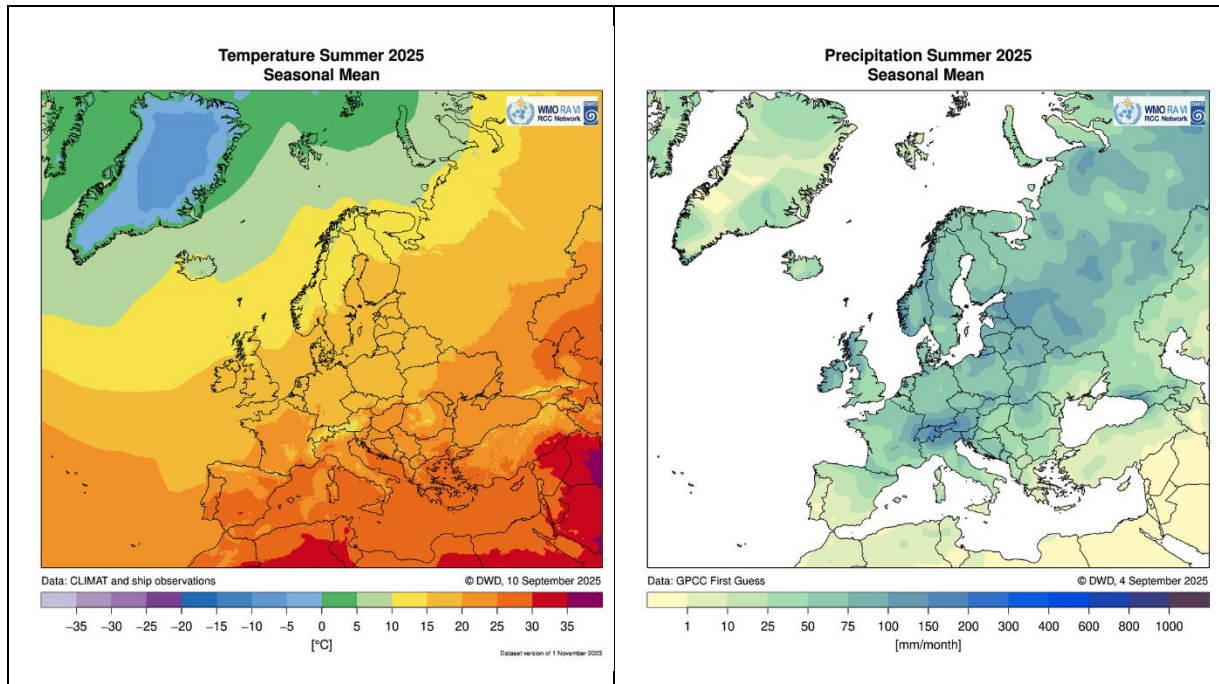


Figure 2. Summer season 2025, Europe – observed temperatures (left panel) and observed precipitation in mm per month (right panel). Source:

https://www.dwd.de/EN/ourservices/rccm/int/rccm_month_ttt.html?nn=796932 (left panel)

https://www.dwd.de/EN/ourservices/rccm/int/rccm_month_rrr.html?nn=796932 (right panel)

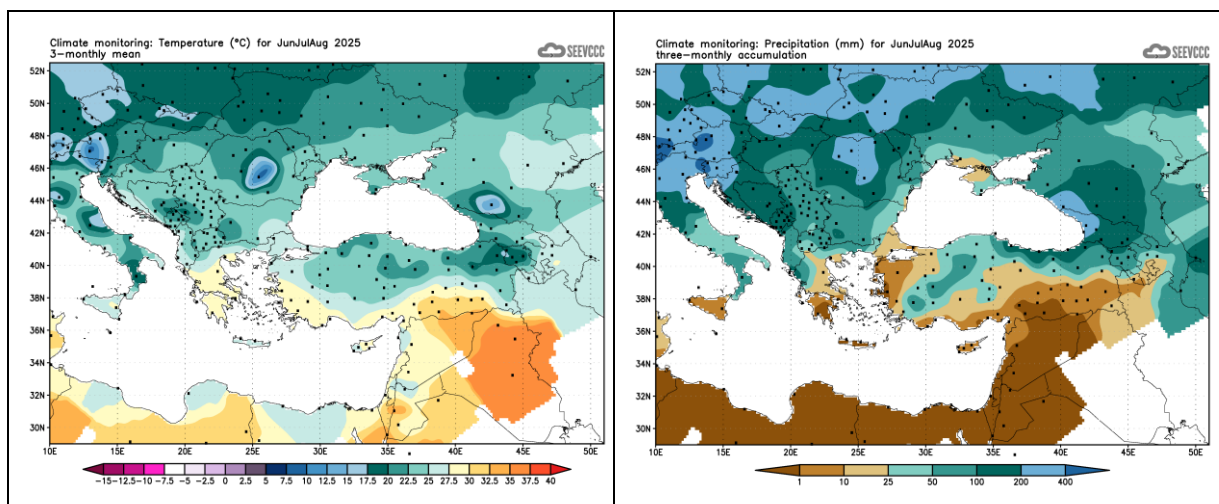


Figure 3. Summer season 2025, SEECOF region – observed temperature (left panel) and observed precipitation (right panel). Source:

http://www.seevccc.rs/imgsrc/clim_mon/202508/temp_av3m.gif (left panel)

http://www.seevccc.rs/imgsrc/clim_mon/202508/prec_tot3m.gif (right panel)

Seasonal precipitation totals (Figures 2 and 3, right panel) were between 200 mm and 400 mm in parts of central and northern Romania, western Georgia and parts of western and northern Ukraine, in a range from 100 mm up to 200 mm was in the western Balkans, most of Romania, northwestern Moldova, most of Georgia and in northeastern part of Turkey. In rest of the SEECOF region, precipitation totals were below 100 mm, with even below 10 mm in Cyprus, Middle East, southern and western Turkey, and southern part of Greece. It was drier than normal in almost the entire SEECOF region, with less than 80% of the long-term average. Normal conditions were in northern and western Ukraine, part of northern Romania and the southwestern Balkans (Figures 4 and 5, right panel).

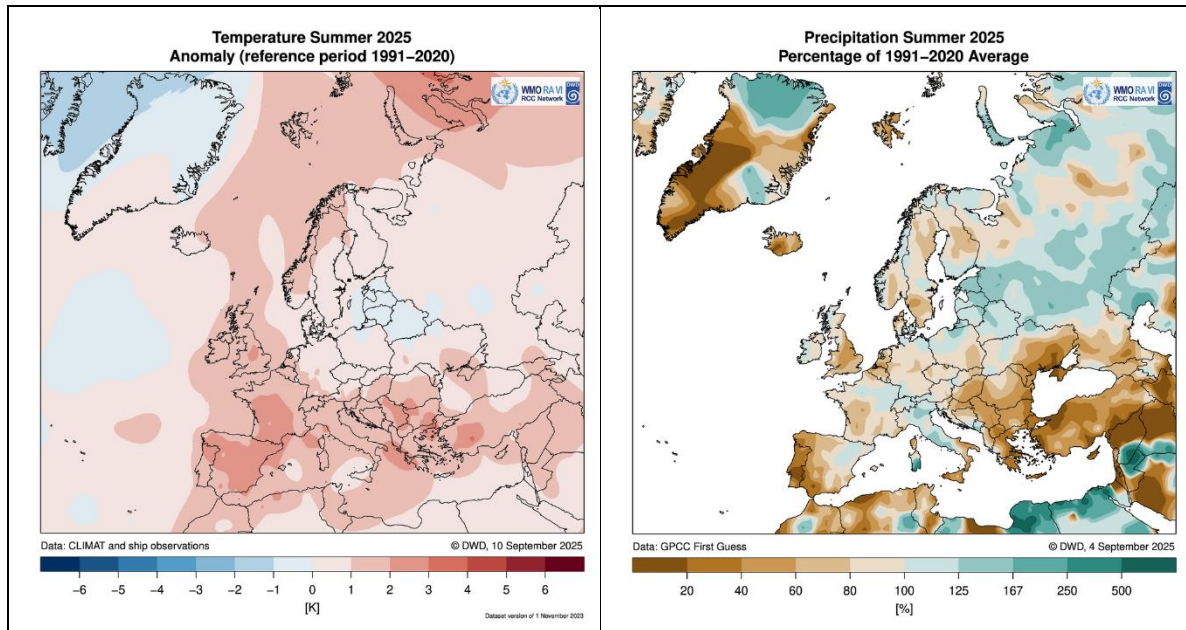


Figure 4. Summer season 2025, Europe – observed temperature anomalies (left panel) and observed precipitation anomalies in percent of 1991-2020 normal (right panel). Source:

https://www.dwd.de/EN/ourservices/rccm/int/rccm_month_ttt.html?nn=796932 (left panel)

https://www.dwd.de/EN/ourservices/rccm/int/rccm_month_rrr.html?nn=796932 (right panel)

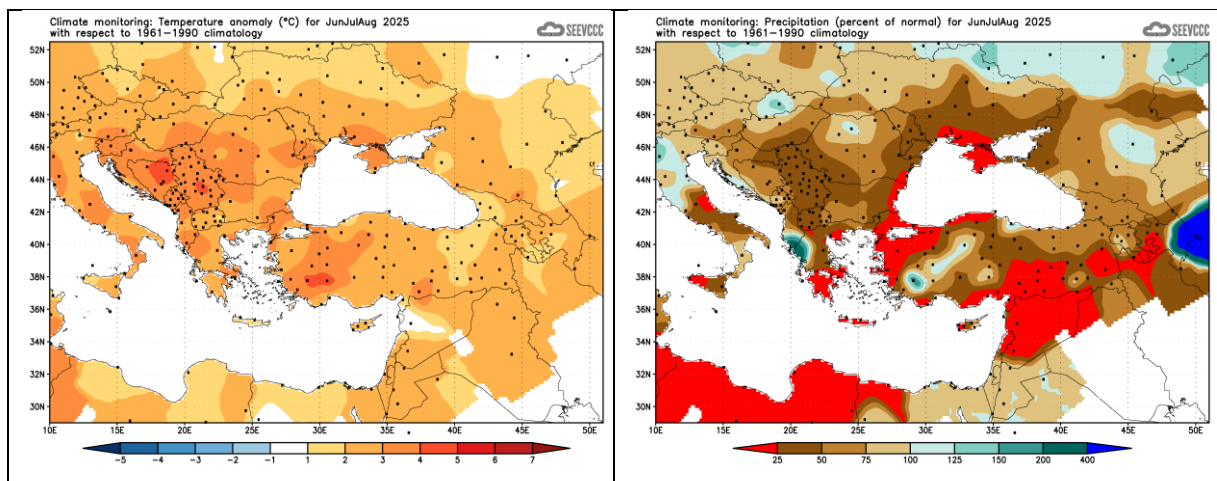


Figure 5. Summer season 2025, SEECCF region – observed temperature anomalies (left panel) and observed precipitation anomalies in percent of 1961-1990 normal (right panel). Source:

http://www.seevccc.rs/imgsrc/clim_mon/202508/temp_an3m.gif (left panel)

http://www.seevccc.rs/imgsrc/clim_mon/202508/prec_pn3m.gif (right panel)

VERIFICATION OF CLIMATE OUTLOOK FOR THE 2025 SUMMER

Summer 2025 temperature was in the above normal category in the entire SEECOF region. Consequently, the outlook was correct.

SEECOF-33 Climate outlook for summer precipitation was correct for most of the region with below normal precipitation sums. On the other hand, the outlook did not anticipate below-normal summer precipitation totals in Cyprus and southern Greece, as well as some parts of Middle East.

APPENDIX A: Analysis and verification of the SEECOF-33 climate outlook for the 2025 summer season:

Verification summary based on the national reports and contributions of the participants of Pre-COF of the SEECOF-34 meeting

Country	Seasonal temperature (DJF)		Seasonal precipitation (DJF)		High Impact Events
	Observed	SEECOF-33 climate outlook for temperature	Observed	SEECOF-33 climate outlook for precipitation	
Armenia ref. (1991-2020)	Above normal	Above normal (20, 30, 50)	Below normal	Below normal (50, 30, 20)	- Tenth warmest summer since 1935. The highest positive temperature anomaly was observed in August when mean monthly temperature was 1.9 °C above the norm. - August was especially dry, when monthly precipitation consisted only 19% of the norm.
Bosnia and Herzegovina (FBiH) ref. (1991-2020)	Above Normal in almost entire Bosnia and Herzegovina	Above normal (10, 20, 70)	Within and below normal	Below normal (50, 30, 20)	At most meteorological stations, June 2025 was the warmest since the beginning of official measurements in Bosnia and Herzegovina. At the meteorological stations Sarajevo and Tuzla, a new absolute maximum for the month of June was recorded. In Sarajevo, 38.0 degrees were measured, and in Tuzla 37.2 degrees. June was an extremely dry month. At a large number of stations, no precipitation was recorded during the month. At other meteorological stations, the measured precipitation amounts were the lowest in June since the beginning of official measurements.
Bulgaria ref. (1991-2020)	Above normal	Above normal (10, 20, 70)	Below normal	Below normal (50, 30, 20)	- The summer of 2025 is one of the driest summers in Bulgaria since 1950, similar to the summers of 2000 and 2012. Seasonal precipitation amounts are below the climatic norm – between 7 and 74% of it. June 2025 is the driest June since 1950. - During the periods from June 30 to July 9 and from July 19 to 29, the entire country was engulfed in a heat wave. High temperatures, a prolonged period of no rain, and human negligence caused dozens of fires to rage in various parts of the country. With the passage of atmospheric disturbances on 7 and 28 July thunderstorms, intense rainfall of rain and hail, and strong

					winds were registered. In towns, streets were flooded, roofs and fences were damaged, power poles were broken and trees were uprooted, and sections of the road network were temporarily blocked. • The country experienced another heat wave from August 3 to 17. In the first half of the month, large fires engulfed forest and field areas in the municipalities of in the east part of the country. On August 22, intense rainfall accompanied by strong winds caused local flooding, felled trees, and damaged the power grid and infrastructure in the northern parts of the country. • The hot and dry weather called into question the survival of some spring crops grown under non-irrigated conditions. As a result, of below-normal rainfall towards the end of the month, productive soil moisture reserves were completely depleted in many of the country's agricultural regions. With the deepening moisture deficit, a large part of the sunflower grown under non-irrigated conditions has a severely impaired turgor, with small, poorly decorated cotyledons. In corn crops, yellowing and drying of the leaves on the lower floors of the plants is observed. As a result of unfavorable agrometeorological conditions, damage to agricultural crops is increasing - leaf scorch on corn and sunflower, sterility in late production vegetable crops, premature leaf fall in some perennial crops. • In the first half of August, the deepening summer drought and extremely high temperatures compromised the corn and sunflower harvest in many places in the country. Sunflower yields are unusually low, in places - below 100 kg/hectare, and a significant part of the corn crops grown under non-irrigated conditions will not be harvested.
Croatia ref. (1991-2020)		Above normal (10, 20, 70)	Normal and below normal (most of Croatia)	Below normal (50, 30, 20)	• In all three months heat waves were observed – one per month (most pronounced at the end of June and in August, longer lasting at the coast). • In all three months convective related severe weather phenomena (thunderstorms, hail, heavy rains, flash floods, waterspouts) were observed mostly all over Croatia.

	Above normal				• In June, severe thunderstorms accompanied with rain, hail and very strong wind hit Istra on June 16, especially Rovinj. Damage from falling trees was recorded in Auto camps and 7 people were injured. • Due to the strong wind, there were some stranded boats. On June 27 severe thunderstorm hit continental part of Croatia - damage on corps due to hail were reported. • In July convective activity was very frequent all over Croatia. From July 6th to 8th, the area of several counties was affected by severe thunderstorms accompanied by gale-force winds, heavy rain and hail. There was a lot of material damage from fallen trees and hail on roofs and facades. In Split, on July 8, there was extensive damage to the Marjan Forest Park, where almost 4,000 trees were felled, and the damage is estimated at 3 to 5 million euros. A few dozen people were injured, two seriously. In the port, due to the breaking of the rope with which the ferry was tied, it caused damage to other ships, fortunately only material damage. There were also severe storms that affected a larger area towards the end of the month (July 26 and 27). Material damage was recorded due to stormy winds, flash floods and hail, and there were interruptions in the electricity supply in the continental part of Croatia and in the northern and central Adriatic. In Poreč (Istria), more than 50 mm of rain fell in a short time, causing flash floods. There were no injuries. • August - There were severe thunderstorms in August, but fewer than in July. At the end of the month (August 29th and 30th), a thunderstorm hit the Adriatic coast and areas along the Adriatic, especially the south, with gale-force winds and heavy rain. There were floods and landslides in the south, causing traffic disruptions. The daily precipitation amount at the Zavižan (highest mountain station) was 78 mm.
Cyprus ref. (1981-2010)	June Above normal	June Above normal	June Below normal	June Below normal	June In relation to the recorded average daily maximum temperature, this was above normal. Extreme maximum temperatures were recorded with positive deviations well beyond 4 °C, such as at the Polis

	July Above normal August Above normal	July Normal August Normal	July Below normal August Below normal	July SW part below normal, NE part above normal August South and East part below normal and North and West part above normal	Chrysochous and Prodromos stations with extreme maximum daily temperatures of 39 °C and 32.5 °C, respectively, which were 8.7 °C and 7.5 °C above the normal maximum temperature of each station, respectively. Extreme minimum temperatures with positive deviations were also recorded, such as at the Athalassa station where the minimum temperature (26.4 °C) was 7.2 °C above normal and in Larnaca where the minimum temperature (25.5 °C) was 6.1 °C above normal. The accumulated precipitation was a result of local rain showers and thunderstorms during the days 1-3, 15- 16, 22 and 29 of June. Hail was reported for the 4th and 15th of June. For the days from 25-29 of June EMMA yellow warnings were issued, concerning extreme high temperature. July The mean maximum and minimum temperatures were above normal in all of the selected stations. Daily maximum temperatures above normal (deviating by 4 °C or more from normal) were recorded, such as at the mountain station at the Forestry College in Prodromos and at Athalassa, where the extreme maximums (35.5 °C) and (44.7 °C), respectively, were 7.6 °C above normal for both areas. Extreme high minimums (more than at least 4 °C above normal for each station) were also recorded, such as in Polis Chrysochous and Athalassa, where the minimum (27.6 °C) and (28.7 °C) respectively, were 6.5 °C and 6.6 °C above normal for the two stations respectively. During July, extremely high temperature EMMA warnings, have been issued at both the yellow and the orange risk level, for both the maximum and the minimum temperatures. Specifically, a total of 13 EMMA warnings for extremely high temperatures were issued; 8 of which were at the yellow risk level during the periods 7-11, 21-22 and 28 of July, while 5 of them were at the orange risk level during the period 23-27 of July. From the distribution of the accumulated precipitation of July, as shown in the provisional chart that follows, the surface distribution
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					reached 0.2 mm or 8% of normal, something that shows the uncertainty of the seasonal forecast model which must always be taken into account with a reserve. During the periods 2, 16, 17 and 21 of July local showers and isolated thunderstorms were reported. August Extreme maximum temperatures were recorded with positive deviations of more than 4 °C, such as at the station at Achna, where the extreme maximum (45.2 °C) was 11.7°C above normal (33.5 °C) and at the station at Prodromos, where the extreme maximum (38 °C) was 10 °C above normal (28 °C). Extreme minimum temperatures with positive deviations of more than 4 °C were also recorded, such as at the station at Larnaca Airport, where the extreme minimum (30.4 °C) was 8.1 °C above normal, and at the station at Prodromos, where the extreme minimum (26.1 °C) was 8 °C above normal. For the periods 9-15 and 21-23 of August EMMA yellow warnings were issued, concerning high temperatures. EMMA warnings at the orange level were issued on August 9-12, regarding high temperatures. In addition, EMMA warnings at the red level were issued on August 13 and 14, regarding extremely high temperatures. From the distribution of the accumulated precipitation of August, as is shown in the provisional chart that follows, the surface distribution reached only 0.1 mm or 6% of normal, something that shows us the uncertainty of the seasonal forecast model which must always be taken into account with a reserve. During the period of 25-27 of August local showers accompanied sometimes with thunderstorms were recorded, while no hail was reported during August.
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Georgia ref. (1991-2020)	Above and Near normal	Above normal (10, 20, 70)	Below normal	Below normal (50, 30, 20)	No high impact events
Greece ref. (1991-2020)	Above normal	Above normal	Below or near normal	Below normal Mavrovonly over north Greece	A strong heatwave gripped Greece from July 20-27, 2025, with temperatures soaring past 42 °C in many regions and reaching as high as 44 °C.
Republic of Moldova ref. (1991-2020)	Above normal	Above normal	Mostly below normal	Below normal	- On certain days during the season, extreme meteorological events were observed in places across the region, including heavy rainfall and squalls: - On July 29, 86.7 mm of precipitation fell in 12 hours near the Edinet agrometeorological station; - On August 6, maximum wind speeds reached 27 m/s at the Balti and Soroca meteorological stations. - Significant precipitation deficits and elevated temperatures during the summer months in the southern half of the republic contributed to atmospheric and soil droughts in June-August. The drought created unfavourable conditions for crop formation in the southern half of the republic. - The Standardized Precipitation Evapotranspiration Index (SPEI), which characterizes the degree of moisture in the territory, was -1.1 to -1.9 in the southern half of the republic during the summer period, which corresponds to moderate to severe drought.
Republic of North Macedonia ref. (1991-2020)	Above normal	Above normal (10, 20, 70)	Extremely dry to normal	Below normal (50, 3, 20)	July Highest value of monthly Tmax_avg 27.6 °C in Skopje Exceeded daily Tmax on 26st in Skopje valley 43.7 °C Ohrid 38.1 °C o 34.3 °C

The Republika Srpska, Bosnia and Herzegovina	Above normal	Above normal	Below over the most places (normal in southern)	Below to normal	Wild fires occurred at the Southern area (Eastern Herzegovina) during very hot and dry periods.
Serbia ref. (1991- 2020)	Above normal	Above normal (10, 20, 70)	Below normal	Below normal (50, 30, 20)	- Third hottest and fourth driest summer since 1951 - The warmest and the driest June for Serbia - The 5th warmest July in Serbia - The new absolute maximum daily air temperature in Krusevac (44,0 °C) and Banatski Karlovac (42,0 °C), measured on July 26 - The driest summer in Negotin since 1941 (24.1 mm of precipitation) - Kikinda recorded the maximum number of insolation hours (1049) - Exceeded the minimum number of days with thunderstorms in Negotin (eight days), Pozega (12), Palic (nine) and Kopaonik (nine)
Slovenia ref. (1991- 2020)	Above normal	Above normal (10, 20, 70)	Drier than normal in the north, parts of the south, east and the northeast Wetter than normal in parts of west and north- west	Below normal (50, 30, 20)	- Sixth warmest summer on record since 1950 - June: Record-breakingly warm and record-breakingly dry 3 June 2025 - A severe thunderstorm, accompanied by hailstones exceeding 5 cm in diameter, struck the northern Goričko region between 1 and 2 p.m., causing extensive damage. 26 June 2025 - The eastern half of Slovenia experienced the peak of a prolonged heatwave. Numerous locations recorded the highest June temperatures ever measured. Dobliče near Črnomelj: 38.4 °C – new national June record Metlika: 37.9 °C Lendava: 37.4 °C Ravne na Koroškem: 37.3 °C Celje: 36.9 °C Novo mesto: 36.7 °C

			Normal elsewhere		Lisca (947 m ASL): 32.1 °C Rogla (1492 m ASL): 25.5 °C Daily mean temperatures were also exceptionally high: Dobliče: 31.5 °C Celje and Cerklje ob Krki Airport: 29.7 °C Ljubljana: 29.0 °C • 7 July 2025 - In the second half of the night (6–7 July), heavy rainfall affected parts of the Kras and Vipava Valley. Dolenje near Ajdovščina: 129 mm of rain in 145 minutes • 11 August 2025 - A record-warm morning occurred in parts of the Littoral region due to a warm air mass and bora wind. A new national record for daily minimum temperature was set at Koper Markovec, where the temperature did not fall below 28.0 °C. Other notably high daily minimum temperatures included: Podnanos: 27.0 °C Vedrijan: 26.4 °C Škocjan near Divača: 23.5 °C • 14 August 2025 - Extremely hot conditions prevailed, especially along the coast, with light bora in the afternoon. Portorož Airport: 38.8 °C – new absolute record, Koper Markovec: 37.9 °C. • 29 August 2025 - Intense downpours occurred, particularly in a belt from the Koper coastal area to the Ljubljana Marshes. In many places more than 100 mm of rain fell in only several hours: Postojna: 204 mm – new daily rainfall record, highly surpassing the previous daily rainfall record, Dekani: 175 mm, Kozina: 160 mm, Planina near Postojna: 143 mm.
Turkey ref. (1991-2020)	Near or Above normal except	Above normal	Below normal at most parts Above normal	No clear signal for most parts and	• During the winter season, Türkiye experienced 180 meteorological disasters. The most frequent types were snow, with 71 occurrences; storms, with 32; and heavy rain/floods, with 29.

	northeastern parts		at Black Sea coastal	Below normal at southeastern parts	- January 2025 was the third hottest January on record with an anomaly of 2.6 °C. 2 stations reached new monthly maximum temperature record in in the 2024/25 winter season.
Ukraine ref. (1991-2020)	Above normal (40% stations) normal (59% stations) below normal (1% stations)	Above normal	Above normal (17 % stations) normal (29 % stations) below normal (54 % stations)	Below normal	- During summer meteorological extraordinary phenomenas were observed in many regions of the country. - In June heavy rains 30-59 mm/2-5h were recorded in Ternopil, Khmelnytskyi, Sumy regions 06-08/06/2025 - In July were three periods with heavy rains: 30-143 mm/12-24h were recorded in Zakarpattia, Lviv, Ternopil, Khmelnytskyi regions 08-10/07; 30-104 mm/12-24h were recorded in Zakarpattia, Chernivtsi, Ivano-Frankivsk, Ternopil, Khmelnytskyi regions 17-19/07; 30-55 mm/7-12h were recorded in Chernivtsi, Zhytomyr, Kyiv regions 27-29/07. Storm squalls (with speed 26 m/c) were fixed in Rivne region 24/07 and large hail (diameter 22 mm) in Chernihiv region 10/07. - In August heavy rains 33-42 mm/4-8h were recorded in Zakarpattia, Chernivtsi, Lviv regions 17, 22/08. Locally caused loss power, telecommunications, utilities and transport. - The summer was dry in most regions, except for the north-west of the country. June and August were the driest months in southern and central parts, when the amount of precipitation was from 2 to 19% of the norm.