



Sixteenth Session of SOUTH EAST EUROPEAN CLIMATE OUTLOOK FORUM

SEECOF-18 MEETING

DRAFT VERSION

ANALYSIS AND VERIFICATION OF THE SEECOF-17 CLIMATE OUTLOOK FOR SUMMER OF 2017 FOR SOUTH-EAST EUROPE (SEE)

CLIMATE OUTLOOK FOR 2017 SUMMER SEASON FOR SEE REGION

As stated in the SEECOF-17 Consensus Statement on the Seasonal Climate Outlook for the 2017 Summer Season over South-East Europe (document:

[http://www.seevccc.rs/SEECOF/SEECOF-17/STEP-](http://www.seevccc.rs/SEECOF/SEECOF-17/STEP-3/Consensus%20Statement%20SEECOF-17.pdf)

[3/Consensus%20Statement%20SEECOF-17.pdf](http://www.seevccc.rs/SEECOF/SEECOF-17/STEP-3/Consensus%20Statement%20SEECOF-17.pdf), the entire SEECOF region is likely to experience above-average summer temperature. Probability for above-average summer temperature is increasing across the areas spreading from northern-northeastern toward western and southern parts of the SEECOF region. Probability for exceeding average summer temperature is lower in eastern part of the Balkan Peninsula, as well as Ukraine and along the coasts of the Black Sea (zone 1 in Figure 1), while probability for above-average conditions is highest for southern Greece, eastern Mediterranean with belonging coasts, as well as Jordan and Israel (zone 3 in Figure 1). The generalized relatively high warm signal is probably partly due to the background climatic warming trend.

Uncertainties in regional predictions are higher for precipitation than for temperature. The uncertainty is high for the entire SEECOF region (zone 1 in Figure 2), - probabilities for below-, near- or above-average conditions are approximately equal. The exception is the South Caucasus region and the northeastern coasts of the Turkey (zone 2 in Figure 2) with below- or near-normal summer precipitation sums. It should be noted that certain parts of the country, particularly mountain regions may receive near- or above- normal summer precipitation sums due to the episodes of enhanced convection accompanied by heavy precipitation. Due to dry season masking, it is not possible to forecast summer precipitation totals for the Eastern Mediterranean with belonging coasts and hinterland, Crete as well as in Israel and Jordan.

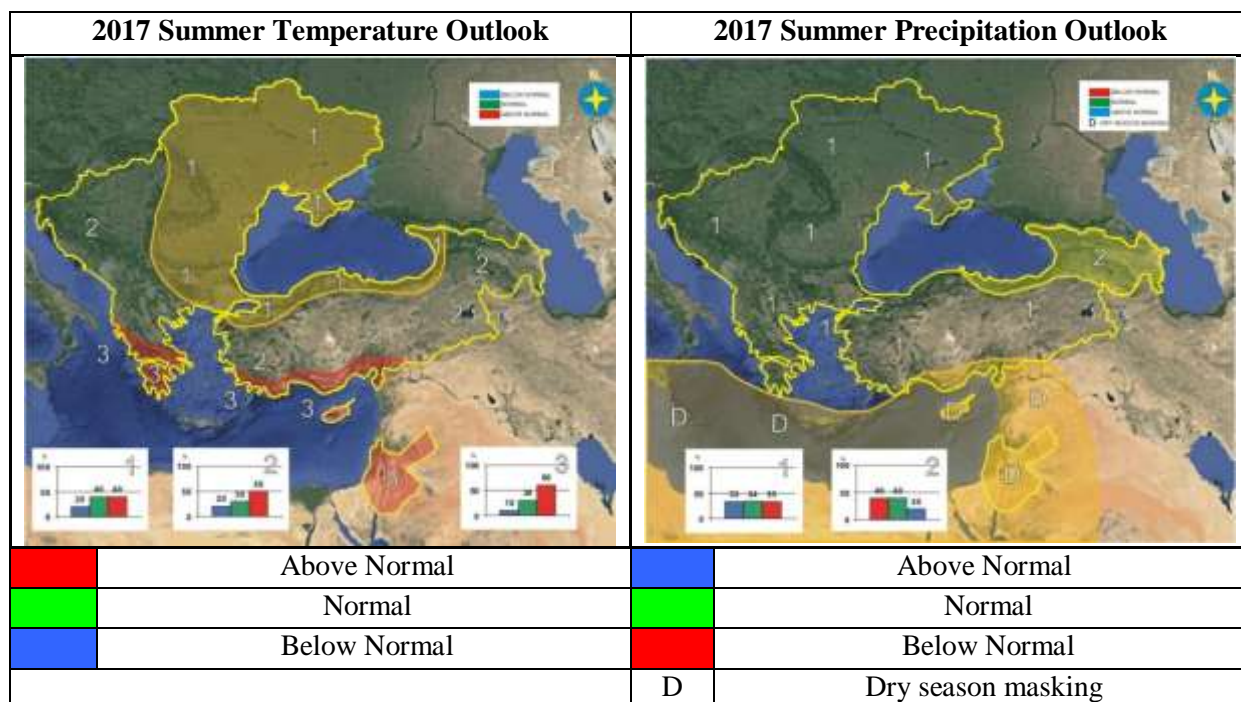


Figure 1. Graphical presentation of the Climate Outlook for the 2017 Summer Season for the SEE Region

SHORT ANALYSIS OF SUMMER 2017 FOR THE SEE REGION

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

- operational products of the European Climate System Monitoring – ECSM (the ECSM system is a technical platform of the DWD, WMO RA VI RCC Node on Climate Monitoring), <http://www.dwd.de/rcc-cm>;
- seasonal bulletin on climate in the WMO Region VI for the summer of 2017 (ECSM, DWD, WMO RA VI RCC Node on Climate Monitoring), <http://www.seevccc.rs/SEECOF/SEECOF-18/Pre-COF/Climate-Monitoring-Report-Summer-Season-2017-exp-RCC-CM.pdf>;
- climate monitoring products of the South East European Virtual Climate Change Center – SEEVCCC (Member of the WMO RA VI Pilot RCC Node on Climate Monitoring), http://www.seevccc.rs/imgsrc/clim_mon/201708/, and
- national climate monitoring reports of the following SEECOF-16 participating countries: Armenia, Bulgaria, Bosnia and Herzegovina (the Federation of Bosnia and Herzegovina, Republic Srpska), Croatia, Cyprus, Georgia, Greece, Israel, Montenegro, the former Yugoslav Republic of Macedonia, the Republic of Moldova, Serbia, Slovenia, Turkey and Ukraine (documents available on: <http://www.seevccc.rs/SEECOF/SEECOF-18/Pre-COF/>).

The entire SEECOF region observed above-normal summer temperatures.

Summer temperatures across the lowlands in most of the SEECOF region were mainly in a range between 18°C and 25°C; along the coasts of the Mediterranean, Ionian, Aegean, Caspian, as well as central and southern part of Adriatic Sea, on the south-east of Turkey, in eastern part of the South Caucasus region, in Israel and Jordan, temperatures ranged between 25°C and 30°C, at some locations in Jordan, Israel and south-eastern Turkey the average temperature was even higher. On the other hand, at some high-lying areas in the Carpathian region, summer temperatures ranged between 10°C and 15°C. The summer temperatures are presented in Figures 2 and 3 (left panel).

In most of the SEECOF region anomalies ranged between 1°C and 2°C above normal; in the Pannonian Plain, western Balkans, eastern Jordan and some parts of the south Caucasus, they were in a range between 2°C and 3°C, in eastern Turkey more than 3°C above normal. The exception to this was observed in the southern Balkans, western coast of the Black Sea, western Turkey and eastern Mediterranean, where anomalies ranged between -1°C and 1°C. The summer temperature anomalies are presented in Figures 4, 5 and 6 (left panel).

In most of the SEECOF region, June conditions were above normal, with the highest positive anomalies reaching 4°C in the western Balkans. In eastern Mediterranean, most of the southern Balkans and Turkey anomalies ranged between -1°C and 1°C. June was the second warmest on record in Slovenia and third in Serbia. Heat waves were registered in Croatia and Serbia.

July was characterized by normal conditions in most of the SEECOF region. Warmer than normal was in the western Balkans, southern and eastern Turkey, south Caucasus, and Middle East, with the highest positive anomalies reaching 4°C in the easternmost parts of Turkey and Jordan. Heat waves were registered in Greece, Serbia and Armenia. Forest fires hit Croatia, Republic of Srpska and Montenegro.

In August, above normal mean air temperature lingered across most of the SEECOF region, while in eastern Mediterranean, most of the southern Balkans and western Turkey conditions were near normal. High positive anomalies, even reaching to 5°C were registered in eastern Turkey. Heat waves were recorded in FYR Macedonia and Armenia. Record-breaking maximum air temperatures were observed in Knin in Croatia (42.3°C on August 10th), as well as Gradacac, Jajce and Zenica in Bosnia and Herzegovina. Wild fires affected Greece, in late August also in Bulgaria. Record-breaking number of days with the temperature above 38°C was registered in Serbia.

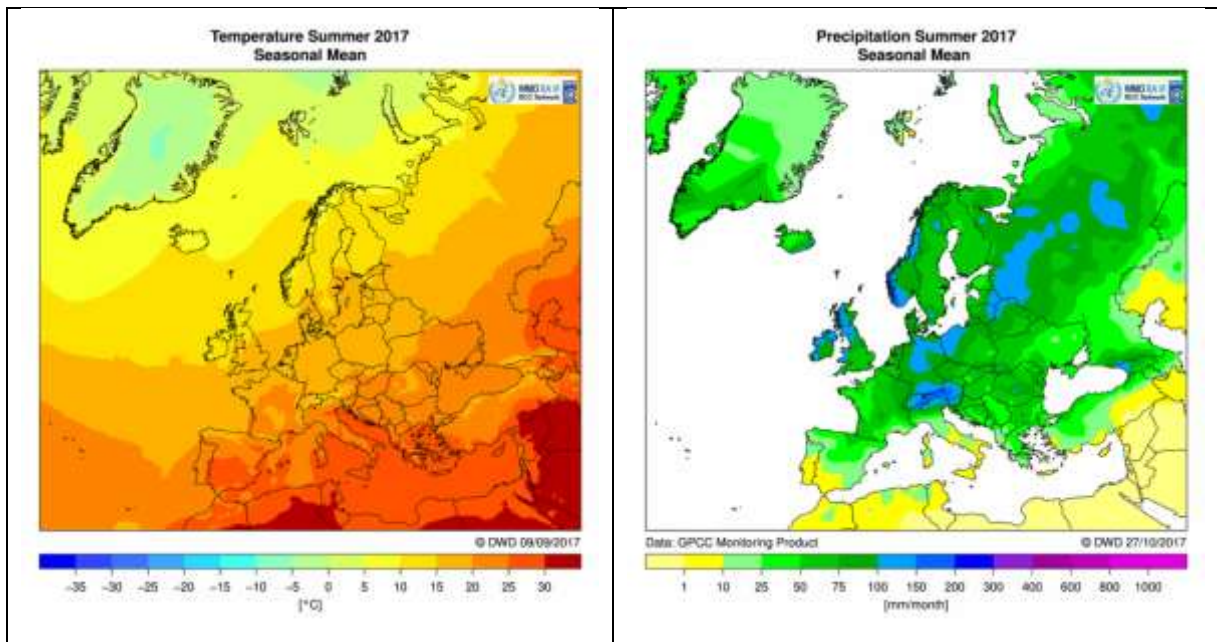


Figure 2. Summer season 2017, Europe – observed temperatures (left panel) and observed precipitation in mm per month (right panel). Source: <http://www.dwd.de/rcc-cm>

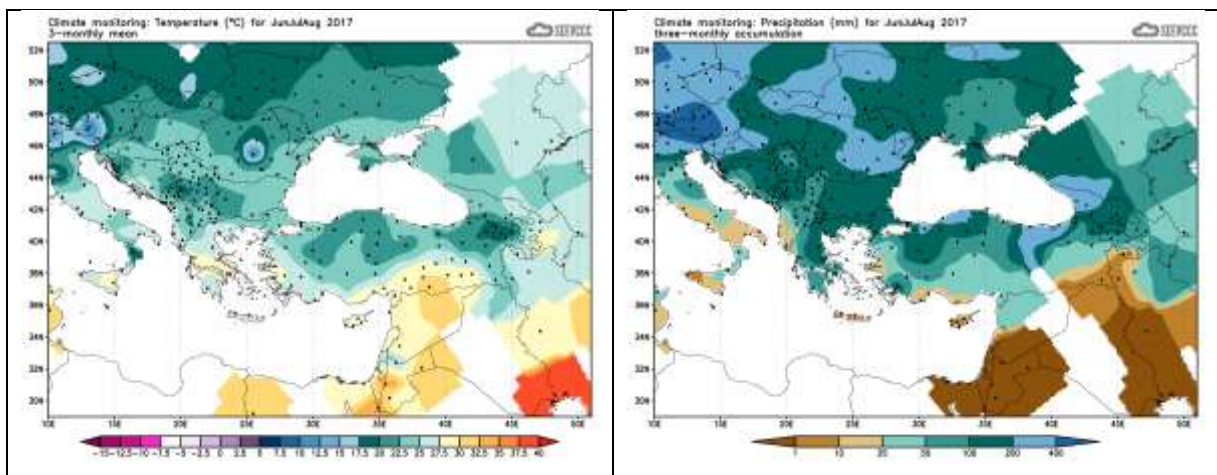


Figure 3. Summer season 2017, SEECOF region – observed temperatures (left panel) and observed monitoring precipitation in mm per month (right panel). Source: <http://www.seevccc.rs/?p=6>

The summer precipitation totals were below 25 mm along the coasts of the central and southern Adriatic, eastern Mediterranean, Cyprus, south-eastern Turkey and Middle East. In most of the SEECOF region precipitation sums reached 200 mm, while in the north-western Balkans, Romania, southern Moldova, western Ukraine, southern coast of Black Sea, Georgia, they reached up to 400 mm. Even higher precipitation totals were recorded on the local level in Slovenia. The summer precipitation totals are presented in Figures 2 and 3 (right panel).

Precipitation anomalies characterized great diversity within the SEECOF area. It was drier than normal (<75% of the long-term average) in the western and central Balkans, most of the Ukraine, Cyprus, eastern Turkey, Armenia and Middle East. It was wetter than normal (>125% of the long-term average), in eastern Romania, Aegean Sea region and western Turkey. It was normally wet in the remainder of the SEECOF region. The summer precipitation anomalies are presented in Figures 4, 5 and 6 (right panel).

During June, it was drier than normal, in the western and central Balkans, Ukraine, Cyprus, southern and eastern Turkey, Armenia and Middle East. Wetter than normal conditions were in eastern Romania, Aegean Sea region, western Turkey and Azerbaijan. June was driest on record in Ukraine. Heavy rain, with hailstorm was registered in Athens, Greece.

July was drier than normal, in parts of the western and central Balkans, western and eastern parts of Ukraine, Cyprus, most of Turkey, south Caucasus and Middle East. July precipitation sums were above average in the eastern and southern Balkans, north-western Turkey, parts of northern and southern Ukraine. Central Greece observed wettest July since 1957, with precipitation eight times greater than the normal. Heavy rain was registered around Sea of Marmara in Turkey.

August was drier than normal in most of the SEECOF region. Wetter than normal conditions were observed in western and central Turkey, with relative anomaly of more than 400% (total sums reaching up to 100 mm). In the Carpathian Mountains and north-eastern Turkey precipitation totals were near-normal. Agricultural areas in Aydin and Aksaray, Turkey, were affected due to heavy rain.

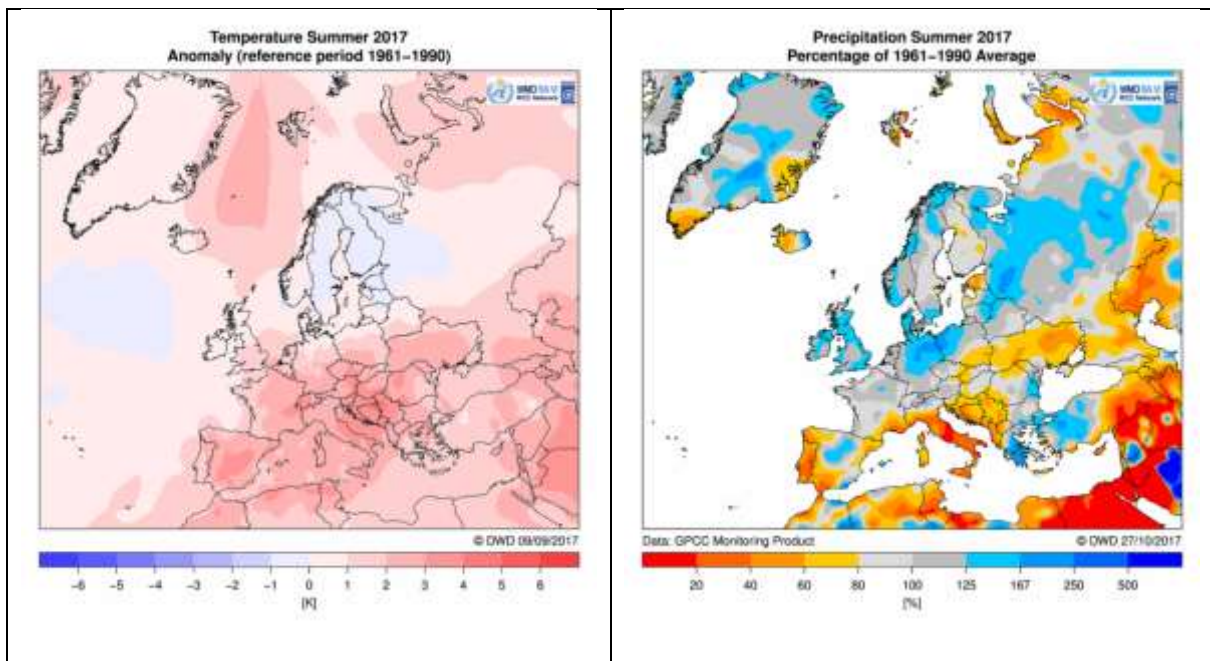


Figure 4. Summer season 2017, Europe – observed temperature anomalies (left panel) and observed precipitation anomalies in percent of 1961-1990 normal (right panel). Source: <http://www.dwd.de/rcc-cm>

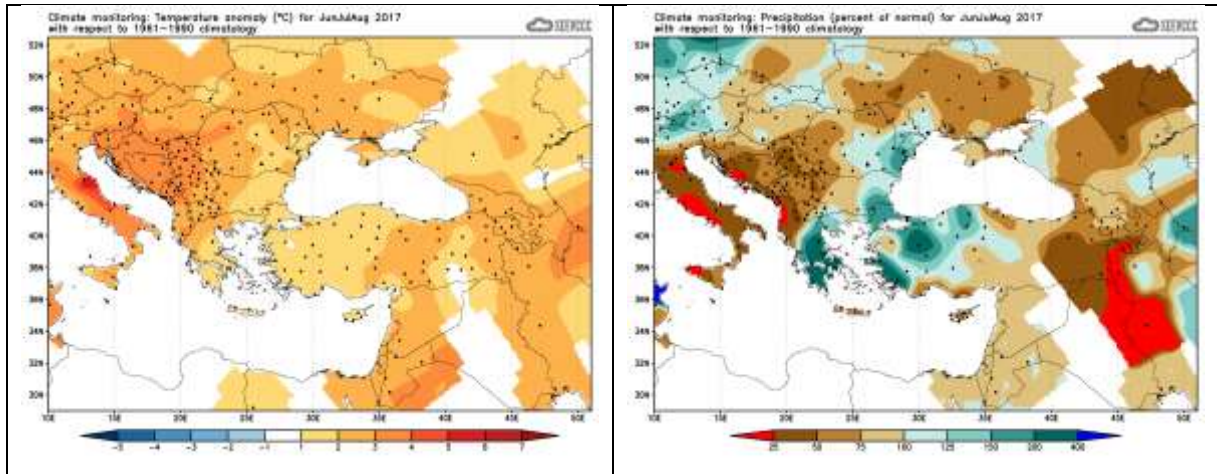


Figure 5. Summer season 2017, SEECOF region – observed temperature anomalies (left panel) and observed precipitation anomalies in percent of 1961-1990 normal (right panel). Source: <http://www.seevccc.rs/?p=6>

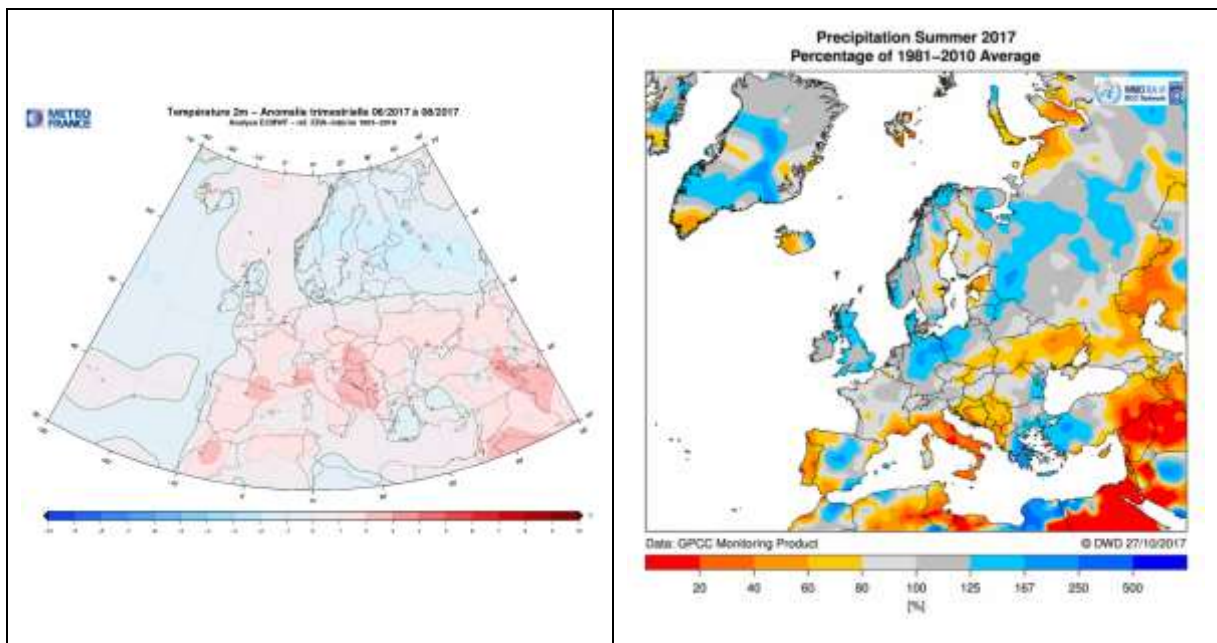


Figure 6. Summer season 2017, Europe – observed temperature anomalies (left panel, source: <http://seasonal.meteo.fr>) and observed precipitation anomalies in percent of 1981-2010 normal (right panel, source: https://www.dwd.de/EN/ourservices/rccm/int/rccm_int_rrr.html)

VERIFICATION OF CLIMATE OUTLOOK FOR 2017 SUMMER

The SEECOF-17 Climate Outlook for the 2017 summer concluded that the entire SEECOF region had higher likelihood for above-average temperature.

The probability for above-average summer temperature was expected to increase across the area spanning from the north-eastern, towards the southern parts of the SEECOF region. Above- or near-normal summer temperatures were predicted for Ukraine, Carpathian Mountains, eastern Balkans and along the coasts of the Black Sea. Higher probability for

above-average conditions was expected in rest of the SEECOF region, especially in the south of Greece, Eastern Mediterranean, Israel and Jordan. Based on the aforementioned regional, sub-regional and national climate monitoring products, it turned out that the monitored anomalies of the mean summer air temperatures were above normal in most of the SEECOF region, which means that the climate outlook for the summer air temperature was accurate. The summer temperature predictions were incorrect for the southern Balkans, Cyprus and southern Turkey, where anomalies were within average.

According to the SEECOF-17 Outlook, it was predicted that the uncertainties in regional predictions would be higher for precipitation than for temperature. It was outlined, that in the South Caucasus region and along the Black Sea coast of north-eastern Turkey summer precipitation totals were likely to be near- or below- average, which was observed afterwards. Additionally, it was emphasized that in rest of the SEECOF region, it was not possible to predict summer precipitation totals due to equal chances for below-, near-, or above-normal conditions, or due to the dry season masking effect. Consequently, those regions were not taken into consideration for the verification of the summer precipitation.

APPENDIX A: Contributors to the pre Pre-COF of SEECOF-18

- World Meteorological Organization
- Deutscher Wetterdienst, the Federal Republic of Germany
- South East European Virtual Climate Change Center hosted by the Republic Hydrometeorological Service of Serbia, the Republic of Serbia
- Royal Netherlands Meteorological Institute, the Netherlands
- Armenian State Hydrometeorological and Monitoring Service, the Republic of Armenia
- National Institute of Meteorology and Hydrology, the Republic of Bulgaria
- Meteorological and Hydrological Service, the Republic of Croatia
- Meteorological Service, the Republic of Cyprus
- Department of Hydrometeorology, the Republic of Georgia
- Hellenic National Meteorological Service, the Republic of Greece
- Israel Meteorological Service, the State of Israel
- Republic Hydrometeorological Institute, the former Yugoslav Republic of Macedonia
- State Hydrometeorological Service, the Republic of Moldova
- Hydrological and Meteorological Service of Montenegro, the Republic of Montenegro
- Federal Hydrometeorological Service of the Federation of Bosnia and Herzegovina, the Federation of Bosnia and Herzegovina, Bosnia and Herzegovina
- Republic Hydrometeorological Service of Republic of Srpska, Republic Srpska, Bosnia and Herzegovina
- Republic Hydrometeorological Service of Serbia, the Republic of Serbia
- Slovenian Environment Agency, Slovenia
- Turkish State Meteorological Service, the Republic of Turkey
- Ukrainian Hydrometeorological center, Ukraine

APPENDIX B: Analysis and verification of the SEECOF-17 climate outlook for the 2017 summer season:

Verification summary based on the national reports and contributions of the participants of Pre-COF of the SEECOF-18 meeting

Country	Seasonal temperature (JJA)		Seasonal precipitation JJA		High Impact Events
	Observed	SEECOF-17 climate outlook for temperature	Observed	SEECOF-17 climate outlook for precipitation	
Armenia (1)	Above normal	Above normal	No signal	Below normal (extremely dry)	<p>On June 6, strong wind with the gusts reaching 25-28 m/sec was observed in Fantan (Kotayk region). On June 12, heavy hail was observed (hail diameter exceeding 20 mm) in Yerevan. On June 22 and 29 heavy rainfall (30mm/12h) was observed in Goris, Sisian and Vorotan (Syuniq region).</p> <p>July: Heat wave was observed: in Ararat, the maximum temperature reached 40-41°C on July 4, 22, 23, 24, 29 in Ararat valley and Meghry.</p> <p>August: Heat wave and significant precipitation deficit was observed across most of the country.</p> <p>Drought affected the entire territory.</p>

<p>Federation of Bosnia and Herzegovina, Bosnia and Herzegovina (1)</p>	<p>Above normal</p>	<p>Above normal (20, 30, 50)</p>	<p>Below normal</p>	<p>No predictive signal (33, 34, 33)</p>	<p>Air temperatures (summer 2017): above average summer temperatures between 2.6 and 4.1. Summer 2017 was extremely warm across the entire Bosnia and Herzegovina.</p> <p>MS Bihać – The warmest summer and the warmest July.</p> <p>August 2017 - the absolute maximum temperature was observed in Gradacac, Jajce, Zenica (center Bosnia) and Livno (SW).</p> <p>Summer of 2017 was marked by five heat waves. Drying period July and August in Herzegovina.</p>
<p>Republic Srpska, Bosnia and Herzegovina (1)</p>	<p>Above normal</p>	<p>Above normal</p>	<p>Below normal in the most of the territory</p>	<p>No clear signal</p>	<p>Extremely sunny, warm and dry in most places of RS: according to the difference evaporation-rainfall, the drought was more intense than relevant indexes of precipitation (SPI, Percentiles) showed given the very sunny to extremely sunny and windy (of southern directions) weather patterns;</p> <p>Six heat waves; -the yields of soybean, corn and others are less by 50%; fruits are also halved for 80% with regard to late spring frost and second driest summer in the last 60 years -wild forest fires Estimated damage is more than 100 million of KM.</p>
<p>Bulgaria (1)</p>	<p>Above normal</p>	<p>Near or above normal</p>	<p>Near normal in average for the country</p>	<p>No forecast or near normal</p>	<p>Around 30 June – 1 July the maximum temperatures soared to extreme levels driven by approaching cold front from northwest. They surpassed 40°C at some places for example - Ruse, 43.6°C. Fire weather conditions in the southeast indicated very high risk of wild fires in late August due to long lasting hot and dry weather</p>

Croatia (1, 5)	Above normal	Above normal (20,30,50)	Below normal In the whole country	No predictive signal (33,34,33)	<p>Summer 2017 was extremely warm across the entire country.</p> <p>Five heat waves were observed during summer – one in June and August, and three in July.</p> <p>In August, the absolute maximum temperature was measured in Knin (hinterland of middle Adriatic) – 42.3°C on August 10 (the measurements in Knin exist from 1949).</p> <p>During all three months, forest fires hit mostly costal part of Croatia, but few of them were wild fires – especially in July (the town Split in the middle Adriatic was affected by fire).</p> <p>In all three months convective related severe weather phenomena (thunderstorms, hail, heavy rains, flash floods, waterspouts) were observed all over Croatia.</p>
Cyprus (5)	June Normal July Above Normal August Normal	June Normal July Normal August 1 to 2°C below normal, except western part that it would be normal	June Below Normal July Below normal August Normal	June Below Normal July West part below Normal, East part above Normal August Below Normal to Normal, except West and North part Normal to above Normal	<p>June Temperature extremes were recorded with great positive departures ranging from 6 to 8°C, like Polis Chrysochou station where the highest daily maximum temperature (37.8°C) was 8°C higher than normal (29.8°C) and Athalassa station, where the highest daily maximum temperature (41°C) was 6.1°C higher than normal (34.9°C).</p> <p>Lowest daily minimum temperatures were also recorded, with positive departures ranging from 5 to 7°C above normal, like Pafos airport, where a minimum of 23.9°C was by 5.9°C above station's normal (18.0°C) and the station of Athalassa, where a minimum of 26.1°C was by 7°C above station's normal (19.1°C).</p> <p>During June local showers and/or thunderstorms caused by thermal instability were recorded on 19 and 21 June resulting with accumulated precipitation of 71% of normal. It is worth mentioning that based on the provisional data, hail was reported on the 21st of the month.</p>

				<p>July</p> <p>Extreme highs and lows (both maximum and minimum departing by 4°C of normal) were recorded. On July 1 and 2, maximum temperature departing by at least 4°C of normal was recorded at all stations. Specifically on 1 July the daily maximum temperature of 41.6°C was measured at Pafos airport. On 2 July the daily maximum temperature at Athalassa and Prodromos were 44.6°C and 36.7°C, respectively. All the aforementioned maximum temperatures are considered extremes for July in the past 30-year period.</p> <p>They are also the highest temperatures recorded for the last 30 years, except for the maximum temperature of Athalassa, which was the second highest (after the record high temperature of 45.6°C measured on 1 August 2010).</p> <p>Highest minimums with positive departures higher than 4°C of normal were also recorded. Note the minimum 28.6°C at Athalassa station on 1 July and the minimum 23.6°C at Prodromos on 3 July.</p> <p>On 24 July episodes of thundery activity and isolated showers over mountainous areas resulted in accumulated precipitation of 4% of normal.</p> <p>August</p> <p>Temperature extremes were also recorded with positive departures higher than 4°C, like Achna station where the highest daily maximum temperature (38.9°C) was by 5.4°C higher than the normal (33.5°C) and Prodromos station, where the highest daily maximum temperature (32.6°C) was by 4.6°C higher than the normal (28°C). Overall, the highest maximum of the month was recorded on 1st of August over the inland station of Athalassa, measuring 40.6°C compared to the normal of 36.9°C.</p> <p>Daily minimum temperatures were also recorded, with negative departures higher than 4°C below normal, like Prodromos, where a minimum of 13.4°C was by 4.7°C below station's normal (18.1°C) and the station of Achna, where a minimum of 18°C was by 4°C below station's normal (22°C).</p>
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					On the 4, 5, 6, 12 and 23 August episodes of thundery activity and isolated showers over mountainous areas resulted in accumulated precipitation of 100% of normal.
Georgia (1)	Above normal	Normal or above normal for the Black Sea Coastal Zone Above normal in the rest of Georgia	Normal In west Georgia Below normal in the most territory of east Georgia, excluding several stations, where it was near norm	Near or below normal	Air temperature of +40°C was observed in Zestafoni on July 28 and 12 and August 13; in Qutaisi on August 7; in Lagodekhi on August 9. On the June 15 a large amount of rainfall was registered throughout Georgia, which caused floods in the Rioni Basein.
Greece (2, 5)	Above normal	Above normal	Above normal the greatest part of the country Normal 4 stations Below normal only 2 stations	No predictive signal (33, 34, 33) Dry season masking island of Crete	June On 30 June the stations Elefsis (airport) and Larissa (airport) recorded a maximum daily temperature of 44.8°C and 42.6°C, respectively. On the 4 June Athens experienced heavy rainfall and hailstorm. As a result some roads in the centre of Athens were closed due to flooding. July Heat wave that started at the end of June continued into the beginning of July. Second heat wave was observed between 11 and 13 July. Southwestern, central and northern parts of Greece experienced severe weather event (intense rainfall and flooding) during the 16 and 17 of July. Tanagra (airport) station (located in the central Greece) reported its wettest July since 1957 with 68.0 mm while its mean monthly precipitation in July for the normal period 1971-2000 is about 8.26 mm (about 8 times above normal).

					August Destructive forest fires occurred in the northeast Attica during 13 and 16 of August.
Israel (5)	Above normal	Above normal	No precipitation	Dry season masking	No high impact events.
The former Yugoslav Republic of Macedonia (5)	Above normal	Above to near normal (20, 30, 50)	Very variable precipitation regime	No predictive signal (33, 34, 33)	June - Extremely warm 3rd decade - Exceeded upper limit of minimal air temperature 22.4°C on 30 in Ohrid, 21.6°C on 30 in Mavrovo, 18.3°C on 3 in Lazaropole August - Extremely warm 1st decade with heat waves
Republic of Moldova (5)	Above normal	Near or above normal	Near or below normal	No predictive signal	Significant meteorological phenomena have been reported in the form of strong showers: – on June 27, MS Soroca received 50 mm of precipitations; – on June 30, MS Leova during 3 hours – received 64 mm of precipitations; – on July 27, MS Comrat during an hour received 47 mm of precipitations, and during 5 hours – 67 mm; – on July 28, MS Dubasari during 6 hours received 66 mm; at HP Molochișul Mare, Doibani, Nezavertailovca, Giurgiulesti during 12 hours – 52-71 mm; – on July 29, MS Ribnita during an hour received 33 mm; – overnight from 6th to 7th August, MS Balti during 6 hours received 73 mm of precipitation The heavy rains during June-July, isolated with hail and wind intensities of up to 25 m/s, caused the damage to crops and material damage to the national economy. The high heat and the shortage of precipitation, which marked the month of August, contributed to the drying of the upper layer

					of the soil leading to unfavourable conditions for the cultivation of the crops, as well as for the preparation of the lands for sowing the crops of autumn.
Montenegro (1,5)	Above normal	Above normal (20, 30, 50)	Below normal (larger part) Normal (northeastward) Above (in Bijelo Polje and its surroundings)	No predictive signal (33, 34, 33)	Second warmest summer for Bar, Pljevlja, Kolasin, Zabljak, Cetinje, Bijelo Polje and Rozaje, fifth warmest in the rest of the country Shift in low water level 2 months earlier (in August instead of October); Favorable conditions for forest fires; Shift in grape harvest 1 month earlier (in September instead in October); Accumulating lakes near minimum; Honey less than normal, and some agricultural products especially tomatoes, cabbage, ca, broccoli and rasan. Their losses are between 30-40%. Preferable conditions for olives.
Serbia (1,5)	Above normal	Above normal (20, 30, 50)	Below normal in almost entire Serbia	No predictive signal (33, 34, 33)	June 2017 was the third warmest for Serbia, second warmest for Novi Sad, Zrenjanin and Cuprija. Zajecar and Sremska Mitrovica observed driest June on record, fourth driest for Serbia July 2017 ranks as the fourth warmest for Serbia and the third warmest for Smederevska Palanka and Banatski Karlovac. Zrenjanin observed third driest July while Novi Sad and Crni Vrh experienced fifth driest July. Two heat waves were observed. Record-breaking number of tropical nights was recorded in Zrenjanin August 2017 ranks as the third warmest for Belgrade, Cuprija, Novi Sad and Smederevska Palanka, and the seventh warmest for Serbia. Record-breaking number of days with the temperature above 38°C was registered this August. August daily maximum air temperature records were passed in Kikinda, Banatski Karlovac and Zrenjanin. Palic, Sombor, Novi Sad, Zrenjanin, Loznica, Valjevo and Curpija observed record-breaking number of tropical nights. Daily precipitation record was broken at MMS Veliko Gradiste

					The second warmest summer on record for Serbia, and record warm summer in Banatski Karlovac and Smederevska Palanka. The fourth driest for Novi Sad, and the fifth driest for Zrenjanin
Slovenia (5)	Above normal	Above normal	<p>Below normal in the most of the country (except north-west and parts of northern and north-eastern Slovenia)</p> <p>normal in western Slovenia and parts of northern and north-eastern Slovenia</p> <p>Above normal in small parts of north-western Slovenia</p>	No predictive signal	<p>-Second to fourth warmest summer since reliable records.</p> <p>-Four heat waves.</p> <p>-Highest observed temperature 40.6 °C in Podnanos (south west of Slovenia).</p> <p>-June was the second warmest (only to June 2003) in most of the country.</p> <p>-Agricultural drought in south west, south east and north east of the country.</p>
Turkey (2)	Around normal mostly in the west above	Above normal in the south western coast (10, 30, 60) Above normal	Below normal in the eastern regions, especially in	Below normal to normal in the north eastern coast, and southern	<p>In June 2017, buildings were damaged, and transportation was affected due to heavy rain in Samsun, Bolu, Zonguldak</p> <p>In July 2017, agricultural areas in Manisa, Çanakkale and Aydın were affected due to heavy precipitation. Buildings were damaged and transportation was affected because of heavy rain</p>

	normal in the eastern and coastal regions	to normal in the north coastal regions (20, 40, 40)	southeast Above normal in the west Around normal in the central regions	coast except the southwestern region (40, 40, 20)	in Tekirdağ and Istanbul. Heavy rain, hail and strong storm and flood also caused damages on vehicles in Istanbul. In August 2017, agricultural areas were affected due to heavy rain in Aydın and Aksaray.
Ukraine (5)	Above normal	Normal and above normal	Below normal (77% stations) Normal (18% stations) Above normal (5% stations)	No predictive signal	During the summer season, meteorological extraordinary phenomena were observed locally in many regions of the country. Among others: very heavy rains (30-81 mm precipitation in 2-11 hours), squalls and wind gusts (with wind speeds 25-29 m/s), tornado in Dnipro region (in Kryvuy Rih 28.07), big hail (diameter 20-34 mm). Unfavourable weather conditions caused power outage, disruption of telecommunications, utilities and transport at places. Lightning and falling trees killed 8 people. On 8 August, Botievo (Zaporizzhya region) and Henichesk, Strilcove (Kherson region) observed the highest August temperature on record for that day and month. Summer was dry in most part of Ukraine, but in some regions (Lviv, Cherkasy, Poltava, Kharkiv, Kherson regions) stations experienced driest summer conditions since 1961, with 51-148 mm (28..55% of the norm). In Smila (Chercasy region) and Pervomaysk (Mykolaiv region), June ranks as the driest on record since the observations commenced.

Note:

- 1 – Basic climatological period (1961-1990)
- 2 – Basic climatological period (1971-2000)
- 3 – Basic climatological period (1951-2000)
- 4 – Basic climatological period (1980-2009)
- 5 – Basic climatological period (1981-2010)
- 6 – No information about the basic climatological period