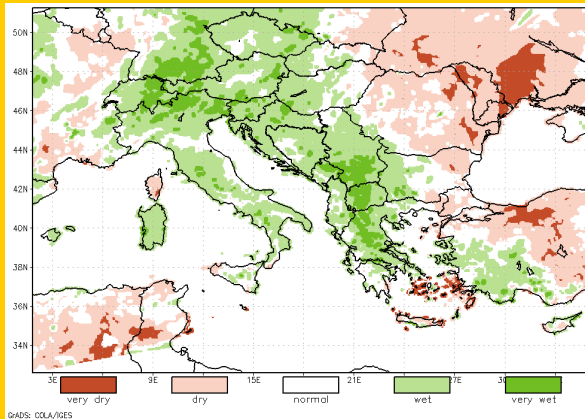


# DROUGHT MONITORING BULLETIN

August 2020

## HOT SPOT

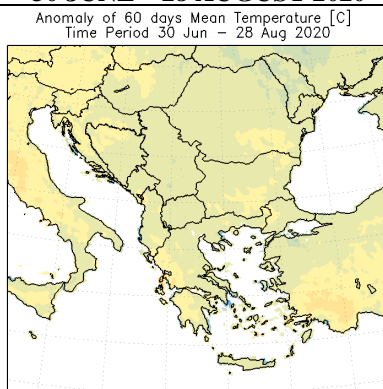


Monthly precipitation level for August 2020 in comparison to 1981-2010 period (in percentile classes) show similar picture as for July. Rainfall rate was again well above-average over western half of the region from Hungary to continental Greece. However, August counts as another, consecutive dry month over eastern part of the region from Moldova to eastern Bulgaria and over central Turkey, while in certain locations the precipitation deficit of this month classified among the driest 5 % of the local records.

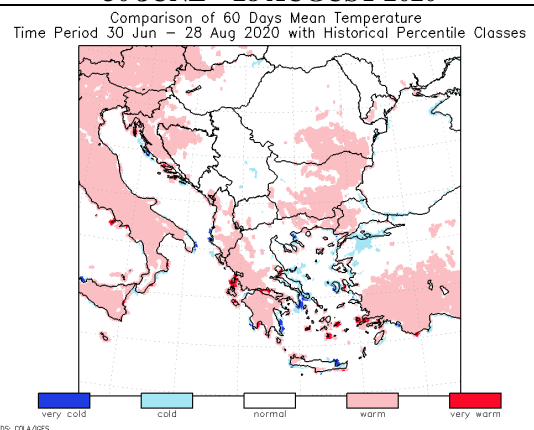
## AIR TEMPERATURES AND SURFACE WATER BALANCE

Figures in this section present anomalies of the average air temperature and accumulated surface water balance as well as classified values of the average air temperature and surface water balance in percentile classes for 60-day period from 30 June to 28 August 2020.

### AVERAGE AIR TEMPERATURE ANOMALY (°C) 30 JUNE – 28 AUGUST 2020



### AVERAGE AIR TEMPERATURE PERCENTILE CLASSES 30 JUNE – 28 AUGUST 2020



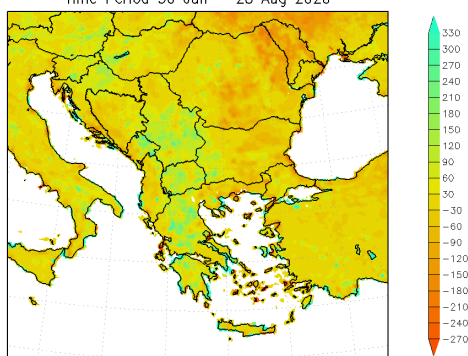
In general, August was warmer than usual across most of the region. Its first days brought more or less average air temperatures across most part of Balkan Peninsula. The only exceptions were northeastern Romania and northern half of Moldova with anomalies of up to 2 °C below the average. While air temperatures up to 2 °C warmer than usual were in first days of August

present over western third of Turkey and scattered parts across Balkan Peninsula, including northern Bosnia and Herzegovina, southern Bulgaria and over the southern Aegean Sea, where, in southwestern Turkey even up to 3 °C. Mid-August saw warmer than usual air temperatures spread over the region from the north-west. Slovenia, most of Croatia, northern Bosnia and Herzegovina as well as western half of Hungary experienced air temperatures warmer than normally for up to 3 °C. The influence of warmer than usual weather reached as far as to central Balkan Peninsula, from western Romania, across Serbia to southern Croatia and Albania, where above-average air temperatures for up to 2 °C stretched. Meanwhile, temperatures for up to 2 °C colder than usual for this time of year continued to be present over Moldova, but this time also over central and northwestern Turkey which saw a sharp decrease of air temperatures in comparison to early days of August. While the last decade of August brought approximately average air temperatures to most part of the region, warmer-than-usual air temperatures, of up to 2 °C, persisted across Slovenia and Croatia until the end of the month. Final days of August were similarly warmer than usual also across wide central part continental Greece and scattered parts across northern Moldova, eastern half of Romania and southern Bulgaria.

A 60-day average of air temperature indicates several scattered areas where July-August period was for up to 1 °C warmer than normally. This includes Slovenia, central coastal Croatia and northern Bosnia and Herzegovina, area along the western Greece, southern Romania, southern Bulgaria and wider part of southwestern Turkey. Limited area over its Mediterranean coast in Turkey's south-west, the 60-day period was up to 1.5 °C warmer, mainly as a result of well warmer than usual beginning of July and early August. On the other hand, July-August period was on average up to 1 °C colder than normally in Moldova, to which contributed cold mid-July and first half of August.

**ACCUMULATED WATER BALANCE  
ANOMALY (mm)  
30 JUNE – 28 AUGUST 2020**

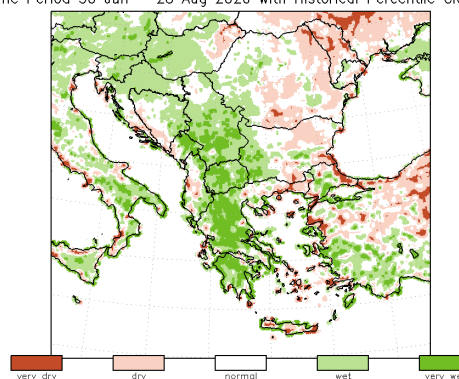
60 Days Accumulated Water Balance (RR-EVP) Anomaly [mm]  
Time Period 30 Jun – 28 Aug 2020



DATA: DDA/RES

**ACCUMULATED WATER BALANCE  
PERCENTILE CLASSES  
30 JUNE – 28 AUGUST 2020**

Comparison of 60 Days Accumulated Water Balance  
Time Period 30 Jun – 28 Aug 2020 with Historical Percentile Classes



DATA: DDA/RES

August brought high amount of precipitation to northwestern and central Balkan Peninsula, leaving noticeable precipitation surplus across Slovenia, continental Croatia, northern Bosnia and Herzegovina and across Serbia and North Macedonia. Meanwhile, eastern and southern parts of the region experienced dry August, especially all of Moldova, areas from eastern Romania to northeastern Bulgaria, over the Aegean Sea islands and across central Turkey where August rainfall rate classified among the driest 5 % of local records.

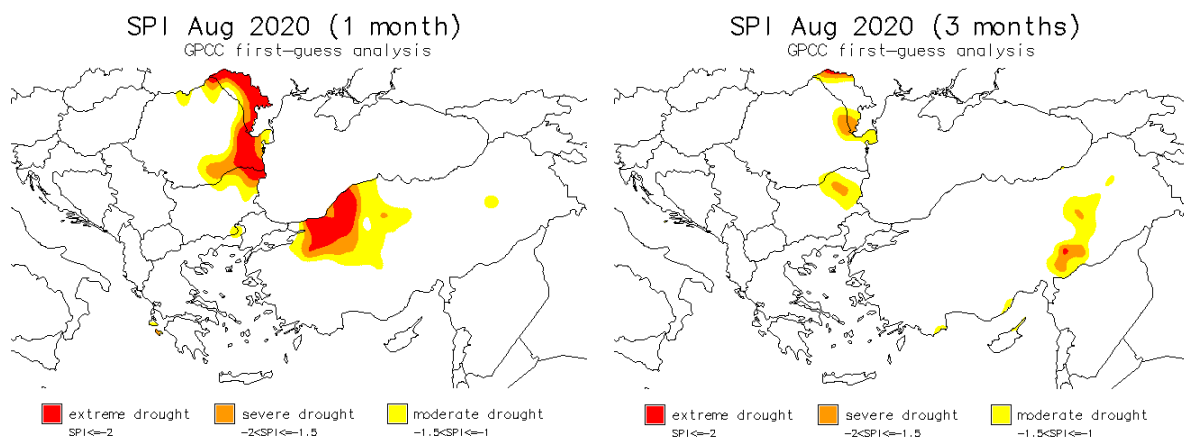
A 60-day overview of surface water balance conditions reveals July-August period was wetter than normal over northeastern part of the region as surplus ranged between 60-150 mm. Much wetter than normal for that time was region's central and southern parts stretching from central

Serbia over to most of continental Greece where anomalies of 120-150 mm prevailed although locally, surplus reached up to 300 mm. Elsewhere in the region, July-August period resulted in surface water balance deficit. Along the region's western coastline and over western half of Turkey, deficit of up to 90 mm from the average prevailed while entire over Balkan Peninsula's eastern half, the accumulated water balance was approximately 60-120 mm below the average for this time of year, over eastern Romania and Moldova for up to 180 mm below the average.

## STANDARDIZED PRECIPITATION INDEX

The drought situation with regard to the precipitation accumulation is presented by Standardized Precipitation Index (SPI). The SPI calculation is based on the distribution of precipitation over long time periods (30 years, in our case long-term average 1961-1990 was used). The SPI can be calculated at various time scales which reflect the impact of the drought on the availability of water resources. The long term precipitation record is fit to a probability distribution, which is then normalised so that the mean (average) SPI for any place and time period is zero. SPI values above zero indicate wetter periods and values less than zero indicate drier periods. Only the dry part of the extreme anomalies is presented on the maps.

Standardized precipitation index for **August 2020** is shown in figures below. SPI for a one-month period indicates possible drought conditions which can have impact on vegetation while SPI for a three-month period can be indicative also for surface water status.



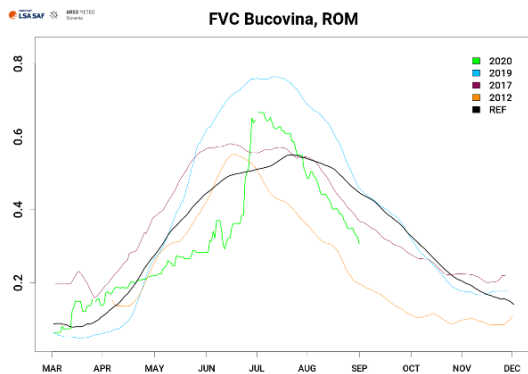
Scarce precipitation amount in August in eastern parts of the region is reflected in monthly SPI values. Low values indicating extreme drought were present across most part of Moldova southeastern Romania and over to far northeastern Bulgaria, as well as over wider Black Sea area in northwestern Turkey. Lack of rain, resulting in moderate to severe drought conditions, was noticeable across the rest of Moldova stretching over to far northern Romania, also across southern Romania over to most of northeastern Bulgaria, as well as across wider part of central-northwestern Turkey. Similar areas of the eastern Balkan Peninsula experienced persisting conditions of moderate to severe drought also on a 3-month scale. In addition to those areas, a 3-month overview shows areas of moderate to severe drought conditions also in southeastern Turkey, mainly as a result of drier-than-usual June.

## REMOTE SENSING - FRACTION OF VEGETATION COVER

Fraction of vegetation cover (FVC) is vegetation index, based on multi-channel remote sensing measurements (data from EUMETSAT's LSA SAF data base is used for products in this bulletin). FVC shows fraction of the total pixel area that is covered by green vegetation, which is relevant for applications in agriculture, forestry, environmental management and land use, it has also proved to be useful for drought monitoring. Values vary according to the vegetation stage and of course to the damages of possible natural disasters (including drought). FVC values are lower at the beginning of the growth season, the highest at the full vegetation development and then FVC slowly drops with vegetation senescence. Line shape depends on sort of the vegetation.

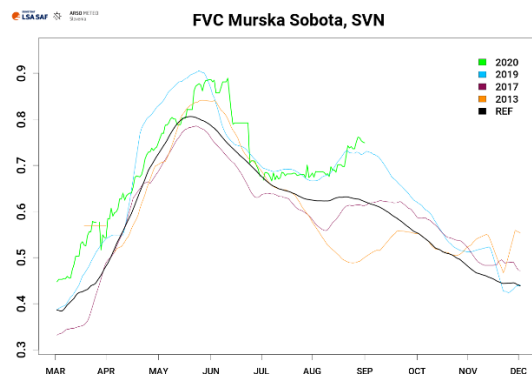
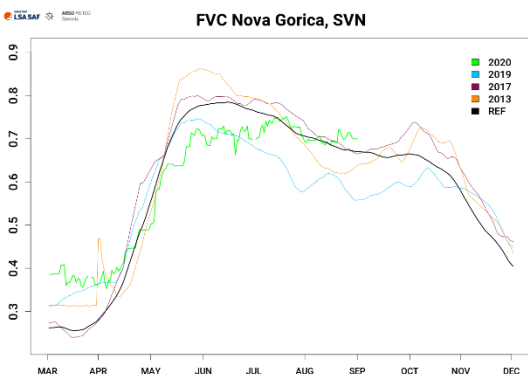
Graphs below present the **vegetation situation** as recorded **on 31 August 2020** in some regions of Southeastern Europe. FVC values for year 2020 are presented as a green line. Graphs also include reference line (2004–2019) in black, and lines in light blue (year 2019), magenta (year 2017) and orange (year 2012, or 2013 for Slovenia) for comparison. Possible missing values or sharp decline of values could be a result of prolonged cloudy weather, extreme weather events or snow blanket.

### ROMANIA



In Bucovina in northern Romania, warm spring air temperatures boosted vegetation development at the beginning of the season although lack of rain throughout spring months hindered its further growth. By the end of May, the coverage with green canopy reached less than two third of its usual spread at that time of year, according to FVC. June weather conditions brought welcome boost although dry July and August accelerated vegetation senescence. FVC values at the end of August stand at the level of FVC normally reached in October time.

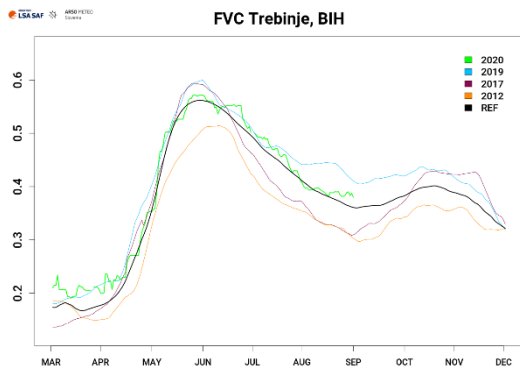
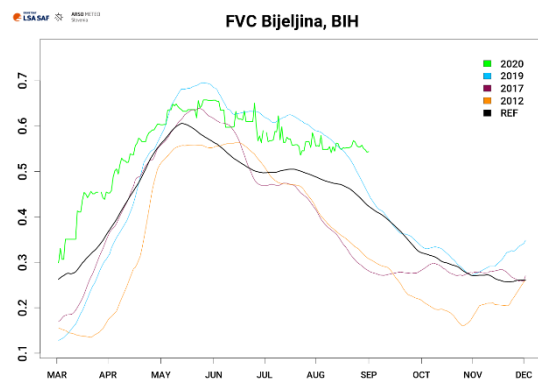
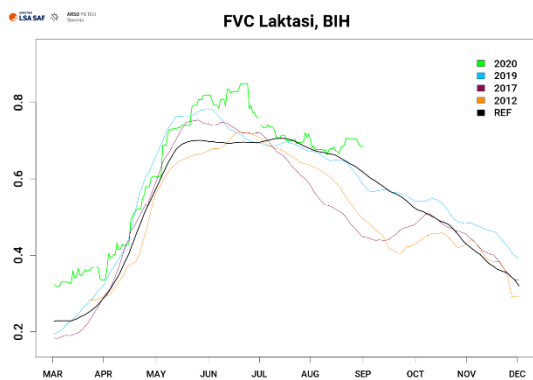
### SLOVENIA





Vegetation growth started early in Nova Gorica in western Slovenia. Lack of rain in spring and early summer months did not support further optimal development of the vegetation, as seen also by under-average FVC values between mid-May and mid-July. Wetter-than-normal July-August period kept vegetation coverage at the continuous level without evident turning point of the senescence yet. Also in Murska Sobota in northeastern Slovenia, vegetation started early this year and wet period came just in time to boost in further on in early summer, evident also in FVC values exceeding the average. Wet summer months resulted in much higher than normal second peak, exceeding the average by more than 15 % according to FVC.

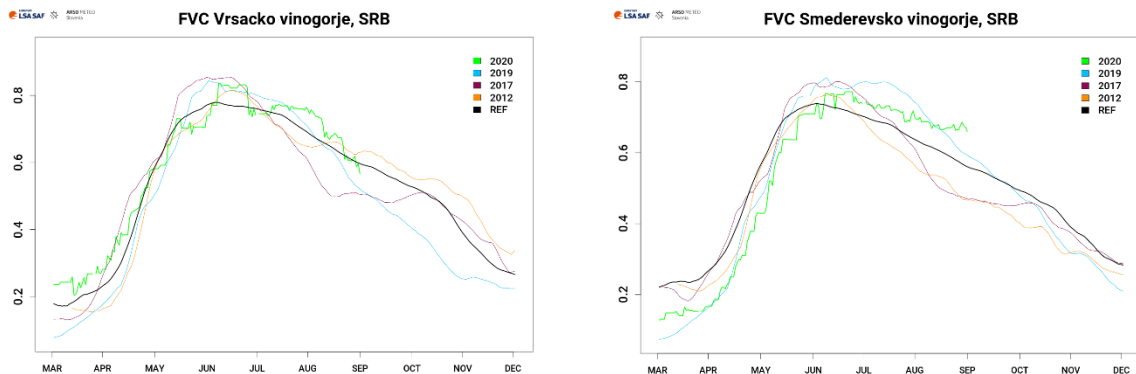
**BOSNIA AND HERZEGOVINA (REPUBLIC OF SRPSKA)**



In Laktasi as well as Bijeljina along northern Bosnia and Herzegovina, vegetation growth exceeded the average coverage during warm early spring, while in Trebinje in southern part of the country, the boost at that time was less evident. Since then, vegetation in Trebinje continued to follow its usual pattern of development throughout all summer months while wetter summer periods along northern part of the

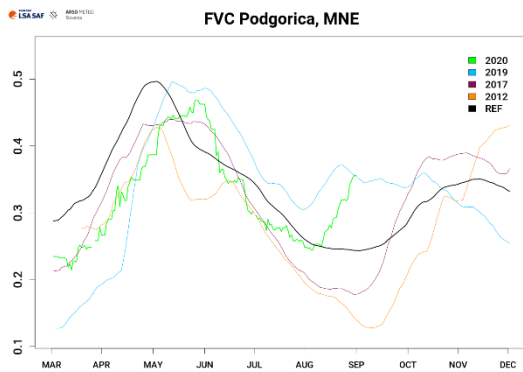
country resulted in noticeably higher summer peak than usual in Laktasi, of more than 15 % according to FVC, and in continuously above-average vegetation growth in Bijeljina where FVC continues to exceed the average for approximately 10-15 % since May.

## REPUBLIC OF SERBIA



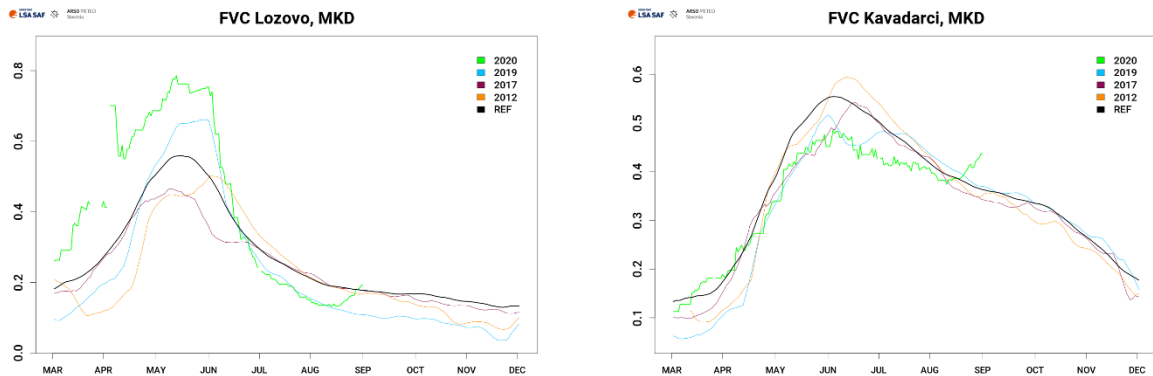
Spring conditions turned out favourable for vegetation development in Vrsacko vinogorje in northeastern Serbia. It has since then progressed more or less as expected, with occasional periods of boosts as well as sharp declines that might be a result of other extreme weather events. In Smederevsko vinogorje in central Serbia, early spring weather conditions delayed vegetation development but which, after its spring boost in April, followed its usual pattern of seasonal development although delayed for approximately 2 weeks. It slightly exceeded its usual level of FVC at its peak although reached later than normally.

## MONTENEGRO



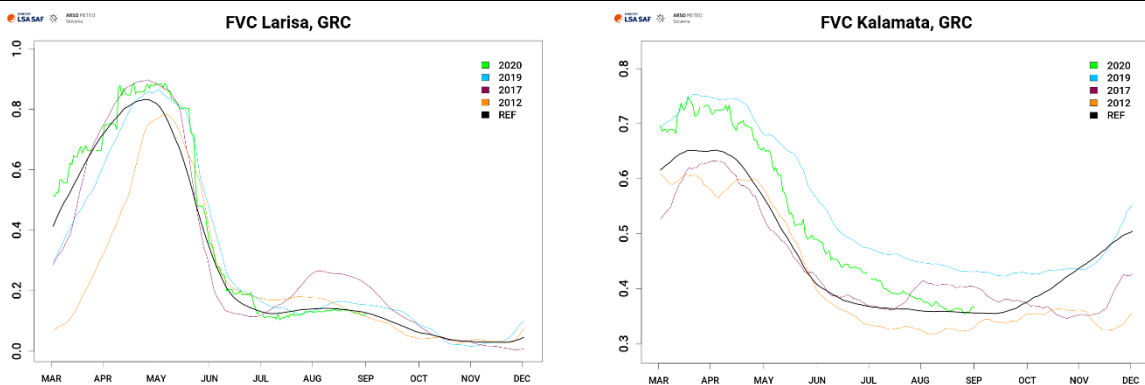
Vegetation development in early spring was delayed also in Podgorica, southern Montenegro. Despite progressing by its usual pattern of development later on, the delay of approximately 3-4 weeks was continuously present up to its peak. Dry June and July conditions accelerated the senescence, which during summer months normally occurs at a slower rate, resulting in outbalancing the few-week delay and even lower-than-normal FVC values for July. August weather conditions turned out favourable for vegetation recovery.

## NORTH MACEDONIA



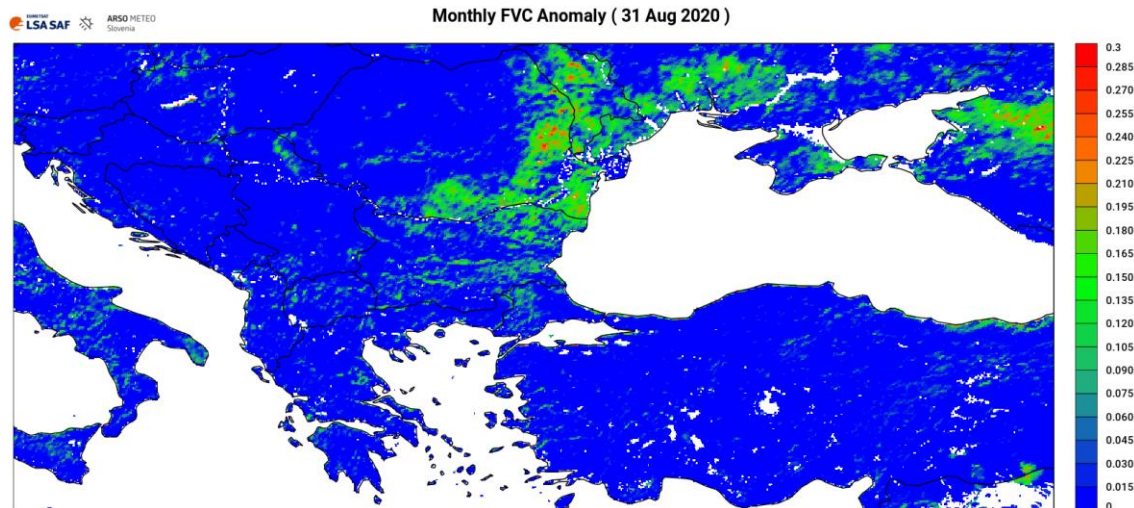
Rather wetter than normal spring months acted in favour of vegetation development in Lozovo in central part of North Macedonia. FVC values were exceeding the average for approximately 20 % through March-May period. Dry June is also reflected through FVC values as they dropped rapidly throughout the month, from vegetation coverage of almost 80 % at the location down to 20 % by the end of June. Further decline came to an end only in August, probably as a result of higher precipitation level this month. In Kavadarci in southern part of the country, vegetation began as usual but progressed at the lower rate than normally this spring, which resulted in reaching its peak at the usual time in June but at below-average FVC values. On the other hand, also the vegetation senescence did not unfold as evident as normally, meaning the vegetation cover in mid-August was again average. August weather conditions turned out favourable for another boost in vegetation growth later in month, unusual for Kavadarci at this time of year.

## GREECE



This season, vegetation development in Larisa in central-eastern Greece has been progressing as expected. The only noticeable deviation from the usual pattern presents the April to mid-May period when peak was exceeded by approximately 5 %, according to FVC, likely due to wetter-than-normal April over that part of the country. The above-average values lasted until mid-May when vegetation senescence began as usual. In Kalamata in southern Greece, vegetation cover was continuously approximately 10 % above its average value the entire first half of the season. Drier-than-normal August brought an end to this excess as FVC values dropped to about-average level for this time of year.

Figure below shows negative anomaly of **accumulated 30-day FVC values** as recorded on **31 August 2020** in comparison to the past 16 years (2004-2019), and is used experimentally.



According to FVC, most of the northern and western part of Balkan Peninsula did not experience noticeable deviations from its average fraction of vegetation cover. August accumulations of below-average FVC anomalies concentrate across vast part of in the region's east. Under-average accumulations of FVC of 15 %, locally up to 25 %, were present across nearly all of Moldova, over to eastern and southern Romania and far northeastern Bulgaria, which has been the case for the past 4 months. Other areas of lower than normal FVC accumulations, of up to 10 %, include part of northern Serbia, scattered areas along the belt from Albania across to the Black Sea coast and individual areas over Greece.

## IMPACT REPORTS

### MOLDOVA

As drought hit the agriculture sector, a sharp jump in prices was recorded for almost all types of greens in Moldova, with an acute shortage of domestic and imported products. Prices for cilantro and parsley increased by 13 %, the price for dill increased by 32 % <sup>[1]</sup>. This year's potato harvest is also severely affected by drought. Drought in winter-spring, and then the hail rains from the beginning of summer affected several potato plantations in the north of the country <sup>[2]</sup>. In addition, grape fruit yield is expected be the smallest in the last decade <sup>[3]</sup>. The estimates of the country's Ministry of Agriculture, Regional Development and Environment show that the drought and hail in the last year affected about 200 thousand ha of agricultural land. Most crops were compromised by more than 60 %, causing a total damage of 1.2 billion lei to farmers in the country <sup>[4]</sup>. The Intervention and Payments Agency for Agriculture of Moldova has so far received 11,689 files from farmers that reported more than 60 % of fruit losses by July 1, underlining the scope of the agriculture drought damage in this year <sup>[5]</sup>.



Farmers' protests over inadequate help from the government upon severe drought in agricultural sector, which started in late July, continued throughout most of August. Farmers blocked another main road, the Chisinau-Hincesti route, with agricultural equipment for a few weeks and marched towards the capital [6, 7].

In connection with the lack of significant precipitation, the State Hydrometeorological Service announcements of yellow and orange codes of hydrological drought were in place throughout August for most part of the country. In last days of August, the water flow at the Hrusca Hydrological Station in northeastern Moldova was at 45-55 % of the norm. Similarly, the average daily water supply to the Dubasari reservoir was 40-50 % of the monthly norm. The upper course of the Prut River on Moldova-Romanian border and its several tributaries, especially between Criva and Costesti towns, saw a decrease of water level of 0.2-0.5 m over the last 7 days of August. Critically low was also the water pumping station Cosernita in central Moldova, with its water level at 8.5 m, while several lakes have completely dried up across the country. [8, 9, 10, 11].

## **ROMANIA**

In Moldova County in eastern Romania, rapeseed, peas and corn are among the most affected agricultural crops this year due to drought. Wheat yields were around 1 ton per hectare compared to the average of 6 tons in a normal year, presenting less than 20 % of the usual yield. Some farmers are on the verge of bankruptcy as a result of having more than 70 % of cultivated land completely compromised [12]. In Glina, Ilfov County in southern Romania, sunflower and corn productions were compromised to a large degree. In comparison to last year's production of 4 tons per hectare, this year only 1.5 tons per hectare was made. Corn yield was also down to 40 % in comparison to last year. Similar reports come from Botosani area in northeastern Romania [14]. According to the Ministry of Agriculture, drought caused a reduction of this year's cereal production by between 35% and 40% at country level [3]. IN addition to crop production, also beekeeping and livestock farming are among the drought-affected sections in the agriculture [15]. In Dobrogea area in southeastern Romania, drought has compensated more than half of the sown crops. Farmers, who no longer had money to pay the salaries of their employees, took to the streets to demand aid from the authorities [16].

Significant lack of rain reflected in hydrological drought as well. 95 % of the surface of Lake Nuntași in Danube Delta area, which normally stretches over 850 hectares, dried up over the course of past two months. Consequently, the flora and fauna of the area were destroyed, posing an ecological disaster in the biosphere sector [17]. Also the level of lake Solești dropped by 60 % [18]. Fisheries were required to manage the existing volumes of water with great care in order to ensure the necessary living conditions for the fish stock [19].

The number of villages where water supply schedule was introduced grew alarmingly over this summer. In some localities of Vrancea area in southwestern Romania, water was supplied

for a whole day every other day, while in others a schedule allowed water daily but only as per hours, in the morning and in the evening. When in place, the water flow was weak and hence did not enable making reserves <sup>[20]</sup>. In Negresti in eastern Romania, consumption was restricted due to the drastic decrease in the volume of water in the Cazanesti reservoir <sup>[18]</sup>.

## **BULGARIA**

According to the Minister of Agriculture, Food and Forestry, this year is the worst of the record for the agricultural sector due to drought, as Bulgaria have not recorded such a drought. In several areas, mainly in eastern Bulgaria, drought has caused unprecedented damage; yields are at record low levels. Beyond that, for the first time there is a collapse of cereal crops of nearly 1 million decares, which has never happened before. This includes areas that were sown but will not be harvested due to complete loss of yield due to drought <sup>[20, 21]</sup>. Wheat yields in the Yambol region are 42 % lower than last year. Yields are lower for barley and oilseed rape as well, standing at approximately 75 % of the yield in 2019. The continued drought, coupled with hot weather and dry winds in August, has worsened the condition also of the spring cereals. Heavily affected are sunflower and corn crops in Dobrich region in northeastern Bulgaria, which is among the largest producers of oilseeds and feed grain in the country. The average yield in the district will not exceed 130 kg per decare, which is only one third of the optimal. According to the chairman of the Dobrich Union of Grain Producers, the sunflower seeds were not full, the fat content was low and traders showed no interest in the first harvest. The completely ruined areas with autumn crops, including wheat, oilseed rape and barley, are mainly in the municipalities of Straldzha and Tundzha in central-eastern Bulgaria <sup>[22, 23, 24]</sup>. The situation is similar in Shabla and Kavarna in northeastern Bulgaria, where, in addition to wheat, there are already completely ruined areas of corn. Large bankruptcies in small farmers and small grain producers are expected, as they will not be able to cope with a dry year like this which saw three failed crops already <sup>[24]</sup>. In addition to cereal growers, also beekeepers are reporting “zero year” due to poor honey yield. The more fortunate beekeepers managed to extract some honey, although 60-70% less than last year <sup>[25]</sup>.

Severe situation is reflected also in hydrological drought across eastern half of Bulgaria. The long-lasting drought throughout the year led to critical levels of the dams and to serious problems in water supply to the population. Several dams were experiencing critical conditions in August. The Ticha dam with a total volume of 311 million cubic meters bore only 148 in it at the end of the month. The volume of Kamchia dam, which gives water to two major seaside cities Burgas and Varna, has drastically decreased this year. Consequently, the supplied water amount to the two cities was reduced, threatening the Black Sea coast and tourism, according to the Minister of Ecology <sup>[26, 27]</sup>. The level of the Yastrebin Dam, which feeds the town of Antonovo, was also reported critical. With a volume of 62 million cubic meters, it contained only over 16 million at the end of August <sup>[26]</sup>. According to the Minister of the Environment and Water, 30 % of the outflow of Koprinka Dam in central Bulgaria was directed along the Tundzha River to Zhrebchevo Dam in order to ensure the normal water supply of the boreholes used by the residents of Stara Zagora, Sliven and Yambol districts in central and central-eastern Bulgaria <sup>[28]</sup>.

Residents of ninety settlements in Targovishte region in eastern Bulgaria were reported to have irregular water supply <sup>[29]</sup>. Prolonged drought led to a sharp reduction in the flow of existing water sources and shortage of water for drinking and household needs. Consequently, the local administration of the Smyadovo municipality in eastern Bulgaria declared a partial state of emergency for the three towns, Rish, Veselinovo and Alexandrovo. The emergency declaration stated that the water was released every seventh day, and that the collected amount of water in the reservoirs ended within 12 hours. The state of emergency was in place until the end of August and prohibited the supply of drinking water for irrigation and industrial needs until that time <sup>[30]</sup>.

[1] <https://press.try.md/item.php?id=1042837075>

[2] <http://www.hotnews.md/articles/view.hot?id=64658>

[3] <https://unimedia.info/ro/news/f1c5f4f96fe198a9/cea-mai-modesta-recolta-de-struguri-din-ultimii-10-ani-cauzata-de-schimbarile-climaterice.html>

[4] <http://www.interlic.md/2020-08-19/executivul-va-repartiza-300-milioane-de-lei-pentru-compensarea-par-iala-a-pierderilor-la-culturile-de-grupa-i-64155.html?highlight=secet%C4%83>

[5] <https://unimedia.info/ro/news/fd1f568351a6ab8b/video-aipa-a-receptionat-pana-acum-1169-de-dosare-de-la-agricultori-pe-266-dintre-acestea-suma-subventiilor-reprezinta-57-de-milioane-de-lei.html>

[6] <https://unimedia.info/ro/news/84893de5d10c2931/video-protestele-agricultorilor-cotinau-politia-semnaleaza-incalcari-contravenionale-si-spune-ca-va-actiunea-in-conditiile-cadrului-legal.html>

[7] <https://unimedia.info/ro/news/c513328d388c9952/video-agricultorii-au-anuntat-ca-pleaca-acasa-ne-ducem-sa-ne-facem-datoria-dar-ne-vom-reintoarce-nu-am-cedat.html>

[8] <http://www.meteo.md/index.php/en/news/detail/aspectele-24-31-08-2020>

[9] <http://www.meteo.md/index.php/en/news/detail/aspectele-hi>

[10] [http://stiri.tvr.ro/seceta-seaca-lacurile-din-republica-moldova--ecologi--tii-spun-ca-este-unul-dintre-cei-mai-secetosi-ani-din-ultimii-70-de-ani\\_868352.html#view](http://stiri.tvr.ro/seceta-seaca-lacurile-din-republica-moldova--ecologi--tii-spun-ca-este-unul-dintre-cei-mai-secetosi-ani-din-ultimii-70-de-ani_868352.html#view)

[11] [http://stiri.tvr.ro/seceta-seaca-lacurile-din-republica-moldova--ecologi--tii-spun-ca-este-unul-dintre-cei-mai-secetosi-ani-din-ultimii-70-de-ani\\_868352.html#view](http://stiri.tvr.ro/seceta-seaca-lacurile-din-republica-moldova--ecologi--tii-spun-ca-este-unul-dintre-cei-mai-secetosi-ani-din-ultimii-70-de-ani_868352.html#view)

[12] [http://stiri.tvr.ro/recolte-de-rapita--mazare--grau-si-porumb-compromise-in-jude--ul-ia--i-din-cauza-secetei\\_867129.html#view](http://stiri.tvr.ro/recolte-de-rapita--mazare--grau-si-porumb-compromise-in-jude--ul-ia--i-din-cauza-secetei_867129.html#view)

[13] [http://stiri.tvr.ro/seceta-face-ravagii-in--ara--este-un-an-catastrofa--noi--fermierii--suntem-termina--i\\_867907.html#view](http://stiri.tvr.ro/seceta-face-ravagii-in--ara--este-un-an-catastrofa--noi--fermierii--suntem-termina--i_867907.html#view)

[14] <https://www.agerpres.ro/economic-intern/2020/08/21/ministrul-agriculturii-va-fi-suficient-grau-pentru-panificatie-chiar-daca-productia-este-diminuata-de-seceta--560350>

[15] [http://stiri.tvr.ro/crescatorii-de-animale-mari-i-de-albine-vor-primi-subven-ii-de-la-stat-pentru-pagubele-produse-de-seceta-i-pandemie\\_868739.html#view](http://stiri.tvr.ro/crescatorii-de-animale-mari-i-de-albine-vor-primi-subven-ii-de-la-stat-pentru-pagubele-produse-de-seceta-i-pandemie_868739.html#view)

[16] [http://stiri.tvr.ro/protest-al-agricultorilor-dobrogeni--seceta-le-a-distrus-mai-mult-de-jumatate-din-culturi\\_868520.html#view](http://stiri.tvr.ro/protest-al-agricultorilor-dobrogeni--seceta-le-a-distrus-mai-mult-de-jumatate-din-culturi_868520.html#view)

[17] [http://stiri.tvr.ro/dezastru-ecologic-in-rezervatia-biosferei-delta-dunarii-unde-a-disparut-95-la-suta-din-suprafata-lacului-nunta-i\\_867713.html#view](http://stiri.tvr.ro/dezastru-ecologic-in-rezervatia-biosferei-delta-dunarii-unde-a-disparut-95-la-suta-din-suprafata-lacului-nunta-i_867713.html#view)

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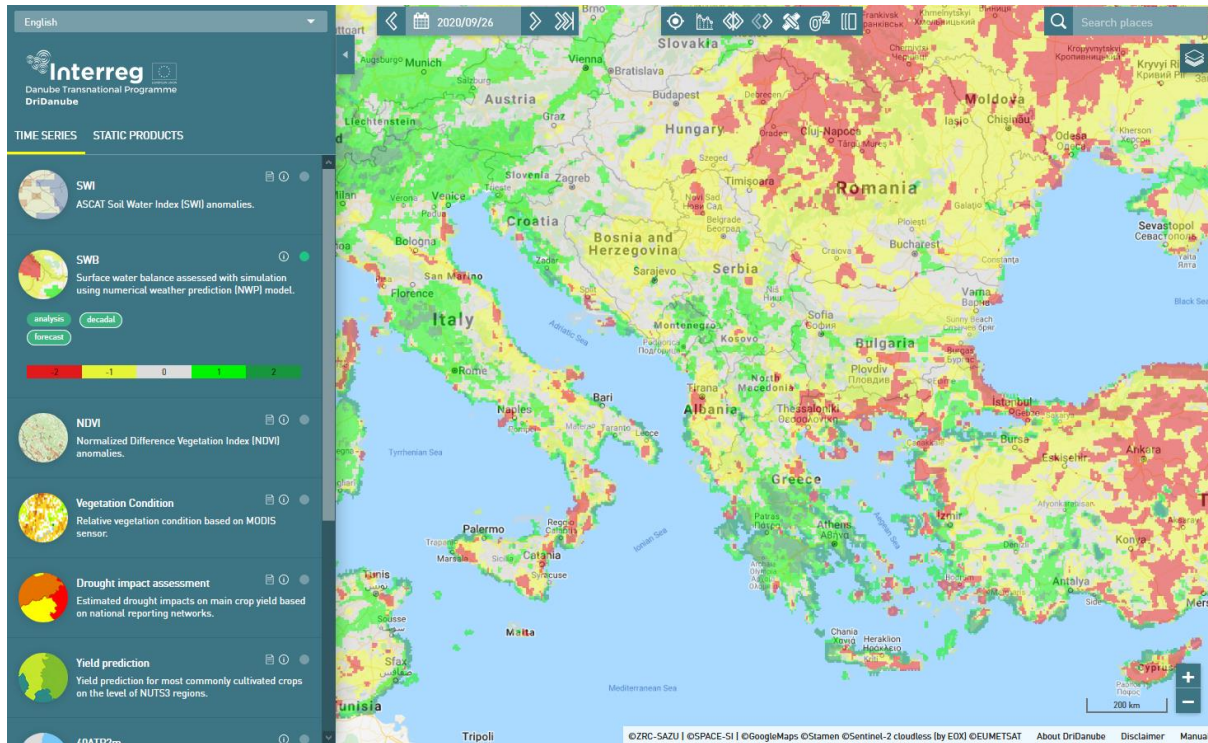
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## OUTLOOK

Figure below presents model simulations of the **60-day accumulated surface water balance anomaly** in historical percentile classes for the time period from **30 July to 27 September 2020**, as seen in Drought Watch tool<sup>1</sup>.



<sup>1</sup> <https://www.droughtwatch.eu/>

In terms of percentile comparison with the long-term records, the accumulated surface water balance will prove wet to very wet over the entire southern half of Greece and to wetter-than-usual also over southern Serbia, across most of Montenegro and over the region's far north-west from the Alpine parts along the entire Adriatic Sea coastline. On the other hand, dry to very dry surface water balance conditions will persist over Moldova and eastern Romania while at the same time extend from Hungary and Bosnia and Herzegovina across vast part of northern half of the Balkan Peninsula, to the Black Sea. Albania, northeastern Greece and especially central third of Turkey too are expected to experience a dry to very dry period.

### Methodology

DMCSEE Drought monitoring bulletin is based on numerical weather prediction (NWP) model simulations over SE Europe, SPI index calculations and remote sensing. Precipitation data is provided by Global Precipitation data Centre (GPCC; see: <https://www.dwd.de/EN/ourservices/gpcc/gpcc.html>). NWP simulations are performed with Non-hydrostatical Mesoscale Model with cca. 7 km spatial resolution (NMM; see: <http://www.dtcenter.org/wrf-nmm/users/>). Historical DMCSEE model climatology was computed with NMM model for time period between 1 January 1990 and 31 December 2019. European Centre for Medium Range Weather Forecast (ECMWF) ERA5 data set (see: <http://www.ecmwf.int/en/forecasts/datasets/reanalyses-datasets/era5>) was used as input for simulations. Long term averages (1990-2019), used for comparison of current weather conditions, are obtained from simulated data set. Comparison of current values to long-term averages provides signal on potential ongoing drought severity.