

DROUGHT MONITORING BULLETIN

July 2022

HOT SPOT

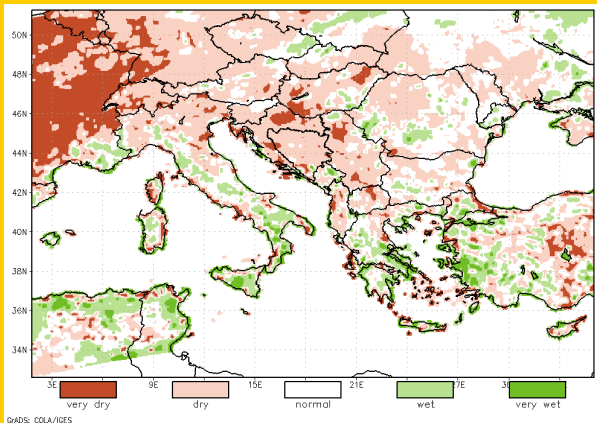
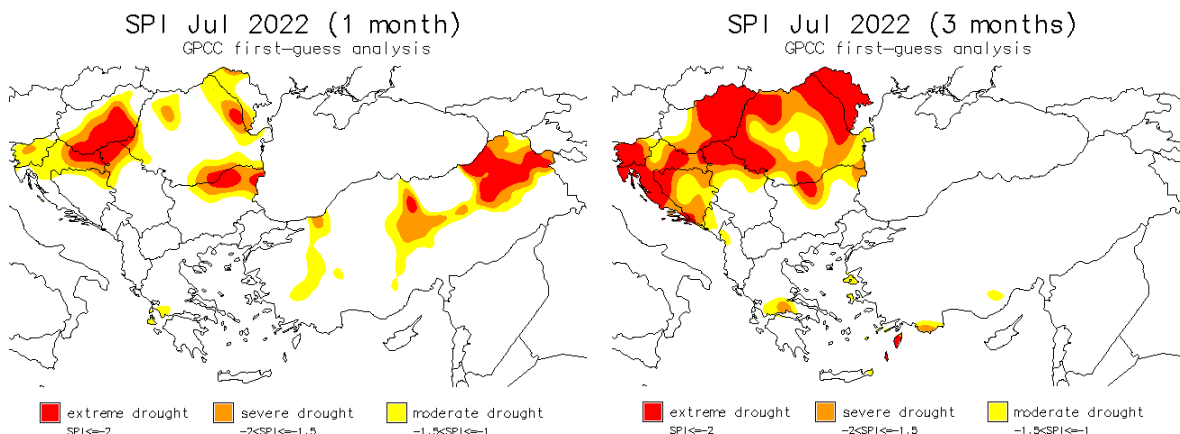


Figure on the left shows **surface water balance for July 2022 in percentile classes** on the base of 1991-2020. Due to scarce precipitation level and its uneven distribution, and with air temperatures warmer than normal for July, deficit of monthly surface water balance prevailed over a vast part of Balkan Peninsula and central Turkey. In scattered areas over the region's greater north-west and in central Turkey it classified among the driest of July surface water balance levels in local history.

STANDARDIZED PRECIPITATION INDEX

Drought situation with regard to the precipitation level is presented by Standardized Precipitation Index (SPI). The SPI calculation is based on the distribution of precipitation over long time periods (at least 30 years) and can be calculated at various time scales that reflect the impact of 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 **July 2022** 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.



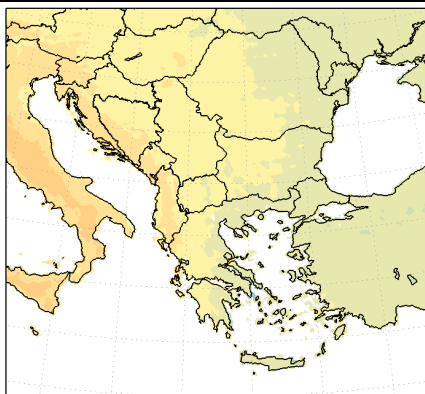
According to the SPI1, precipitation deficit in July reached a level of moderate to severe drought across Slovenia and northern Croatia, in parts along the northern Romania and northern Moldova as well as in central-western and central Turkey. Even greater was the precipitation deficit in the bordering area between Croatia, Hungary and Serbia, in northeastern Bulgaria and northwestern Turkey where lack of rain indicated extreme drought conditions.

A 3-month SPI taking into account accumulated precipitations over the May-July period reveals a great extend of severe to extreme drought conditions over northern half of Balkan Peninsula. Across various parts of the northern belt from Slovenia, Croatia, Hungary, Romania and Moldova, noticeable lack of rain was present throughout all three observed months and thus continuously accumulation precipitation deficit. In northern Bulgaria, negative SPI3 values come mostly on the account of severe to extreme drought conditions in July, and over Bosnia and Herzegovina mostly on the account of severely dry June.

AIR TEMPERATURE AND SURFACE WATER BALANCE

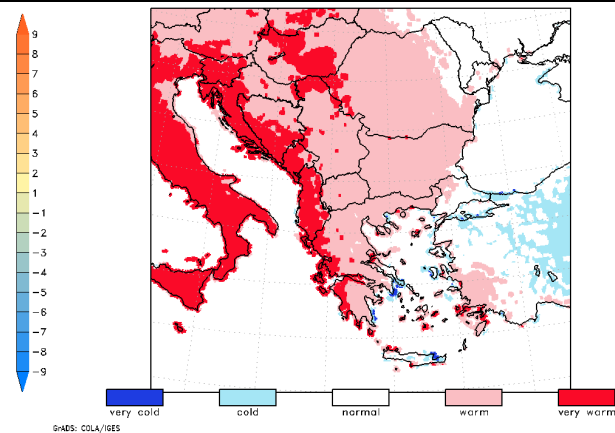
Figures in this section present anomalies of the average air temperature and accumulated surface water balance as well as their classified values in percentile classes for a 60-day period from 31 May to 29 July 2022.

AVERAGE AIR TEMPERATURE
ANOMALY (°C)
31 MAY – 29 JULY 2022



©ADS: COLA/IGES

AVERAGE AIR TEMPERATURE
PERCENTILE CLASSES
31 MAY – 29 JULY 2022



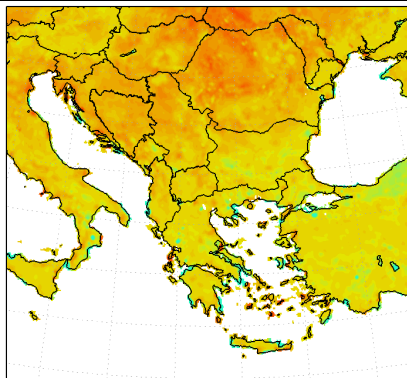
©ADS: COLA/IGES

July was characterized by periods of changing air temperature conditions over most of the region, only over most of Turkey it was continuously colder than normal, mostly up to -2°C , in mid-July up to -3°C . In its first days, warmer than normal air temperatures prevailed across wider central part of Balkan Peninsula from southern Adriatic Sea area to Hungary and Black Sea area where 10-day mean exceeded the average for up to 3°C , over eastern Hungary and northwestern Romania for up to 4°C . Average air temperatures were present in central Croatia and wider Aegean Sea area stretching across central and northern Greece, southern Bulgaria and western half of Turkey. In mid-July, colder than normal air temperatures of up to 2°C spread across northern part of the region and across a central belt from Hungary to southern Greece, in Moldova and northeastern Romania up to -4°C , while below-average air temperatures continued over Turkey with anomalies of up to -3°C . Elsewhere in the region, mid-July was of average air temperatures. By the end of the month, most of Balkan Peninsula experienced a period of above-average air temperatures, although anomalies of up to 4°C spread over a greater part of Balkan Peninsula, including its northwestern quarter from Hungary

to Albania as well as central Serbia and northwestern Bulgaria. It was up to 3 °C warmer than usual in central Romania, the rest of Bulgaria, North Macedonia and continental Greece, while over Moldova and northwestern Romania, air temperatures again dropped below the usual for this time of year, similar as in Turkey where anomalies of up to -2 °C continued.

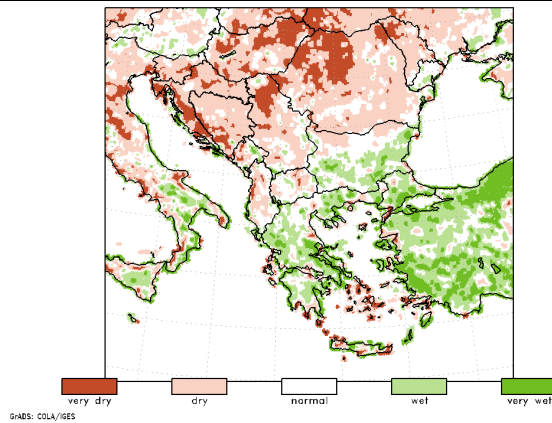
Mean air temperature of the 60-day period covering June and July reveal a west-to-south gradient of air temperature conditions. In areas along the Adriatic Sea from Slovenia to Albania, mean air temperature of June-July period was up to 3 °C higher than normal, classifying it among the warmest 5 % of local records. In central part of Balkan Peninsula including Hungary, continental Croatia, western half of Romania and southward to central Greece up to 2 °C, while elsewhere, in eastern parts of the region, mean air temperature of the June-July period varied about the average for this time of year.

ACCUMULATED WATER BALANCE
ANOMALY (mm)
31 MAY – 29 JULY 2022



GHAS: COLA/IES

ACCUMULATED WATER BALANCE
PERCENTILE CLASSES
31 MAY – 29 JULY 2022



GHAS: COLA/IES

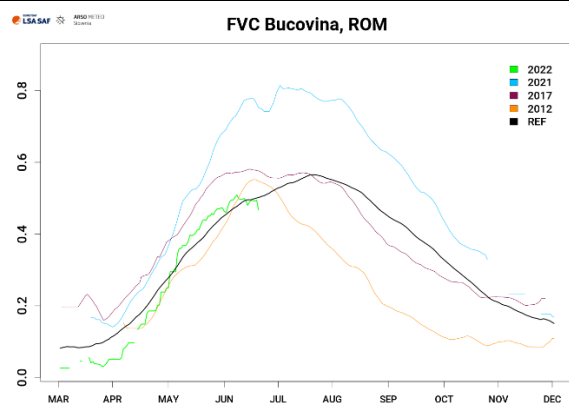
Level of surface water balance accumulated over the June-July period shows much of the northern half of Balkan Peninsula was experiencing noticeable deficits, with various areas experiencing among the driest water balance conditions of their local history. Greatest negative anomalies were present over eastern Hungary and western Romania where 60-day surface water balance was up to 240 mm below its normal values for this time of year, followed by accumulated deficit of up to 180 mm over northern Serbia and northern Moldova. Over the rest of the area northern of the Montenegro-to-Romania belt, a 60-day surface water balance deficit ranged between 120 and 150 mm, while other areas of noticeable deficit included northern Albania, southern Serbia and northwestern Bulgaria where 60-day accumulated surface water balance deficit stretched of up to 90 mm. In southern part of the region, namely Greece, southern Bulgaria and western half of Turkey, accumulated surface water balance did not deviate much from the average, however there were scattered local areas where extreme surplus exceeded 300 mm.

REMOTE SENSING - FRACTION OF VEGETATION COVER

Fraction of vegetation cover (FVC) is a 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 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, then FVC slowly drops with vegetation senescence. Line shape depends on the sort of vegetation at the given location.

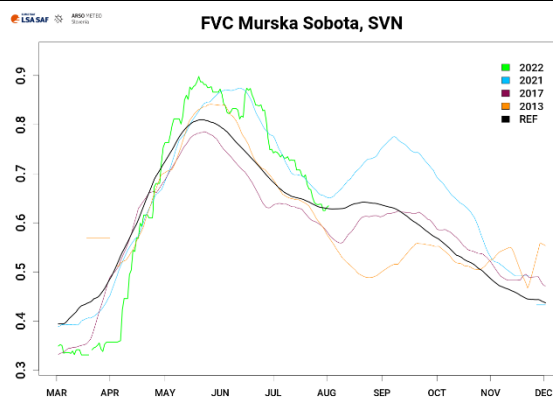
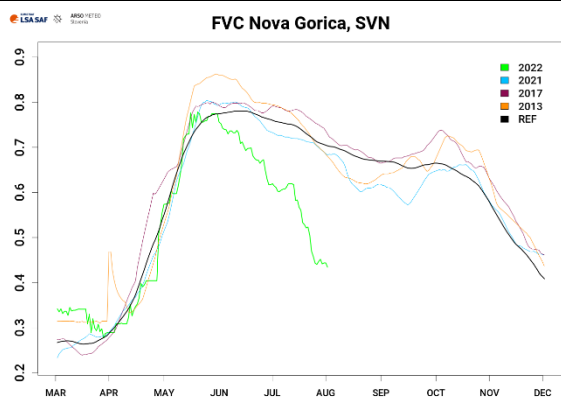
Graphs below present the **vegetation situation** as recorded on **31 July 2022** at some locations across Southeastern Europe. FVC values for year 2022 are presented as a green line. Graphs also include reference line (2004–2021) in black, and lines in light blue (year 2021), magenta (year 2017) and orange (year 2012, or 2013 for Slovenia) for comparison. Possible missing values or their sharp decline could be a result of a prolonged cloudy weather, extreme weather events, snow blanket or changes to product by product provider.

ROMANIA



In Bucovina, northern Romania, vegetation season began slightly later than normal and progressed well throughout April and especially May. June weather conditions did not support further growth and above-average vegetation cover, according to the dropping values of FVC with the coming of June. Level of vegetation cover remained average, while the much earlier than normal decline in vegetation development appear similar to the one in year 2012. Unfortunately, FVC values have been missing since the end of June.

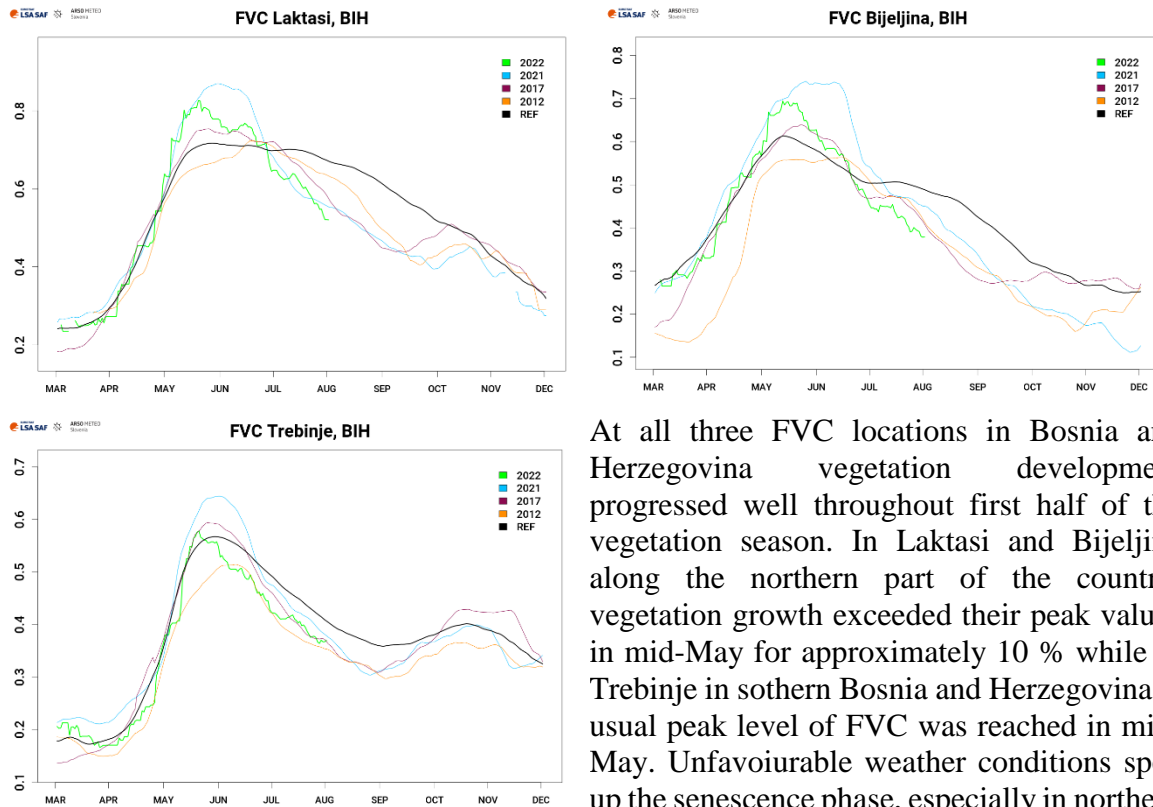
SLOVENIA



Vegetation development in Nova Gorica, western Slovenia progressed as expected in early part of the vegetation season from its beginning until before its peak time. Unfavourable weather conditions greatly affected further vegetation development, according to FVC, as the index value has been continuously dropping from mid-May onward, and the degree of vegetation

cover dropped from about 75 % to 45 % by the end of July, which is approximately half the normal for this time of year. Vegetation in Murska Sobota, northeastern Slovenia also experienced good start of the season as vegetation growth progressed well and exceeded its peak for approximately 10 % in mid-May. Even in its senescence phase fraction of vegetation cover remained above-average, although June and July weather conditions brought the exceeded vegetation cover back to normal by the end of July.

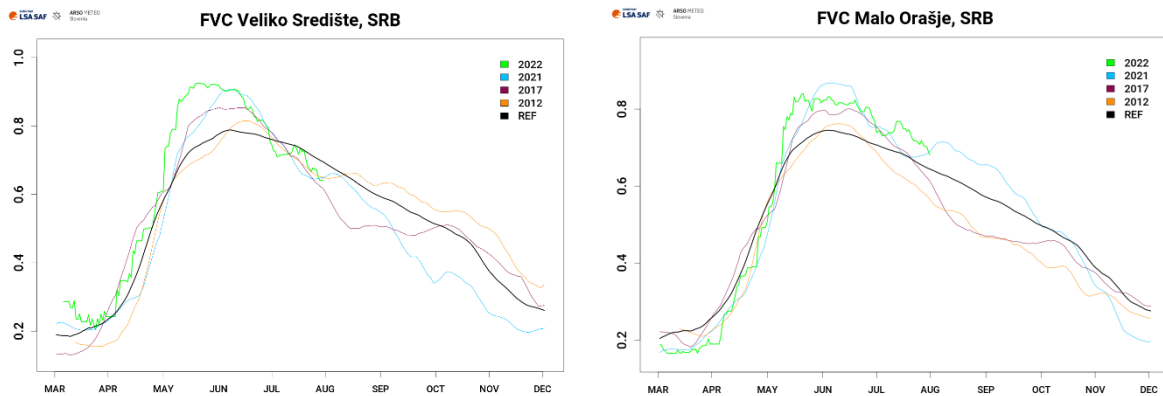
BOSNIA AND HERZEGOVINA (REPUBLIC OF SRPSKA)



At all three FVC locations in Bosnia and Herzegovina vegetation development progressed well throughout first half of the vegetation season. In Laktasi and Bijeljina along the northern part of the country, vegetation growth exceeded their peak values in mid-May for approximately 10 % while in Trebinje in sothern Bosnia and Herzegovina, a usual peak level of FVC was reached in mid-May. Unfavourable weather conditions sped up the senescence phase, especially in northern two locations, resulting in higher-than-normal

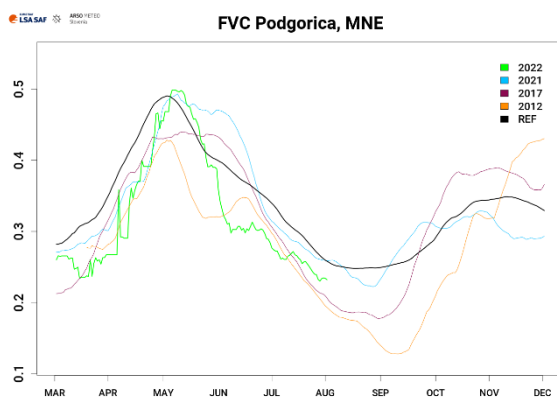
rate at which FVC values in laktasi and Bijeljina were dropping throughout June and July. Graph for FVC in Trebinje reveals the senescence phase is occurring at the usual rate, although possible reason for slightly lower than normal FVC values throughout June-July period can be in the fact that peak period at the end of May did not last as long as it normally does.

SERBIA



In Veliko Srediste, northeastern Serbia, vegetation growth began as usual in April and developed well throughout spring, especially in May when at its peak period of the year it exceeded the average for over 10 %. Senescence phase began as usual in early June, although the rate of FVC decline occurred faster than normally, dropping below the average by the end of July. Also in Malo Orasje in central Serbia, vegetation development progressed well and also experienced favourable weather conditions at the end of spring that helped vegetation growth to continue. Peak period was exceeded for approximately 10 % and, in contrast to vegetation in Veliko Srediste, peak period lasted as usual and also the rate of vegetation senescence throughout June and July appear more or less usual.

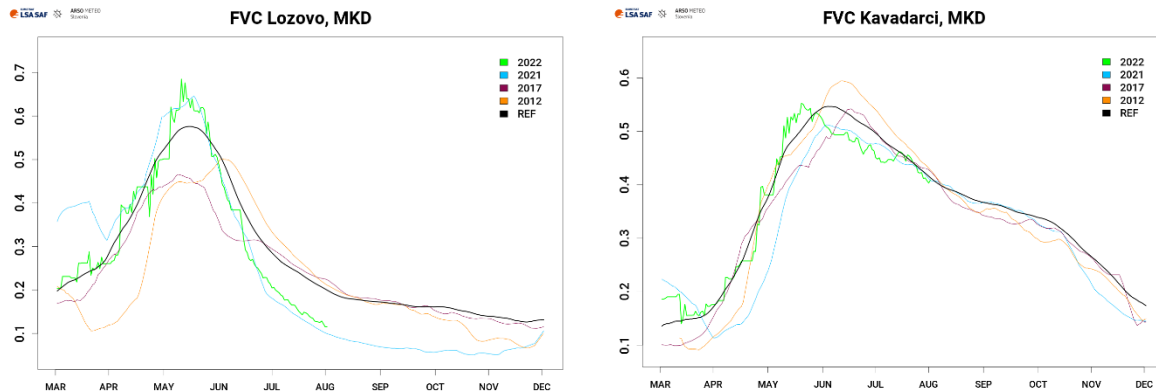
MONTENEGRO



In Podgorica, southern Montenegro vegetation began its growing season from a lower level of cover compared to the normal according to the FVC. It resulted in lagging behind its expected level of cover for approximately 2 weeks for the entire growing part of the season although its rate of growth was as usual and progressed well throughout April and early May. It reached its peak value slightly later than normal but weather conditions that followed sped up the senescence phase, especially from mid-May to mid-June when

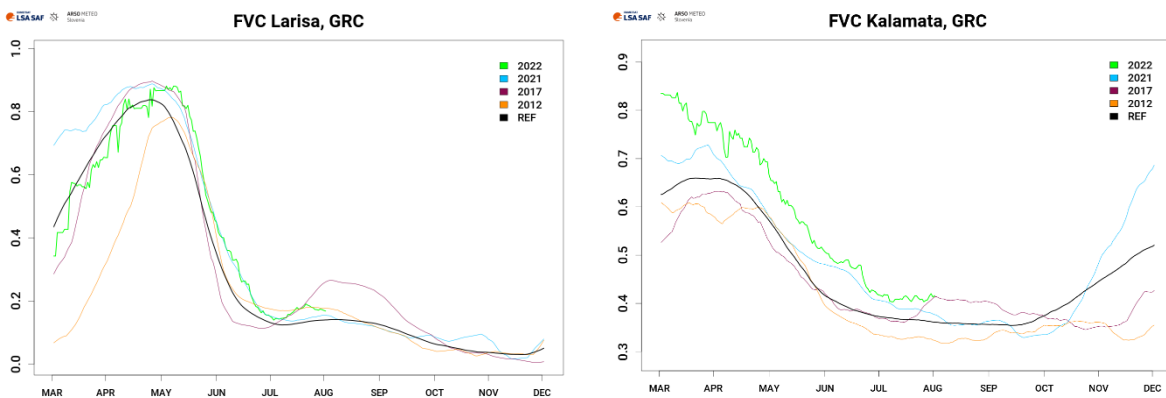
level of vegetation cover dropped well below the average and remain under-average in July.

NORTH MACEDONIA



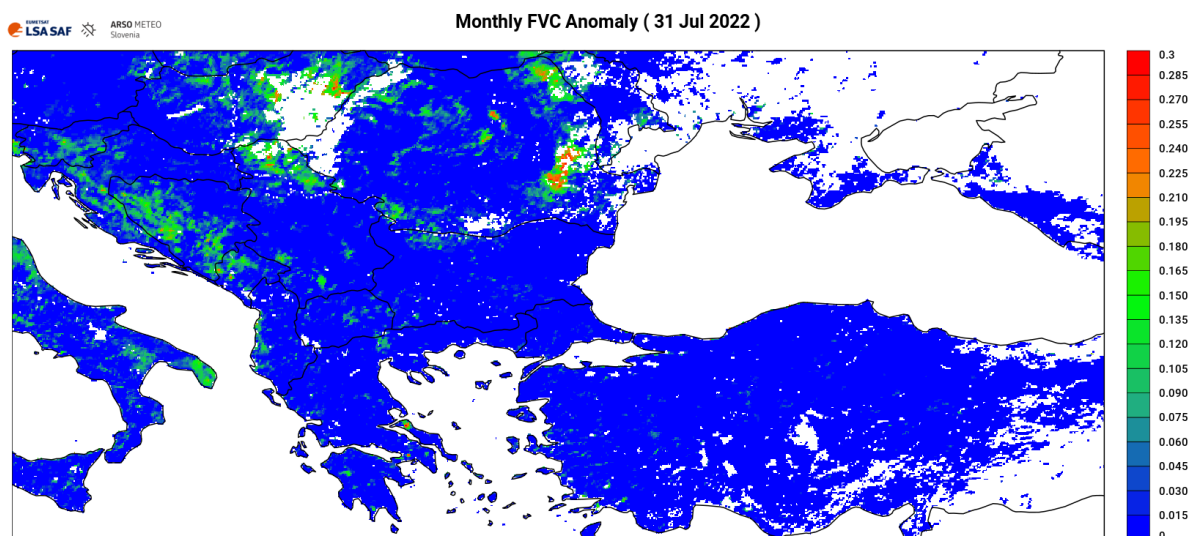
Weather conditions in first part of the vegetation season were favourable for the boost and growth of vegetation in Lozovo, central North Macedonia. Throughout May, its peak period, level of cover with vegetation exceeded its usual values for over 10 %, although here too a rapid decline in FVC values indicating sped up senescence phase can be observed. The negative anomalies from the average continued to grow since the beginning of June and at the end of the July stood 10 % below its regular value for this time of year, meaning the level of cover was only at half its usual end-of-July expansion. Vegetation development in Kavadarci in southern part of the country also progressed well in its growing part of the season. It experienced a period of decline which began earlier than normal and resulted in temporary below-average level of vegetation cover throughout June. However, the senescence phase progressed at the mild rate, thus FVC values caught up with their usual values by the end of July.

GREECE



Vegetation season began slightly later than normal in Larisa, central-eastern Greece although vegetation development progressed well throughout its growing phase and even slightly exceeded the peak values at the peak of the season in early May. Senescence phase throughout May and June progressed at its regular rate and also reached its lowest vegetation cover level at its ordinary time in early July. By the end of the month, FVC values stood slightly above the long term average. In Kalamata, southern Greece, vegetation season appear to be above-average, according to FVC, as its values continuously exceeded its long-term average from March onward. FVC values indicate no problematic period of vegetation season, with level of vegetation cover more than 20 % greater in early March, and remained 5-10 % higher than normal throughout the rest of the months of this year.

Figure below shows negative anomaly of **accumulated 30-day FVC values** as recorded on **31 July 2022** in comparison to the past 18 years (2004-2021), and is used experimentally.



Areas with noticeable 30-day accumulated deficits in fraction of vegetation cover appear mainly over the three major areas in the northern half of Balkan Peninsula: FVC values are up to 15 % lower over the countries along the Adriatic Sea from Slovenia to Montenegro; in an extensive area stretching over the lowlands between Hungary, western Romania and northern Serbia missing FVC values surrounded by deficits of up to 10 % suggest possible appearance of much higher than normal deviations from the usual; the third area with noticeably lower than normal values of cover with green vegetation stretch over the entire eastern Romania where accumulated level of vegetation cover is lower for 10–30 %.

DROUGHT IMPACT REPORTS

HUNGARY

Based on the results of the harvesting work, it became clear that the country was split in two. While harvest in Transdanubia was average, the quantity and quality of the harvest in the Great Plains, northern and central Hungary was very poor. The average yield of winter wheat fell short of the original expectations and was almost a quarter less than the average of the last five years. The lowest yield of autumn barley was reported from the counties of Nograd in northern Hungary, and Jasz-Nagykun-Szolnok in central-eastern Hungary with a yield of up to 2.7 tons per hectare whereas in the counties of South Transdanubia and West Transdanubia, the producers achieved a result of 6 tons per hectare. The quality and quantity of rye, triticale, spring barley and oats also show a large territorial disproportion. The crop yields required for fodder production remained far below the normal amount. Quality of hay fodder was also reported poor and low in quantity. According to estimates, the total arable land affected by drought may reach 1 million hectares, and this year's yield of corn and sunflower crops too were reported to be reduced ^[1].

The months-long drought was causing serious problems not only in agriculture but also for

beekeepers. In drought, the flowers barely produce nectar and pollen, the bees starve and have almost no honey. The majority of the silk grass completely dried up during flowering. Due to the lack of nectar and pollen, bees can raise very few offspring which was another concern to beekeepers. The manager of the Sarosi Apiary who takes care of eighty bee colonies in the Godollo area, northern Hungary, said drought was also visible on the sunflowers themselves as they should have grown to about two meters, but stand at the waist-high level ^[2].

The water level of Lake Fertő and Lake Velence dropped dangerously, Lake Nagyszeles has completely dried up, a 15-kilometer section of the Bodva stream completely dried up, and a desert atmosphere prevails in the Great Plain. The problem is so great that the Hungarian government announced at the end of July the establishment of the Drought Emergency Operational Team ^[3].

The Tarna River dried up completely, due to drought as well as concurrent permitted water withdrawal for irrigation by winery company. The situation elevated conflicts over the priority water use in extreme drought in the view of business and ecosystem. Between Verpelet and Kapolna in country's north-east, cases of continuous illegal water abstraction took place, which was talked about as a serious ecological crime ^[4].

[1] <https://24.hu/belfold/2022/07/29/buzatermes-aszaly-betekaritas-hoseg-alfold-klimavaltozas/>

[2] <https://hu.euronews.com/2022/07/29/alig-van-nektar-es-viragpor-eheznek-a-mehek-az-aszaly-miatt>

[3] <https://qubit.hu/2022/07/30/magyar-fotosok-dramai-kepein-az-aszaly-altal-okozott-pusztulas>

[4] https://nepszava.hu/3164011_kiszaradt-a-tarna-az-aszaly-idejen-is-azzal-ontozott-egy-vallalkozas-a-folyobol

SLOVENIA

According to the President of the Chamber of Agriculture and Forestry Slovenia, drought affected nearly all agricultural plants, including crops and orchards. The greatest damage was seen on vegetables, orchards, permanent plantations and crops. A great problem was also with mowing of grass, as first cut was reduced for approximately 30 % , second cut appeared very poor or offered barely any yield, while the third autumn cut might be lost. This was likely to cause a problem for livestock farmers this year, because even if they wanted to replace this feed, e.g. for dairy cows, for breeding pigs or for an unfed animal, it seemed difficult to get it because there was no fodder elsewhere in the country or it is extremely expensive on markets, as the prices of cereals on the world market have risen from last year's 250 to 400 and more euros per ton. In his opinion, if the high prices persist, farmers will not have the money to buy feed for the core herd because the purchase prices will not cover this cost ^[1]. Agricultural Forestry Institute Nova Gorica, western Slovenia reported of an increasing pressure from wild animals (wild boars, roe deer, deer...) which, in search of food and water, caused great damage to arable land and orchards, but also from insects, such as mites, lice, leaf miners, bed bugs, moths and others ^[2].

At the end of June, Administration for Civil Protection and Disaster Relief declared a major fire threat first in the area of Ajdovscina municipality, western Slovenia, and by July it extended its warning to the entire country ^[3, 4]. Due to severely dry topsoil level and scrubs, massive wildfire broke over the Karst area, western Slovenia in mid-July, which in addition to on-going drought was maintained by heatwaves and strong bora winds, while fire extinguishing was difficult due to the hydrological drought in surface- and groundwaters in addition to the unexploded ordnance from WWI. It lasted for over two weeks and burnt the area of more than 3,500 hectares, making it the greatest wildfire in country history. The

emergency engaged over 10,000 firefighters and army support units, and ground and aerial help from other EU countries ^[5, 6, 7].

Lack of rain in summer months but mostly also precipitation deficit in winter and spring months caused great hydrological drought in Slovenia. Lack of snow in the highlands, which melted away in early spring, brought reduced inflow of water from the mountains in the summer, thus contributing to lowered water levels and higher water temperatures, some of which were measured as high as never before ^[8]. The temperatures of several surface waters rose to 24 °C in mid-July. The warmest rivers were Sava, Vipava, Krka and Kolpa in the lower reaches. Water temperatures also in Lake Bohinj and Lake Bled were in the mornings around 23 °C, and a lot of algae was spotted to be appearing ^[9]. This year's prolonged hydrological drought caused critically low levels of water, which had been measured since the end of June at nearly all rivers in western half of the country, among them also the rivers Sava, Ljubljanica, Vipava and Soca ^[10]. Critically low water levels put water ecosystems in Slovenia at high risk. A number of Fishing Families across the country had to intervene upon dying of fish and rescuing the existing one, and prohibited sports fishing until further notice. These include the fishing area of Lake Cerknica and Rakov Skocjan in country's south-west, most of the Soca River tributaries in the country's north-east, and Ljubno at Savinja in northern parts of the country ^[11, 12, 13].

Due to the long-term drought, four Slovenian coastal municipalities including the regional capital municipality of Koper decided to close all systems for watering green public areas, showering on all beaches and fountains in public places, and have taken a number of other similar measures in early July ^[14, 15]. By mid-July, the ban on the use of drinking water was extended also for watering agricultural land and other uses in agriculture, and other business entities were urged to reduce consumption by 30 % ^[16]. The supply of drinking water was very limited even for ships docking in the port of Koper. The Union of Agents informed shipowners that ships should be supplied with drinking water in other ports ^[17]. By the end of July, a number of municipalities and water supply companies across the country began to take measures to ensure the rational use of drinking water due to the drought. Most of them prohibited the use of drinking water for any non-essential use as well as for filling fire cisterns without the prior consent of the water supply company. Among others, it was restricted in Novo mesto, Spodnja Savinjska dolina, Ajdovscina, Vipava, Kozjansko, Zalec, Obsotelje, Kranj and Murska Sobota. Municipalities of Ajdovscina and Vipava in western Slovenia prohibited any use of water other than of primary supply of drinking water from 6 to 9 in the morning and from 6 and 11 in the evening ^[18]. From last week of July onward, the army and firefighters were activated to deliver drinking water to threatened municipalities in Slovenia due to the extreme drought that has hit the coastal area and dried up water reservoirs. Water supply was ensured by transporting water from the Unica River and its underground reservoirs, and by buying water from Croatian Istrian water supply and delivering it to the Rižana Water Supply company, which covers the area of the Slovenian Istria and where consumption has already been reduced due to the shortage ^[19, 20].

Due to the extremely low flow of the Soca River, the Solkan hydroelectric power plant temporarily stopped operating in mid-July, which happened for the first time since 2003. Director of Soca Powerplants Nova Gorica said the consequences of extreme drought and low water levels were felt on the entire Soca watercourse with its tributaries. The rest of the system power plants on the river also operate at a very limited extent, including the pumped hydroelectric power plant Avce. Of 22 small hydropower plants that fall under their umbrella,

five were not working due to lack of water, and most of the others were switched on only occasionally. According to the Slovenian Powerplant Holding, production on the Drava River is 31 % lower, on the Soča River 45 % lower, and on the lower Sava River 39 percent lower compared to the previous five-year average of electricity production in the same period ^[21].

Salt farmers in Slovenian Istria are recording a really good harvest this year. They began collecting salt in mid-June already, which is a month earlier than in recent years, and have by the end of July collected under 1,500 tons of salt which equals the last year's yield ^[22].

- [1] <https://www.delo.si/novice/slovenija/prizadete-so-vse-kulture-susa-hujsa-od-tiste-leta-2017/>
- [2] <https://www.kmetijskizavod-ng.si/novice/arhiv-novic/2022072216013396/>
- [3] <https://www.gov.si/novice/2022-06-22-dnevni-informativni-bilten-centra-za-obvescanje-republike-slovenije/>
- [4] <https://www.gov.si/novice/2022-06-30-izredni-informativni-bilten-centra-za-obvescanje-republike-slovenije/>
- [5] <https://www.rtvlo.si/enostavno/slovenija/pozar-na-krasu-je-pod-nadzorom/635166>
- [6] <https://www.gov.si/novice/2022-07-25-na-krasu-pogorelo-3500-hektarov-zemlje/>
- [7] <https://www.rtvlo.si/okolje/fotogalerija-boj-z-ognjenimi-zublji/634819>
- [8] <https://n1info.si/novice/slovenija/temperatura-bohinjskega-jezera-v-cetrtek-znasala-kar-266-stopinje-celzija/>
- [9] <https://www.zurnal24.si/slovenija/padajo-rekordi-tako-toplo-je-bohinjsko-jezero-389862>
- [10] <https://meteo.arslo.gov.si/uploads/probase/www/agromet/bulletin/drought/sl/>
- [11] <https://rdcerknica.si/novice/prepoved-ribolova-na-cerkniskem-jezeru-in-v-rakovem-skocjanu/>
- [12] <https://www.delo.si/novice/okolje/zaradi-suse-na-nekaterih-rekah-prepovedali-ribolov/>
- [13] <https://www.gov.si/novice/2022-08-01-drzavni-sekretar-dr-darij-krajcic-na-obisku-pri-ribiski-druzini-ljubno-ob-savinji/>
- [14] <https://www.rtvlo.si/lokalne-novice/primorje/zaradi-zmanjsanja-kolicin-pitne-vode-na-obali-zaprte-prhe-na-plazah-in-prepovedano-polnjenje-bazenov/633276>
- [15] <https://mondo.ba/Info/Region/a/152915/U-Sloveniji-zbog-suse-zabranjeno-tusiranje-na-plazama.html>
- [16] <https://www.rtvlo.si/okolje/prepoved-uporabe-pitne-vode-za-kmetijske-namene-vodo-iz-pip-bo-kmalu-treba-prekuhavati/634289>
- [17] <https://www.rtvlo.si/radio-koper/prispevki/novice/tudi-ladje-v-koprskem-pristaniscu-brez-pitne-vode/634660>
- [18] <https://www.rtvlo.si/lokalne-novice/komunale-po-sloveniji-nadaljujejo-z-ukrepi-za-racionalno-rabo-pitne-vode/635676>
- [19] <https://www.rtvlo.si/radio-koper/prispevki/novice/voda-v-slovensko-istro-tudi-s-cisternami/635018>
- [20] <https://mondo.ba/Info/Region/a/157091/Susa-u-Sloveniji.html>
- [21] <https://www.rtvlo.si/gospodarstvo/zaradi-nizkega-vodostaja-soce-ustavili-hidroelektrarno-solkon-struga-ponekod-popolnoma-suha/635534>
- [22] <https://www.rtvlo.si/gospodarstvo/obeta-se-dobra-letina-soli-tudi-zaradi-letosnje-majhne-kolicine-padavin/635971>

CROATIA

Due to the continuation of the dry period during July and even more frequent heat waves, a decrease in yields is expected, especially in the case of maize, which is estimated to be reduced by 50–60 %, soybeans by 30–50 %, sunflowers by at least 25 %, and mandarins, apples, and olives by 30–50 %. Also vegetable yields, regardless of irrigation, were expected to be reduced by about 30–40 %. The great heat left its mark too, as drought decimated part of the farmers in Slavonia and Baranja, continental Croatia. In addition to reduced yields, production costs increased, especially in vegetable growing due to the need for irrigation and additional feeding increased so that plants could better withstand heat and water stress. Special attention was paid to young fruit tree plantations. Drought caused damage in olive growing, having a negative impact on the filling of the olive fruit, which produced abundantly this year. Most of the olive groves and vineyards do not have irrigation, so some farmers had to bring water with cisterns and water the plantation.

Such extreme weather conditions were a great stress not only for plants but also for animals looking for shelter and drinking water. High temperatures and drought drove wild animals from their habitats into urban areas in search of water. For example, roe deer from the forest areas near Opatija descended on the town. Therefore, the population in Istria, northwestern Croatia organized water supply for wild animals through watering holes.

Extracted from:

https://meteo.hr/klima.php?section=klima_pracenje¶m=spi&el=prspi

https://meteo.hr/klima.php?section=klima_pracenje¶m=ocjena

https://meteo.hr/proizvodi.php?section=publikacije¶m=publikacije_publicacije_dhmz&el=bilteni (preliminary report; publication is in preparation)

https://meteo.hr/klima.php?section=klima_pracenje¶m=spi&el=karte_suse&Week=220714

BOSNIA AND HERZEGOVINA

Although the honey season in Bosnia and Herzegovina started promisingly in the spring, high temperatures and drought affected the bee colonies, so the bees were left without food and water. With the absence of summer meadow grazing, hunger prevailed, but the problem was aggravated by the impossibility of bees to reach water nearby. The yield of meadow honey was to be certainly reduced, but additional drought damage was expected to be caused to the bee colonies themselves, which would be in good shape and we would have a problem preparing for the winter. The price for a kilogram of honey throughout republic of Sprska, which usually sits at around 25 marks, has already risen up to 30 marks ^[1, 2].

Wildfires were reported in municipality of Bileca and also near Lake Boracki in municipality of Konjica, southern Bosnia and Herzegovina ^[3, 4, 5]. The water supply company of one of the biggest towns Banja Luka, southern part of the country, reported of problems with water in the outskirts of the city due to which it declared a state of emergency in eight local communities. It had to change the operating regime of the water supply network in order to fill the Tunjice reservoir and normalize the water supply in the surrounding settlements. The measures included reduction of water in certain local communities where possible, increased controls by the city's control bodies and the police, given that there are problems and losses of water on pipes, hydrants and connections ^[6, 7, 8, 9, 10]. Due to the insufficient water inflow in the catchment area at the Zeleni Jadar locality caused by the drought, more serious water reductions were introduced in Srebrenica, eastern Bosnia and Herzegovina for the first time in the last eight years. Regime included that every other night, half of the population had a reduction from 8 p.m. to 6 a.m., and so alternately until the source was filled again ^[11, 12]. Significant decrease in the water level of the Drina River since the beginning of July caused a significant decrease in the water level also in the canal system in Semberija. Works were carried out to deepen a part of its riverbed and the connecting channel between the Drina and the canal network, so that in the on-going dry period, more water from the Drina river bed could reach the canal system in Semberija, and in this way provide sufficient amounts of water for functioning of the irrigation system ^[13].

[1] https://www.nezavisne.com/ekonomija/agrar/Zbog-suse-i-pcele-ostale-bez-hrane-i-vode/728434?utm_source=nezavisne&utm_medium=feed&utm_campaign=RSS%3A+Najnovije

[2] <https://www.nezavisne.com/ekonomija/trziste/Teglica-meda-i-do-30-KM/728332>

[3] <https://mondo.ba/Info/Drustvo/a1154953/Pozar-u-selo-kod-Bilece.html>

[4] <https://www.oslobodjenje.ba/vijesti/bih/novi-pozar-u-hercegovini-gori-u-blizini-bilece-jak-vjetar-pogorsava-situaciju-776387>

[5] <https://mondo.ba/Info/Crna-hronika/a1154831/Pozar-na-Borackom-jezeru-kod-Konjica.html>

[6] <https://mondo.ba/Info/Drustvo/a1156327/Problemi-sa-vodom-u-banaluckim-naseljima.html>

[7] <https://www.nezavisne.com/novosti/banaluka/Vanredna-situacija-uvodena-u-nekoliko-mjesnih-zajednica-u-Banaluci/725387>

[8] <https://mondo.ba/Info/Drustvo/a1156701/sjednica-banaluckog-staba-za-vanredne-situacije.html>

[9] <https://mondo.ba/Info/Drustvo/a1152557/Meteorolog-o-susama.html>

[10] <https://mondo.ba/Info/Drustvo/a1152377/Zbog-problema-s-vodom-proglasena-vanredna-situacija-u-banaluckim-selima.html>

[11] <https://www.oslobodjenje.ba/vijesti/bih/jos-jedan-muka-za-srebrenicane-redukcije-vode-zbog-suse-ali-i-zbog-nemara-ljudi-777702>

[12] <https://avaz.ba/vijesti/bih/758796/susa-uzima-danak-srebrenicani-ostaju-bez-vode>

[13] <https://mondo.ba/Info/Drustvo/a1154893/Susa-u-Semberiji.html>

SERBIA

Severe drought this year did not affect the yield of wheat in Serbia, however, the yield of corn, soybeans and sunflowers was expected to fail greatly this year due to high temperatures and lack of rain. The cereal yield was expected to be sufficient only to ensure domestic needs and slightly more for the export, which is far below the usual grain potential for Serbia ^[1, 2].

In most river courses in Serbia, the water level was very low, close to the biological minimum. The most critical situation was on the Sava River, at the measuring stations near Šabac and

Sremska Mitrovica, while hydrological warnings were soon afterwards introduced for the Danube River, especially on the account of very poor water level in the upper course of the river. At the same time, Drina River was in some places so shallow it could be walked across. Due to the drop in groundwater levels, drought and heat, Lake Jamurine was on the verge of being left without water^[3, 4]. Vojvodina, northern Serbia reported of severe hydrological drought. Due to insufficient rainfall, dead fish were observed floating in the little water left in Conopljan Lake near Sombor. The lake gradually disappeared, reaching the level of ecological disaster this summer, and due to the lack of water, the entire ecosystem collapsed. Fish was transported to the nearest Danube-Tisa-Danube channel. Herons, roe deer, wild ducks and protected bird species will most likely disappear along with this lake^[5].

Due to extreme lack of water, ban on irrigation was introduced in part of Vojvodina, northern Serbia. The suspension of irrigation was put in place from the Moravica, Zobnatica and Sava reservoirs as the water level in them dropped to an all-time low. 3,200 hectares were normally irrigated from these reservoirs, however, the ban remained in effect until the water levels increase. The aggravating circumstance was that, none of these reservoirs could be replenished with water from natural watercourses or canal networks, therefore the amount of water directly depends on meteorological conditions, that is, on rainfall^[6].

[1] <https://www.blic.rs/biznis/upozorenje-agroekonomiste-susa-pogodila-kukuruz-soju-i-suncokret/07swe3k>

[2] <https://www.novosti.rs/ekonomija/vesti/1137856/zega-kuva-kukuruz-suncokretu-prija-tropska-vrucina-zasiurno-ostavlja-posledice-ovogodisnji-rod>

[3] <https://www.novosti.rs/drustvo/vesti/1138843/ceka-nas-mozda-najsusnija-godina-vodostaji-reka-srbiji-minimumu-kriticno-savi>

[4] <https://www.novosti.rs/srbija/vesti/1137786/spasli-jezero-suse-zajednickom-akcijom-cokani-sprecili-pomor-zivotinjskog-sveta-jamurine>

[5] <https://www.blic.rs/vesti/novi-sad/jezero-u-conoplji-pred-iskusivanjem-ugrozen-riblji-fond-i-zivotinjski-svet/bqv3zn2>

[6] <https://rs.n1info.com/vesti/najveca-susa-od-2012-godine-zabrana-navodnjavanja-u-delu-vojvodine/>

GREECE

The persistence of high temperatures, combined with dry atmospheric conditions and generally strong winds, favoured forest fires in many areas mainly in eastern and southern Greece. The most disastrous forest fires occurred in Penteli (Attica), in the Dadia Forest National Park (Eastern Macedonia and Thrace), in the island of Lesvos, in Iliia (Peloponnese), and in Rethymno (Crete). In Penteli, more than 20,000 acres were burnt based on information from the Landsat 9 satellite. The Secretary General of Civil Protection, declared the Municipality of Penteli in a state of emergency for six months in order to restore the damage and problems created by the catastrophic forest fire that occurred on 19/07/2022^[1, 2]. In the Dadia Forest National Park, the fire that broke out on Thursday 21 July lasted several days, threatening the unique ecosystem of one of the country's most important protected areas. According to initial estimates by the Forest Service and other officials, at least 25,000 hectares of the forest - natura, or 10 % of its total area, have been incinerated^[3, 4]. In Lesvos, it is estimated that the fire has burned about 17,000 acres of pine forest and agricultural crops. In Iliia it is estimated that about 7,000 hectares of pine forest and olive groves have been burnt, and many animals in the pasture farms in the area have been burnt^[3]. In the municipality of Agios Vasileios, in southern Rethymno, more than 15 thousand acres (olive groves, greenhouses, vineyards), beehives and livestock have been burnt^[5].

[1] <https://www.tanea.gr/2022/07/21/greece/penteli-kaikan-pano-apo-20-000-stremmata-megalos-kindynos-kai-simera-gia-foties/>

[2] <https://www.ethnos.gr/greece/article/217987/sekastastashektaktksanagkshkhrxthhkeodhmospentelhsposyephghapotisfoties>

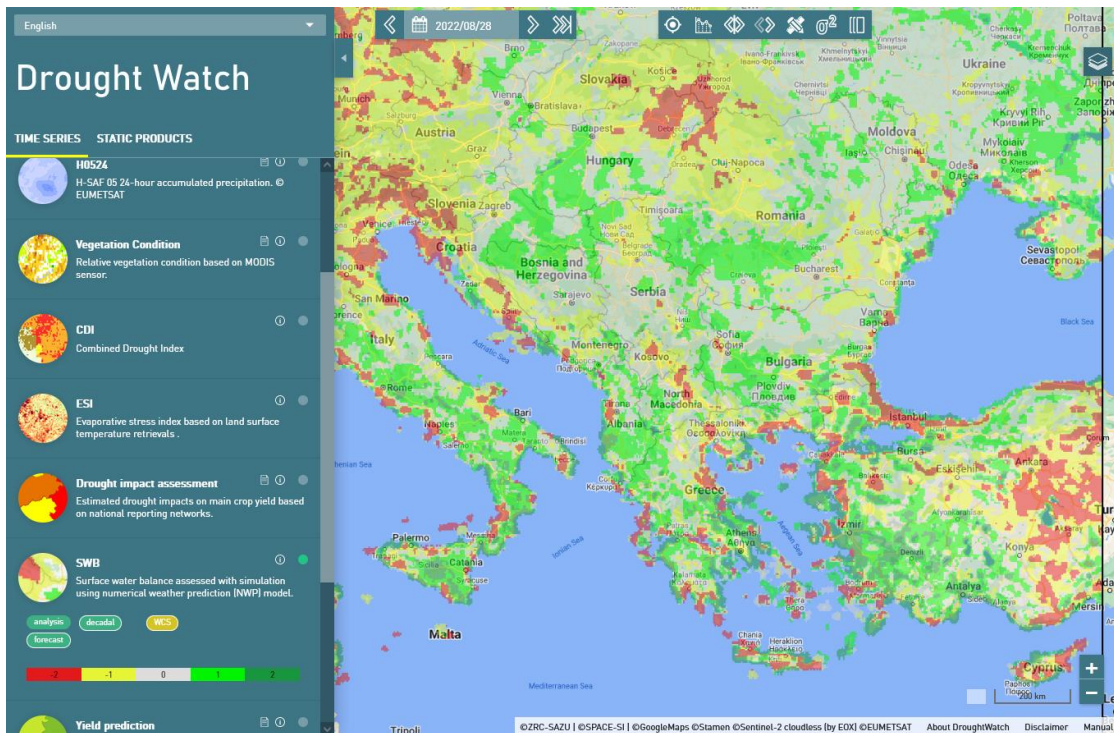
[3] <https://www.ertnews.gr/eidiseis/ellada/synechizetai-gia-6i-mera-i-fotia-sti-dadia-evroy-dyo-ta-metopa-sti-lesvo-se-yfesi-sta-krestena/>

[4] <https://www.ethnos.gr/greece/article/217795/fotiasthadadiasynexizeigia6hmerahpyrinhlailapaapokardiotikeseikones>

[5] <https://www.ertnews.gr/eidiseis/ellada/pyrkagies-katastrafikame-lene-oi-katoikoi-toy-notioy-rethymnoy-syllipsi-ypoptoy-gia-emprismo-stin-patra/>

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 June to 28 August 2022**, as seen in Drought Watch tool¹.



¹ <https://www.droughtwatch.eu/>

Accumulated surface water balance is expected to improve across various parts in central Balkan Peninsula as well as over eastern Romania and Moldova, as wet conditions will replace existing dry to very dry ones. However, dry surface water balance conditions are expected to prevail over the regions far north-west, along the Adriatic Sea area and over the area stretching from northeastern Hungary to northwestern Romania. In these parts, 60-day accumulated surface water balance is expected to reach very dry levels, among the driest 5 % of local history for this time of year. Dry to very dry surface water balance conditions are foreseen also for coastal parts in the Aegean Sea area, but also over great part of central Turkey. Elsewhere in southern parts of the region, wet to very wet conditions will prevail.

Methodology

DMCSEE Drought monitoring bulletin is based on numerical weather prediction (NWP) model simulations over SE Europe, SPI index calculations, remote sensing and public media drought impact reports. Precipitation data is provided by Global Precipitation Climatology Centre (GPCC; <https://www.dwd.de/EN/ourservices/gpcc/gpcc.html>), shown against the averages of the 1961-1990 time period. NWP simulations are performed with Non-hydrostatic Mesoscale Model at ~7 km spatial resolution (NMM;



<http://www.dtcenter.org/wrf-nmm/users/>). Historical DMCSEE model climatology is computed with NMM for the time period between 1 January 1991 and 31 December 2020. European Centre for Medium Range Weather Forecast (ECMWF) ERA5 dataset (<http://www.ecmwf.int/en/forecasts/datasets/reanalyses-datasets/era5>) is used as input for simulations. Long-term averages (1991-2020), used for comparison of current weather conditions, are obtained from simulated dataset. Comparison of current values with long-term averages provides a signal on potentially ongoing drought. Remote-sensing product in the bulletin is based on the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) Land SAF MSG Daily Fraction of Vegetation Cover product (<https://landsaf.ipma.pt/en/products/vegetation/fvc/>), presented for the checked and confirmed locations and using long-term averages from 2004 to the last full year (currently to 2021). Information on drought impacts are obtained from only freely available online reports of national authorities and media newspapers.