European Commission

JRC MARS Bulletin global outlook 2017

Crop monitoring European neighbourhood

Turkey

March 2017

No impact from a dry and cold winter

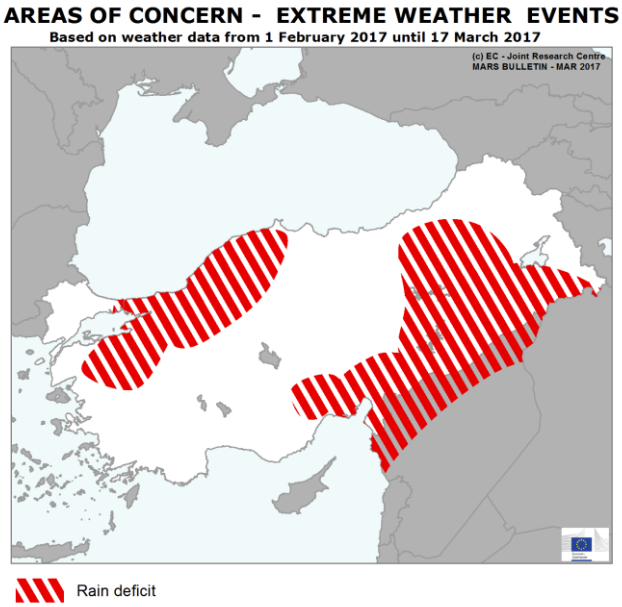
In the main agricultural regions of central Anatolia (Ankara, Konya, Kirikkale, Kayseri), winter crop-sowing activities started in late November – up to one month later than usual – due to the persistent rain deficit. In the south-eastern regions of Gaziantep, Sanliurfa and Mardin, sowing conditions were almost optimal with sufficient precipitation around the usual sowing window (end of November – beginning of December). In December, abundant snowfall protected the recently emerged crops from frost damage.

In January, significant precipitation occurred in most of the Central and Aegean regions. In Central Anatolia, temperatures were 5°C below the average, but cold spells occurred up to mid-February associated with drier-than-usual conditions. Lack of precipitation was especially significant in Kocaeli and south-eastern regions.

From mid-February, temperatures rose and snow melted. At the beginning of March, a significant temperature anomaly (+6°C compared to the average) was recorded in Central and northern Anatolia.

Table of content:

Covers the period from September 2016 until March 2017



The warm temperature accelerated the winter crops dehardening.

Although water reserves for irrigation and soil moisture levels are now more than sufficient, most winter crop regions could be jeopardised by a prolonged dry spring.

Summer-crop-sowing activities are generally delayed due to the persistent cold weather in February, but there is no imminent cause for concern..

Joint Research Centre

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1. Agro-meteorological overview

Colder-than-usual weather conditions have characterised **winter** across most of Turkey, except for the south-eastern region of Anatolia. The coldest temperature anomalies, locally 5°C below the long-term average, were recorded in north-eastern Turkey, *Konya*, *Kocaeli* and *Ankara*. Minimum temperatures below -15°C were regularly recorded in central Anatolia, while temperatures of -20°C or lower were often experienced in eastern Anatolia. In central Anatolia, a substantial drop in temperature occurred during the third dekad of January and the first dekad of February. During that period, cold spells with minimum temperatures below -18°C were experienced in *Konya*, *Kirikkale*, *Kayseri* and locally in *Ankara*. Colder-than-seasonal weather conditions during winter were interrupted in the second dekad of January and at the end of February. It is worthwhile mentioning that December 2016 was among the coldest on our records in the western part of Turkey.

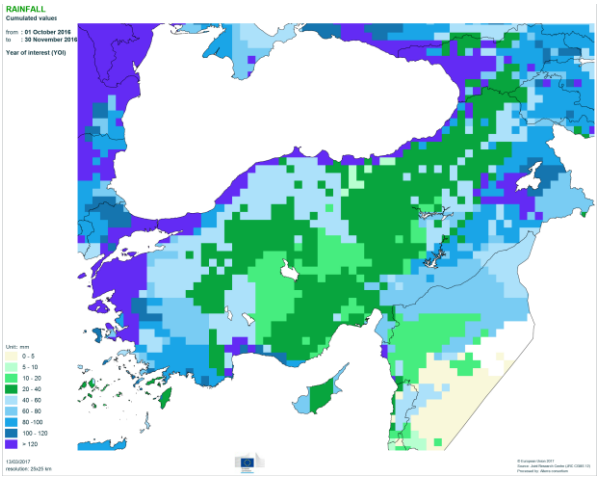
Snow remained on the ground during winter in most of central and eastern Anatolia, however with a spatially highly variable thickness. During the cold-spell events, snow provided a protective cover that limited the impact of low temperatures on winter crops in the major agricultural areas of central Anatolia. In January, snow cover was also present in the Aegean, Marmara and Black Sea regions.

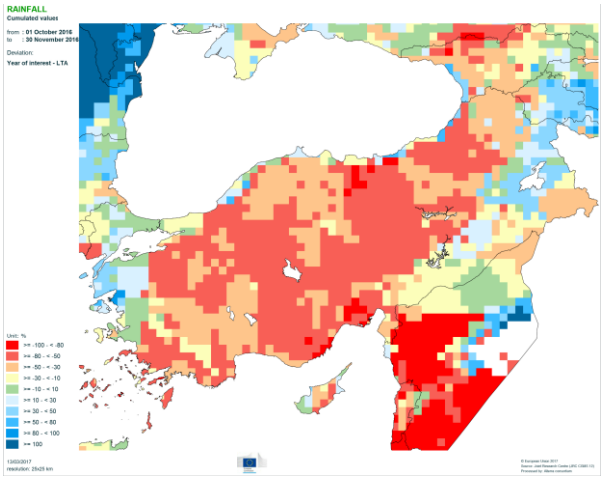
Warmer-than-usual weather conditions were observed in **October and November**, especially in the south-eastern Anatolia region, with temperature anomalies up to 4°C above the long-term average.

Substantially drier-than-usual conditions were recorded in October and November in the major parts of central Anatolia, the Mediterranean and eastern Anatolia. Rainfall cumulates across most of central Anatolia were below 30 mm, with less than three rainy days. Drier-than-seasonal conditions also continued in *Ankara* during winter, with precipitation cumulates below 70 mm. Precipitation cumulates did not exceed 50 mm in *Kastamonu*. As for the rest of Turkey, precipitation cumulates below 100 mm occurred in eastern Anatolia and in a part of south-eastern Anatolia.

Abundant precipitation, with cumulated values above 300 mm, was recorded in south-western Turkey, and the coastal areas of the Mediterranean and Black Seas. Heavy daily rainfall events, exceeding 100 mm, might have caused local flooding in the coastal areas of *Antalya*, *Izmir*, *Adana* and *Kocaeli*.

March started with an unusually warm weather anomaly, with daily average temperatures up to 6°C above the long-term average. Daily maximum temperatures exceeded 18°C in the Aegean, Mediterranean, and Black Sea regions, as well as in south-eastern Anatolia and locally in central Anatolia.





2. Winter crop conditions

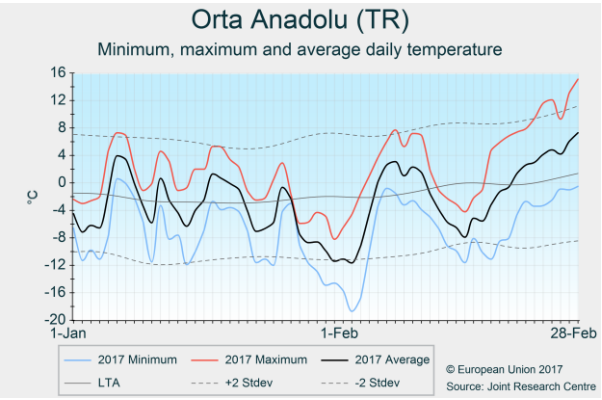
Unfavorable winter conditions did not harm crops.

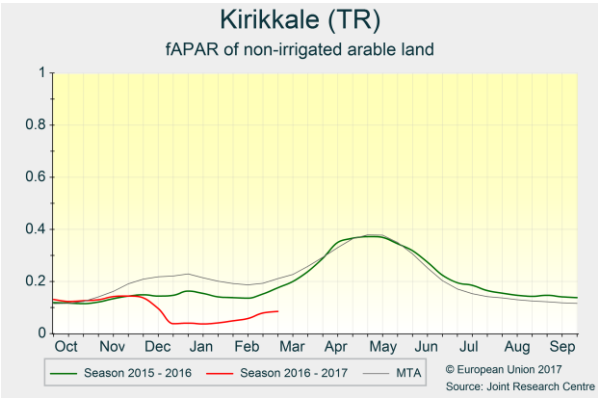
The sowing of winter crops was hampered by dry conditions during October and November in central Anatolian regions. Winter crops resisted to several cold spell from December to February thanks to snow protection. In March temperatures rose and spring re-greening started

Dry autumn conditions delayed winter-crop-sowing activities in central Anatolia. In central Turkey (e.g. *Konya, Anakara, Kirikkale*), October and November ranked among the three driest years from 1975 to 2015. Such conditions led farmers first to delay sowing activities and later to sow under dry conditions in the hope of profiting from the first rains, which only occurred in mid-November. From December, sufficient precipitation occurred in all of the main crop-producing regions, from central Anatolia to the south-eastern agricultural regions of *Gaziantep* and *Sanliurfa*. In the first days of December, most of the crops had emerged - following the usual timescale in the south-eastern regions but strongly delayed compared to the average timescale in central-western regions - just before a temperature drop and extensive snowfall occurred throughout the country.

From December to February, several cold spells occurred (e.g. in *Orta Anadolu*), but, thanks to sufficient snow coverage, no relevant frost-kill event was recorded. Significant precipitation during winter partially replenished water reservoirs, apart from in central-northern Anatolia and south-eastern Turkey, where cumulated winter rainfall remains half of the usual amount. Snow coverage persisted in central Anatolia until mid-February, but completely melted away by the end of February, when average temperatures significantly increased. In March, crops re-greening started, later than usual, in most of the regions. Remote sensing data well describe, in central Anatolia, the winter crop delay in biomass accumulation at the beginning of March (e.g. see the *Kirikkale* fAPAR profile), due to the late autumn sowing and cold winter temperature.

Yield forecasts rely on trend analyses for both wheat and barley.





3. Sowing conditions for maize and sugar beet

In most of the country, sowing conditions for sugar beet have been unfavourable due to cold conditions until the end of February, and even during the first ten days of March, when minimum temperatures occasionally dropped below 0°C in the most important production regions of central and eastern Turkey. This is no cause for immediate concern, as it is still very early in the season and thermal conditions are rapidly improving.

The cold February conditions also hampered maize sowing activities, which are generally delayed. The first sowing activities are expected to start from mid-March in the Aegean and Black Sea regions. The weather in these regions has been beneficial since the beginning of March, with average temperatures (around 10°C) and well-distributed precipitation..

4. Crop yield forecasts

Turkiye yield forecasts - March 2017 Bulletin

Country	Crop	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
		Avg 5yrs	2016	2017	%17/5yrs	%17/16	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16	Avg 5yrs	2016	2017	%17/5yrs	%17/16
Turkey	wheat	7,755	7,672	**7,672**	-1.08	+0.00	2.69	2.71	**2.79**	+3.55	+2.84	20,874	20,791	**21,382**	+2.43	+2.84
	barley	2,748	2,700	**2,700**	-1.75	+0.00	2.63	2.48	**2.67**	+1.50	+7.54	7,221	6,696	**7,201**	-0.28	+7.54
	grain maize	662	680	**680**	+2.72	+0.00	8.83	9.42	**9.60**	+8.64	+1.88	5,848	6,406	**6,526**	+11.6	+1.88
	sugar beets	291	322	**322**	+10.5	+0.00	57.6	60.5	**60.2**	+4.47	-0.50	16,781	19,468	**19,372**	+15.4	-0.50

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg

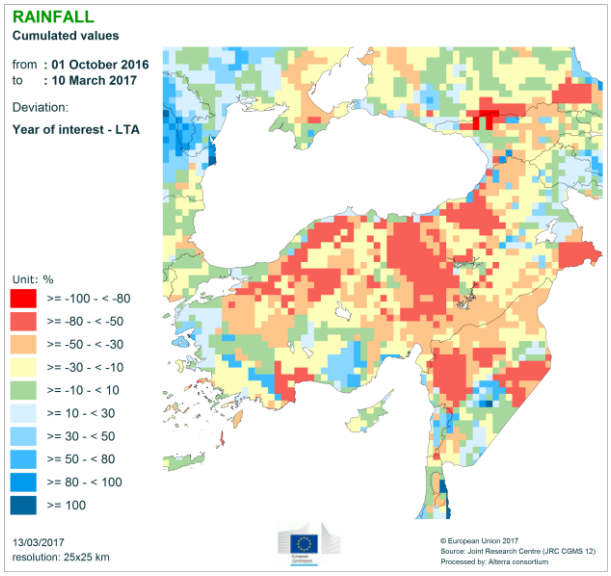
Sources: 2011-2015 data come from Turkish Statistical Institute (TurkStat) and ESTAT DB

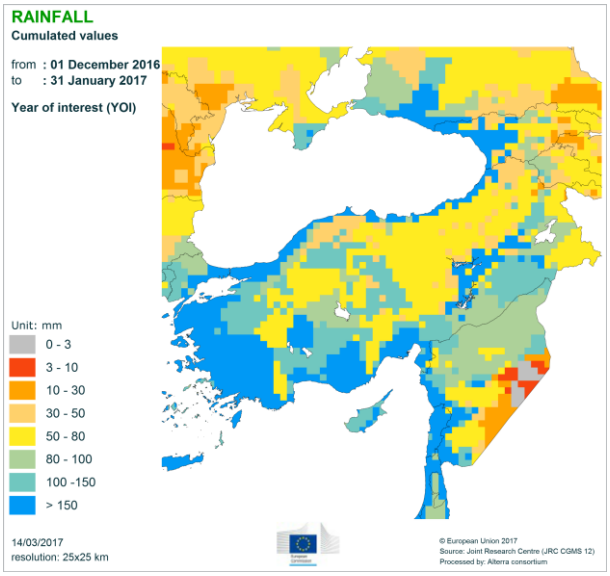
2016 yields come from Turkish Statistical Institute

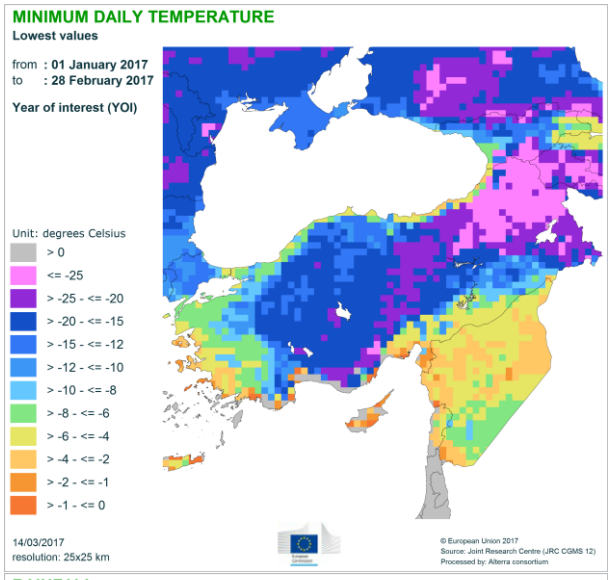
2017 area copied from data of year 2016 published by Turkish Statistical Institute

2017 yields come from the MARS Crop Yield Forecasting System (CGMS output up to 10/03/2017)

5. Atlas


RAINFALL
Cumulated values
from : 01 October 2016
to : 10 March 2017
Deviation:
Year of interest - LTA
Unit: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
13/03/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


RAINFALL
Cumulated values
from : 01 December 2016
to : 31 January 2017
Year of interest (YOI)
Unit: mm
0 - 3
3 - 10
10 - 30
30 - 50
50 - 80
80 - 100
100 -150
> 150
14/03/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


MINIMUM DAILY TEMPERATURE
Lowest values
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to : 28 February 2017
Year of interest (YOI)
Unit: degrees Celsius
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<= -25
> -25 - <= -20
> -20 - <= -15
> -15 - <= -12
> -12 - <= -10
> -10 - <= -8
> -8 - <= -6
> -6 - <= -4
> -4 - <= -2
> -2 - <= -1
> -1 - <= 0
14/03/2017
resolution: 25x25 km
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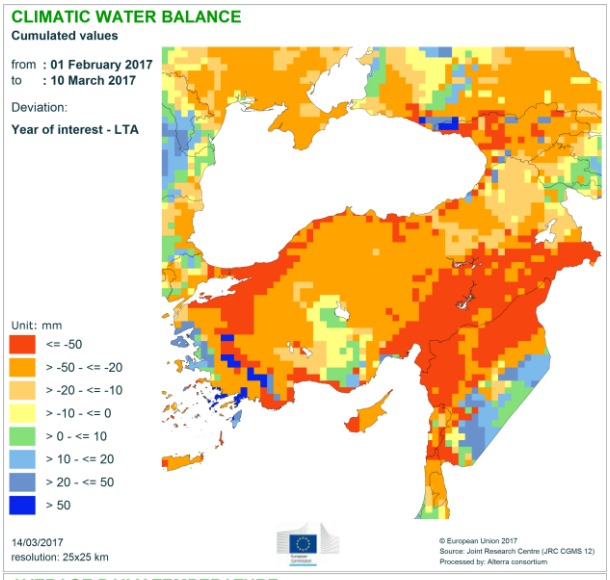
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


CLIMATIC WATER BALANCE
Cumulated values
from : 01 February 2017
to : 10 March 2017
Deviation:
Year of interest - LTA
Unit: mm
<= -50
> -50 - <= -20
> -20 - <= -10
> -10 - <= 0
> 0 - <= 10
> 10 - <= 20
> 20 - <= 50
> 50
14/03/2017
resolution: 25x25 km
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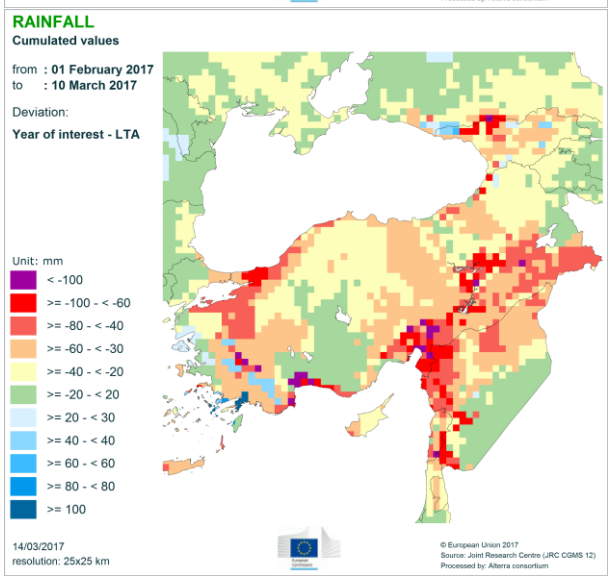
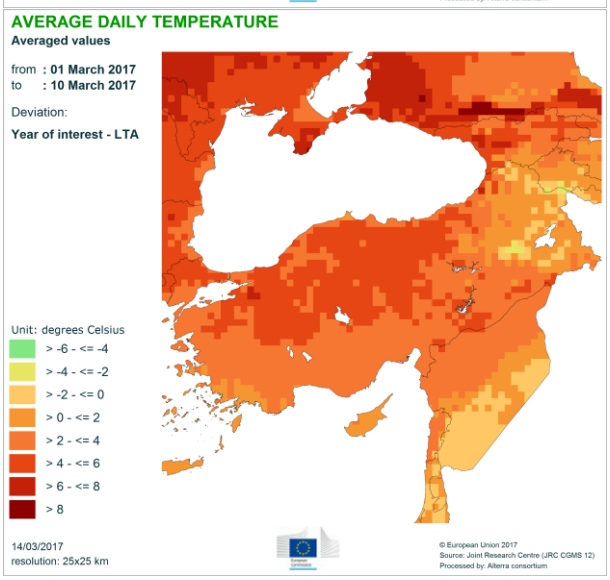
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


RAINFALL
Cumulated values
from : 01 February 2017
to : 10 March 2017
Deviation:
Year of interest - LTA
Unit: mm
< -100
>= -100 - < -60
>= -80 - < -40
>= -60 - < -30
>= -40 - < -20
>= -20 - < 20
>= 20 - < 30
>= 40 - < 40
>= 60 - < 60
>= 80 - < 80
>= 100
14/03/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


AVERAGE DAILY TEMPERATURE
Averaged values
from : 01 March 2017
to : 10 March 2017
Deviation:
Year of interest - LTA
Unit: degrees Celsius
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> -4 - <= -2
> -2 - <= 0
> 0 - <= 2
> 2 - <= 4
> 4 - <= 6
> 6 - <= 8
> 8
14/03/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

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MARS stands for Monitoring Agricultural Resources

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European Commission

JRC MARS Bulletin global outlook 2017

Crop monitoring European neighbourhood

Turkey

June 2017

Favourable spring conditions, but slight delay

Yield forecasts for winter crops are encouraging: wheat is forecast 4.8% above the five-year average, while barley outperforms last year's yield by 13%. Forecasts for summer crops yields are in line with last year's results– less than +2% of difference - and clearly above the five-year average - more than +6% for both maize and sugar beet.

Winter crops took profit from the general favorable spring conditions: well-distributed rains in March and April and more abundant in May compensated for the dry winter conditions. In June, leaf area expansion reached average values just before the flowering period. However, the main agricultural regions of central Turkey (*Ankara, Konya, Kirikkale, Kayseri*) were marked by four cold spells. Winter crops growth slowed down and the delayed development that characterized the whole season was kept. Spring weather conditions favoured summer crop sowing activites during April. In south-eastern regions (*Sanliurfia, Mardin*) wheat and barley are harvested. Here growth resulted optimal during March and April but in May temperatures rose and precipitation was absent, locally hampering grain filling stages, but winter crops yield expectations remain favourable at national level.

In Aegean regions (*Adana*), where most of the maize is produced the season was positive: sowings were favoured by good soil moisture conditions, vegetative growth was not impacted by not-so-favourable April and May temperatures and irrigation reservoirs should support crop growth for the whole summer.

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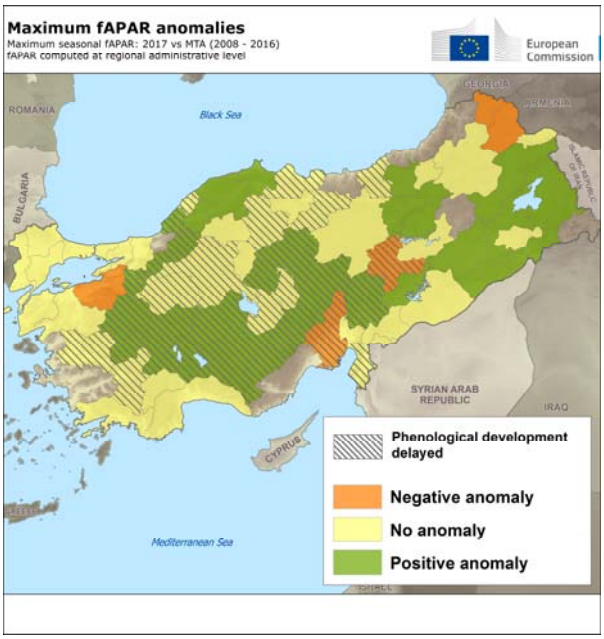
Covers the period from 1 March 2017 until 10 June 2017



Turkey yield forecasts - June 2017 Bulletin

Country	Crop	Yield (t/ha)				
		Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
Turkey	wheat	2,69	2,71	2,82	+4,8	+4,1
	barley	2,63	2,48	2,80	+6,6	+13
	grain maize	8,83	9,42	9,60	+8,6	+1,9
	sugar beets	57,6	60,5	61,2	+6,3	+1,3

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg

Sources: 2011-2015 data come from Turkish Statistical Institute (TurkStat) and ESTAT DB
2016 yields come from Turkish Statistical Institute
2017 area copied from data of year 2016 published by Turkish Statistical Institute
2017 yields come from the MARS Crop Yield Forecasting System (CGMS output up to 10/06/2017)

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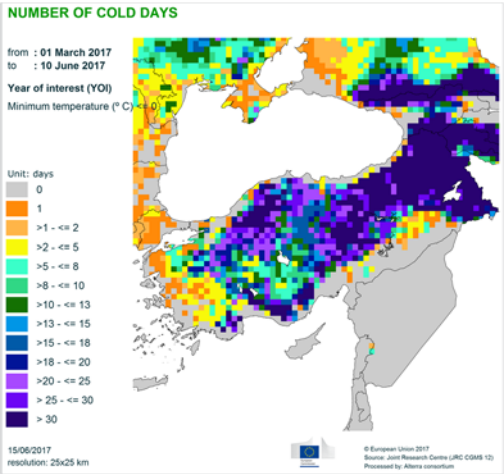
1. Meteorological overview

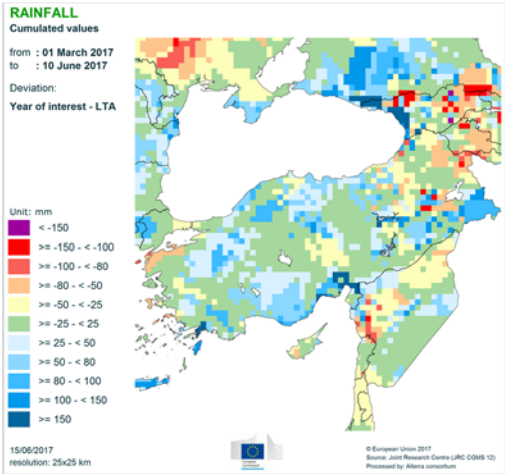
The analysed period was overall characterised by warmer-than-usual weather conditions, interrupted by a few colder events. There was no large-scale deficit in precipitation, but a large area of central Anatolia was affected by slight drier-than-usual weather conditions. Wetter-than-usual conditions were observed in some areas of western Turkey, especially in the Mediterranean region.

Warmer-than-usual weather conditions characterised the analysed period with positive daily mean temperature anomalies (w.r.t. the long-term average) mainly between 0.5 °C and 2 °C in the entire country. Overall, this warmer conditions led to positive anomalies of temperature sums (threshold at 0 °C), especially in the Aegean region, central Anatolia and the Black Sea region. A few colder events in the whole analysed period brought in large areas of Anatolia and the Black Sea region more than 20 days with minimum temperatures below 0 °C. By looking at the temporal evolution of the weather conditions in the analysed period, some events are worth to be highlighted. The first half of March and the first half of May were both characterised by warmer-than-usual weather conditions, with positive daily mean temperature anomalies between 2 °C and 4 °C. Four colder periods interrupted the normal-to-warmer conditions of the analysed period. The first one occurred in mid-March and was mainly characterised by minimum temperatures between -8 °C and -4 °C in central Anatolia, -15 °C and -8 °C in the eastern Black Sea region and eastern Anatolia, -4 °C and 0 °C elsewhere. The second colder event occurred in the first half of April (around 8 – 14 April) and was characterised by daily mean temperature anomalies between -4 °C and –2 °C in central Anatolia, where minimum temperatures were ranging between -4 °C and 0 °C. While in eastern Anatolia, minimum temperatures were mainly comprised between -10 °C and -6 °C. A third event occurred towards the end of April (around 22 – 24 April) and affected the western and central parts of Turkey, with daily mean temperature anomalies between -4 and -2 °C. The last event was observed in the second half of May (around the 19-25 May) especially in the central Anatolian region, where again negative temperature anomalies (w.r.t. the long-term average) were comprised between -4 °C and -2 °C. Minimum temperatures during this colder phase mainly remained above 2 °C, although negative minimum daily temperatures locally occurred in the eastern part of the Black Sea region.

Drier-than-usual weather conditions were observed in a large area of central Anatolia with anomalies mainly comprised between -30% and -10% w.r.t. the long-term. Similar drier conditions were also recorded in smaller areas of the eastern Anatolia and the Black Sea region.

Wetter-than-usual weather conditions with positive anomalies of cumulated precipitation (between 10% and 80% w.r.t. the long-term average) were mainly observed in western Turkey, especially in a large area overlapping the Mediterranean region and the south-western part of Central Anatolia (where anomalies were above 50%). Finally, almost the entire country experienced less than 4 days of moderate precipitation events (with daily cumulated values above 15 mm). By looking at the temporal evolution of the hydrological conditions, in the first half of March 20-40 mm of cumulated precipitation were observed in Turkey; except in the Aegean, the Mediterranean regions and south-eastern Anatolia where values mainly ranged between 40 mm and 80 mm (locally 120 mm). In the second half of March, cumulated precipitation values between 10 mm and 40 mm were observed in most of the country. While, large areas in the western part experienced less than 5 mm, and in eastern Anatolia 40-80 mm were recorded. During the first half of April and in large areas of the country, 40-60 mm of cumulated precipitation were observed with higher values in the easternmost part of south-eastern Anatolia. While less than 5 mm were recorded in a large area of central Anatolia. The second half of April was very dry with almost no precipitation (less than 5 mm) in a large areas extending from the Mediterranean region towards the Black Sea region. These dry conditions persisted in the first half of May in the southern part of the aforementioned area. In the second half of May most of the country experienced wetter conditions with cumulated values mainly between 20 and 60 mm (higher locally). Finally, the last ten days of June were dry in most the regions except for a large area in western Turkey, where cumulated values between 5 mm and 40 mm (locally reaching 60 mm) were observed.





2. Crop conditions

2.1 Winter crops

Development of winter crops in central and western Anatolia is still delayed, but biomass accumulation is now average, and the previous deficit has been recovered. In south-eastern regions, precipitation in April was favourable, but dry conditions at the end of May partially hampered grain filling. Thanks to the improved conditions in central Anatolia, regional forecasts for both barley and wheat have been revised upwards, and remain above the trend and the five-year average.

The early spring crop growth in central Anatolia was marked by contrasting weather conditions. Temperatures fluctuated in March and April (mid-March, just before mid-April and around 20 April) between above and significantly below average. During these periods, night temperatures even fell below zero. These conditions slowed down crop growth, as consequence winter crops remained in delayed stages. No frost damages occurred. During the same period, precipitation was favourable: March was predominantly dry with only a few well-distributed rainfall events, while April was wet, with the exception of the Ankara region (second most relevant region for winter barley and soft wheat production), where soil moisture remained lower than average, and biomass accumulation suffered slightly from suboptimal growth conditions. The first half of May resulted in average temperatures that were 3-4°C above the average, with maximum temperatures reaching 30°C on some days. The warm temperatures accelerated winter crop development and increased biomass production. The increased water demand was satisfied thanks to the well-distributed rains that occurred in the second half of May. Weather during May was mostly beneficial for winter crops in eastern Anatolian provinces (e.g. *Kayseri*) - relevant for soft and durum wheat production - where winter crops caught up to normal stages with slightly above-average biomass accumulation. In those regions, wheat started flowering during the first ten days of June. In central and eastern Anatolian regions, crops entered in the flowering stage towards the middle of the month – ten days later than usual - with average biomass accumulation.

In south-eastern regions (*Sanliurfa* and *Mardin*), after a dry March, winter crops received around 80 mm of rain in April. This supported wheat growth (durum and soft) during the leaf area expansion and flowering stages that occurred after mid-April. At its peak, biomass development in those regions was significantly higher than average, as shown by both remote sensing profiles and crop model (e.g. *Mardin*). From May, weather was drier and hotter than in the rest of the country, but still in line with average weather conditions; only in southern *Sanliurfa* wheat and barley are likely to have suffered a shortening of the grain-filling period. Towards mid-June, crops reached maturity in all south-eastern regions, and the harvest will start with favourable expectations.

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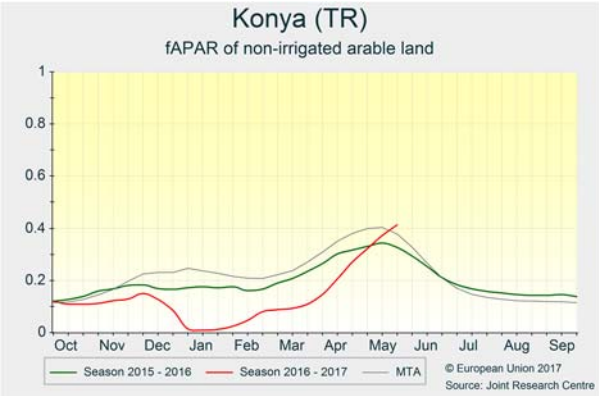
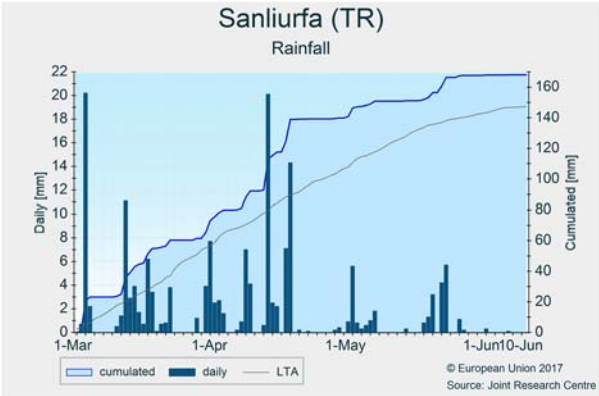
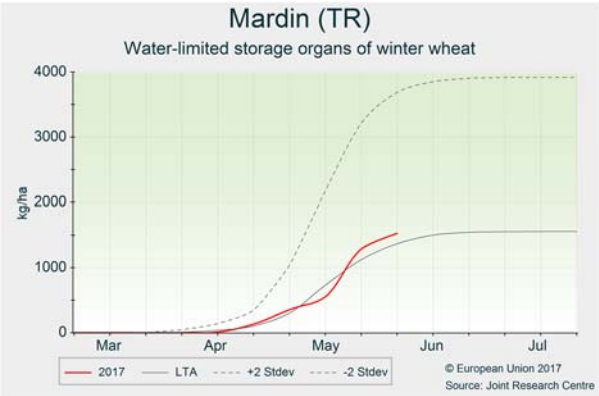
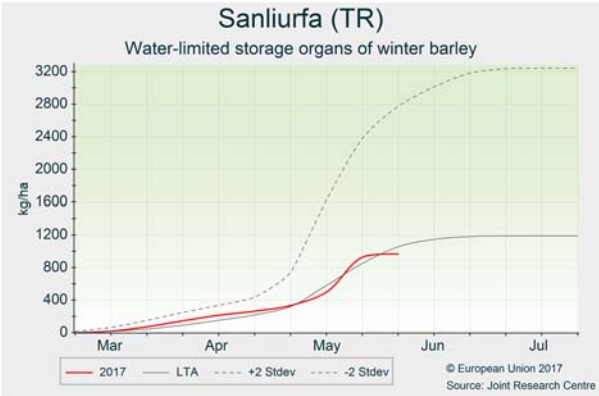








2.2 Summer crops

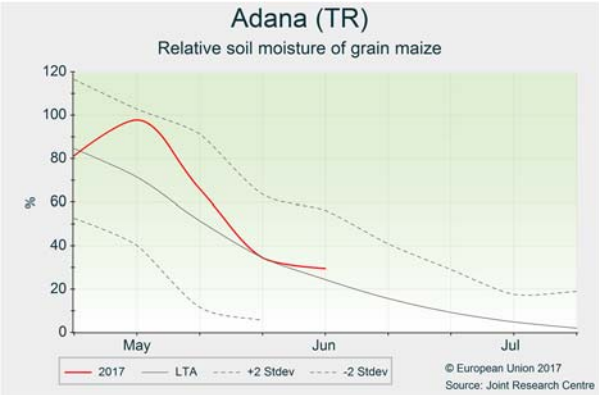
The maize and sugar beet seasons started with no major concerns. Wet sowing conditions at the beginning of April favoured seed establishment, while rainfall in May replenished irrigation reservoirs and soil moisture. There are no concerns for maize, which is mostly irrigated, and the sufficient water levels for irrigation suggest a forecast in line with the trend. Sugar beet is forecast to be slightly above last year's yield, using the crop growth model outputs.

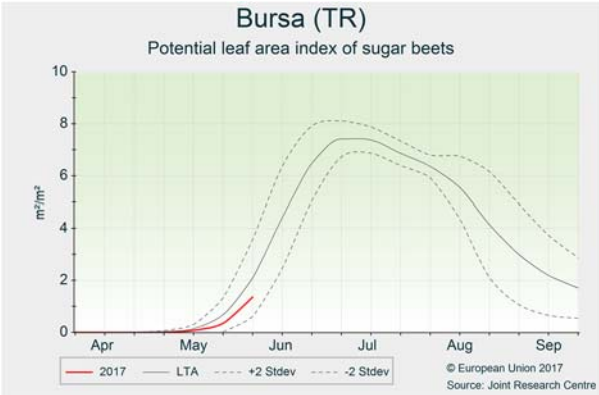
In the southern Aegean regions, where most of the grain maize is grown (the *Adana* province accounts for around 30% of the national production), sowing activities were carried out between the end of March and the beginning of April, taking advantage of the favourable rain distribution. During April, cold spells occurred but did not substantially delay crop development. In May, weather conditions were more favourable: temperatures increased and slightly accelerated crop development and biomass accumulation. From the second half of May, significant precipitation occurred and replenished water reservoirs for irrigation. The not-so-warm spring, coupled with sufficient precipitation, determined an overall average development and favourable expectations for the summer.

In the rest of the country, the analysis of maize conditions is more complex. Maize is cultivated in the *Konya, Sanliura, Mardin* and *Manisa* regions (around another 30% of national maize production), mostly under irrigation and following different crop-rotation schemes. In most regions, maize is cultivated as a second-season crop after wheat, in rotation with sugar beet, cotton and soybeans, among others. Due to the double-cropping system, the maize growing cycle is strongly shifted towards the summer compared to a single season (as in the *Adana* region). The late sowing activities due to the management practice of double seasons are not implemented in our model. Remote sensing information, retrieved for irrigated arable land, confirms double cropping for 2017, but the spatial resolution and available land cover information do not allow for the retrieval of maize-specific information. Some general considerations follow: spring precipitation was generally sufficient to ensure adequate irrigation water for the summer growing period. Where no first season occurred (e.g. in *Manisa*), sowing activities were carried out earlier

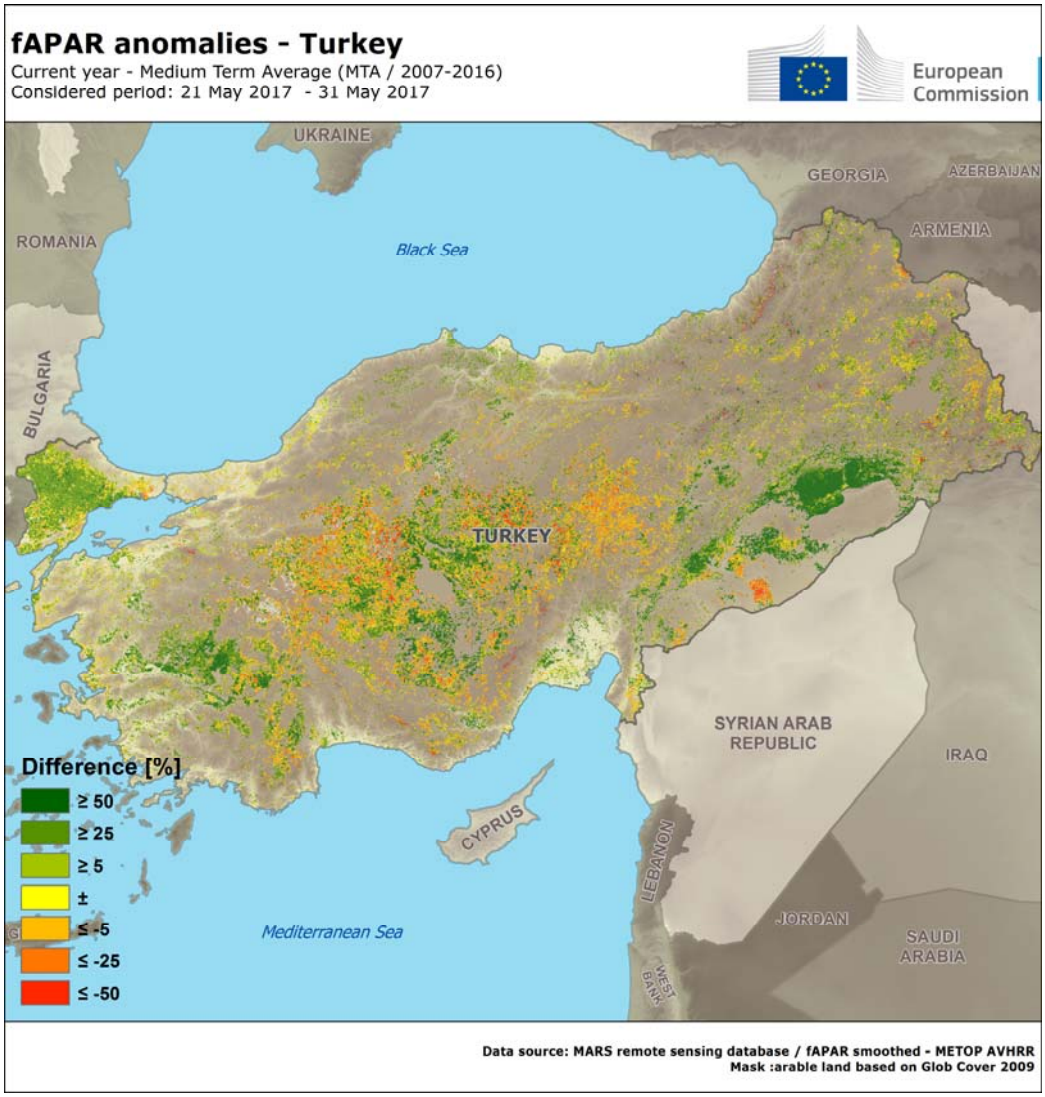
than usual. Late sowing is expected in *Konya* and south-eastern regions, where irrigated winter crops are facing a delayed season that would influence the newly sown crops.

For sugar beet, our analysis considers only central Anatolia, which accounts for 75% of the national production. Among Anatolian regions, Konya is the most relevant, with around 30% of production and most of the sugar factories. There, sowing activities were carried out in April with favourable soil moisture. However, initial leaf area expansion was slowed down due to suboptimal temperatures. Conditions improved in May, and our model displays an increase in leaf area expansion that moved to slightly above average. In central-western Anatolia (e.g. Bursa) crops slightly suffered from overly wet soil conditions during May coupled with reduced incoming radiation. These conditions slightly hampered crop growth, as shown by the leaf area index graph. In eastern Anatolia, weather conditions were slightly better, with less precipitation. The outlook for summer growth presents no major concerns..





3. Remote Sensing map



4. Crop yield forecasts

Turkey yield forecasts - June 2017 Bulletin

Country	Crop	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
		Avg 5yrs	2016	2017	%17/5yrs	%17/16	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16	Avg 5yrs	2016	2017	%17/5yrs	%17/16
Turkey	wheat	7,755	7,672	7,672	-1.1	+0.0	2.69	2.71	2.82	+4.8	+4.1	20,874	20,791	21,643	+3.7	+4.1
	barley	2,748	2,700	2,700	-1.8	+0.0	2.63	2.48	2.80	+6.6	+13	7,221	6,696	7,565	+4.8	+13
	grain maize	662	680	680	+2.7	+0.0	8.83	9.42	9.60	+8.6	+1.9	5,848	6,406	6,526	+12	+1.9
	sugar beets	291	322	322	+11	+0.0	57.6	60.5	61.2	+6.3	+1.3	16,781	19,468	19,713	+17	+1.3

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg

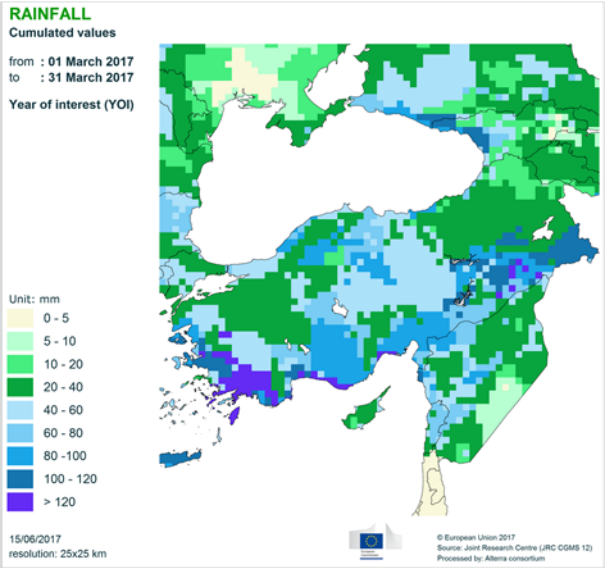
Sources: 2011-2015 data come from Turkish Statistical Institute (TurkStat) and ESTAT DB

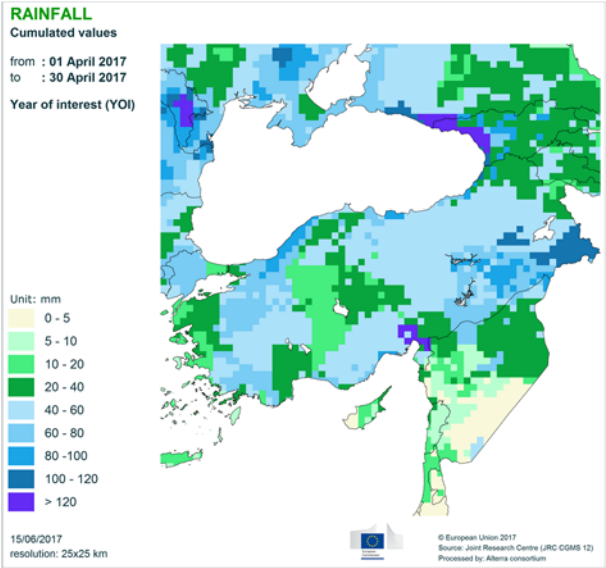
2016 yields come from Turkish Statistical Institute

2017 area copied from data of year 2016 published by Turkish Statistical Institute

2017 yields come from the MARS Crop Yield Forecasting System (CGMS output up to 10/06/2017)

5. Atlas


RAINFALL
Cumulated values
from : 01 March 2017
to : 31 March 2017
Year of interest (YOI)
Unit: mm
0 - 5
5 - 10
10 - 20
20 - 40
40 - 60
60 - 80
80 -100
100 - 120
> 120
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


RAINFALL
Cumulated values
from : 01 April 2017
to : 30 April 2017
Year of interest (YOI)
Unit: mm
0 - 5
5 - 10
10 - 20
20 - 40
40 - 60
60 - 80
80 -100
100 - 120
> 120
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
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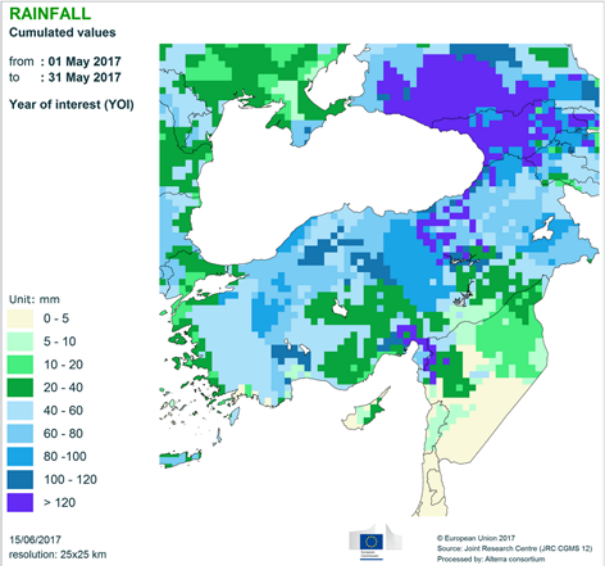
RAINFALL
Cumulated values
from : 01 May 2017
to : 31 May 2017
Year of interest (YOI)
Unit: mm
0 - 5
5 - 10
10 - 20
20 - 40
40 - 60
60 - 80
80 -100
100 - 120
> 120
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
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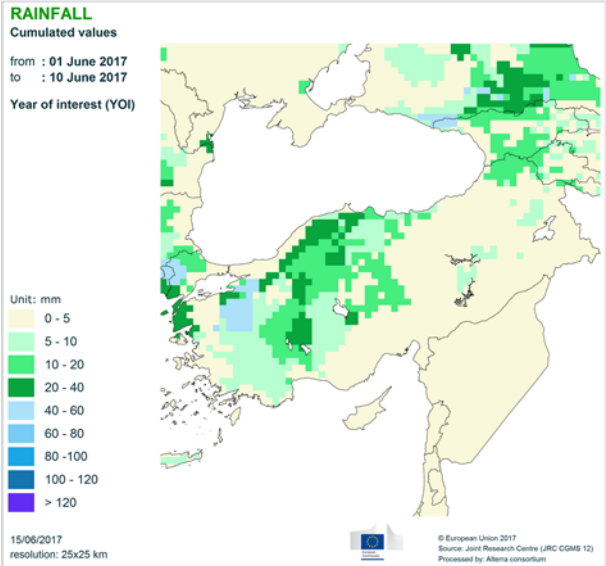
RAINFALL
Cumulated values
from : 01 June 2017
to : 10 June 2017
Year of interest (YOI)
Unit: mm
0 - 5
5 - 10
10 - 20
20 - 40
40 - 60
60 - 80
80 -100
100 - 120
> 120
15/06/2017
resolution: 25x25 km
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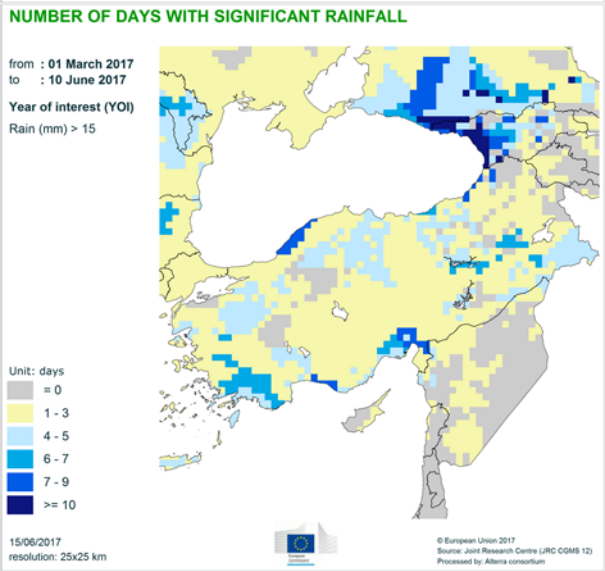
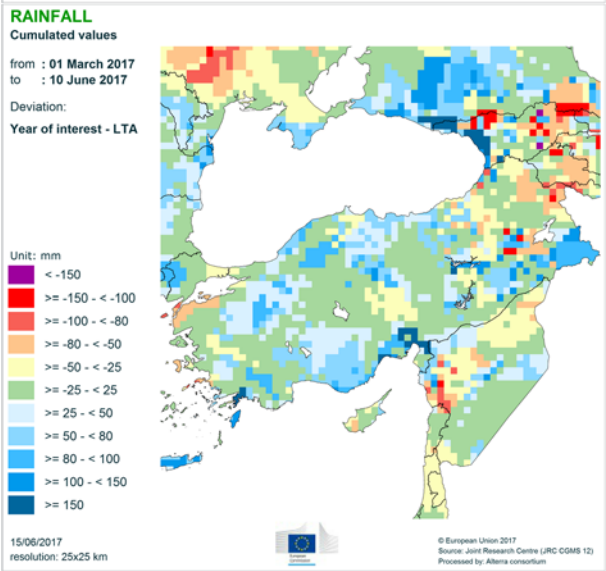
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from : 01 March 2017
to : 10 June 2017
Year of interest (YOI)
Rain (mm) > 15
Unit: days
= 0
1 - 3
4 - 5
6 - 7
7 - 9
>= 10
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


RAINFALL
Cumulated values
from : 01 March 2017
to : 10 June 2017
Deviation:
Year of interest - LTA
Unit: mm
< -150
>= -150 - < -100
>= -100 - < -80
>= -80 - < -50
>= -50 - < -25
>= -25 - < 25
>= 25 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
15/06/2017
resolution: 25x25 km
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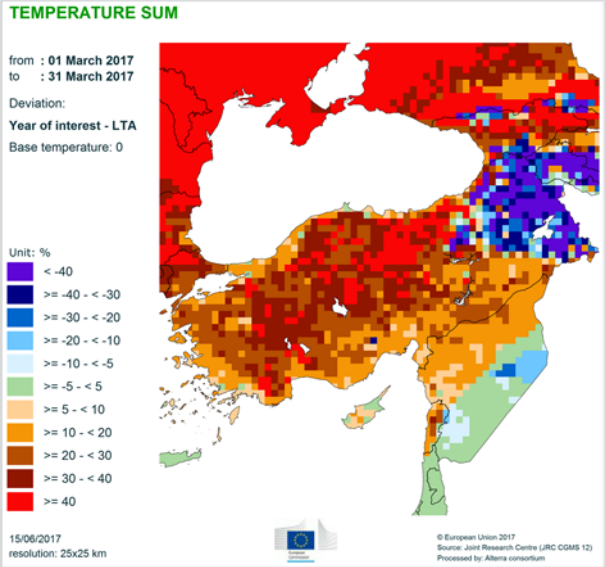
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


TEMPERATURE SUM
from : 01 March 2017
to : 31 March 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
15/06/2017
resolution: 25x25 km
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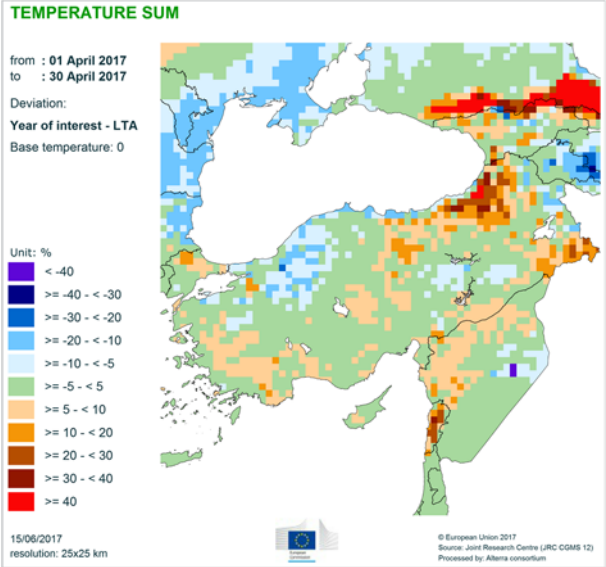
Processed by: Alterra consortium


TEMPERATURE SUM
from : 01 April 2017
to : 30 April 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
15/06/2017
resolution: 25x25 km
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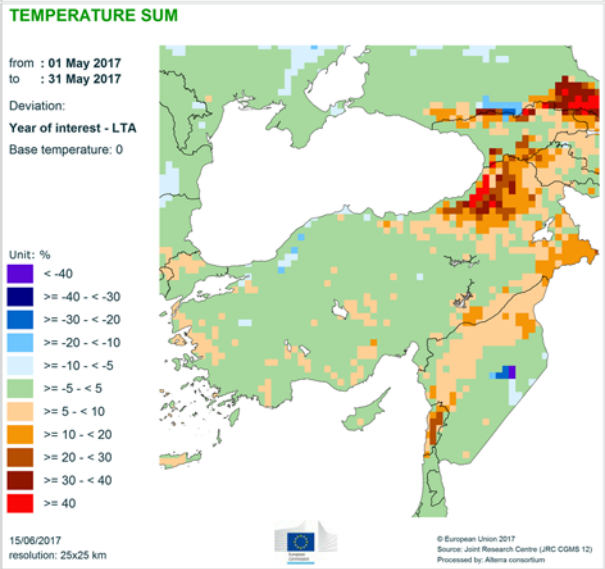
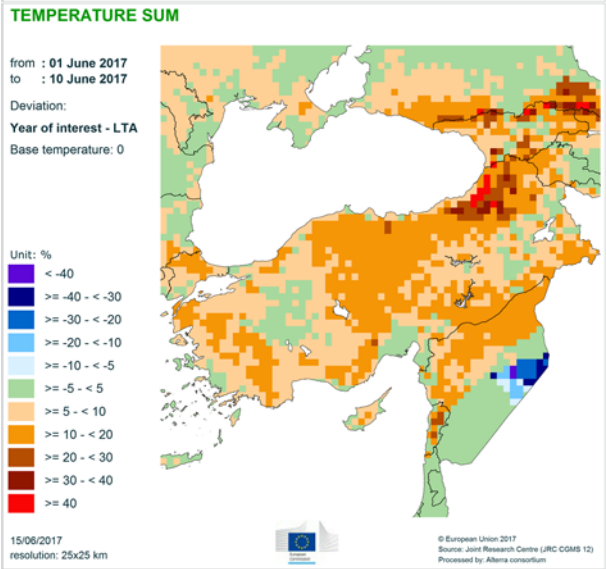

TEMPERATURE SUM
from : 01 May 2017
to : 31 May 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


TEMPERATURE SUM
from : 01 June 2017
to : 10 June 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
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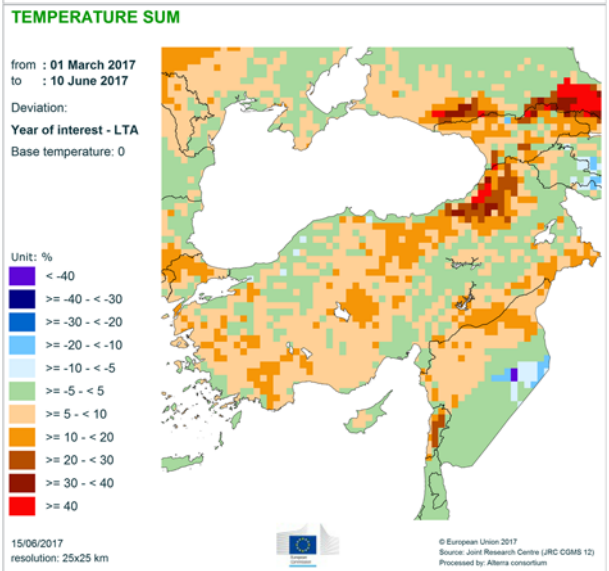
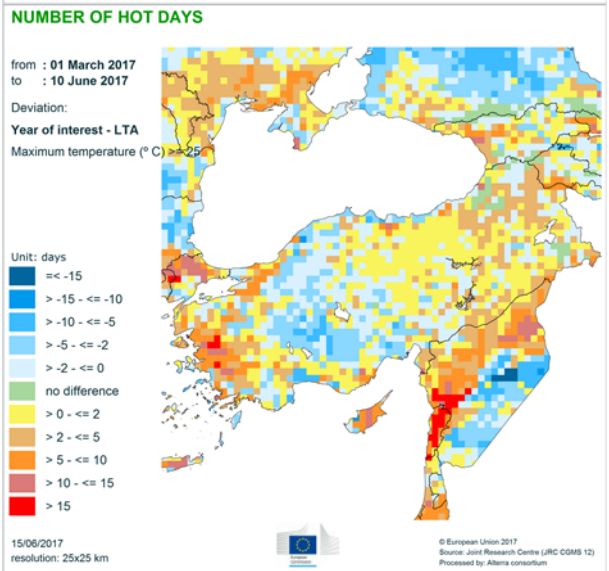

TEMPERATURE SUM
from : 01 March 2017
to : 10 June 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF HOT DAYS
from : 01 March 2017
to : 10 June 2017
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 25
Unit: days
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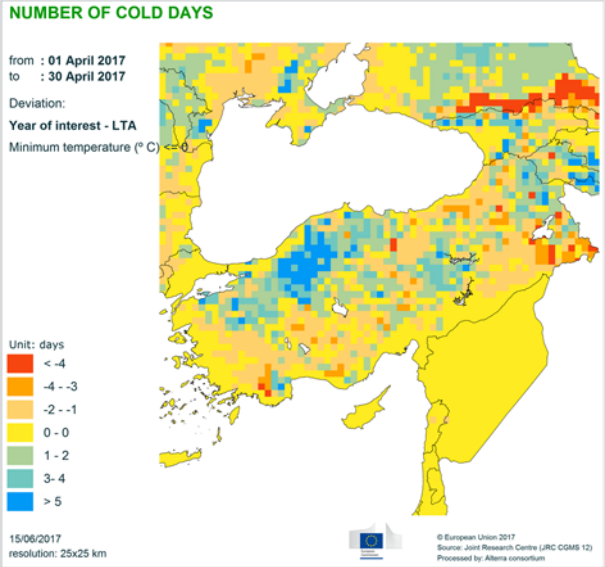
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF COLD DAYS
from : 01 April 2017
to : 30 April 2017
Deviation:
Year of interest - LTA
Minimum temperature (° C) <= 0
Unit: days
< -4
-4 - -3
-2 - -1
0 - 0
1 - 2
3- 4
> 5
15/06/2017
resolution: 25x25 km
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Source: Joint Research Centre (JRC CGMS 12)
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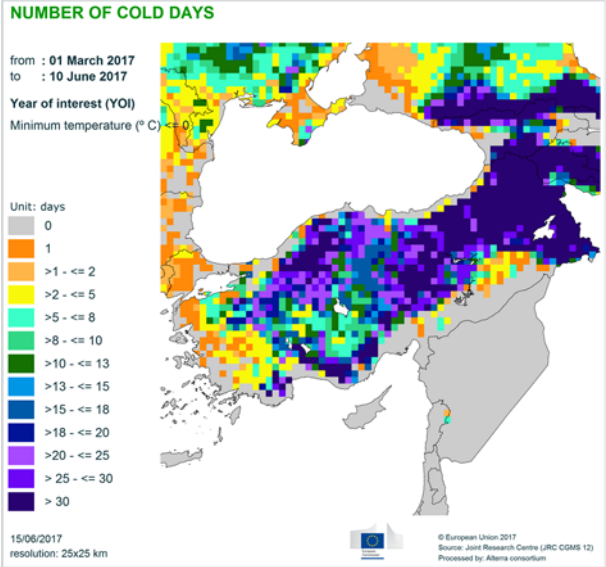
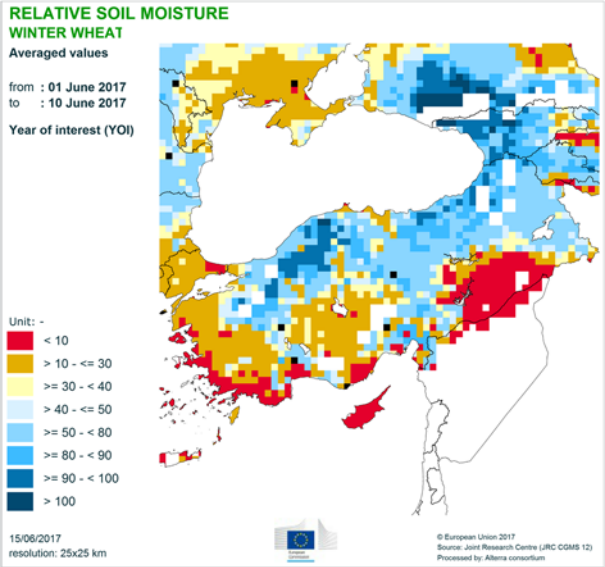
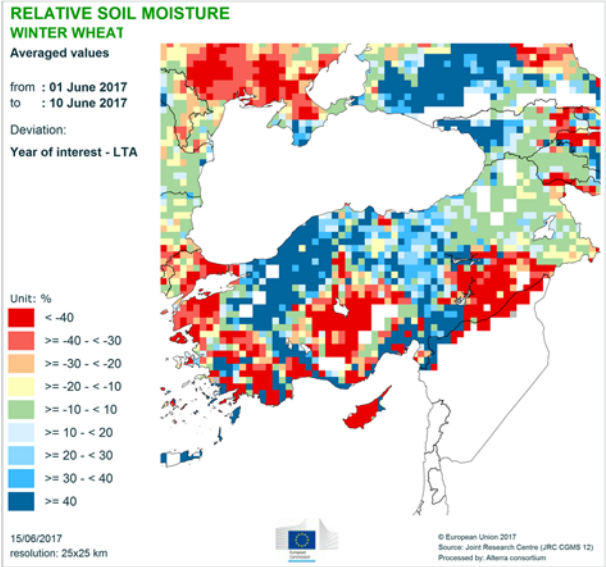

NUMBER OF COLD DAYS
from : 01 March 2017
to : 10 June 2017
Year of interest (YOI)
Minimum temperature (° C) <= 0
Unit: days
0
1
>1 - <= 2
>2 - <= 5
>5 - <= 8
>8 - <= 10
>10 - <= 13
>13 - <= 15
>15 - <= 18
>18 - <= 20
>20 - <= 25
> 25 - <= 30
> 30
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


RELATIVE SOIL MOISTURE
WINTER WHEAT
Averaged values
from : 01 June 2017
to : 10 June 2017
Year of interest (YOI)
Unit: -
< 10
> 10 - <= 30
>= 30 - < 40
> 40 - <= 50
>= 50 - < 80
>= 80 - < 90
>= 90 - < 100
> 100
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


RELATIVE SOIL MOISTURE
WINTER WHEAT
Averaged values
from : 01 June 2017
to : 10 June 2017
Deviation:
Year of interest - LTA
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
15/06/2017
resolution: 25x25 km
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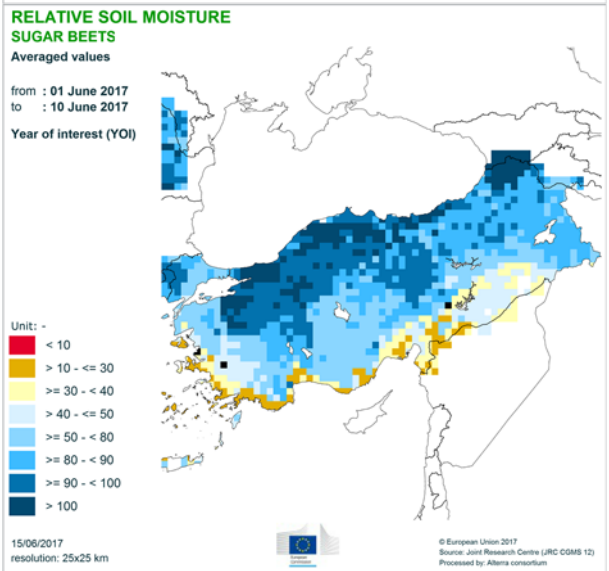
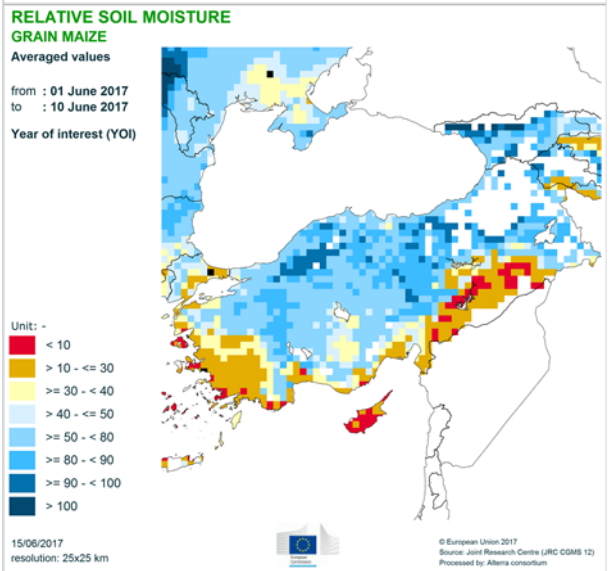

RELATIVE SOIL MOISTURE
SUGAR BEETS
Averaged values
from : 01 June 2017
to : 10 June 2017
Year of interest (YOI)
Unit: -
< 10
> 10 - <= 30
>= 30 - < 40
> 40 - <= 50
>= 50 - < 80
>= 80 - < 90
>= 90 - < 100
> 100
15/06/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


RELATIVE SOIL MOISTURE
GRAIN MAIZE
Averaged values
from : 01 June 2017
to : 10 June 2017
Year of interest (YOI)
Unit: -
< 10
> 10 - <= 30
>= 30 - < 40
> 40 - <= 50
>= 50 - < 80
>= 80 - < 90
>= 90 - < 100
> 100
15/06/2017
resolution: 25x25 km
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Source: Joint Research Centre (JRC CGMS 12)
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MARS stands for Monitoring Agricultural Resources

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European Commission

JRC MARS Bulletin global outlook 2017

Crop monitoring European neighbourhood

Turkey

September 2017

Irrigation mitigated hot weather impact

Yield forecasts remain favourable in spite of a very hot summer. Wheat yields are forecast 5% above the five-year average, while barley yields, still above the five-year average (+8%), have been revised downwards compared to our June Bulletin. The yield forecast for summer crops remains above the five-year average, but sugar beet yields have been revised downwards, slightly below 2016 values.

In **central Turkey** (*Ankara, Konya, Kirikkale, Kayseri*), winter crop development was delayed up to one month because of late sowing and a cold winter. In early June, crop biomass accumulation was back to average, and well-distributed rainfall favoured crop flowering. In late June, temperatures rose and shortened the grain-filling period. The impact was not significant with regard to wheat, but was more marked for barley. Winter crops matured in early July and, by the end of that month, harvesting was complete. Repeated heatwaves in July and August concerned mostly summer crops, but, thanks to irrigation, there was no negative impact. In **Aegean regions** (*Adana*), the maize season started earlier than usual and biomass accumulation was favourable. In July and August, when maximum temperatures peaked, heat stress was mitigated by irrigation and no significant crop damage was observed. In **south-eastern regions** (*Sanliurfa, Mardin*), wheat and barley were harvested in June after a favourable spring. Maize was sown in June and was constantly irrigated during summer to prevent wilting and heat stress. As high temperatures persisted, irrigation is still needed in September, when maize is flowering.

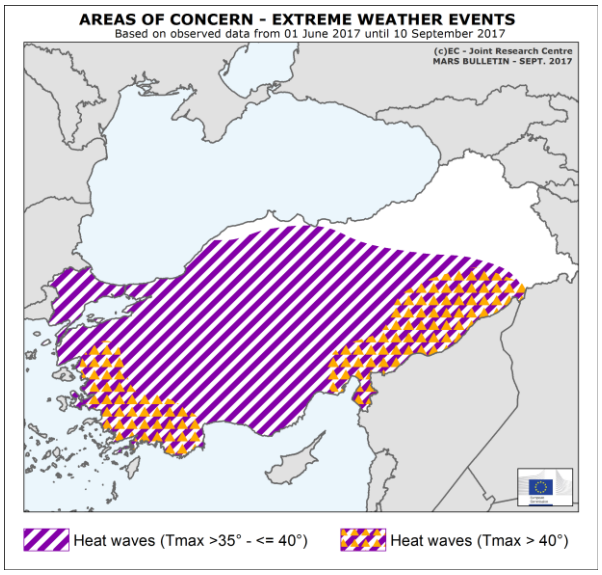


Table of contents:

Covers the period from 1 June 2017 until 10 September 2017

Turkey yield forecasts - September 2017 Bulletin

Country	Crop	Yield (t/ha)				
		Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
Turkey	wheat	2.69	2.71	**2.85**	+5.8	+5.1
	barley	2.63	2.48	**2.69**	+2.3	+8.3
	grain maize	8.83	9.42	**9.81**	+11	+4.2
	sugar beets	57.6	60.5	**59.7**	+3.6	–1.3

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg
Sources: 2011-2015 data come from Turkish Statistical Institute (TurkStat) and ESTAT DB
2016 yields come from Turkish Statistical Institute
2017 area copied from data of year 2016 published by Turkish Statistical Institute
2017 yields come from the MARS Crop Yield Forecasting System (CGMS output up to 10/09/2017)

Joint Research Centre

1. Meteorological overview

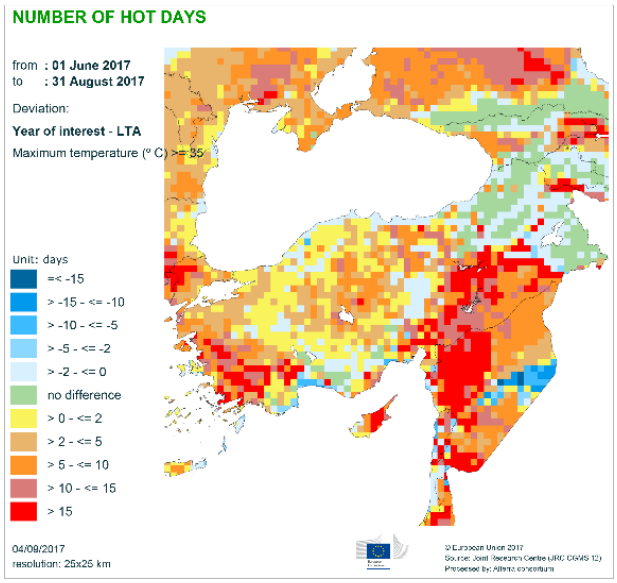
Summer was hotter than average with four to six heatwaves from late June to the end of August and maximum temperatures above 40°C. Maximum temperatures in late August and early September remained hotter than average, especially in the southern Aegean and south-eastern regions. The weather in August and September was dry, in line with the seasonal average.

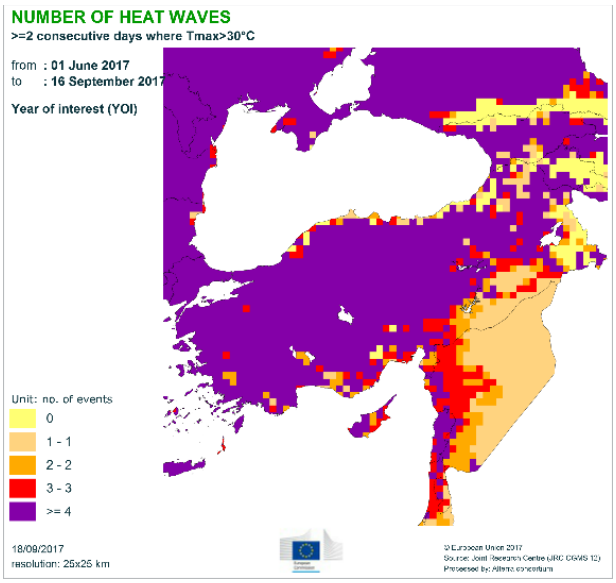
In western Anatolia and in the Aegean regions **June** was initially **wet** (50 mm cumulative rain) and relatively mild. Weather conditions changed around 20 June when, following a significant drop, temperatures increased to around 30°C. At the beginning of July, a country-wide **heatwave** with maximum temperatures of around 35°C was recorded for a few consecutive days. After 10 July two other heatwaves occurred, with less intensity (T_{max} < 35°C). In south-eastern regions, the heatwaves brought even higher temperatures.

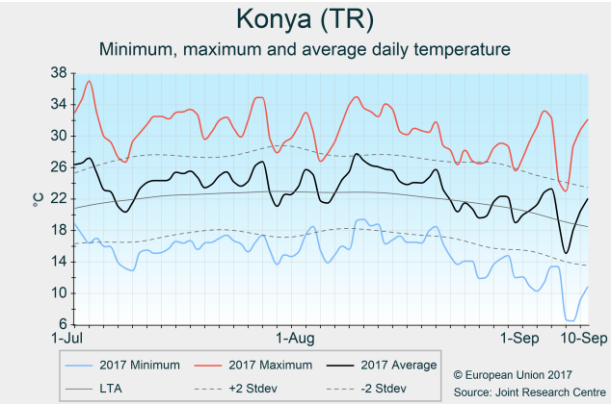
During **August**, hot weather continued with two to three **heatwaves** that kept maximum temperatures between 30°C and **35°C** in most of the country. In western Anatolia sparse rainfall resulted in some welcome cooling, especially during the first 10 days of August, while eastern Anatolia, the Aegean and south-eastern regions remained dry in August.

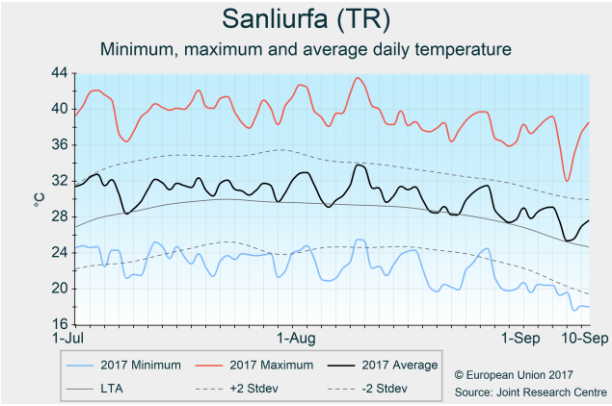
In Anatolia, starting from 15 August, some unusually rainy days occurred (20-40 mm cumulative rainfall); temperatures decreased, but remained above the seasonal average.

In **September**, temperatures increased again, and some days the maximum temperature was above **30°C**. In the Adana region, the weather remained hotter and drier than average, but there were only few days with maximum temperatures above 35°C. In the **eastern regions** of *Sanliurfa* and *Mardin*, late August and early September were hot with a total of 10 days with maximum temperatures above **40°C**.









2. Crop conditions

2.1 Winter crops

The initial delays in winter crop development were partially overcome in June. Heatwaves in late June and July shortened the grain-filling period, with negative effects on yields, mostly in eastern Anatolia and in the barley-growing regions of central Anatolia. In south-eastern Turkey, the winter crop season was favourable. Harvest was concluded at the beginning of July in south-eastern Turkey and at the end of July in central and western Turkey. Compared to our last Bulletin, the yield forecast has been maintained for wheat, whereas it has been revised downwards for barley.

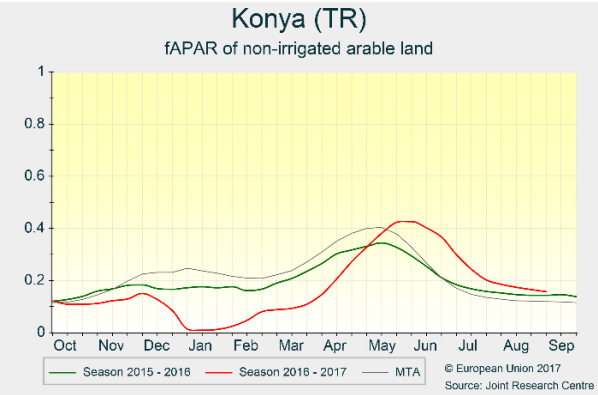
In *Anatolia*, well-distributed rainfall at the beginning of June favoured winter crop flowering, which occurred — later than usual — at the very beginning of the month in western *Anatolia* (e.g. *Konya*) and around 15 June in *Kayseri* and neighbouring regions.

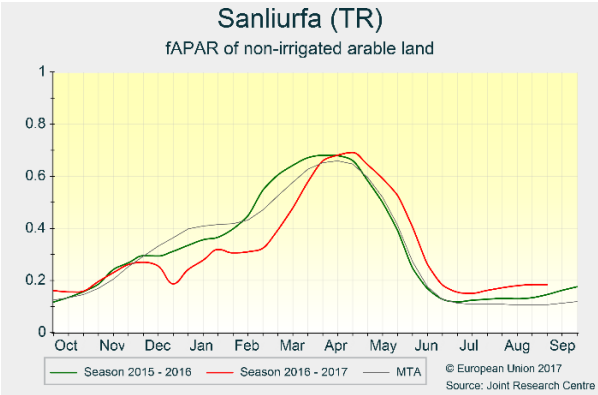
In western Turkey, winter crop development was average, and grain-filling started in June, favoured by good soil moisture conditions. However, in all the main Anatolian producing regions, high temperatures in late June and early July resulted in an unfavourable shortening of the grain-filling period of both wheat and barley. The effect was more pronounced in eastern regions where crops were still at the beginning of the grain-filling stage and for the Anatolian barley-growing regions, which were already suffering from a rain deficit during spring. The main central and western producing regions suffered only slightly with little damage to final yields, as crops were almost mature at the onset of the hot conditions.

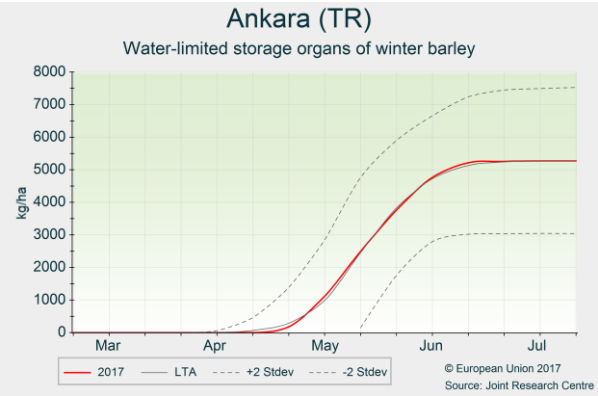
In south-eastern provinces, which are particularly important for durum wheat production (*Sanliurfa*), high temperatures in early June (T_{max} > 30°C) coincided with the start of the ripening phase.

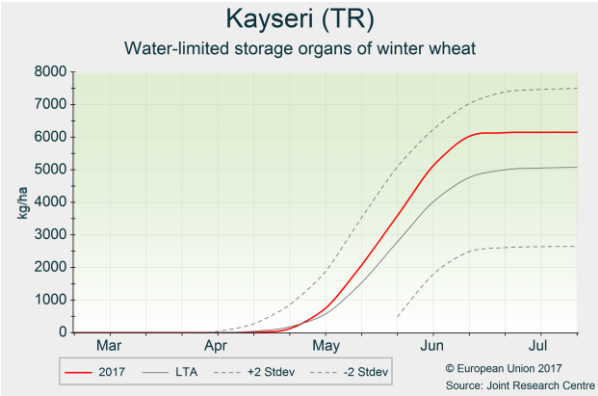
The hot weather conditions during grain filling and/or ripening led to early harvesting: in early July in southern-eastern regions and in late July in Anatolia.

An exception were irrigated winter crops in the central Anatolian provinces, where flowering occurred in July and harvesting in mid-August; here, irrigation mitigated the heat stress on crops.









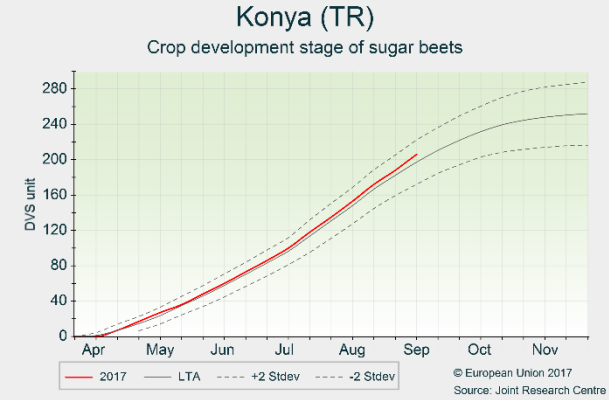
2.2 Summer crops

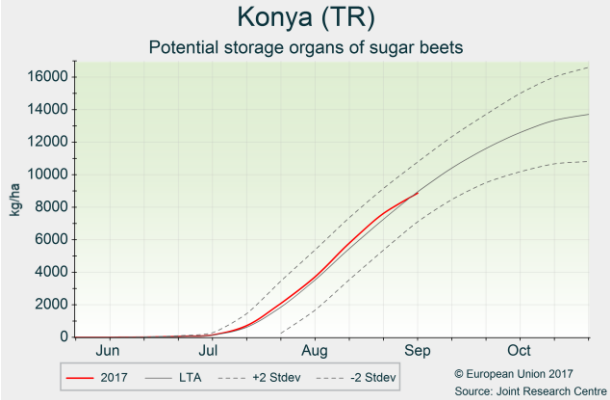
The very hot summer is likely to have had marginal impact on summer crops thanks to the mitigation provided by irrigation. Maize matured in late August in the important producing regions of Adana and Konya and yield expectations are favourable. In south-eastern regions, maize development is around average, while presenting above average biomass accumulation. Sugar beet conditions are generally around average, but locally crops have suffered from hot and dry weather, especially where irrigation was inadequate.

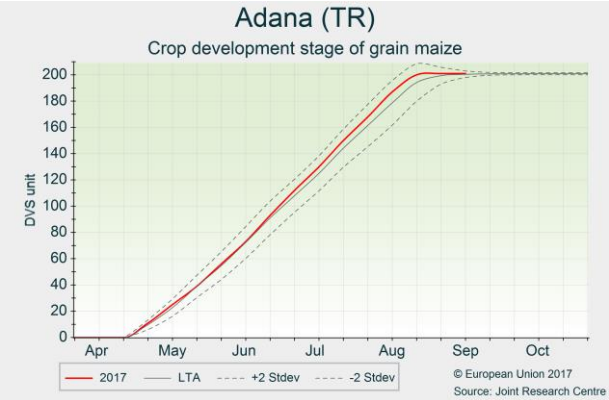
The maize-growing regions in central and south-western Turkey experienced wetter than usual conditions at the beginning of June and very high temperatures at the end of the month. Such conditions encouraged optimal development of the maize canopy until flowering, which occurred at the end of June in the *Adana* region and at the beginning of July in the *Konya* region. While the wet weather was positive for sugar beet canopy development, it may have favoured also the spread of pests and diseases. In July, maize flowered under unfavourable hot conditions due to the repeated heatwaves. In *Konya,* in southern Aegean regions (*Adana*) and in western Aegean regions (*Manisa*) irrigation in July and August was fundamental to mitigate heat stress (T_{max} > 35°C) in both maize and sugar beet. Towards the end of August, most of the irrigated maize matured without significant impacts of the heat stress. In *Adana*, maize harvesting is now proceeding well under favourable weather conditions. In *Konya*, sugar beet development is at average or slightly advanced, and harvesting is likely to start at the beginning of October. There are some concerns about sugar beet quality and quantity in the other regions of central Anatolia, where irrigation infrastructures are less developed.

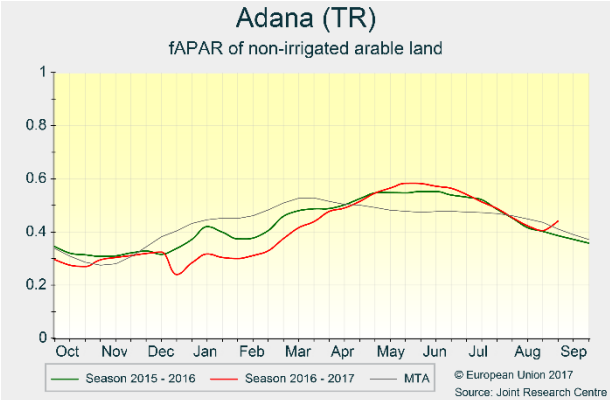
In *south-eastern Turkey*, where maize is cultivated in a double-cropping regime, planting took place at the end of June. Irrigation was extensively used to avoid wilting during the summer months, and maize biomass accumulation is now significantly above the average (*Sanliurfa*). In September, maize flowering started under hot weather conditions. At the moment of analysis, there is no concern about shortages of water for irrigation, even though reservoir levels have decreased significantly during the summer.

Grain maize yield expectations remain above last year's (+4%) and the five-year average (+11%), whereas the sugar beet yield forecast has been revised slightly downwards to slightly below the historical trend (but above the five-year average).

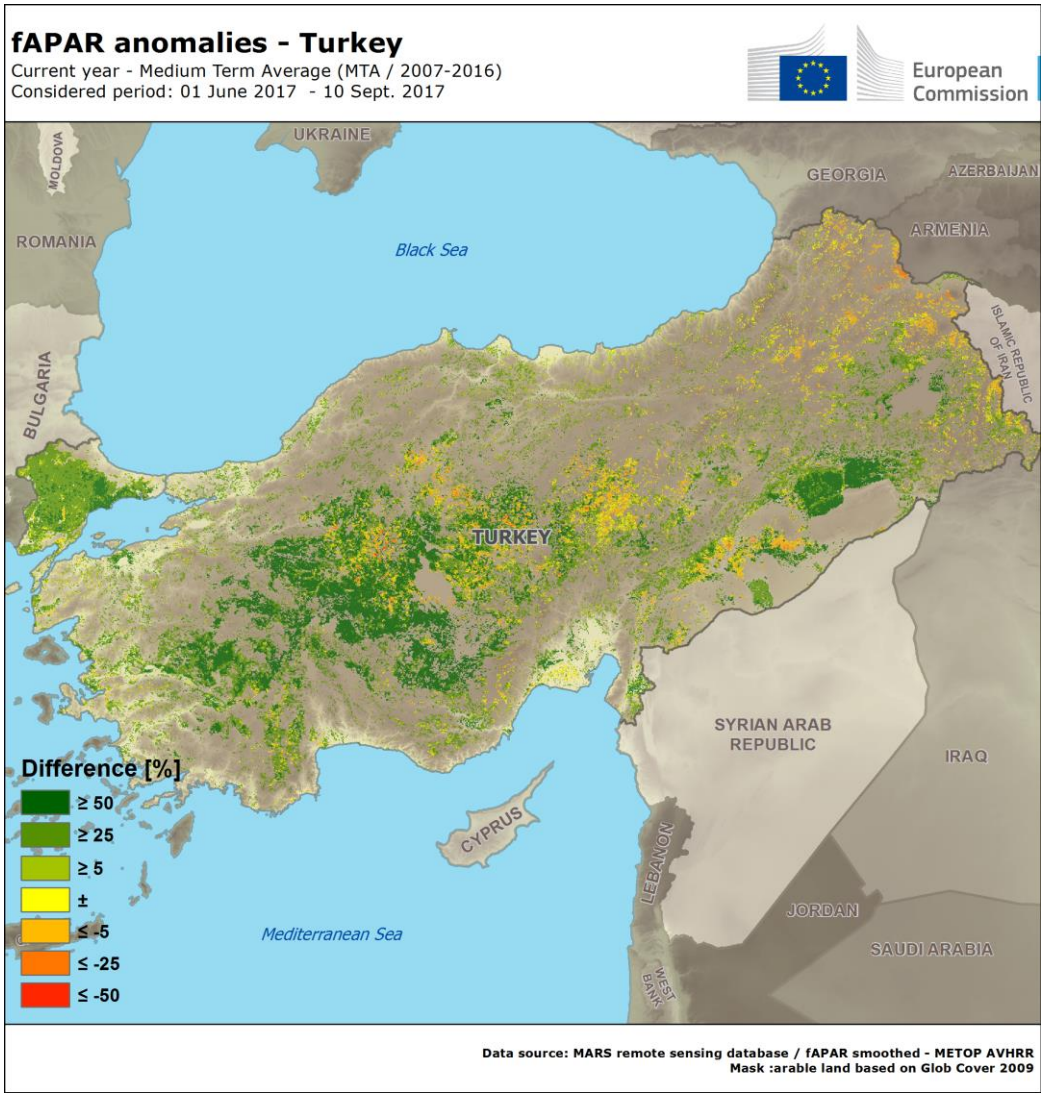

Konya (TR)
Crop development stage of sugar beets
DVS unit
280
240
200
160
120
80
40
0
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
2017
LTA
+2 Stdev
-2 Stdev
© European Union 2017
Source: Joint Research Centre


Konya (TR)
Potential storage organs of sugar beets
kg/ha
16000
14000
12000
10000
8000
6000
4000
2000
0
Jun
Jul
Aug
Sep
Oct
2017
LTA
+2 Stdev
-2 Stdev
© European Union 2017
Source: Joint Research Centre


Adana (TR)
Crop development stage of grain maize
DVS unit
200
180
160
140
120
100
80
60
40
20
0
Apr
May
Jun
Jul
Aug
Sep
Oct
2017
LTA
+2 Stdev
-2 Stdev
© European Union 2017
Source: Joint Research Centre


Adana (TR)
fAPAR of non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Season 2015 - 2016
Season 2016 - 2017
MTA
© European Union 2017
Source: Joint Research Centre

3. Remote sensing map



4. Crop yield forecasts

Turkey yield forecasts - September 2017 Bulletin

Country	Crop	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
		Avg 5yrs	2016	2017	%17/5yrs	%17/16	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16	Avg 5yrs	2016	2017	%17/5yrs	%17/16
Turkey	wheat	7,755	7,672	**7,672**	–1.1	+0.0	2.69	2.71	**2.85**	+5.8	+5.1	20,874	20,791	**21,842**	+4.6	+5.1
	barley	2,748	2,700	**2,700**	–1.8	+0.0	2.63	2.48	**2.69**	+2.3	+8.3	7,221	6,696	**7,255**	+0.5	+8.3
	grain maize	662	680	**680**	+2.7	+0.0	8.83	9.42	**9.81**	+11	+4.2	5,848	6,406	**6,674**	+14	+4.2
	sugar beets	291	322	**322**	+11	+0.0	57.6	60.5	**59.7**	+3.6	–1.3	16,781	19,468	**19,209**	+14	–1.3

Note: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg

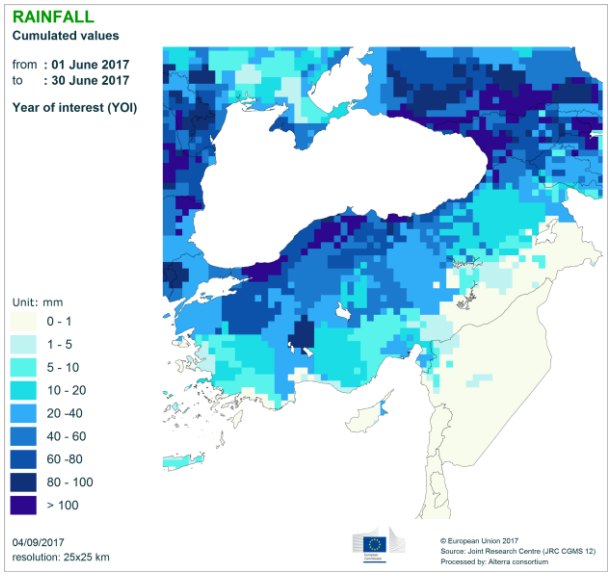
Sources: 2011-2015 data come from Turkish Statistical Institute (TurkStat) and ESTAT DB

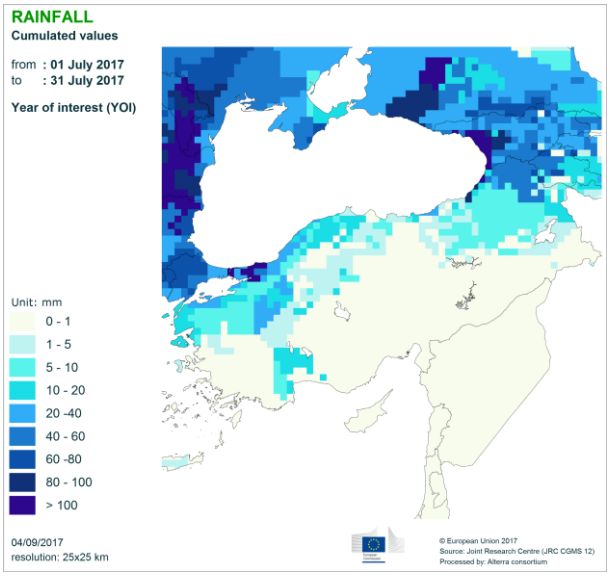
2016 yields come from Turkish Statistical Institute

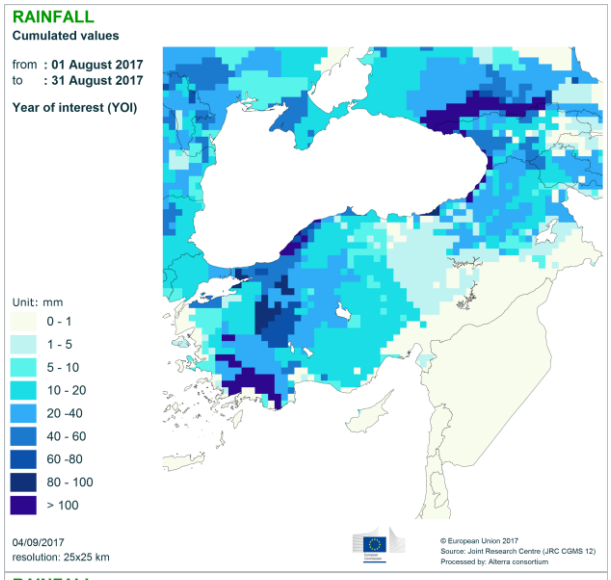
2017 area copied from data of year 2016 published by Turkish Statistical Institute

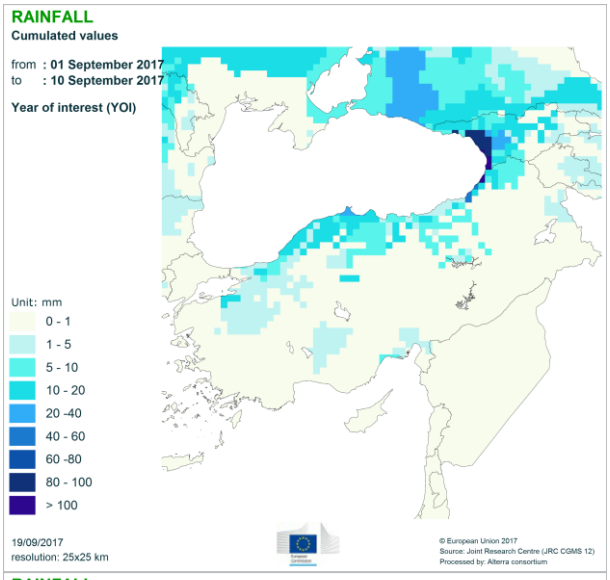
2017 yields come from the MARS Crop Yield Forecasting System (CGMS output up to 10/09/2017)

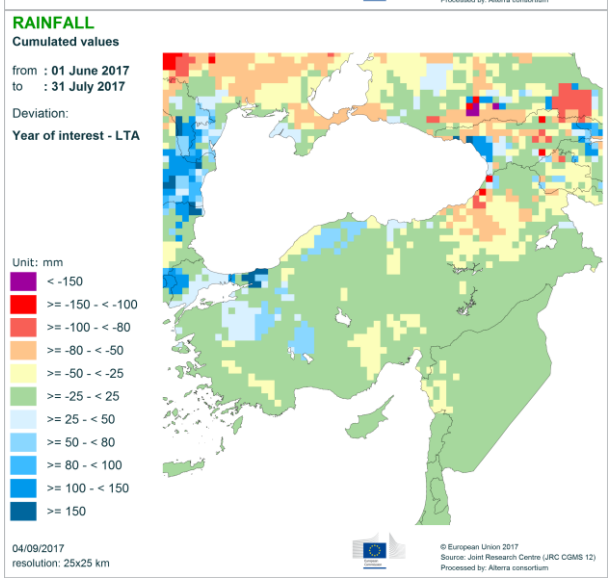
5. Atlas

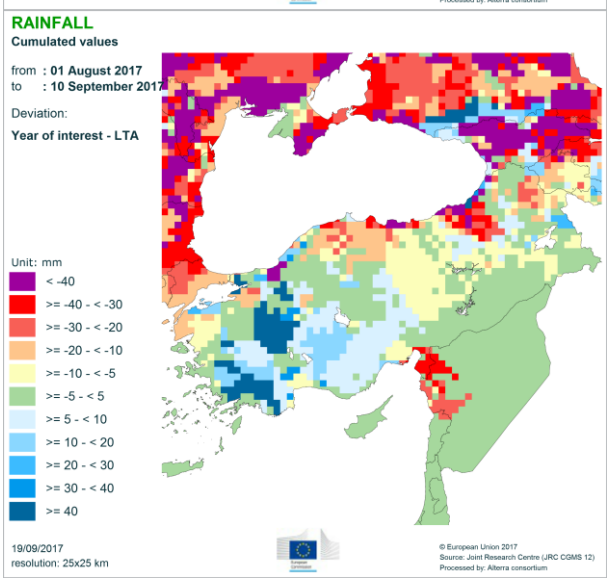

RAINFALL
Cumulated values
from : 01 June 2017
to : 30 June 2017
Year of interest (YOI)
Unit: mm
0 - 1
1 - 5
5 - 10
10 - 20
20 -40
40 - 60
60 -80
80 - 100
> 100
04/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

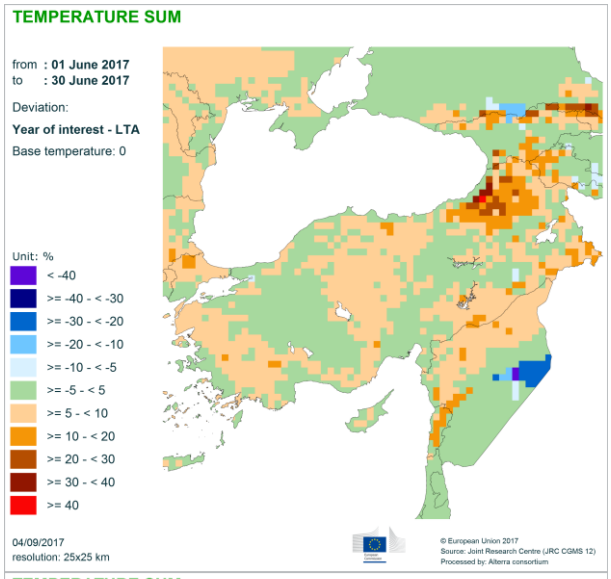

RAINFALL
Cumulated values
from : 01 July 2017
to : 31 July 2017
Year of interest (YOI)
Unit: mm
0 - 1
1 - 5
5 - 10
10 - 20
20 -40
40 - 60
60 -80
80 - 100
> 100
04/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

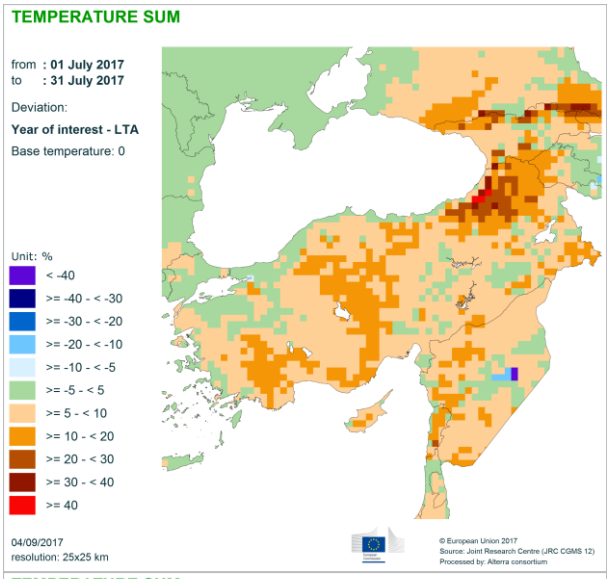

RAINFALL
Cumulated values
from : 01 August 2017
to : 31 August 2017
Year of interest (YOI)
Unit: mm
0 - 1
1 - 5
5 - 10
10 - 20
20 -40
40 - 60
60 -80
80 - 100
> 100
04/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

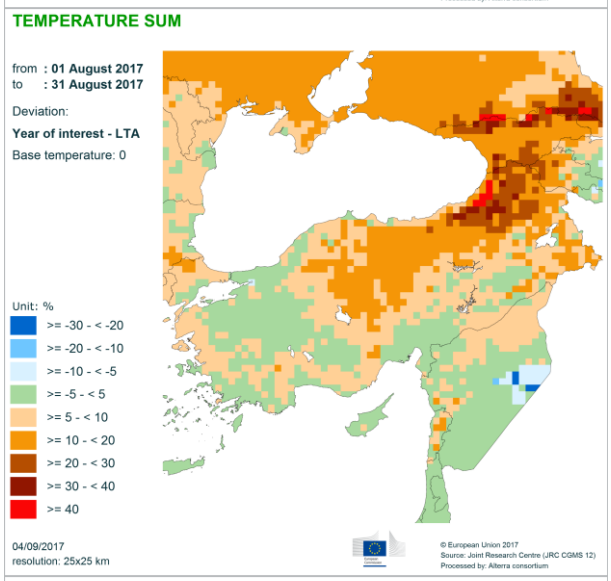

RAINFALL
Cumulated values
from : 01 September 2017
to : 10 September 2017
Year of interest (YOI)
Unit: mm
0 - 1
1 - 5
5 - 10
10 - 20
20 -40
40 - 60
60 -80
80 - 100
> 100
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

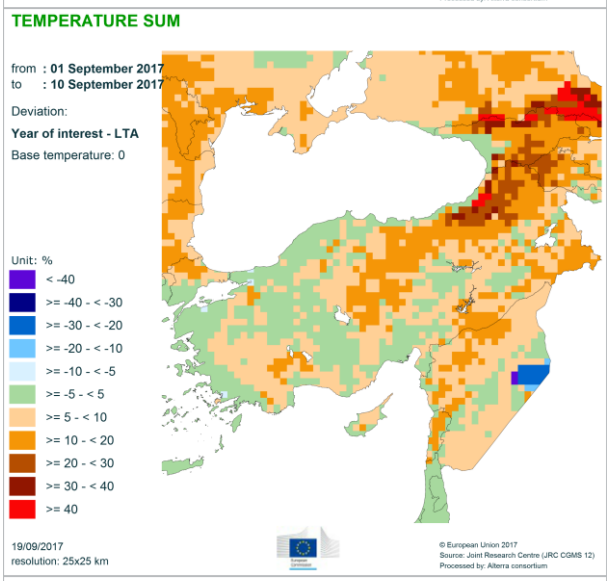

RAINFALL
Cumulated values
from : 01 June 2017
to : 31 July 2017
Deviation:
Year of interest - LTA
Unit: mm
< -150
>= -150 - < -100
>= -100 - < -80
>= -80 - < -50
>= -50 - < -25
>= -25 - < 25
>= 25 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
04/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

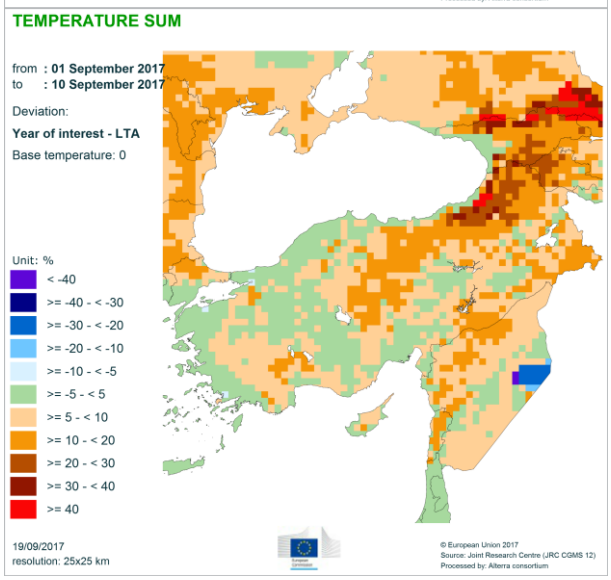

RAINFALL
Cumulated values
from : 01 August 2017
to : 10 September 2017
Deviation:
Year of interest - LTA
Unit: mm
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

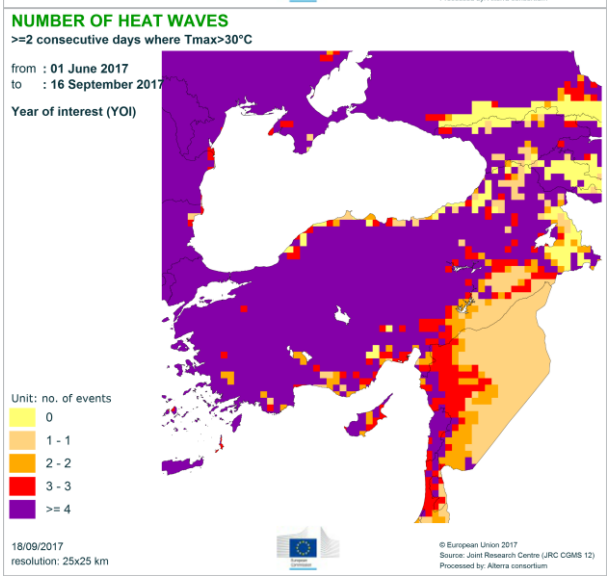

TEMPERATURE SUM
from : 01 June 2017
to : 30 June 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
04/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

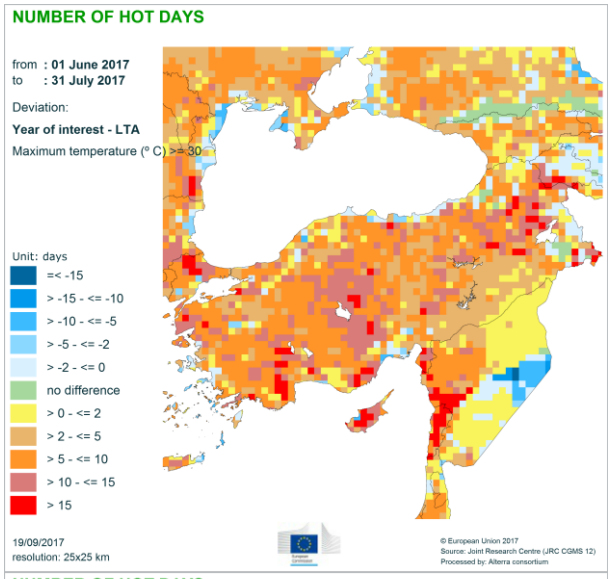

TEMPERATURE SUM
from : 01 July 2017
to : 31 July 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
04/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

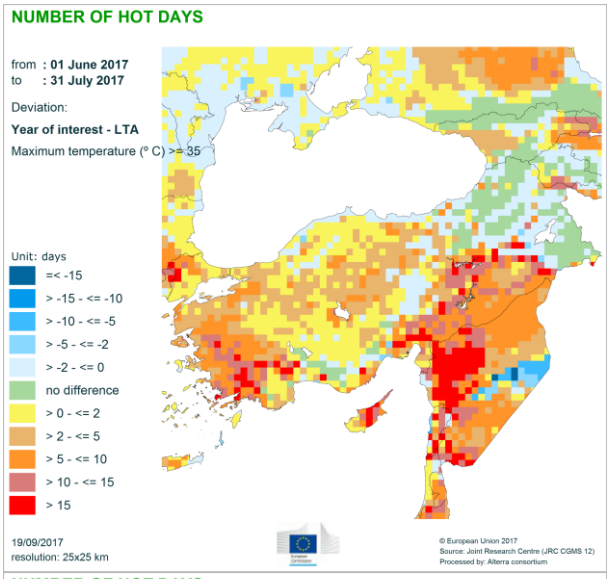

TEMPERATURE SUM
from : 01 August 2017
to : 31 August 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
04/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

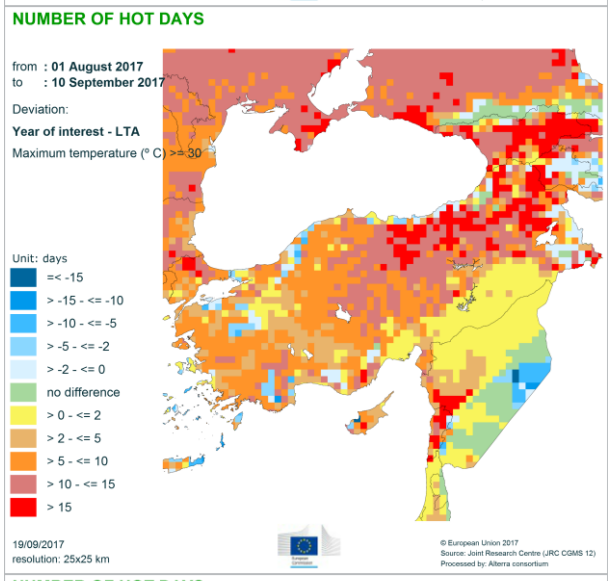

TEMPERATURE SUM
from : 01 September 2017
to : 10 September 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

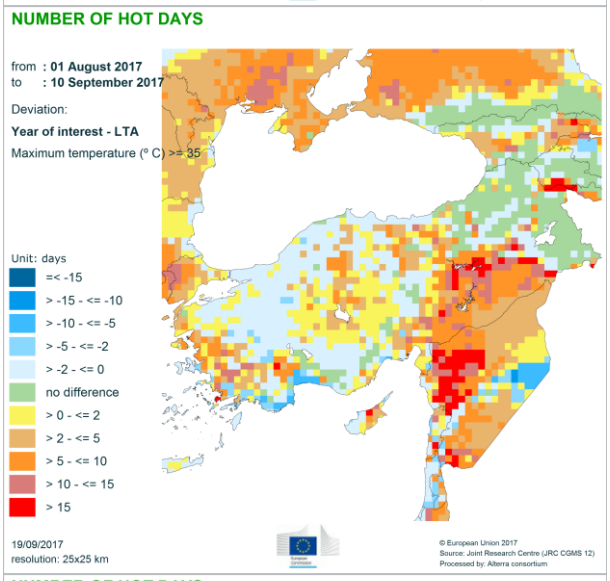

TEMPERATURE SUM
from : 01 September 2017
to : 10 September 2017
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
< -40
>= -40 - < -30
>= -30 - < -20
>= -20 - < -10
>= -10 - < -5
>= -5 - < 5
>= 5 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

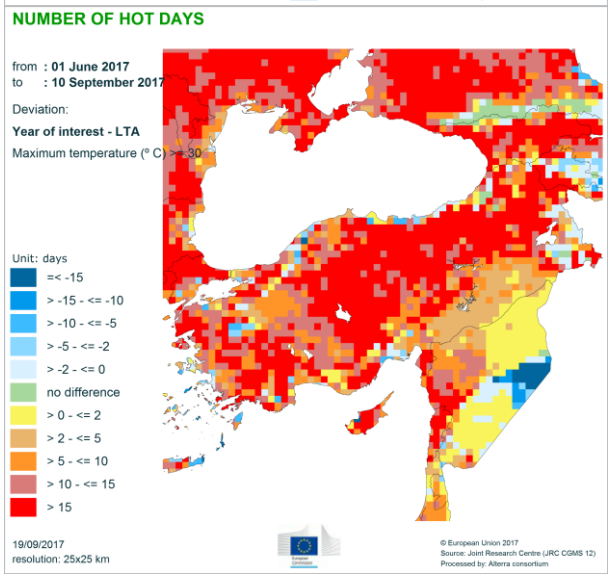

NUMBER OF HEAT WAVES
>=2 consecutive days where Tmax>30°C
from : 01 June 2017
to : 16 September 2017
Year of interest (YOI)
Unit: no. of events
0
1 - 1
2 - 2
3 - 3
>= 4
18/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF HOT DAYS
from : 01 June 2017
to : 31 July 2017
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 30
Unit: days
=< -15
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF HOT DAYS
from : 01 June 2017
to : 31 July 2017
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 35
Unit: days
=< -15
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF HOT DAYS
from : 01 August 2017
to : 10 September 2017
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 30
Unit: days
=< -15
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF HOT DAYS
from : 01 August 2017
to : 10 September 2017
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 35
Unit: days
=< -15
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
19/09/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF HOT DAYS
from : 01 June 2017
to : 10 September 2017
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 30
Unit: days
=< -15
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
19/09/2017
resolution: 25x25 km
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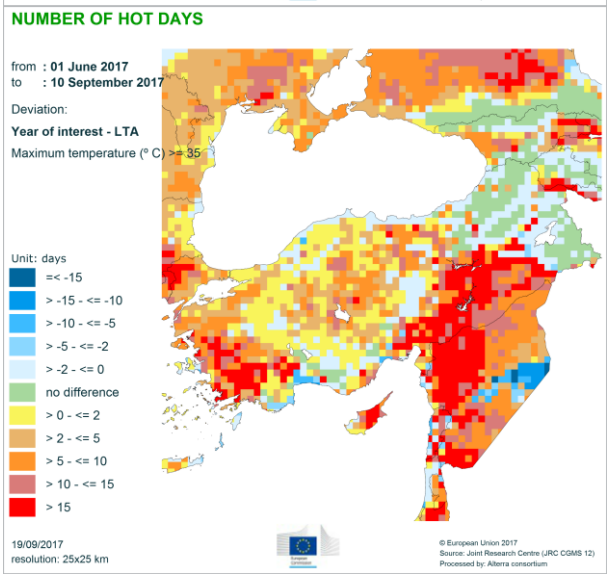
NUMBER OF HOT DAYS
from : 01 June 2017
to : 10 September 2017
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 35
Unit: days
=< -15
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
19/09/2017
resolution: 25x25 km
© European Union 2017
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MARS stands for Monitoring Agricultural Resources

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European Commission

JRC MARS Bulletin global outlook 2017
Crop monitoring European neighbourhood
Turkey

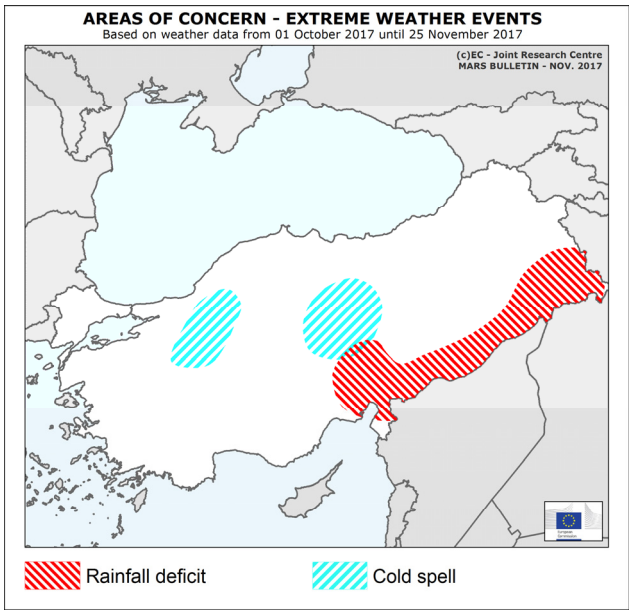
November 2017

Sowing proceeds under favourable conditions

Sowing conditions have generally been favourable in Turkey's main agricultural regions. A cold spell at the beginning of November may have slightly delayed soft wheat sowing activities and damaged the recently emerged winter barley in the Kayseri *and* Konya *regions. South-eastern regions suffered a precipitation deficit but some beneficial rain was recorded at the beginning of November.*

In **central Turkey** (*Ankara*, *Konya*, *Kirikkale*, *Kayseri*), after a dry summer, the rain at the beginning of October and the concurrent drop in temperatures favoured the start of winter barley sowing activities. The mild temperatures in late October favoured seed germination, but in November the emerged winter barley may have suffered some damage due to a cold spell, especially in *Kayseri* province. Soft wheat sowing activities started toward the end of October, in line with average timing. In *Konya*, this was slightly later than usual because of the late harvesting of summer crops. In general, soil moisture and temperature conditions have favoured seed germination. The optimal sowing window for durum wheat opened in November and sowing activities may profit from the favourable rains of early November.

In **south-eastern regions** (*Gaziantep*, *Sanliurfa*, *Mardin*), October was dry and (some) precipitation occurred only at the beginning of November. Farmers could take advantage of these rains and start sowing winter crops (mostly durum and soft wheat) early, compared with the normal sowing window, but could also decide to wait for more rain to provide better germination conditions.



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Covers the period from 1 October 2017 until 14 November 2017

Joint Research Centre

1. Meteorological overview

After a dry summer extending throughout September, precipitation in October and the first half of November was average or above average, with the exception of south-eastern regions, which remained drier than usual up to the date of analysis (–50% of cumulative precipitation). Temperatures in the western half of the country were lower than usual, with minimum values that dropped to around 0°C. In November, in western regions, colder-than-usual weather continued (with $T_{min} \leq$ -5°C at the beginning of the month), while eastern regions experienced generally warmer-than-average weather.

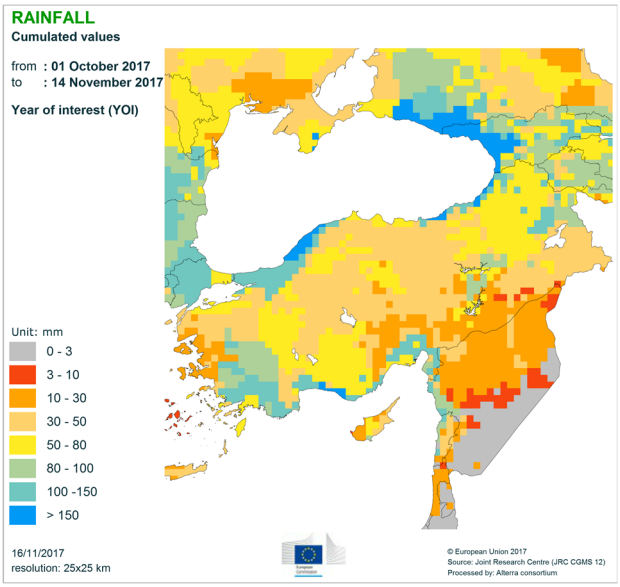
- **A drop in temperatures** occurred in Turkey between 1 October and 15 October, with average temperatures 4°C below the long-term average (LTA), and minimum temperatures below 0°C in the eastern regions (*Kayseri*, *Erzurum*, *Malatya*).

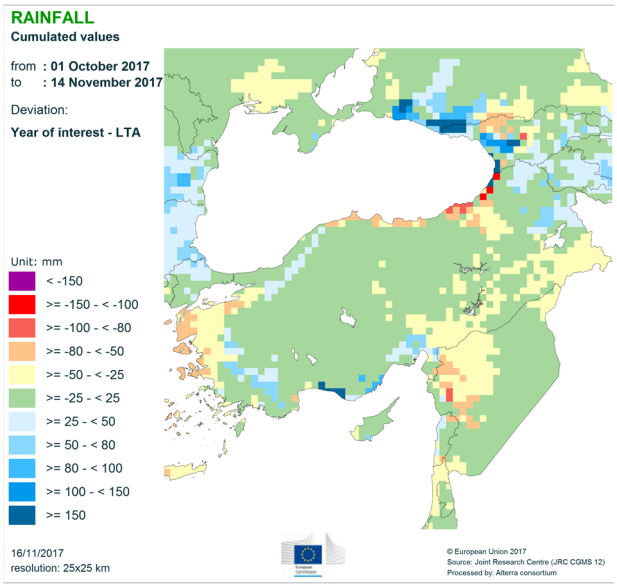
- **Average rainfall** (10mm to 30mm) occurred in the central regions (*Konya*, *Kirikkale*, *Kayseri* and *Ankara*), with most of the precipitation concentrated in the first half of October and the first days of November.

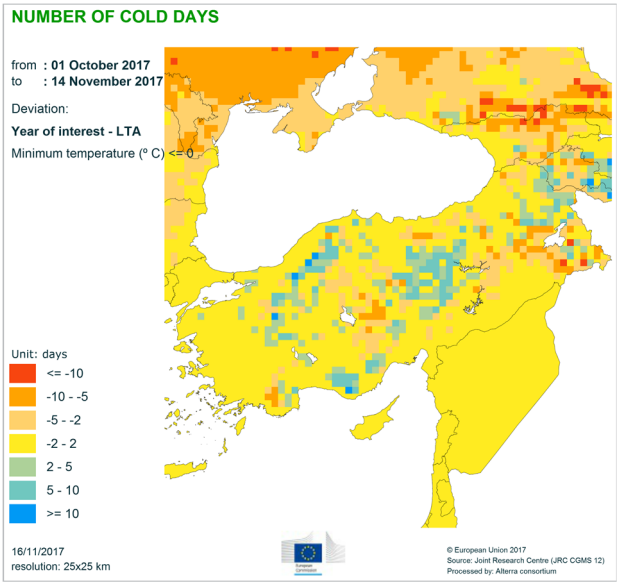
- **Abundant precipitation** occurred in south-western areas, with cumulative precipitation of up to 100 mm, concentrated in the second half of October.

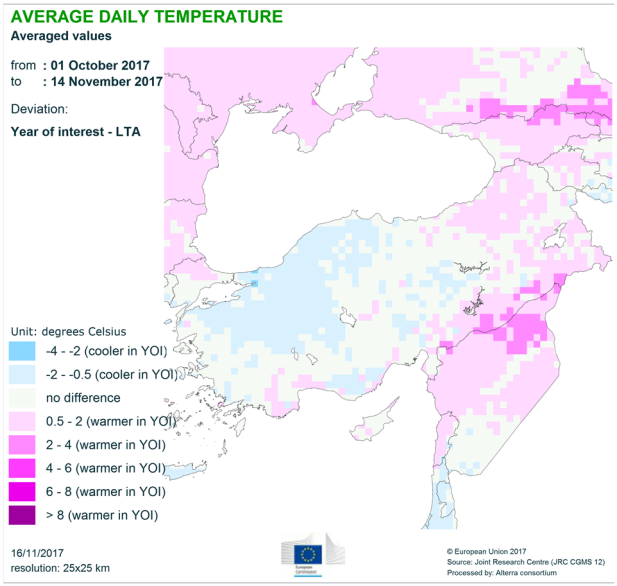
- **There was a cold and wet** start to November in western (*Brusa*, *Mansia*) and central provinces. Minimum temperatures dropped to –5°C/–6°C for three or four days at the beginning of the month.

- **Dry and warm conditions** prevailed in south-eastern regions (*Kirikkale*, *Kayseri*, *Sanliurfa*, *Gaziantep*, *Mardin*), where precipitation has been generally lower than average, with less than half average precipitation since the beginning of October. Temperatures were generally above average, especially in the second half of October (T_{max} > 25°C) and around 15 November.









2. Winter crops sowing conditions

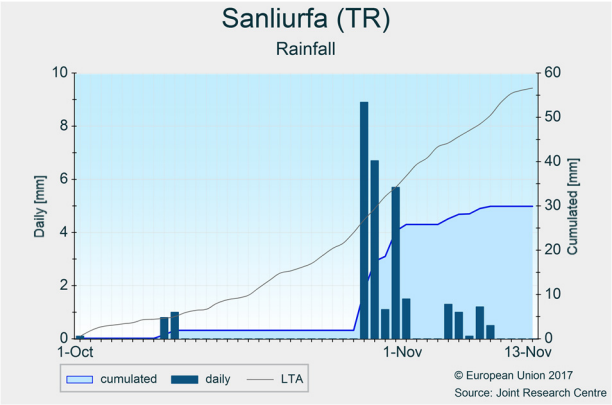
Sowing conditions have generally been favourable, with good weather conditions in the main western provinces. There are some concerns in Ankara *and* Kayseri *provinces, due to a cold spell at the beginning of November that may have damaged emerging crops. In south-eastern regions, sowing activities have just started.*

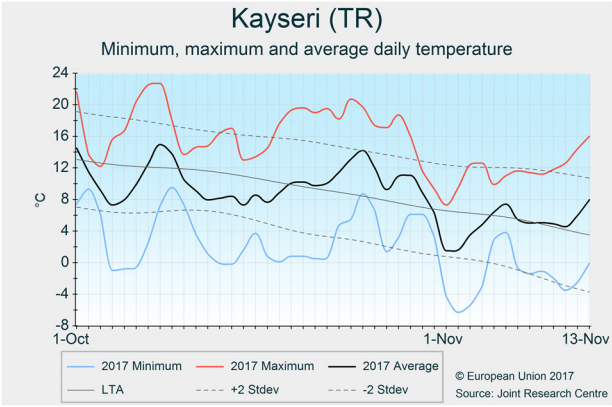
In Turkey, winter crop sowing activities started after the first rains in October, when the dry summer period came to an end and temperatures reached or dipped below seasonal values.

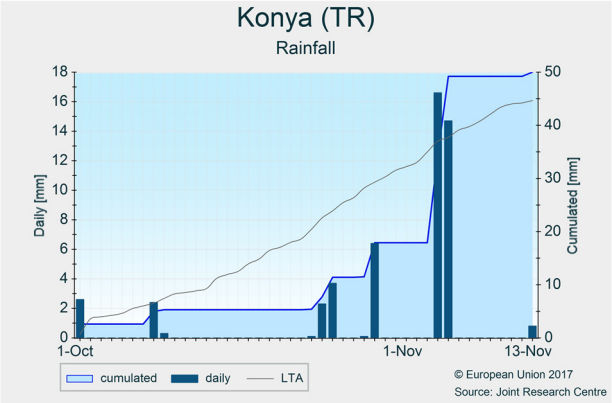
Soft wheat sowing activities started in the eastern regions of *Kayseri* and *Erzurum* around 15 October, whereas in *Ankara* and *Konya* they started in November, after favourable rains and a cold spell. In general, sowing activities in *Konya* are later than average because of the late harvesting of summer crops. In south-eastern regions, the optimal sowing window starts in mid- or late November, but weather conditions suggest that sowing activities could have started just after the rains of early November. Nevertheless, farmers may have decided to wait for more significant precipitation.

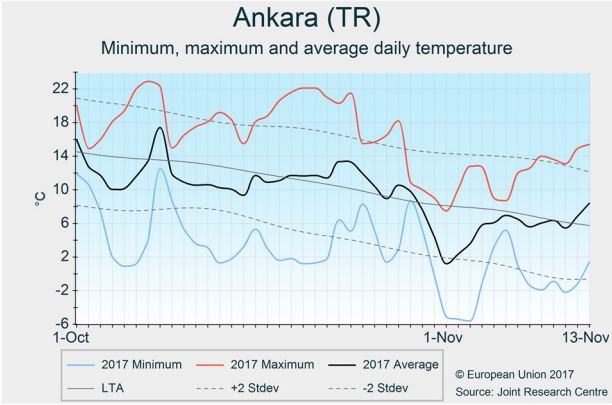
Durum wheat is cultivated mostly in *Konya* and south-eastern regions. In *Konya*, sowing activities are expected to start around 15 November under favourable weather conditions, with good soil moisture. In south-eastern regions, the situation is identical to that described for soft wheat.

Winter barley is cultivated mostly in the central Anatolian regions of *Ankara*, *Konya*, *Kirikkale*, *Bursa* and *Manisa*. Winter barley sowing activities started in October, following rains that moistened the soils, thus enabling field activities. For early sown barley, especially in *Ankara* and *Kayseri* provinces, the abrupt November cold spell, with minimum temperatures down to –6°C, may have damaged the recently emerged crops. In case of damage, resowing is generally possible, according to the meteorological forecast.


Sanliurfa (TR)
Rainfall
Daily [mm]
Cumulated [mm]
1-Oct
1-Nov
13-Nov
cumulated
daily
LTA
© European Union 2017
Source: Joint Research Centre


Kayseri (TR)
Minimum, maximum and average daily temperature
°C
1-Oct
1-Nov
13-Nov
2017 Minimum
2017 Maximum
2017 Average
LTA
+2 Stdev
-2 Stdev
© European Union 2017
Source: Joint Research Centre


Konya (TR)
Rainfall
Daily [mm]
Cumulated [mm]
1-Oct
1-Nov
13-Nov
cumulated
daily
LTA
© European Union 2017
Source: Joint Research Centre


Ankara (TR)
Minimum, maximum and average daily temperature
°C
1-Oct
1-Nov
13-Nov
2017 Minimum
2017 Maximum
2017 Average
LTA
+2 Stdev
-2 Stdev
© European Union 2017
Source: Joint Research Centre

KJ-NA-29011-EN-N

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Publications Office of the European Union

ISSN 1831-9424
ISBN 978-92-79-77306-8
doi:10.2760/701987