JRC MARS Bulletin Vol. 26 No 7

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Period covered: 1 June 2018-15 July 2018
Issued: 23 July 2018

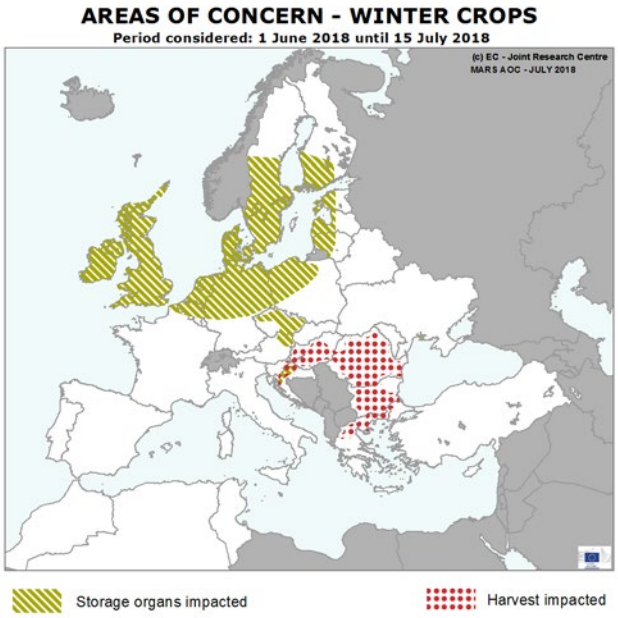
JRC MARS Bulletin
Crop monitoring in Europe
July 2018

Winter crop yield forecasts further down

Improved outlook for maize and sunflower

Water stress, associated with exceptionally dry and warmer-than-usual conditions, affected the flowering and/or grain filling of winter crops and spring cereals in large regions of northern-central and northern Europe. Grain maize and sunflower crops benefited from abundant rain in southern Europe.

Winter and spring cereal yield forecasts were revised downwards in practically all northern and central European countries, including major producers Germany and Poland. The excellent outlook for Spain and the mediocre outlook for France were maintained. At EU level, the current yield forecast is below the 5-year average for all winter cereals considered, as well as for spring barley and rapeseed.



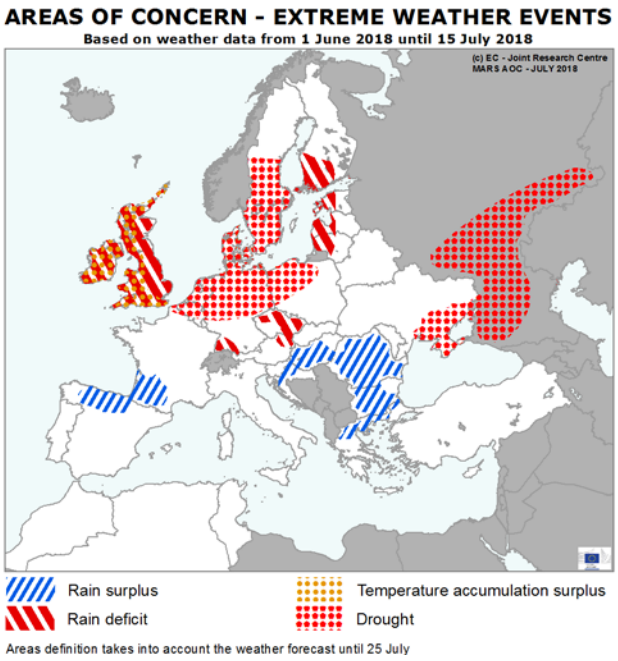
The yield forecasts for grain maize, sunflower and soybean were revised upwards, mainly on account of favourable conditions with abundant rain, in southern central and south-eastern Europe, including large producers such as Hungary, Romania and Bulgaria. The forecast for sugar beet remained practically unchanged at EU level, as an upward revision for France was counterbalanced by a downward revision for Germany, the Netherlands and the United Kingdom.

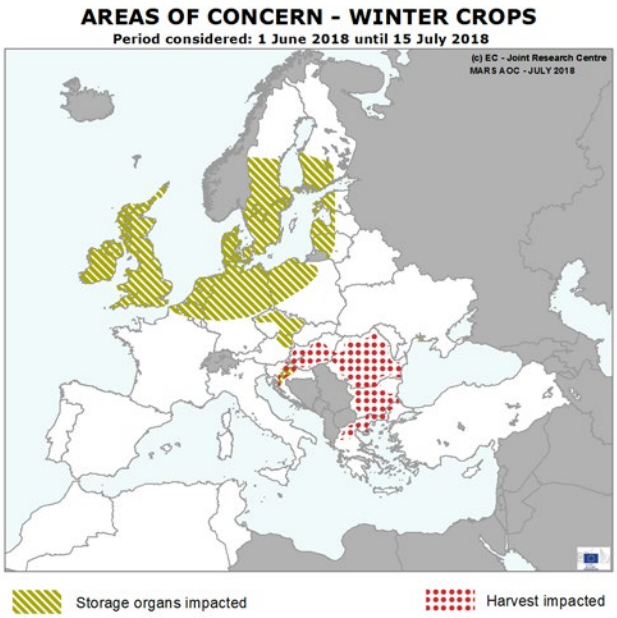
Crop	Yield (t/ha)				
	Avg 5yrs	June Bulletin	MARS 2018 forecasts	% Diff 18/5yrs	% Diff June
TOTAL CEREALS	5,56	5,50	**5,38**	-3,3	-2,2
Total Wheat	5,73	5,79	**5,59**	-2,4	-3,5
soft wheat	5,97	6,04	**5,82**	-2,6	-3,6
durum wheat	3,40	3,52	**3,48**	+2,4	-1,1
Total Barley	4,91	4,98	**4,74**	-3,3	-4,8
spring barley	4,25	4,40	**4,13**	-2,9	-6,1
winter barley	5,79	5,80	**5,60**	-3,3	-3,4
Grain maize	7,30	7,35	**7,64**	+4,6	+3,9
Rye	3,93	3,71	**3,48**	-12	-6,2
Triticale	4,23	4,25	**4,10**	-2,9	-3,5
Rape and turnip rape	3,29	3,05	**2,89**	-12	-5,2
Potato	33,6	34,5	**33,3**	-0,7	-3,3
Sugar beet	74,8	77,5	**77,9**	+4,1	+0,5
Sunflower	2,12	2,27	**2,47**	+17	+8,8

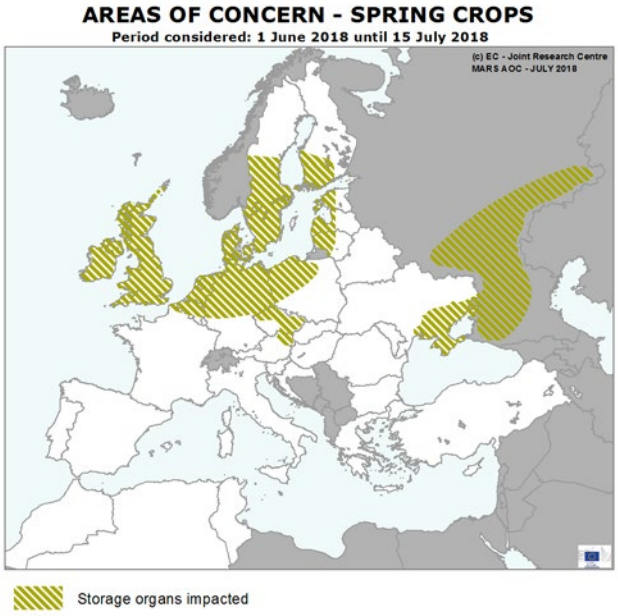
Issued: 20 July 2018

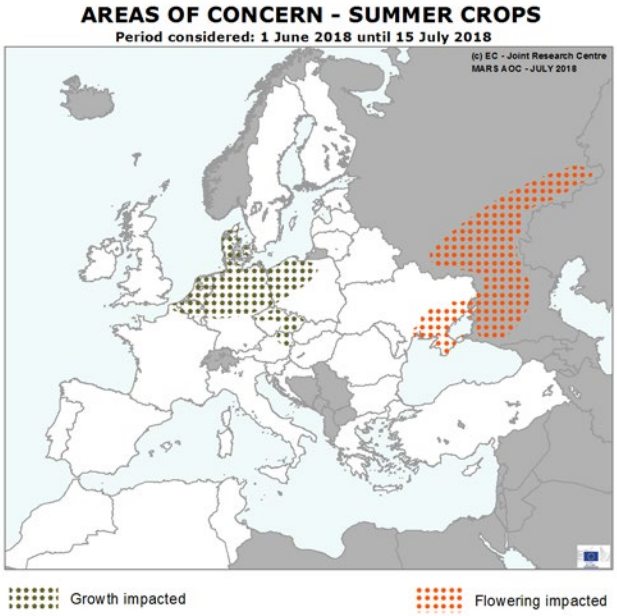
1. Agrometeorological overview

1.1 Areas of concern









During the period reviewed (1 June to 15 July), warmer-than-usual weather conditions prevailed (or continued to prevail), throughout almost all of Europe. Daily mean temperature anomalies (with respect to the long-term average (LTA)) were mainly between + 0.5 °C and + 2 °C; in northern **France**, in large regions in the **United Kingdom** and in the **Scandinavian Peninsula** these anomalies were up to + 4 °C. In **Ireland**, large parts of the **United Kingdom**, **Sweden** and **Denmark**, June was the warmest or second warmest in our records (since 1975).

Exceptionally dry conditions prevailed in large regions of northern-central Europe, the **Scandinavian Peninsula** the **United Kingdom, Belgium** and the **Netherlands**. Many of these areas experienced fewer than 2 days with significant precipitation (above 5 mm) and rainfall totals of less than 20 % compared with the LTA. In **Poland**, **Finland** and the **Baltic countries**, rain after the 2nd dekad of June alleviated the persistently dry conditions that had prevailed since the beginning of May.

In these regions, water stress affected the flowering and/or grain filling of winter crops and spring cereals, leading to substantial downward revisions of our yield forecasts, especially in those countries where dry conditions have persisted for several months. The growth of summer crops was also affected (mostly to a lesser and partly reversible degree) leading to downward revisions of our yield forecasts for maize in **Germany**, **Poland**, **Austria**, **Belgium**, the **Netherlands** and the **Czech Republic**, and for potatoes and/or sugar beet in **Belgium**, the **Netherlands**, **Germany**, **Poland** and **Denmark**.

Regions in south-western **Russia** and southern **Ukraine** have been experiencing a persistent rain deficit combined with warmer-than-usual weather since April. Flowering, leaf area and biomass accumulation of the spring and summer crops are being seriously affected by the drought, and serious yield losses are expected in these regions.

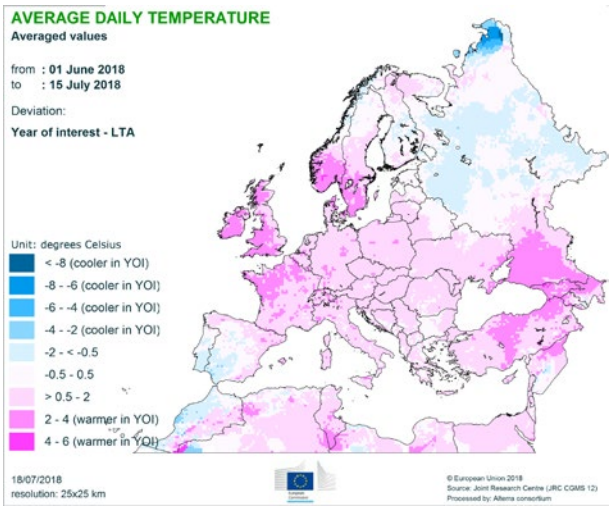
Wetter-than-usual conditions occurred in the northern part of the **Iberian Peninsula,** western **France**, southern **Italy**, the **Balkan region**, south-eastern Europe and **Turkey**. Cumulative precipitation anomalies in these regions were more than 80 % above the LTA, with absolute values above 120 mm. These abundant rains generally benefited summer crops (especially in **Romania** and **Bulgaria**, where they arrived just in time to lift soil water levels above critically low values before flowering). However, excessive wetness hampered the harvesting of winter and spring cereals in the Balkan region and south-eastern Europe, leading to grain quality and yield losses.

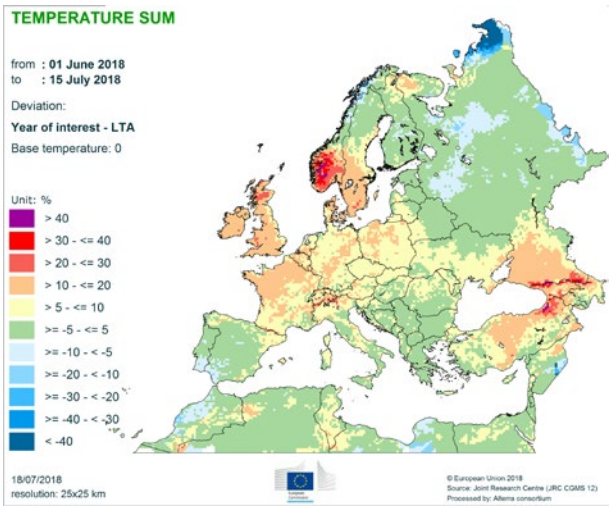
1.2 Meteorological review (1 June to 15 July)

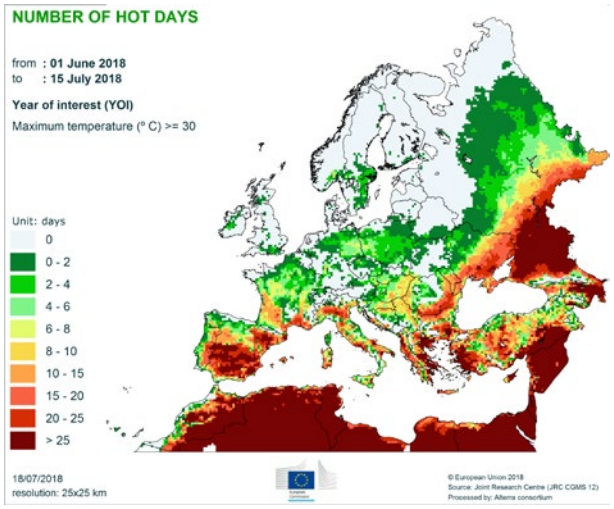
Warmer-than-usual weather conditions were experienced throughout almost all of Europe. Daily mean temperature anomalies (with respect to the LTA) were mainly between + 0.5 °C and + 2 °C, but were up to + 4 °C in northern France, and across large regions of the United Kingdom, Norway and Sweden. Temperature sums (threshold at 0 °C) were 5 % to 20 % (> 40 % in southern Norway) higher than usual in a large region that extended from France to Belarus, in the United Kingdom, in the Scandinavian Peninsula and in the Black Sea region. In large areas of the Mediterranean and Black Sea regions, more than 20-25 days with daily maximum temperatures above 30 °C were observed.

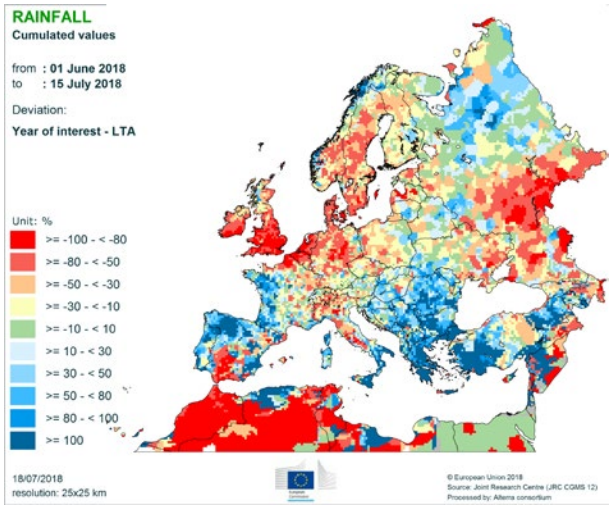
Drier-than-usual conditions were observed in large regions of central Europe, the United Kingdom, Belgium, the Netherlands, the Scandinavian Peninsula, south-western Russia and Spain and locally in the Italian Peninsula. Cumulative precipitation in these regions was – 80 % (locally – 100 %) to – 10 % lower than the LTA, with absolute values mainly below 80 mm accumulated in the entire period under analysis. Large regions in the United Kingdom, Ireland and the Iberian Peninsula as well as areas in France, the Benelux countries, Germany and Italy experienced fewer than 2 days with significant precipitation (above 5 mm). In Poland, Finland and the Baltic countries, rain after the 2nd dekad of June alleviated the persistently dry conditions that had prevailed since the beginning of May.

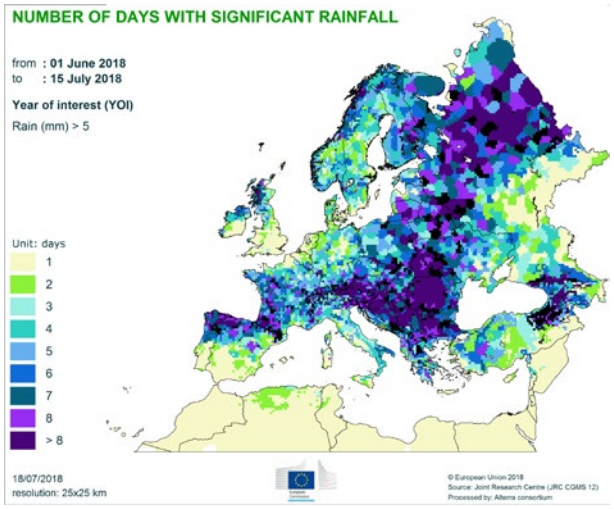
Wetter-than-usual conditions were observed in the northern part of the Iberian Peninsula, and in western France, southern Italy, the Balkan region, south-eastern Europe and Turkey. Cumulative precipitation anomalies were higher than 80 % of the LTA, with absolute values above 120 mm.

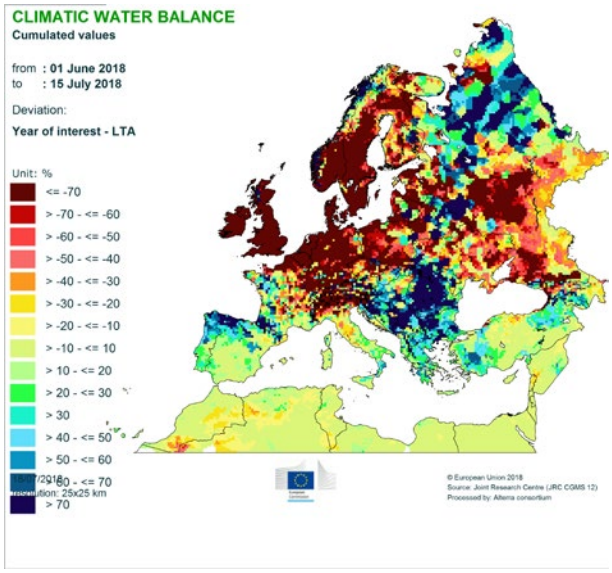





NUMBER OF HOT DAYS
from : 01 June 2018
to : 15 July 2018
Year of interest (YOI)
Maximum temperature (° C) >= 30
Unit: days
0
0 - 2
2 - 4
4 - 6
6 - 8
8 - 10
10 - 15
15 - 20
20 - 25
> 25
18/07/2018
resolution: 25x25 km
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

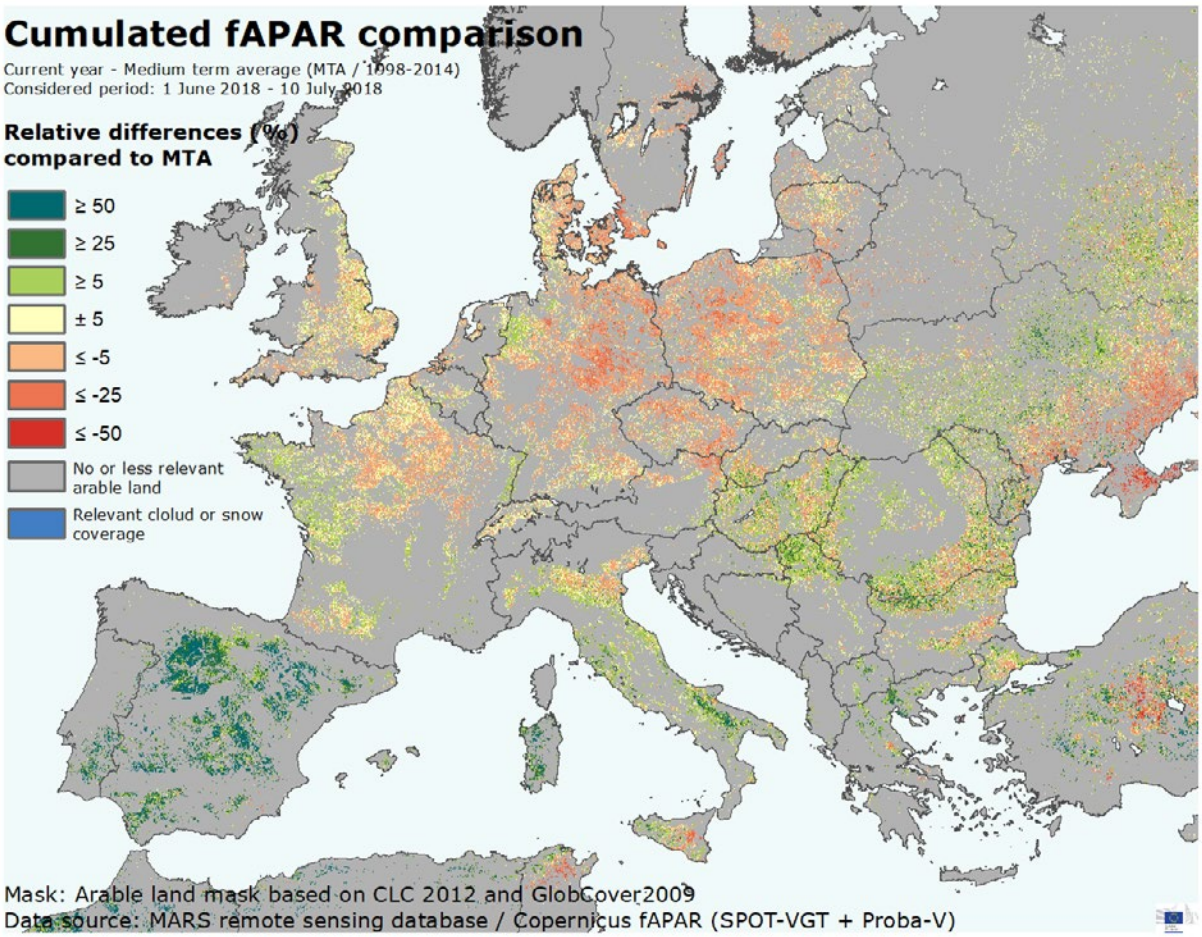

RAINFALL
Cumulated values
from : 01 June 2018
to : 15 July 2018
Deviation:
Year of interest - LTA
Unit: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
18/07/2018
resolution: 25x25 km
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from : 01 June 2018
to : 15 July 2018
Year of interest (YOI)
Rain (mm) > 5
Unit: days
1
2
3
4
5
6
7
8
> 8
18/07/2018
resolution: 25x25 km
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


CLIMATIC WATER BALANCE
Cumulated values
from : 01 June 2018
to : 15 July 2018
Deviation:
Year of interest - LTA
Unit: %
<= -70
> -70 - <= -60
> -60 - <= -50
> -50 - <= -40
> -40 - <= -30
> -30 - <= -20
> -20 - <= -10
> -10 - <= 10
> 10 - <= 20
> 20 - <= 30
> 30
> 40 - <= 50
> 50 - <= 60
> 60 - <= 70
> 70
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

2. Remote sensing — observed canopy conditions

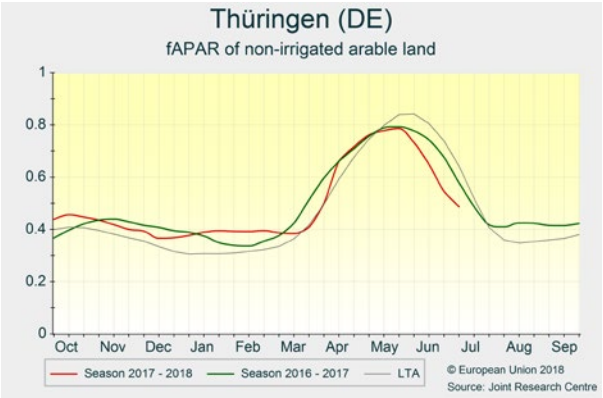
Adverse crop conditions persist in central and northern Europe

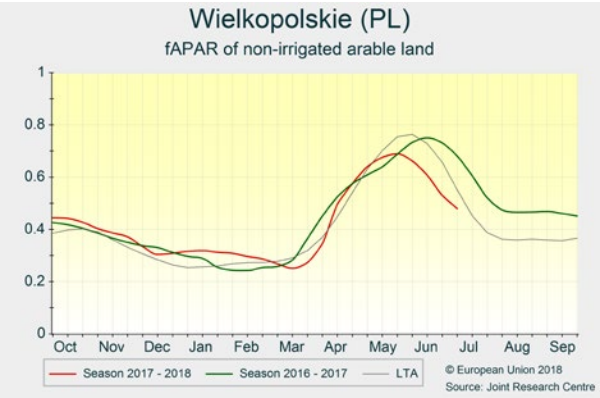


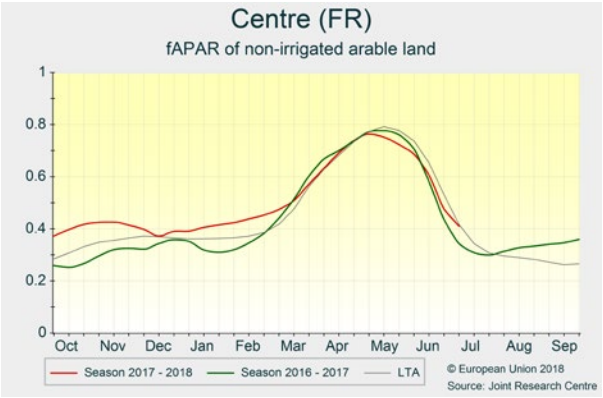
The map displays differences between the fraction of absorbed photosynthetically active radiation (fAPAR), computed from remote-sensing imagery between 1 June and 10 July 2018, and the medium-term average (1998-2014) of fAPAR for the same period. Positive anomalies (in green) reflect above-average canopy density or early crop development, while negative anomalies (in red) reflect below-average biomass accumulation or late crop development.

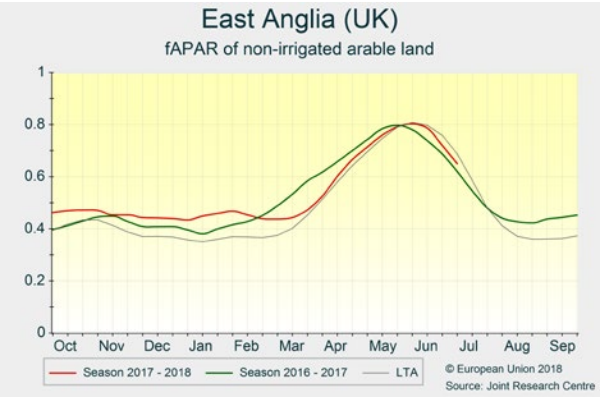
Negative anomalies of photosynthetic activity — the red colour on the map — can be observed in **Germany** (*Thüringen*), **Poland** (*Wielkopolskie*), the **Czech Republic** (*Stredocesky Kray*) and northern **Austria** (*Niederösterreich*). These anomalies identify early senescence of winter crops: the consequence of an adverse growing season, marked by unusually high temperatures and precipitation significantly below average levels. Similar conditions can also be observed in the Baltic Sea area (**Denmark,** southern **Sweden**, **Finland**, **Estonia**, **Latvia** and **Lithuania**), where winter crop growth has been limited by water stress since mid May. In the eastern half of **France** (*Centre*, *Champagne-Ardenne*, *Picardie*), fAPAR indicates below-average biomass accumulation of winter crops — which are being harvested currently — as a consequence of overly wet conditions during the grain-filling phase. By contrast, along the Atlantic coastline (*Poitou-Charentes*, *Pays de la Loire*) remote sensing reveals favourable conditions for winter crops. In the southern **United Kingdom** (*East Anglia*), unusually dry conditions since June have led to an appreciable fAPAR decrease during the grain filling of wheat.

Exceptionally high fAPAR values can be observed in the Iberian Peninsula, especially in central northern **Spain** (*Castilla y León*), where winter crops are approaching physiological maturity. Positive fAPAR anomalies indicate favourable conditions and high growth rates thanks to a humid and mild growing season. In **Italy**, north-eastern regions (e.g. *Veneto*, *Friuli-Venezia Giulia*) show a negative fAPAR anomaly indicating below-average biomass formation in summer crops (maize, soybean), a consequence of the warm and dry weather conditions registered in June. In **Hungary**, **Bulgaria** and **Romania**, crop biomass is generally above the average in the main producing regions (e.g. *Sud-Est*, *Severoiztochen*). This indicates favourable conditions for both winter cereals and maize, thanks to the humid conditions observed since June. In **Ukraine**, negative fAPAR values can be observed for eastern regions (e.g. *Krym*, *Khersins'ka*, *Zaporiz'ka* and *Donets'ka*); the result of a season characterised by above-average rainfall. In contrast, in central regions (e.g. *Poltavs'ka*, *Cherkas'ka*) summer crops show above-average biomass accumulation, thanks to a steady supply of rain and warm conditions.

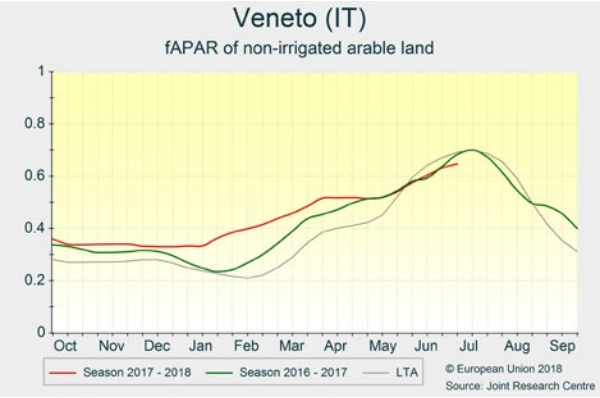

Thüringen (DE)
fAPAR of non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre

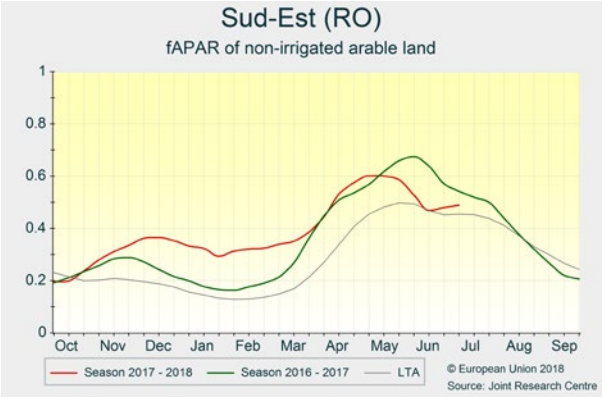

Wielkopolskie (PL)
fAPAR of non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre

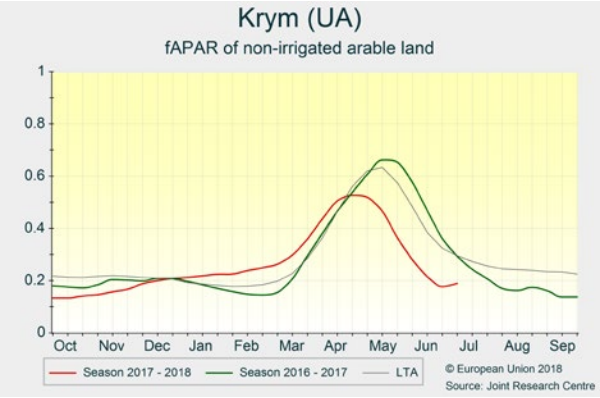

Centre (FR)
fAPAR of non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre


East Anglia (UK)
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 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre


Castilla Y León (ES)
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 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre


Veneto (IT)
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 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre


Sud-Est (RO)
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 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre


Krym (UA)
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 2017 - 2018
Season 2016 - 2017
LTA
© European Union 2018
Source: Joint Research Centre

3. Country analysis

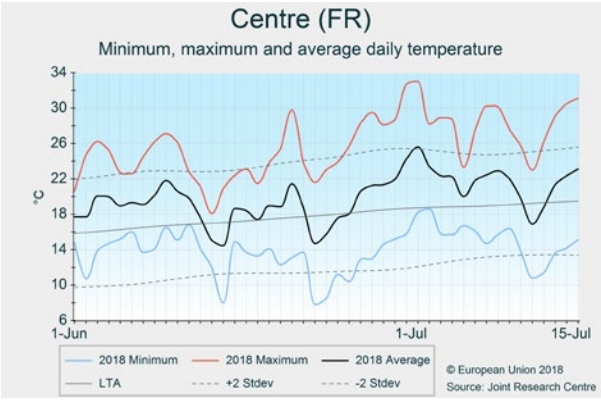
3.1 European Union

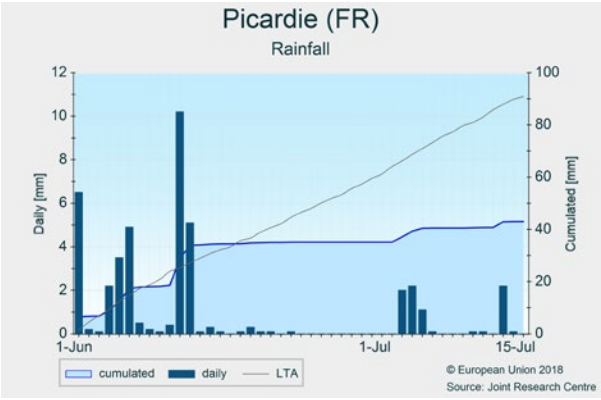
France

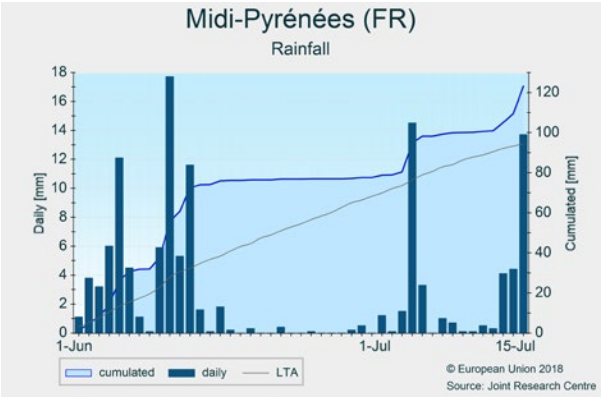
Weather conditions favourable for summer crops

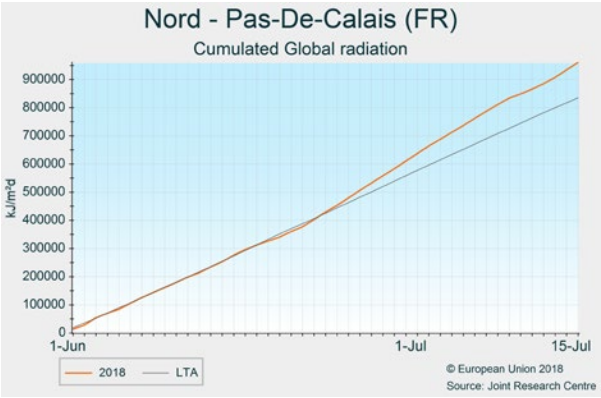
The harvesting of winter crops started early this year with a negative yield outlook for rapeseed and durum wheat. Summer crops, which faced wet weather at the start of the season, benefited from a positive thermal and radiative anomaly, improving the crop conditions, apart from fields damaged by the frequent thunderstorms.

Thundery weather prevailed during the first half of June and the beginning of July. Substantial rainfall has been recorded, with a positive rainfall anomaly along the oceanic coast. In the northernmost regions (*Hauts-de-France*, *Normandy*), and locally in the eastern half of the country, a rain deficit has been observed without any negative consequences to crop conditions. At the beginning of June, showers increased the disease pressure on the summer crops and some of the winter cereals. Large delays in sowing summer crops were observed in the south-west owing to the prolonged rainy weather and a radiative deficit that contributed to degrading the crop conditions. The rain deficit observed after mid June in the north was beneficial for potato and sugar beet, which were exposed to relatively high disease pressure at the beginning of June. Added to the sunny weather observed since the last dekad of June and above-average temperatures, weather conditions have been beneficial for summer crops, except for the fields damaged by thunderstorms, particularly in the south-west. Grain maize recovered partly from the wet conditions observed after sowing and the positive radiative anomaly was beneficial for its growth. The yield outlook is negative for winter rapeseed and durum wheat (respectively – 18 % and – 10 % compared with last year) while soft wheat, winter barley and spring barley yields are expected to be close to last year's levels. Summer crop yields are still forecast to be close to the trend, taking into account the fact that conditions may still improve or worsen in the following weeks. However, soils have been fully recharged, which would limit the impact of a potential heatwave or prolonged dry period.









Germany

Dry and hot conditions affecting yields

The long-lasting dry and hot conditions that started in May have affected the yields of winter and spring crops in several regions. The north and east of the country experienced the worst conditions, sometimes resulting in a complete failure of the winter crops. Both winter and spring cereal yield forecasts are well below average. Summer crops were affected to a lesser degree.

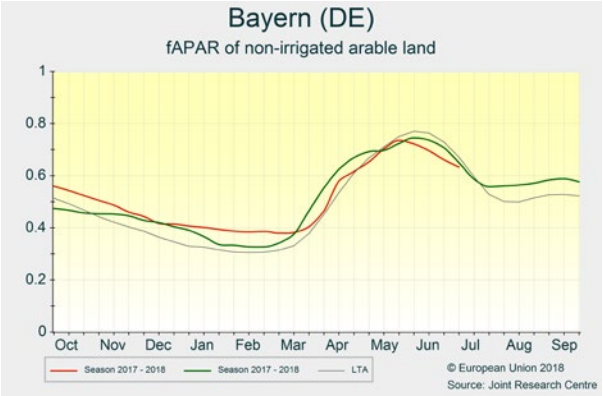
Across Germany, precipitation was far below average, and some areas remained completely dry. Parts of *Bayern* and local areas elsewhere received precipitation close to the LTA. The dry areas in the centre and east of the country received significant rainfall after 10 July. Nevertheless, this was after a long dry period, often too late to improve the situation of the winter crops. *Sachsen-Anhalt* and the areas close to the Dutch border are particularly dry, as well as *Schleswig-Holstein*, *Niedersachsen*, *Thüringen* and *Sachsen*.

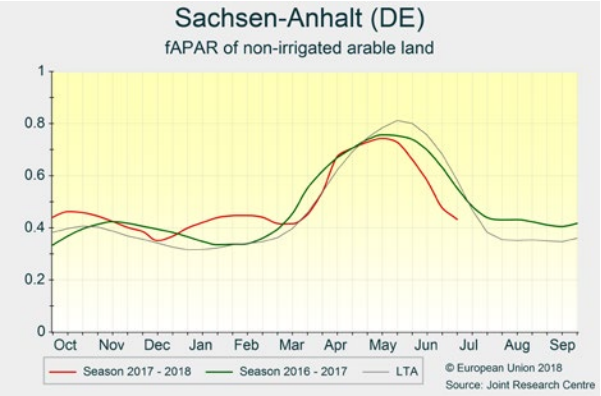
Generally, temperatures were 1-2 °C above average. In *Sachsen-Anhalt*, *Brandenburg*, southern *Hessen* and *Baden-Württemberg*, temperatures were 2-4 °C above average. *Sachsen-Anhalt*, *Brandenburg* and *Sachsen* experienced daily maximum temperatures above 32 °C.

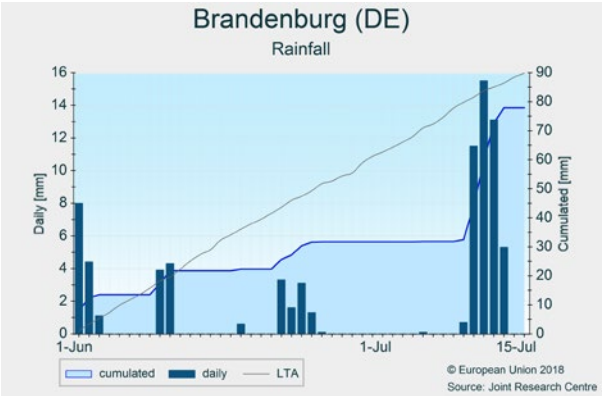
In the centre and north of the country, cumulative precipitation during the review period was 50-100 mm below average. The scarce precipitation in combination with high temperatures accelerated growth and often shortened the grain-filling phase of cereals and/or induced premature ripening. All winter and spring crops suffered from the hot and dry conditions. In some fields in the east of Germany, winter crops were shredded for biomass use. Non-irrigated summer crops such as maize, potato and sugar beets were affected to a lesser degree.

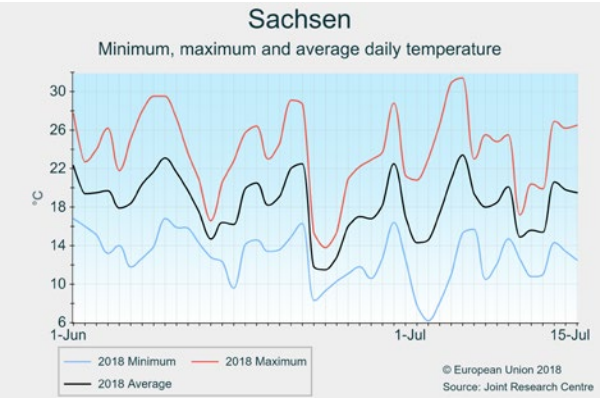
Harvest is generally ahead by about 2 weeks. The winter barley harvest is finished. The winter wheat harvest is still ongoing, and production expectations are significantly below usual levels. Similar situations apply to other winter and spring crops (i.e. winter barley, rapeseed and spring barley).

The outlook for the coming days promises some alleviation for regions in the east: temperatures are expected to decrease, and sporadic rainfall has been forecast. However, hot conditions should prevail in the west, while the south is expected to be wetter than usual. Although conditions are generally not as bad in the south-west of the country, harvest expectations there will not compensate for the unfavourable outlook for the north and east of Germany.









Poland

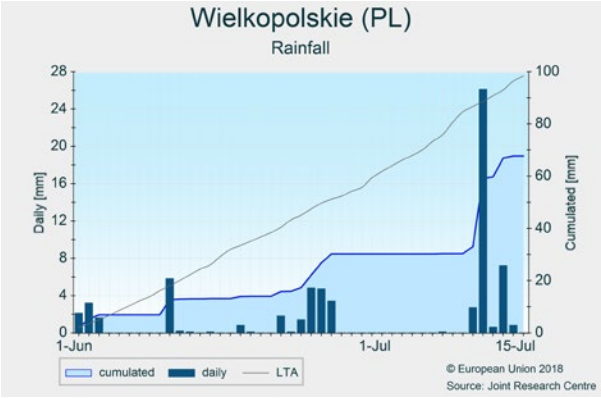
Substantial water deficit significantly reduced yield potentials

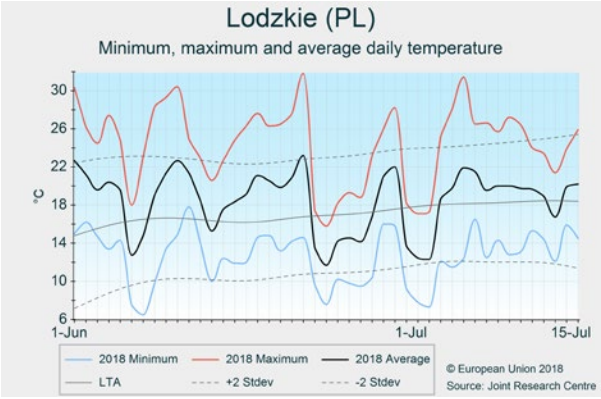
The yield forecasts of rapeseed and spring and winter cereals have been revised significantly downwards because of a substantial water deficit situation, which started in May and continued during this period of review, especially in north-western Poland. Intense precipitation during the 2nd dekad of July is expected to increase soil water levels and improve soil water conditions for summer crops.

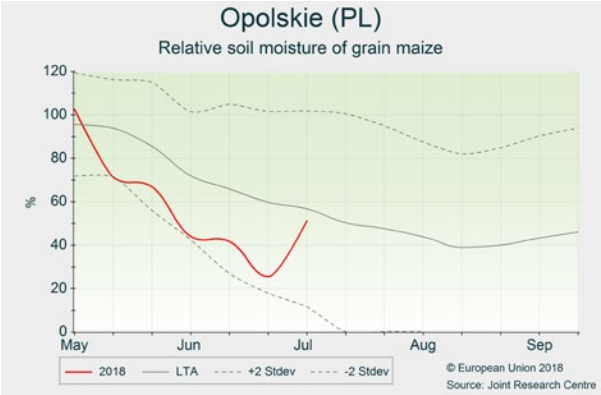
During the first 2 dekads of June, temperatures were significantly above the LTA, while rainfall was below average. As a result, the climatic water balance (already negative since May) deteriorated. The situation was somewhat alleviated by a decrease in temperatures at the end of June and the beginning of July, when temperatures oscillated around the LTA. Rainfall during the 3rd dekad of June brought some relief but was insufficient to significantly counterbalance the exceptionally high water deficits, especially in north-western regions. Intense rainfall during the 2nd dekad of July finally increased soil moisture content to above critical levels in the whole country.

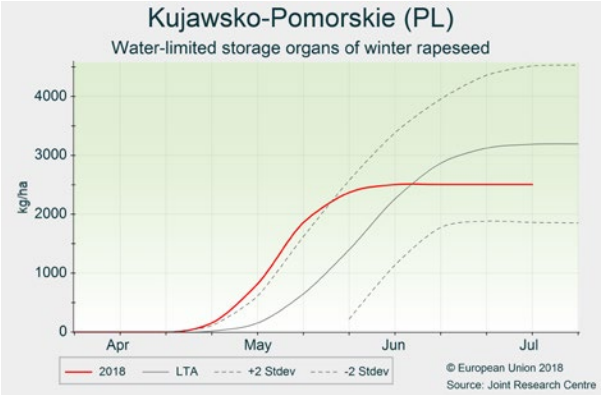
Spring and winter crop yield expectations are highly heterogeneous in Poland, with greatly reduced values in north-western regions (*Zachodniopomorskie*, *Pomorskie*, *Wielkopolskie*, *Lubuske* and *Kujawsko-Pomorskie*) but also on lighter soils in other regions. The yield forecast of rapeseed has been revised significantly downwards because of the long-lasting water deficits. In addition, yields of winter and spring cereals are expected to be far below the average because of water stress during flowering. The ongoing harvest operations of rapeseed and winter barley have been hampered by rainfall (during the 2nd dekad of July), which may further reduce yields and grain quality.

Grain maize is at the flowering or grain-filling stage. The impact of water deficits has been less severe for this crop; however, in some regions, water stress that occurred around flowering may have reduced maize yield potentials. Summer crops may take advantage of replenished soil moisture during further development. At country level, our forecasts for grain maize, sugar beet and potatoes remain around average levels.









The United Kingdom and Ireland

Yield forecast for winter cereals revised downwards

The review period was characterised by warmer-than-usual conditions and persistent dry periods constraining yield potentials. The yield forecasts for winter cereals and spring barley have been revised slightly downwards. Sugar beets are still in good condition.

Above-average temperatures prevailed in the United Kingdom and Ireland throughout the review period (1 June to 15 July), with maximum temperatures close to 30 °C in *South East England* at the beginning of July. In Ireland, June was the warmest in our records (since 1975).

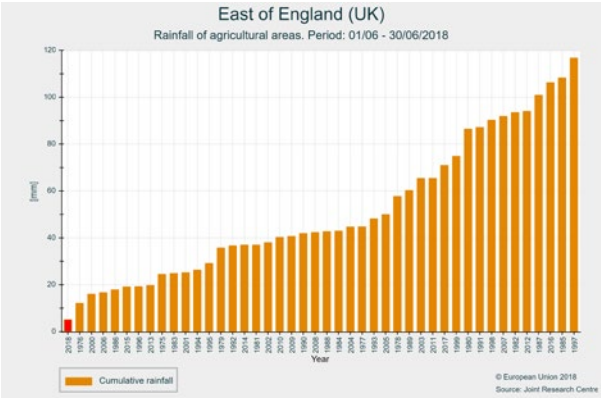
Precipitation was markedly below average, particularly in the southern United Kingdom, where June was the driest in our records.

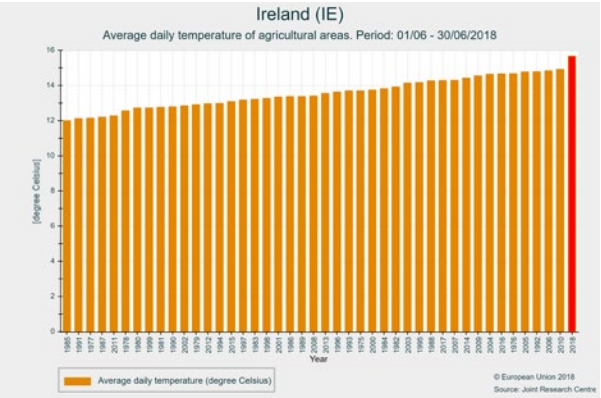
Solar radiation levels were well above average in both countries.

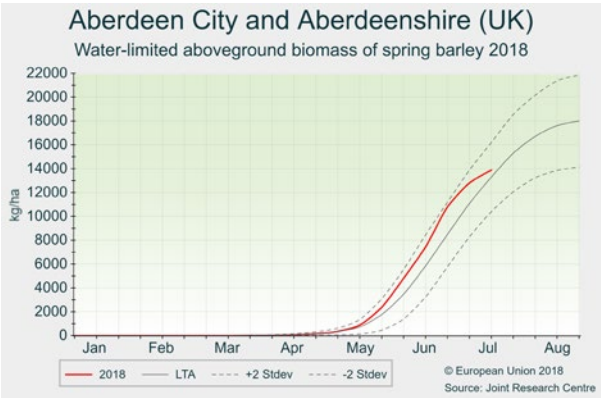
Soil water levels remained close to critical in most of the agricultural areas in the southern United Kingdom and Ireland, affecting the yield potentials of winter cereals during the grain-filling stage. Spring barley is reported to look very variable in Scotland, mainly with the ears emerged and few tillers as a result of the dry weather in May. Adequate rainfall is currently needed for spring barley at the flowering phase. The depleted soil water content combined with the above-average temperatures also affected crop growth in non-irrigated fields of potato crops. Sugar beet is still in good condition.

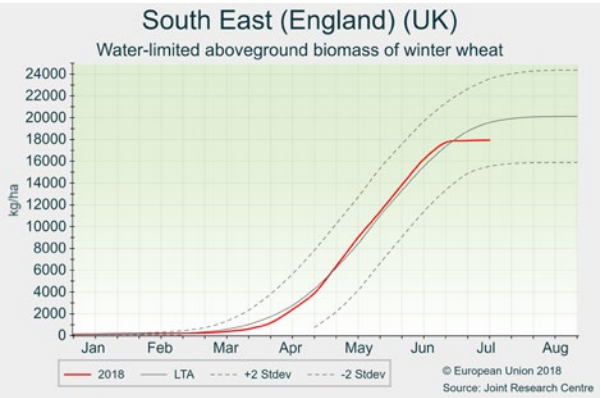
The first harvests, of winter barley and rapeseed, started at the beginning of July, 2 weeks earlier than usual, in the south-eastern United Kingdom. Reported yields are mixed for winter barley and positive for rapeseed. The forecast for rapeseed remains close to the 5-year average.

For Ireland and the United Kingdom, the yield forecasts for winter wheat and winter barley were revised slightly downwards, because of the above-average temperatures, which shortened the duration of the grain filling, combined with the suboptimal water supply. Yield forecasts for spring barley were also slightly revised downwards but could still benefit from adequate weather conditions during grain filling. The forecasts remain close to the 5-year average or slightly below.









Spain and Portugal

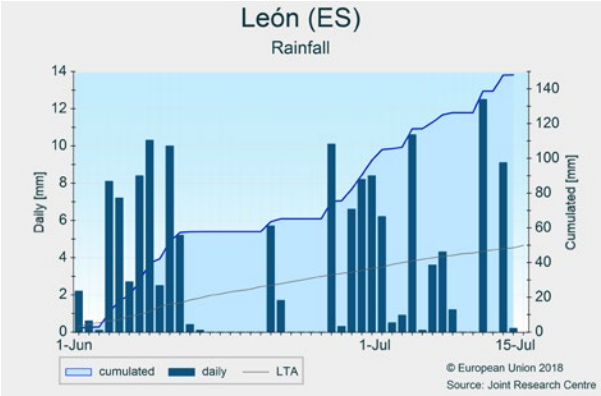
Harvests of winter cereals under way with some delays in northern Spain

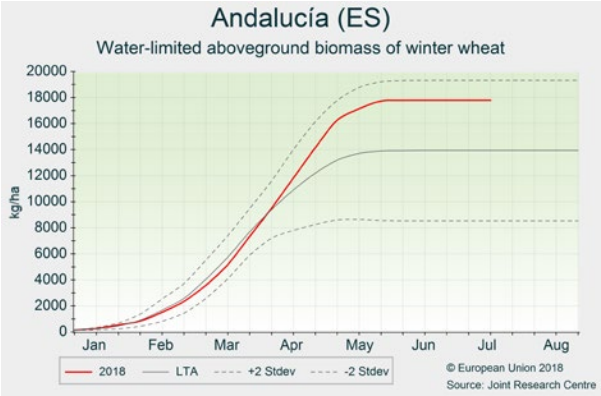
The winter cereals harvest is progressing across the Iberian Peninsula. In the southern half, it is practically finished, with high yields expected, while in the northernmost provinces rainfall in the first half of July has caused some delays, which are projected to last until the end of the month.

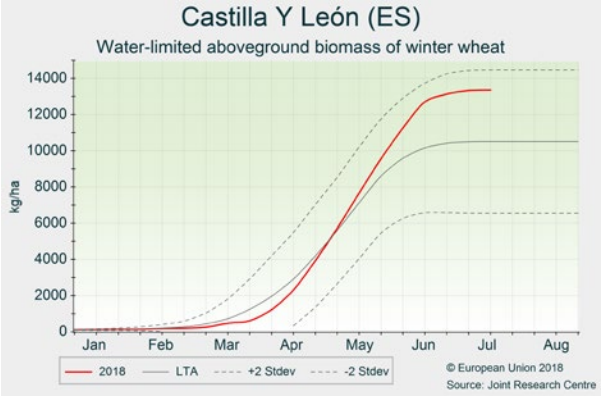
Weather conditions have been humid in the northern half of the Iberian Peninsula (e.g. *Castilla y León, Centro*), with abundant rainfall registered in the first half and at the end of June, and the first week of July. Especially in the northernmost provinces of Spain (*León*, *Palencia*, *Burgos*), these rainfalls came as thunderstorms and hail episodes that caused local damage to winter cereals.

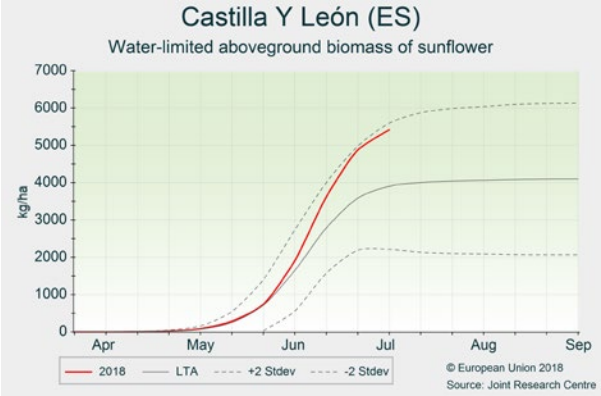
The winter cereals harvest is under way, and has been completed in the south (*Alentejo*, *Castilla-La Mancha*, *Andalucía*). Yield expectations are very high thanks to the favourable weather conditions throughout the growing season. The harvest of wheat and barley has just started in southern *Castilla y León* and *Aragón*, thanks to a sufficient number of dry days since mid June. By contrast, in northern provinces, where humid conditions have prevailed for the last month, harvests will be delayed. The weather forecast for the area indicates a dry period for the next 10 days, which should allow harvesting to start during the second half of July. Yield potentials for wheat and barley are high in those provinces, but dry conditions during harvest will be necessary to confirm positive yields.

The humid conditions registered have favoured sunflower growth, currently in the grain-filling stage, and yield expectations are high. Moreover, water storage is abundant across the peninsula, guaranteeing the summer irrigation campaign for maize, potato and sugar beet, whose yields are expected to be average.









Italy

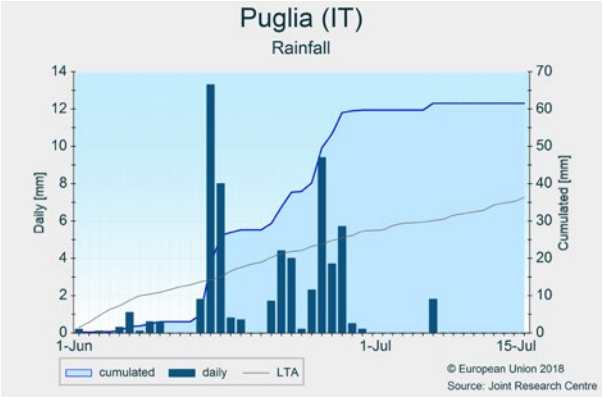
Fairly positive yield outlook maintained

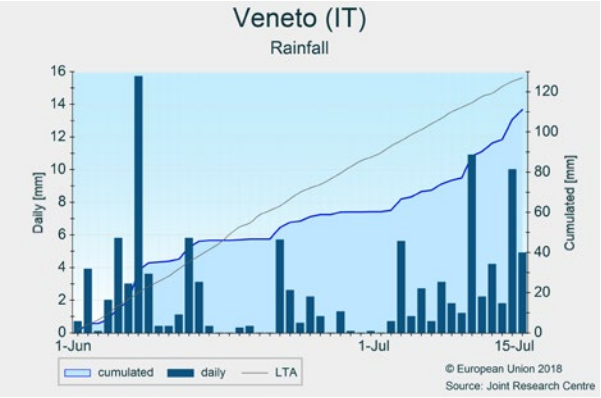
Winter cereals harvests have been completed under favourable conditions. Yield expectations for durum wheat are close to the 5-year average. Conditions for grain maize and sunflower have been average.

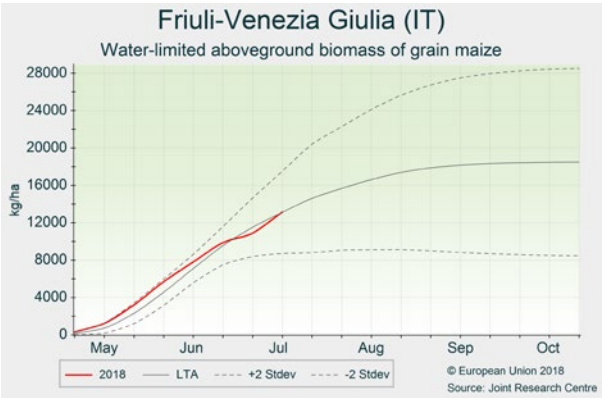
Warmer-than-usual weather conditions prevailed in most of the regions in June and the first half of July, with daily temperatures systematically 1 to 2 °C above the LTA. In the south (*Campania, Puglia*) and on the Adriatic Sea coastline (*Marche*, east of *Emilia-Romagna*) precipitation during June was slightly higher than average, and mainly concentrated in the first half of the month. By contrast, in northern regions (*Veneto, Friulia-Venezia-Giulia*) June was rather dry, but abundant rainfall (about 40 mm) was registered in the 2nd week of July.

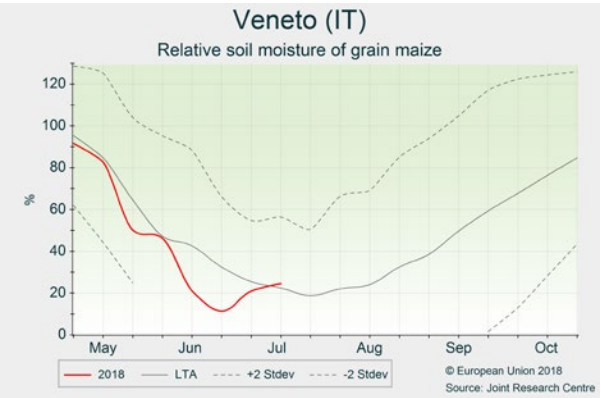
For winter crops, the agronomical season has already been concluded. Harvesting has taken advantage of moderately dry conditions in southern regions during the end-of-June/beginning of July period. Our yield forecast of June is maintained and is close to the 5-year average.

Rainy events that occurred in July in northern regions meant that water deficit stresses on summer crops were avoided, in particular for grain maize and green maize along the upper Po valley. However, Soybean in the *Veneto* and *Friuli Venezia Giulia* regions was somewhat affected. Summer crops are now at the flowering stage, and yield expectations are close to the 5-year average.









Hungary

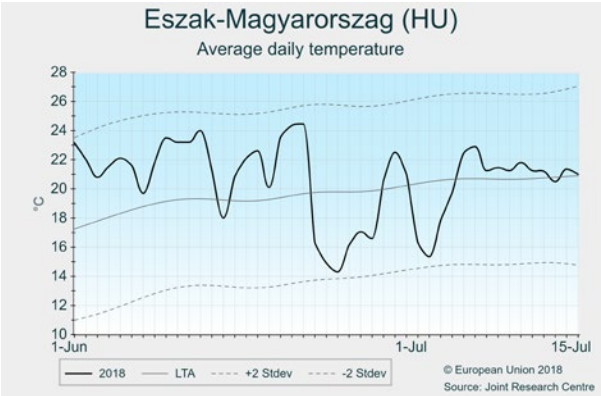
Difficult harvest

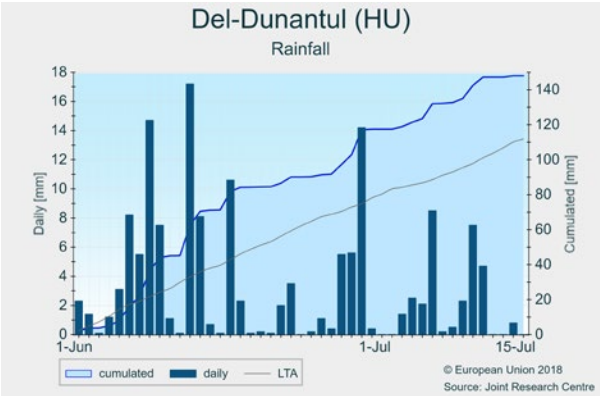
The hot first 2 dekads of June were followed by a colder-than-usual period. Frequent and abundant rainfalls hampered the harvest and reduced the grain quality, but provided adequate water supply for the summer crops. The yield outlook for winter cereals is close to the 5-year average, but for rapeseed it remains below average because of unfavourable spring conditions and expected harvest losses.

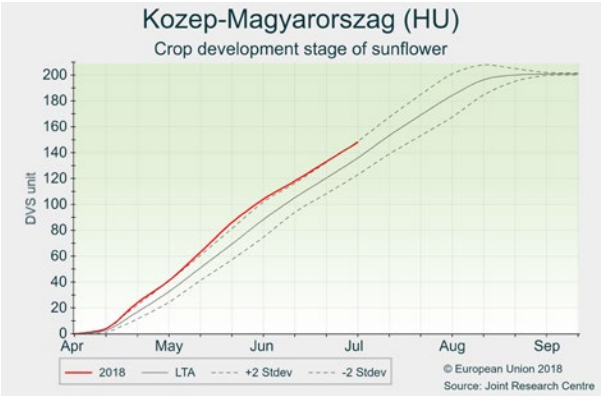
Daily temperatures fluctuated well above the LTA, but without the occurrence of heatwaves in the first 2 dekads of June. Moderately colder-than-usual weather conditions prevailed from 21 June to 15 July. From 1 June to 15 July, most of Hungary experienced frequent and abundant rainfalls, except the north-eastern regions (*Észak-Alföld*), where some precipitation deficit (20-50 mm) was experienced.

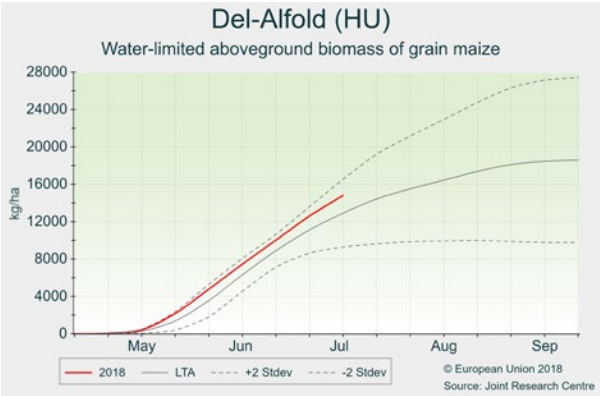
This year, the harvest of winter crops started 2-3 weeks earlier than usual, but made slow progress, and conditions were rather difficult because of frequent rains. Wet fields caused delays and yield losses especially for rapeseed, while for winter cereals the yield quality decreased. Our yield forecast for winter cereals was maintained or slightly increased, taking into account some positive effects of the precipitation during the late grain-filling period, but it was lowered for rapeseed because of yield losses during the harvest.

Conditions for summer crops are good. The extremely warm weather in May and the first half of June accelerated phenological development. Then the recent colder period was favourable for successful pollination, and precipitation favourably replenished soil moisture for the yield formation period and provided a near-optimal water supply. Canopy expansion and biomass accumulation are above the average level, so the yield forecast for summer crops has been revised significantly upwards.









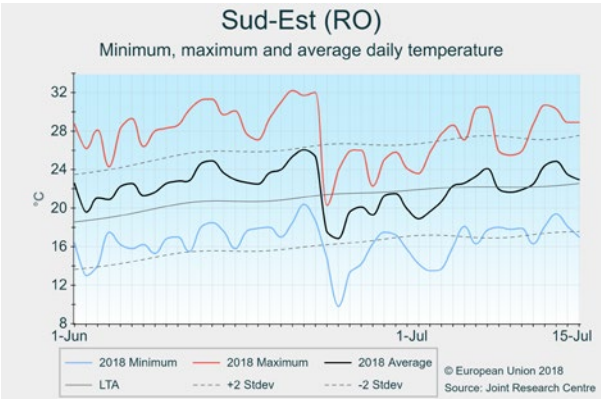
Romania

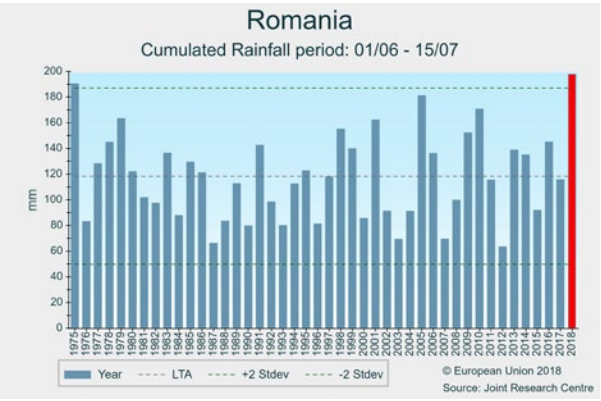
Excessive rain delayed the harvest of winter crops

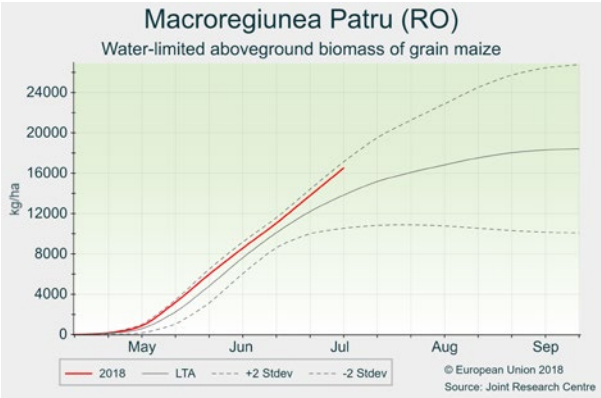
The harvest of winter crops started much earlier than usual, but was severely hampered by frequent and heavy rains. The overly wet conditions also negatively affected the grain quality. The yield forecast for winter cereals is at the 5-year average level, but for rapeseed it is lower. Grain maize and sunflower are in good condition, the water supply is adequate and the yield outlook is high.

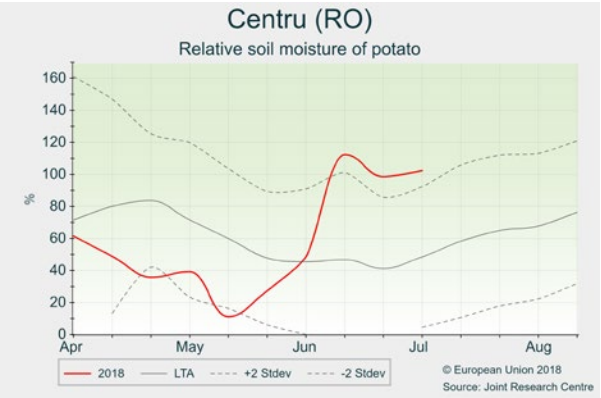
During the first 2 dekads of June, temperatures persistently fluctuated above the LTA by 2-4 °C. In southern Romania, 10-18 hot days (T_{max} > 30 °C) were recorded, with the longest heatwaves reaching a duration of 5-10 days. The last dekad of June was moderately (1-2.5 °C) colder than usual, whereas in the first half of July near-normal thermal conditions were experienced.

The period reviewed (1 June to 15 July) was extremely wet; the wettest in our records (since 1975). Rainfall totals typically reached 80-330 mm, i.e. 50-200 mm above the LTA. Only in some spots at the western and eastern sides of the country were near-average levels recorded. The most intense precipitation events (from 30 to 80 mm in 1 day) occurred during the last 5 days of June, causing waterlogging problems, local floods and significant delays to the harvesting of winter crops. The overly wet conditions led to lower grain quality and provided an optimal environment for fungal infections and other crop diseases. On the other hand, soil moisture levels increased significantly under summer crops. Consequently, good water supply is expected during the flowering and yield formation period. Our crop model simulations indicate high biomass accumulation in maize, sunflower and sugar beet crops. The yield forecast for these crops has been revised considerably upwards. For potatoes, which are very sensitive to overly wet conditions, the yield forecast has been lowered.









Bulgaria

Positive yield outlook for grain maize and sunflower

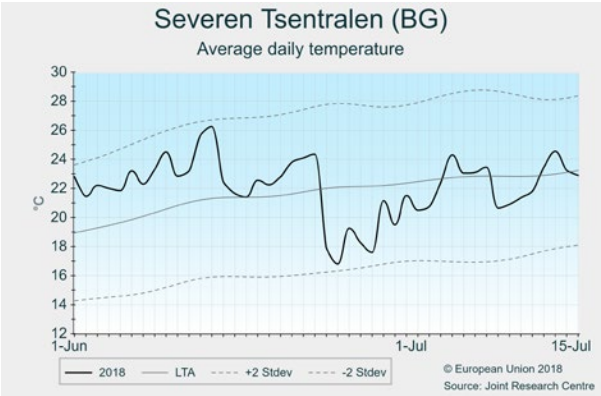
Abundant, locally excessive rainfall caused delays to the harvest of winter cereals and negatively affected grain quality, but increased soil moisture favourably for summer crops. Biomass accumulation of summer crops is high, suggesting good yield potential.

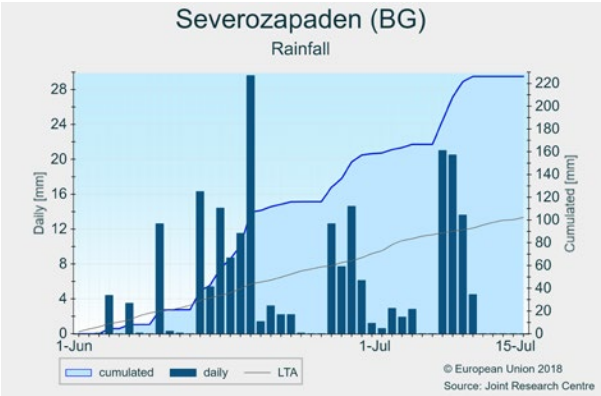
During the first half of the period reviewed, daily temperatures exceeded the average by 2-4 °C. The last dekad of June was somewhat colder than usual, whereas near-normal thermal conditions prevailed during the first half of July. The number of hot days (T_{max} > 30 °C) exceeded the long-term average by 4-10 days, but negative impacts on crops will be limited given the mild intensity and short duration of the heatwaves.

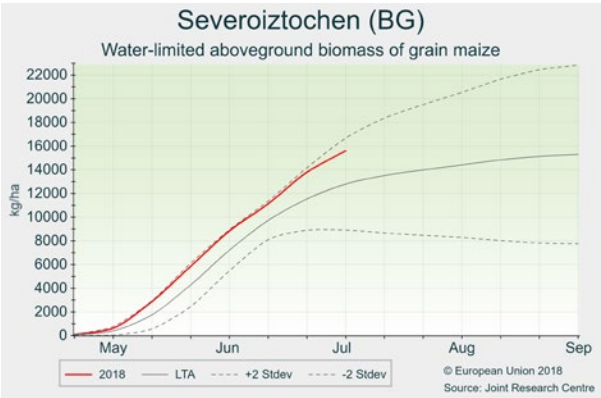
From 1 June, frequent and plentiful rainfall was experienced in most of Bulgaria. Precipitation exceeded the average by 40-140 mm, except in some north-eastern and south-western areas where rainfall totals were around the average.

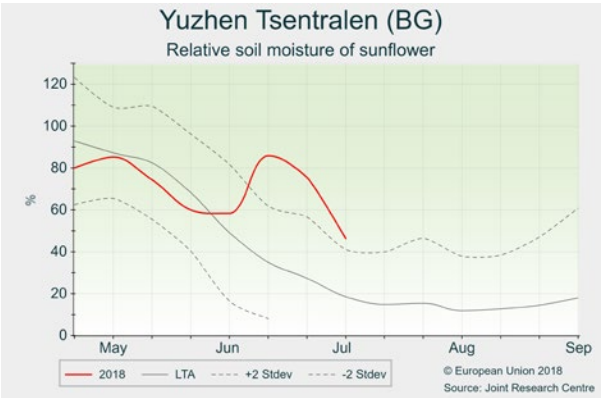
Harvesting of winter cereals and rapeseed began much earlier than usual: crop development was highly advanced as a result of the above-average thermal conditions of this spring. The abovementioned abundant and locally excessive rains hampered harvesting, lowered grain quality (lower protein content and also sprouting in the spike) and increased the incidence of fungal infections. The yield forecasts of winter cereals and rapeseed are above the average of the past 5 years, but remain below the (record high) results of last year. The forecast for winter wheat has been revised slightly upwards, taking into account the positive effects of the rains during late grain filling; the forecast for winter barley remains unchanged; whereas the rapeseed forecast has been revised downwards due to yield losses incurred during the harvest campaign.

Grain maize and sunflower benefited from the recent rainfall because soil moisture (which was critically low) was increased/replenished before the flowering and early grain-filling periods, which are crucial for yield formation. Our model simulations show high biomass accumulation of these crops, and phenological development is 1-2 weeks advanced. Consequently, our yield forecast for summer crops has been revised upwards. However, the wet weather conditions have raised pest and disease pressure.









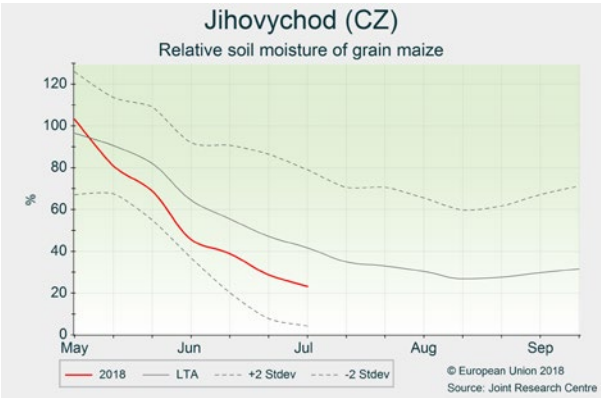
Austria, Slovakia and the Czech Republic

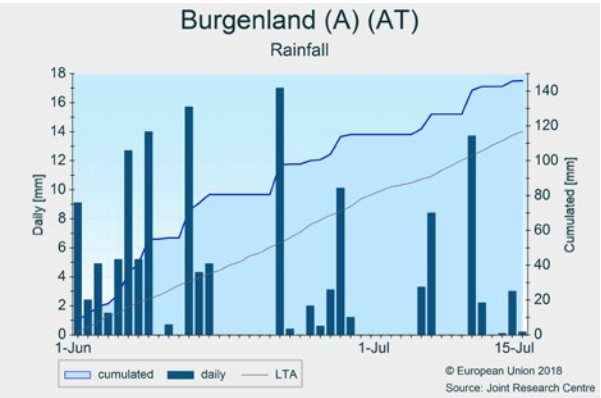
Dry soils affect summer crops in the Czech Republic and Austria

The winter wheat yield outlook remains well below the 5-year average. The harvest campaign is ongoing and was only regionally interrupted by rainfall events in western Slovakia and southern Austria. A yield outlook for summer crops below the 5-year average is expected for the Czech Republic and Austria, while average or slightly above-average yields are foreseen in Slovakia.

A warmer-than-usual June with temperature anomalies up to 4 °C above the LTA was followed by normal temperature conditions during the first half of July. Maximum recorded air temperatures approached 34 °C in *Niederösterreich* (Austria), *Jihovychod* (Czech Republic), *Bratislavsky Kraj* and *Zapadne Slovensko* (Slovakia). The lack of rainfall prevailed in a major part of the Czech Republic, while normal rainfall conditions prevailed in Austria and part of Slovakia. Regionally in southern and eastern parts of the Czech Republic, fewer than 3 rainy days with rainfall cumulates above 5 mm were recorded during the analysis period. South-western Slovakia experienced above-normal rainfall cumulates. Locally in western Slovakia and Austria, rainfall events with daily cumulates between 50 and 80 mm were recorded. According to our model simulation, a lack of soil moisture for summer crops prevails in a major part of the Czech Republic and northern Austria.

The harvesting of winter wheat is ongoing. Yield expectations remain below average and have been revised downwards because of unfavourable weather conditions. Rainfall is regionally interfering with the harvest, especially in south-western Slovakia and southern Austria. Summer crops are being affected by the lack of soil moisture in a major part of the Czech Republic and north-eastern Austria. Yields for summer crops have therefore been revised downwards in the Czech Republic and Austria, while in Slovakia the summer crops yield outlook remains at the level of the last forecast or has been revised upwards.





Denmark and Sweden

Warm and dry weather affects winter and spring crops

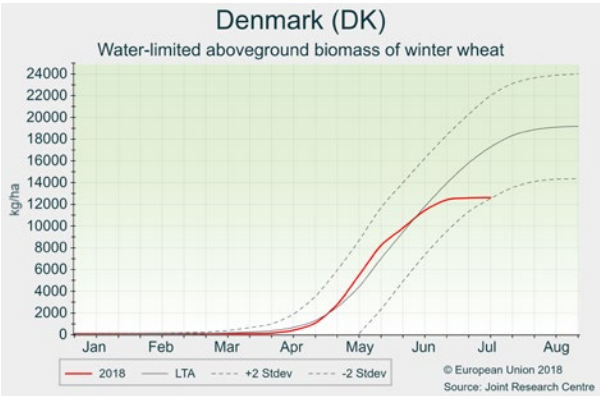
Warm and dry weather conditions persisted during the review period. This affected the development and growth of winter and spring crops. All crops reached advanced development stages with reduced yield expectations.

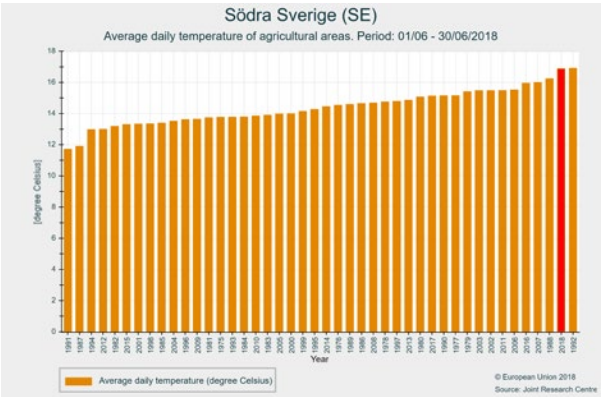
Above-average temperatures continued to prevail in both countries throughout the review period (1 June to 15 July). In *Östra Sverige*, maximum temperatures exceeded 29 °C at the beginning and end of June. Similarly to 1992, when spring was dry and yield low, the month of June was the warmest since 1975 in both countries.

Cumulated rainfall for the review period was well below average in both countries. In Denmark, and in the two regions of *Södra Sverige* and *Östra Sverige* in southern Sweden, cumulative rainfall was respectively 68 %, 57 % and 36 % lower than the LTA. In Denmark, the whole period was characterised by insignificant daily rainfall (less than 0.5 mm per day), although well distributed over the period of review. In Sweden, long dry periods alternated with a few rainy days, with very low precipitation amounts concentrated during the 2nd dekad of June.

All crops present advanced development on account of the persisting warm thermal conditions. Low soil moisture levels combined with high temperatures affected biomass accumulation and are likely to have impacted the flowering of winter cereals (in mid June), further affecting cereal production.

According to our model calculations for winter crops and spring cereals, leaf area index and biomass accumulation are well below average, particularly for winter cereals in the *Östra Sverige* region of southern Sweden, thus suggesting reduced yield expectations. Because of the high temperatures and the persistent water shortage, particularly important in southern Sweden, yield forecasts for winter and spring cereals lowered; and the yield forecast for rapeseed was revised further downwards.





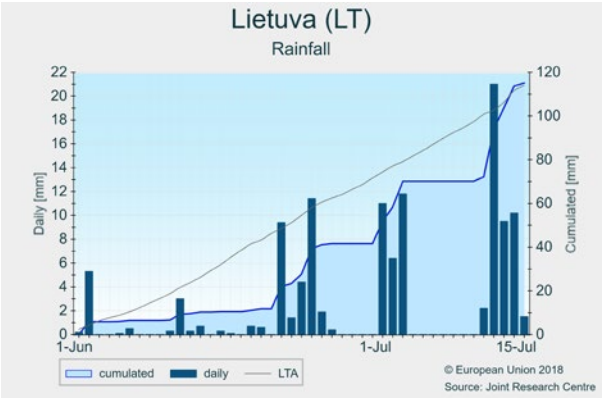
Finland, Lithuania, Latvia and Estonia

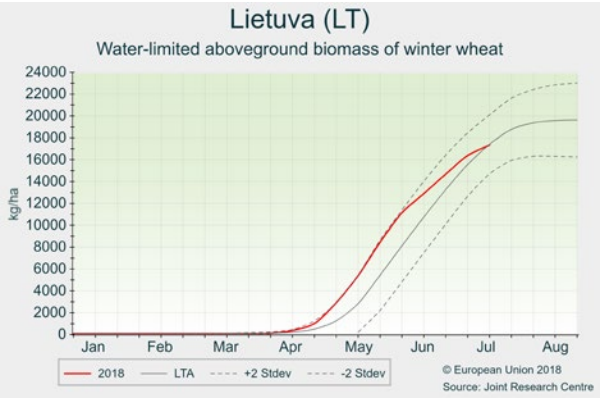
Yield forecasts for winter crops and spring cereals revised downwards

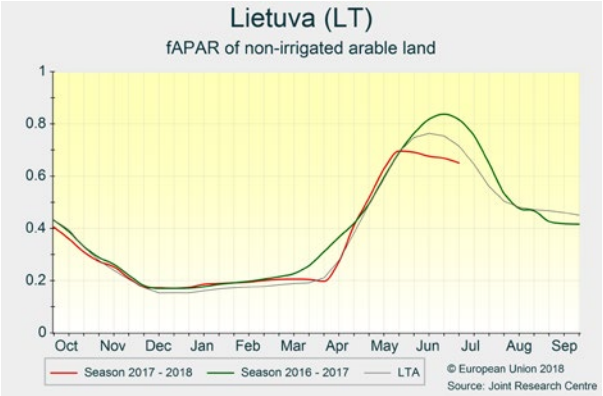
After a dry May and first half of June, rain in the second half of June brought some relief, but soil moisture remained at near-critical levels during the heading and flowering stages of winter and spring cereals. The yield outlook was revised downwards.

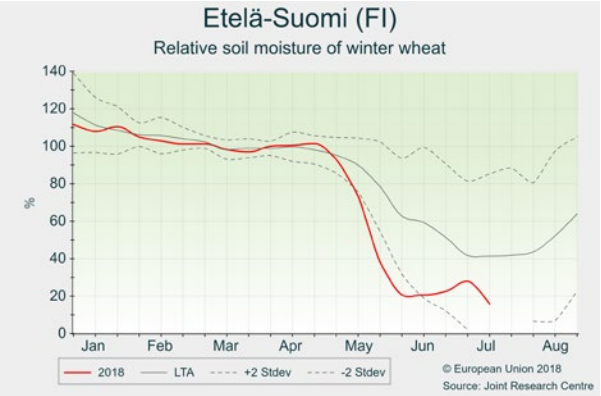
In June, temperatures started off warmer than usual and fluctuated around the average during the rest of the review period. For the period as a whole (1 June to 15 July), cumulative active temperatures (T_{base} = 0 °C) were close to average in Finland, Latvia and Estonia and slightly above average in Lithuania.

After a very dry May and first half of June, rainfall increased in the second half of June, reaching close to average totals at the end of the period of review in Lithuania and Finland. Precipitation helped to gradually replenish soils, but growing conditions only improved at the end of June, when winter cereals were already at the grain-filling phase (and rapeseed at the ripening stage). The extent of yield losses is very difficult to estimate because these depend mainly on the impacts of the warm and dry conditions on flower fertility and grain numbers. Data from remote sensing indicators and simulated growth indicators are in general below average for both winter crops and spring cereals; accordingly, the yield forecasts have been revised downwards with yield expectations below the 5-year average. Conditions were more favourable for spring barley in Estonia where the forecast is close to the 5-year average.









Belgium, the Netherlands and Luxembourg

Yield forecasts revised downwards

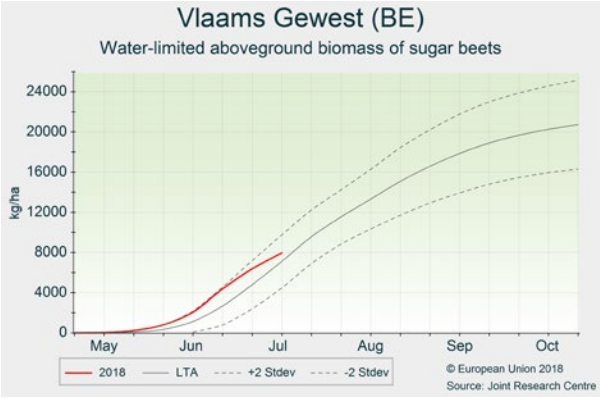
Warm and exceptionally dry weather caused soil moisture contents in well-drained non-irrigated fields to drop near to or below critical levels. Yield forecasts were revised downwards (most markedly for potatoes and spring barley) but remain close to the 5-year average.

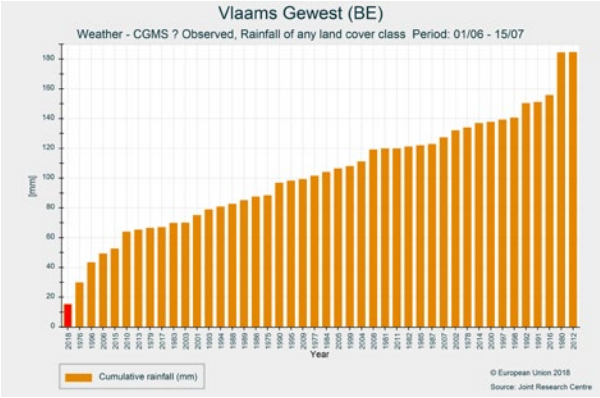
Throughout the Netherlands and northern Belgium, the period from 1 June 2018 to 15 July 2018 was the driest in our records (since 1975). In most parts of these countries, rainfall totals remained below 30 mm. In Luxembourg and southern Belgium, rainfall was also well below the LTA, and was mainly concentrated in the first half of June. Temperatures were 1-2 °C above the average for the period as a whole, with the highest anomalies around 7 June and the first days of July, but maxima remained below 30 °C.

Crop phenological development continued at an advanced pace but biomass accumulation started to lag behind due to constrained water supply and accelerated leaf ageing associated with the persistent warmer-than-usual conditions.

Rapeseed and winter barley crops have mostly been harvested by now, and the yields of these crops are likely to have been little affected by water stress. However, the yield potentials of wheat (of which the harvest has just started or is about to start in the coming days) and spring barley are expected to be affected, especially crops on compact or light-textured (sandy) soils. Irrigated crops or crops that benefit from high groundwater levels may even gain a net benefit on account of the low disease pressure and higher-than-usual sunshine levels. However, water use for irrigation is becoming more and more restricted.

Sugar beet crops are generally still in fair condition, thanks to their deep root systems, but potatoes are more seriously affected and may not fully recover even when conditions improve. Our yield forecasts for winter barley and rapeseed remain unchanged. For all other crops, the yield forecasts have been revised downwards but remain close to the 5-year average.





Greece and Cyprus

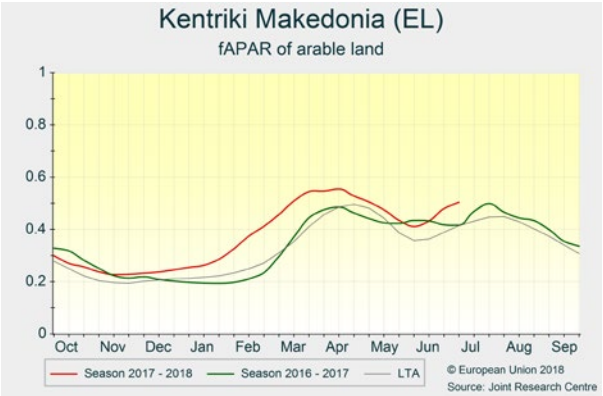
Heavy rains hampered harvest of winter crops

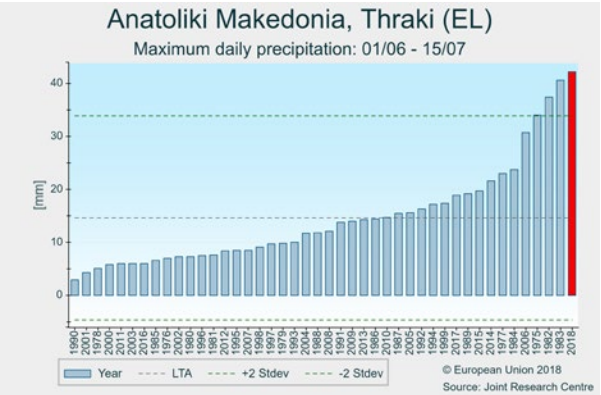
Abundant rains were recorded during the period under review (1 June to 15 July). The harvesting of winter crops has been hampered because of heavy rains at the end of June, and yield forecasts have been revised downwards but remain above average. Grain quality has probably been affected. The outlook of summer crops is positive and yield forecasts are above average.

Weather conditions in the first half of June were warmer than usual with few precipitation events. Average temperatures oscillated between 20 °C and 25 °C (T_{max} < 33 °C). Temperatures dropped sharply to below average during the period from 17 June to 1 July, which brought heavy rains and thunderstorms. In fact, historical maximum daily rains were observed in *Anatoliki*, a region with a predominant cultivation of summer crops. Especially in the *Anatoliki* subregions of *Kavala* and *Xanthi*, local damage to crops was caused by very intense rainfall measured at > 80 mm per day. In central (e.g. *Thessaloniki*, *Serres*) and north-western Greece (e.g. *Grevena*, *Larisa*, *Kozani*, *Trikala*), heavy rainfall amounting to between 30 and 50 mm per day was recorded. In addition to the rains reported in May, these events have led to persistent humid conditions, hampering the harvest of winter crops and probably resulting in a decrease in grain quality. The weight of grains has probably been affected less by these conditions and, although the forecasts have been revised downwards, they remain above average.

On the other hand, summer crops, at country level, have benefited from the weather conditions. Maximum temperatures did not reach 33 °C and there were no more than 5 consecutive hot days (T_{max} > 30 °C) throughout the whole review period. These thermal conditions, along with the abundant rains, have favoured biomass accumulation. A positive fAPAR signal corroborates this assessment, with summer crops now in the flowering stage. As a result, the forecasts for grain maize, sunflower, potato, and green maize are above the 5-year average.

In Cyprus, the campaign is practically finished and the slightly below-average yield forecasts of the last bulletin have been maintained.





Slovenia and Croatia

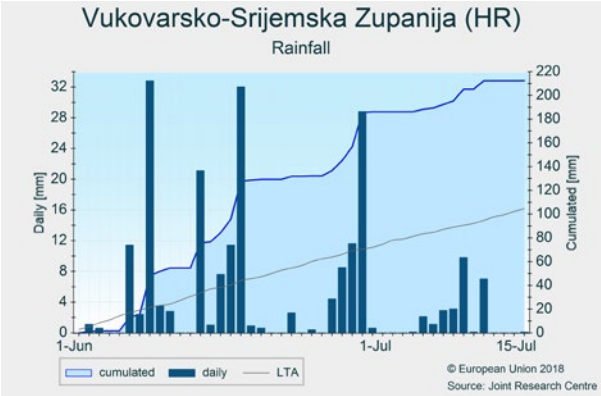
Winter wheat regionally affected by intense rainfall

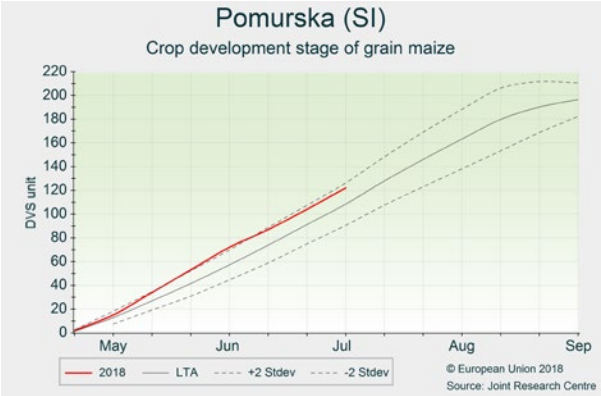
The winter wheat forecast was revised downwards in Slovenia because of frequent rainfall, accompanied by strong winds and also localised hail. Harvesting of winter wheat is ongoing, but it has been interrupted by heavy rainfall in south-eastern Slovenia and the central part of Croatia. A rainfall surplus and the absence of drought conditions have contributed to an improved outlook for summer crops.

A warmer-than-usual June was followed by normal temperature conditions during the first half of July. Maximum temperatures reached up to 34 °C in eastern Croatia. Heatwave events with maximum daily temperatures above 30 °C did not exceed 3 consecutive days during the analysis period. Above-average rainfall levels were recorded in eastern and southern Slovenia, and across major parts of Croatia, with the exception of coastal areas. Rainfall levels exceeded 150 mm in major parts of Slovenia and central and eastern Croatia, and in several regions in southern Slovenia. Rainfall in the central part of Croatia exceeded 200 mm. Locally, in these regions, abundant rainfall events resulted in daily cumulates exceeding 60 mm.

The winter wheat yield outlook was revised downwards in Slovenia as a result of frequent intense rainfall events accompanied by strong winds and sometimes also hail. Abundant rainfall is also interfering with the harvesting of winter wheat in south-eastern Slovenia and regionally in central and eastern parts of Croatia. Additional rain in the following dekad might worsen harvesting conditions and further lower yield quantity and quality.

Summer crop development is at an advanced stage because of the warmer-than-usual conditions in May and June. The outlook is above the 5-year average thanks to the absence of drought conditions. Nevertheless, uncertainties remain with respect to the summer crop yield forecast, related to regional conditions with abundant rainfall, which might lead to problems with diseases.





3.2 Black Sea Area

Ukraine

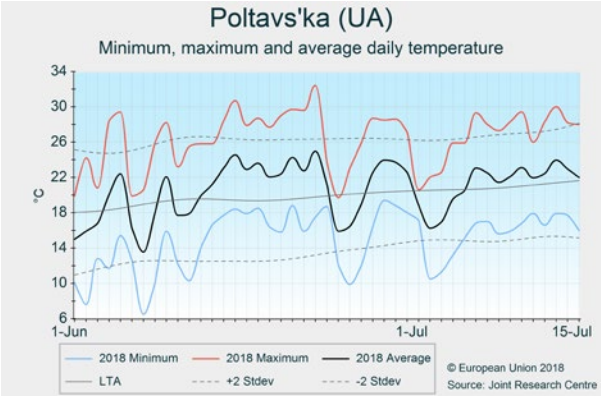
An average yield outlook

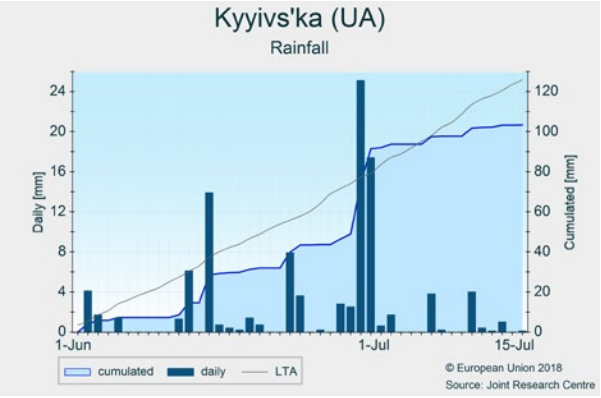
After a long period with little rainfall in April and May, precipitation has been observed across a large part of the country. Only a few areas, located in the south-eastern regions, have experienced a rain deficit since 1 June. Soft wheat yield in those regions has been slightly affected by these dry conditions; spring barley yield is expected to fall below the 5-year average.

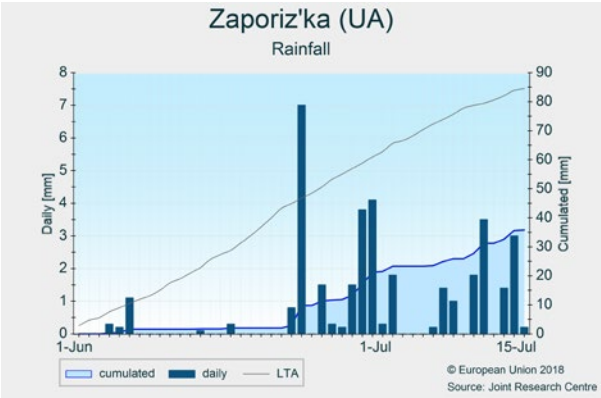
Cumulative rainfall was close to the average in the western half of the country. A small deficit was observed in the eastern half of Ukraine. Only the *Zaporis'ka* oblast experienced a substantial rain deficit for the period of analysis, reinforcing the spring drought that had already affected winter crops and spring barley.

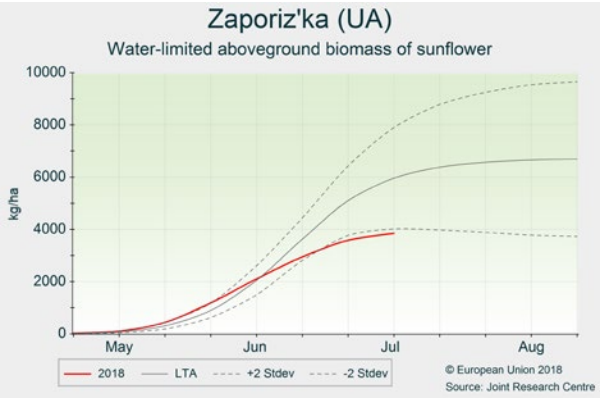
The rainfall observed in central Ukraine has been beneficial for crops there. In the main producing regions, grain maize has not been exposed to a water deficit and currently benefits from these good conditions. Temperatures remained above the average without being exceptionally high. At the end of June and beginning of July, temperatures occasionally dropped below seasonal values. The yield forecast of soft wheat is unchanged compared with last month. The forecast yield is slightly below that of last year, taking account of the impact of the earlier dry conditions in the south-eastern regions. In *Odes'ka*, the main producing region, winter barley has benefited from the advantageous conditions, and yield is forecast to be close to that of last year.

In contrast, the spring barley yield is expected to fall below the 5-year average due to the late start of the season and the dry conditions observed in southern Ukraine. Consequently, the total barley yield is currently forecast to be below last year's level. Grain maize and soybean are currently in good conditions and expectations are positive, provided that severe dry conditions or heatwaves do not occur in the coming weeks. Sunflower is the only major arable crop currently affected by the ongoing drought in the *Zaporis'ka* oblast. The outlook for sunflower is therefore slightly negative, but the conditions and the yield outlook may still improve.









Turkey

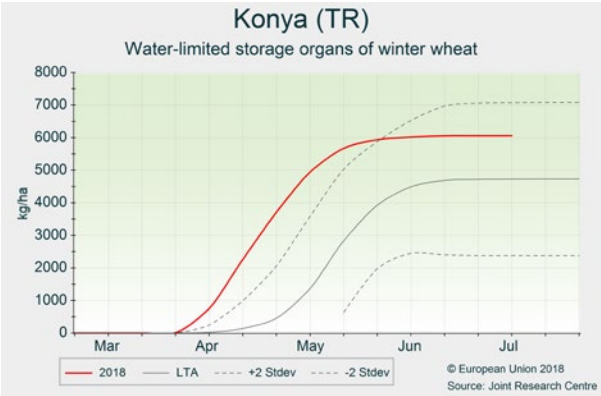
High yield expectations for winter crops

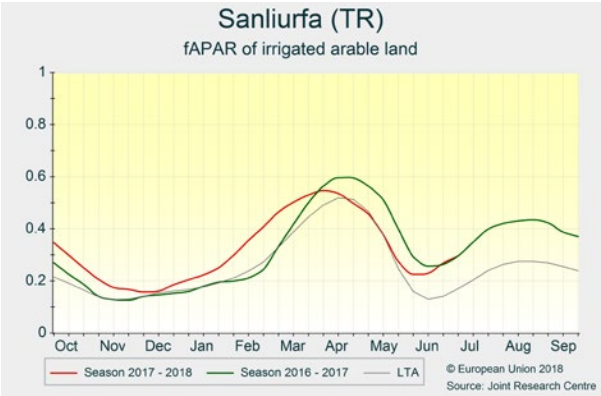
The harvest of winter crops is well advanced and the yield forecast is high thanks to the positive weather conditions experienced during most of the growing season. Grain maize reached grain filling in the main producing regions and yield expectations are average.

The unusually high temperatures observed during most of the spring persisted in June and the first half of July across the country and particularly in central regions (*Ankara*, *Kirikkale*), where daily averages were systematically 2-3 °C above seasonal values. June was exceptionally humid in the west (*Tekirdag*, *Manisa*, *Aydin*), while in central and south-eastern regions precipitation was close to seasonal values. During the first half of July, by contrast, almost no rainfall was registered in any region.

The dry period in July enabled the completion of the harvest of winter cereals in the main producing areas in the western half of the country (*Tekirdag*, *Konya*, *Ankara*, *Kirikkale*). In the east (*Kayseri*, *Samsun*, *Van*), the wheat and barley harvest is now underway and the current dry conditions will permit it to conclude in the next 2 weeks. Yield expectations for winter cereals are positive, as weather conditions have been, overall, highly favourable during the growing season.

The unusually high temperatures observed since May have favoured a rapid development of grain maize in the centre of the south of the country (*Konya*, *Adana*), where maize is presently in the grain-filling phase. In the south-east (*Sanliurfa*, *Mardin*) the growing season is usually later than in the centre of the south, and maize is still in the early development stages. The outlook is positive, and our yield forecast is at the average, as water storage should be sufficient to satisfy the demands of the irrigation campaign.





3.3 European Russia and Belarus

European Russia

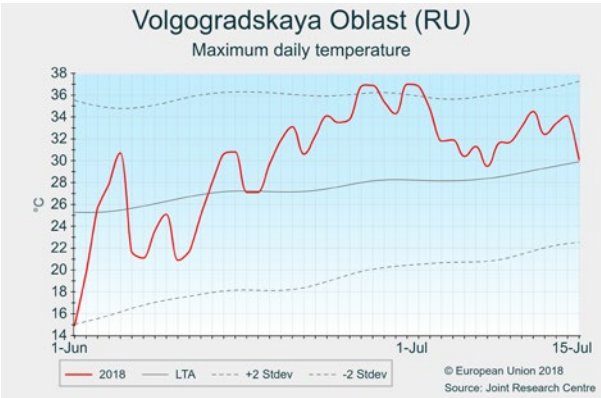
Drought lowers the yield outlook

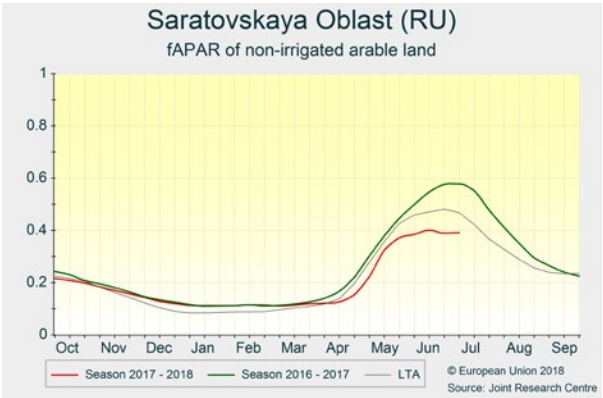
In southern Russia the period was characterised by warm and dry weather, resulting in severe water deficits. Clear signs of an intensifying water deficit are visible on remotely sensed images. Near-average yields are expected for winter wheat but, because of the drought, considerable losses are likely for spring and summer crops.

During the 1st dekad of June, daily temperatures generally fluctuated below the LTA, resulting in negative anomalies of 1-5 °C. After 10 June a perceptible warming started, and after mid June European Russia was characterised by warmer-than-usual thermal conditions. In the southern regions, extremely hot weather prevailed; daily maximum temperatures approached or exceeded 30 °C nearly every day. This resulted in 6-16 more hot days (T_{max} > 30 °C) than climatologically expected. On the hottest days, temperatures reached 36-43 °C.

Southern Russia is suffering from a drought. Since early June, precipitation has varied considerably spatially, but cumulative rainfall was typically 30-80 % below the LTA in the southern half of Russia. This includes most of the Chernozem Belt, the area between the Black Sea and Caspian Sea, as well as the southern regions of the Volga okrug. Drought badly affected winter cereals during grain filling because of a limited supply of soil moisture. Therefore, the yield outlook will remain below the record level of last year, but is expected to be close to the average of the last 5 years.

Leaf area and biomass accumulation of the spring and, especially, summer crops were seriously affected by the drought. Because of extreme hot weather and inadequate water supply, severe yield losses are probable in the *Rostovskaya*, *Volgogradskaya*, *Voronezhskaya* and *Saratovskaya* oblasts, as well as in the *Kransnodarskiy* and *Stavropolskiy* krays and the Kalmykiya Republic. Spring cereals are in better shape in the northern and eastern regions.





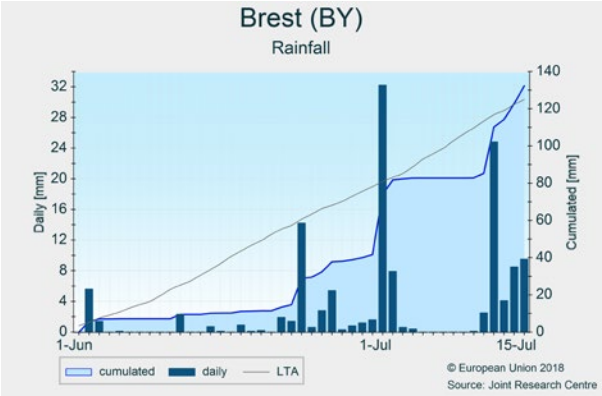
Belarus

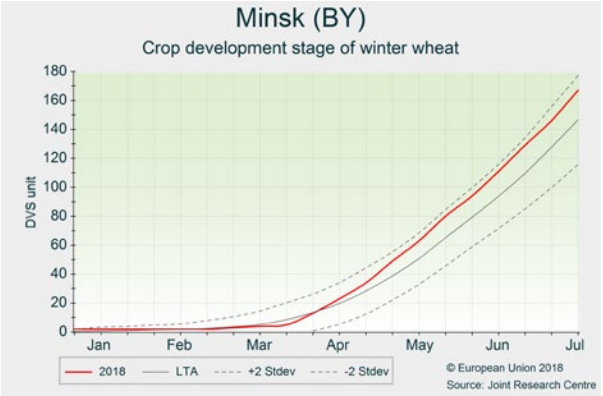
Average expectations for winter cereals and grain maize

Around average temperatures and intense precipitation in July resulted in an improvement in soil water conditions over the period under review. Generally, an average outlook for wheat, barley and grain maize yields is maintained. However, intense precipitation recorded since the beginning of July could delay ongoing harvesting, foster the spread of disease and impact grain quality.

Temperatures oscillated around the LTA during the period under analysis, while cumulative precipitation was constantly increasing and at the end of the period it reached values around the LTA. Moderate temperatures and adequate rainfall enabled the replenishment of soil moisture.

Winter cereal is at an advanced stage of development compared with an average year and is currently at the grain-filling stage. Flowering of winter wheat started in the last dekad of May, when the water deficit was substantial, which could have a negative impact on yields. However, the recent thermal and soil moisture conditions were favourable for grain filling. Intense precipitation at the end of June and in July could result in a delay of the ongoing harvest of winter crops, foster disease spread and reduce grain quality. On the other hand, the effect of rain on the further development of summer crops has been beneficial, as it has improved the soil water balance. The outlook for wheat, barley and grain maize yields is close to average.





3.4 Maghreb

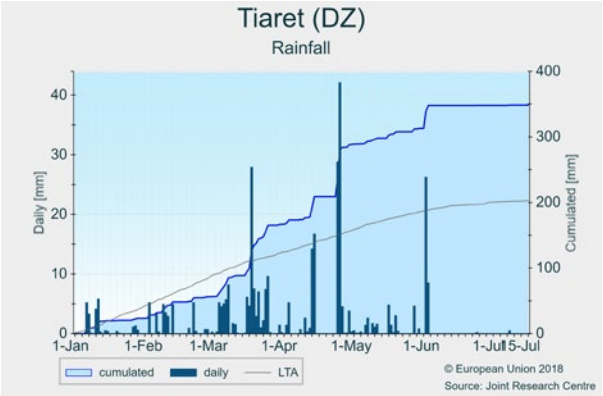
Morocco, Algeria and Tunisia

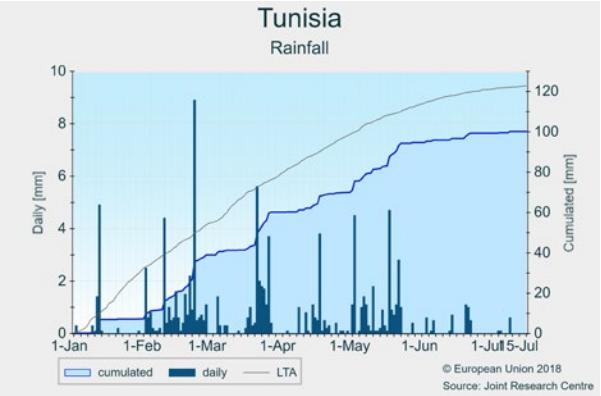
Positive outlook in many agricultural areas of the Maghreb

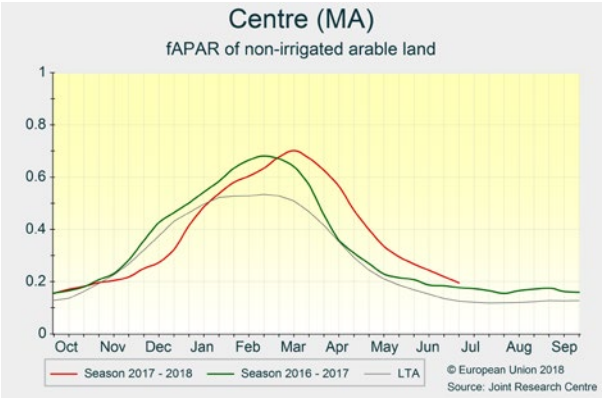
The 2017-2018 winter cereal campaign is finishing with auspicious yield expectations in Morocco, Algeria and coastal northern Tunisia. In the rest of Tunisia, the outlook is below average owing to drier-than-usual conditions.

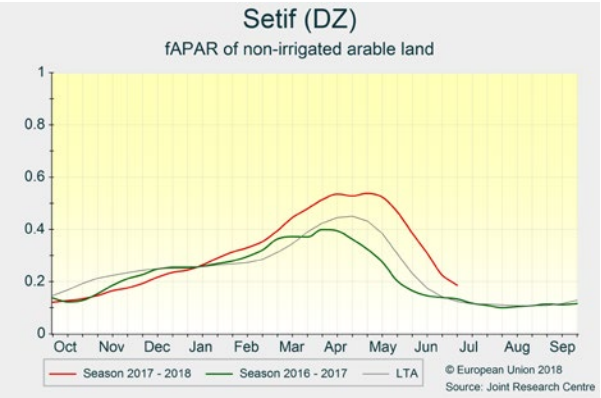
Rain-free days and mild temperatures characterised the period under review (1 June to 15 July) in most of the Maghreb. This weather provided favourable conditions for the harvest of winter cereals. Harvesting has come to an end in Morocco, Tunisia and western Algeria, while it is still ongoing in the eastern regions.

Excellent yields are expected in Morocco ([1]) owing to the positive growing conditions that have been reported throughout the campaign, which this year was delayed (October-June). Our yield forecast for Morocco exceeds the 5-year average for all winter cereals. The vast majority of agricultural areas in Algeria benefited from abundant and well-distributed rain between mid March and May, which created favourable conditions during flowering and led to favourable stocks of soil water to sustain optimal water supply until ripening. Consequently, Algerian farms are also expected to reach above-average yields, except in *Oum El Bouaghi* and *Batna*, where winter crops were irreversibly impacted by persistent drought during the vegetative growth stage. At country level, our yield forecasts are above the 5-year average for all crops. Prospects are similarly positive in the major wheat-producing regions of northern Tunisia, where growing conditions were favourable during most of the growing cycle. However, in the rest of the country, the cereal harvest is expected to be poor because most of the season was marked by persistent lack of rain. At country level, yield forecasts for all crops — barley, durum wheat and soft wheat — are below the 5-year average.





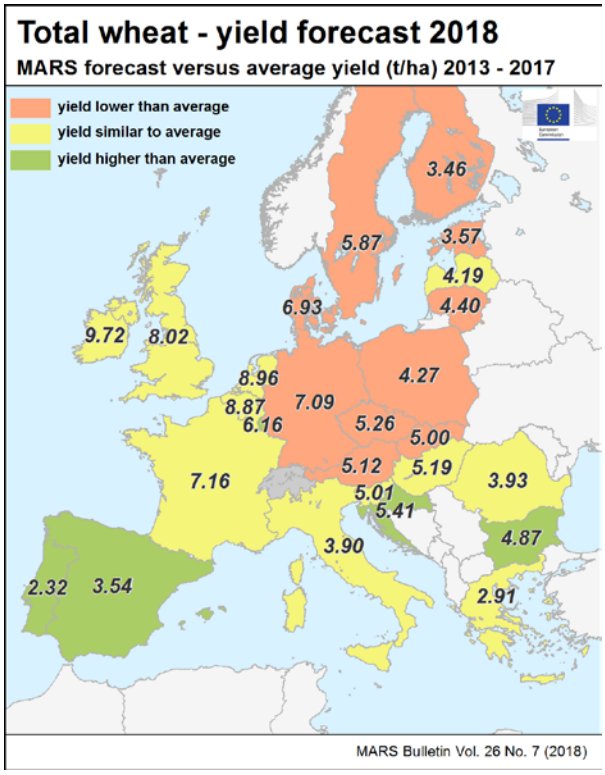




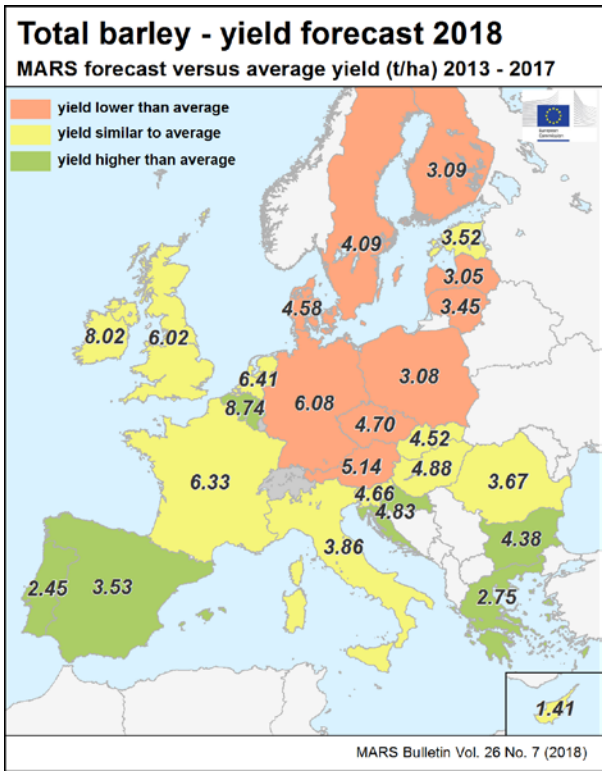
([1]) http://www.agrimaroc.ma/cereales-100-millions/

4. Crop yield forecasts

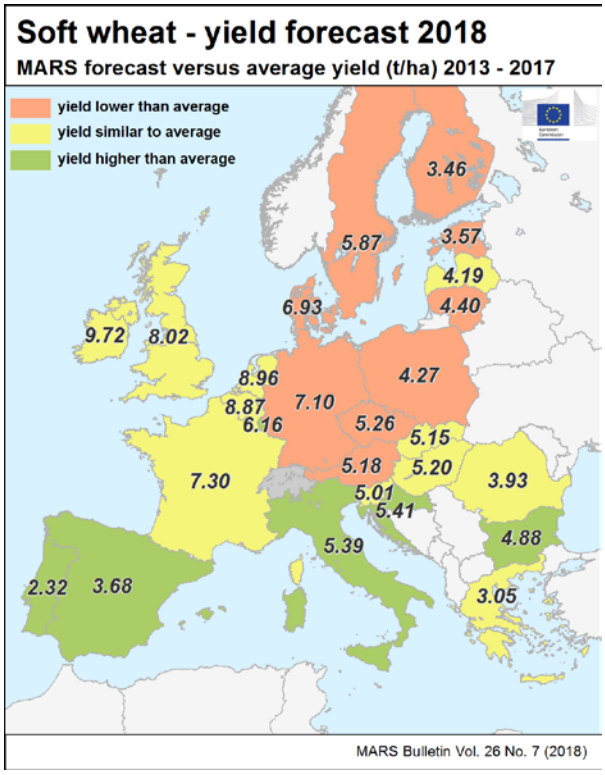
Country	TOTAL WHEAT (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	5,73	5,85	**5,59**	-2,4	-4,5
AT	5,68	5,12	**5,12**	-9,9	-0,1
BE	8,56	8,37	**8,87**	+3,6	+5,9
BG	4,59	5,35	**4,87**	+6,2	-8,9
CY	-	-	**-**	-	-
CZ	6,14	5,67	**5,26**	-14	-7,3
DE	8,00	7,64	**7,09**	-11	-7,3
DK	7,71	8,24	**6,93**	-10	-16
EE	3,84	4,20	**3,57**	-6,9	-15
ES	3,07	2,41	**3,54**	+15	+47
FI	3,99	4,13	**3,46**	-13	-16
FR	6,98	7,25	**7,16**	+2,5	-1,3
GR	2,84	2,93	**2,91**	+2,6	-0,8
HR	5,14	5,95	**5,41**	+5,2	-9,1
HU	5,06	5,44	**5,19**	+2,7	-4,6
IE	9,89	10,2	**9,72**	-1,7	-4,4
IT	3,82	3,86	**3,90**	+1,8	+1,0
LT	4,67	4,82	**4,40**	-5,9	-8,8
LU	5,88	5,48	**6,16**	+4,9	+12
LV	4,29	4,79	**4,19**	-2,4	-13
MT	-	-	**-**	-	-
NL	8,97	9,09	**8,96**	+0,0	-1,4
PL	4,67	4,90	**4,27**	-8,7	-13
PT	2,01	2,05	**2,32**	+15	+13
RO	3,93	4,88	**3,93**	+0,0	-19
SE	6,68	6,99	**5,87**	-12	-16
SI	4,99	5,03	**5,01**	+0,4	-0,5
SK	5,24	4,73	**5,00**	-4,5	+5,7
UK	8,20	8,16	**8,02**	-2,2	-1,8



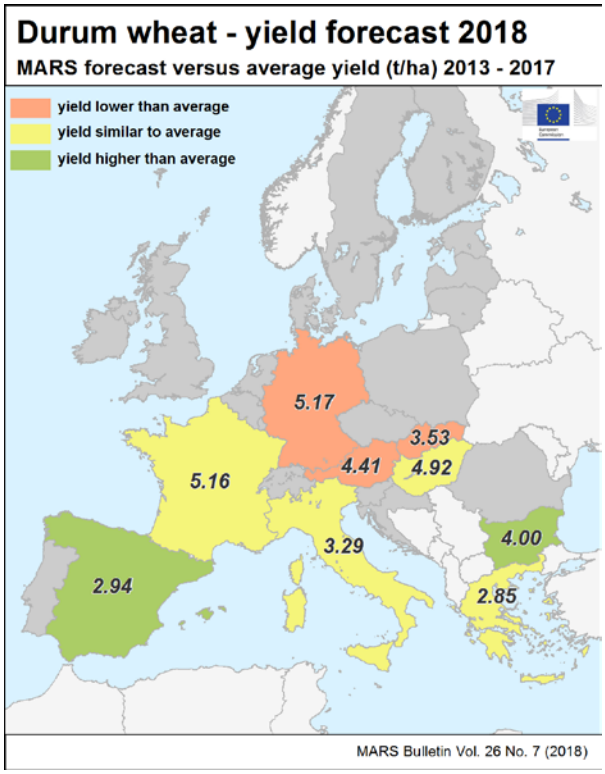
Country	TOTAL BARLEY (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	4,91	4,89	**4,74**	-3,3	-3,1
AT	5,64	5,60	**5,14**	-8,8	-8,2
BE	8,35	8,68	**8,74**	+4,6	+0,7
BG	4,10	4,68	**4,38**	+6,6	-6,5
CY	1,44	1,81	**1,41**	-2,0	-22
CZ	5,30	5,22	**4,70**	-11	-10
DE	6,94	6,93	**6,08**	-12	-12
DK	5,86	6,00	**4,58**	-22	-24
EE	3,55	4,10	**3,52**	-0,9	-14
ES	2,91	2,26	**3,53**	+21	+57
FI	3,68	4,08	**3,09**	-16	-24
FR	6,37	6,33	**6,33**	-0,6	+0,0
GR	2,64	2,69	**2,75**	+4,2	+2,3
HR	4,36	4,98	**4,83**	+11	-3,0
HU	4,74	5,27	**4,88**	+3,1	-7,4
IE	8,05	8,36	**8,02**	-0,5	-4,1
IT	3,81	3,93	**3,86**	+1,1	-1,9
LT	3,60	3,65	**3,45**	-4,2	-5,5
LU	-	-	**-**	-	-
LV	3,31	3,32	**3,05**	-7,8	-8,1
MT	-	-	**-**	-	-
NL	6,67	6,09	**6,41**	-3,8	+5,3
PL	3,79	3,96	**3,08**	-19	-22
PT	2,06	1,90	**2,45**	+19	+29
RO	3,63	4,52	**3,67**	+1,2	-19
SE	5,02	5,29	**4,09**	-19	-23
SI	4,63	4,81	**4,66**	+0,8	-3,0
SK	4,64	4,54	**4,52**	-2,6	-0,3
UK	6,20	6,09	**6,02**	-2,9	-1,2



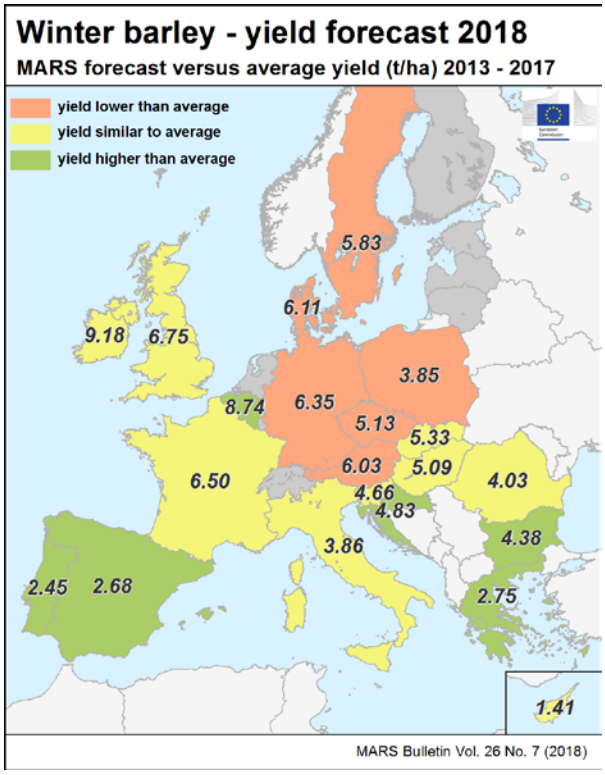
Country	SOFT WHEAT (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	5,97	6,12	**5,82**	-2,6	-4,9
AT	5,74	5,22	**5,18**	-9,9	-0,8
BE	8,56	8,37	**8,87**	+3,6	+5,9
BG	4,60	5,36	**4,88**	+6,2	-8,9
CY	-	-	**-**	-	-
CZ	6,14	5,67	**5,26**	-14	-7,3
DE	8,02	7,66	**7,10**	-11	-7,3
DK	7,71	8,24	**6,93**	-10	-16
EE	3,84	4,20	**3,57**	-6,9	-15
ES	3,19	2,32	**3,68**	+16	+58
FI	3,99	4,13	**3,46**	-13	-16
FR	7,10	7,36	**7,30**	+2,8	-0,8
GR	2,99	3,15	**3,05**	+1,9	-3,1
HR	5,14	5,95	**5,41**	+5,2	-9,1
HU	5,06	5,47	**5,20**	+2,7	-5,0
IE	9,89	10,2	**9,72**	-1,7	-4,4
IT	5,15	5,49	**5,39**	+4,6	-1,8
LT	4,67	4,82	**4,40**	-5,9	-8,8
LU	5,88	5,48	**6,16**	+4,9	+12
LV	4,29	4,79	**4,19**	-2,4	-13
MT	-	-	**-**	-	-
NL	8,97	9,09	**8,96**	+0,0	-1,4
PL	4,67	4,90	**4,27**	-8,7	-13
PT	2,01	2,05	**2,32**	+15	+13
RO	3,93	4,88	**3,93**	+0,0	-19
SE	6,68	6,99	**5,87**	-12	-16
SI	4,99	5,03	**5,01**	+0,4	-0,5
SK	5,30	4,79	**5,15**	-2,7	+7,5
UK	8,20	8,16	**8,02**	-2,2	-1,8



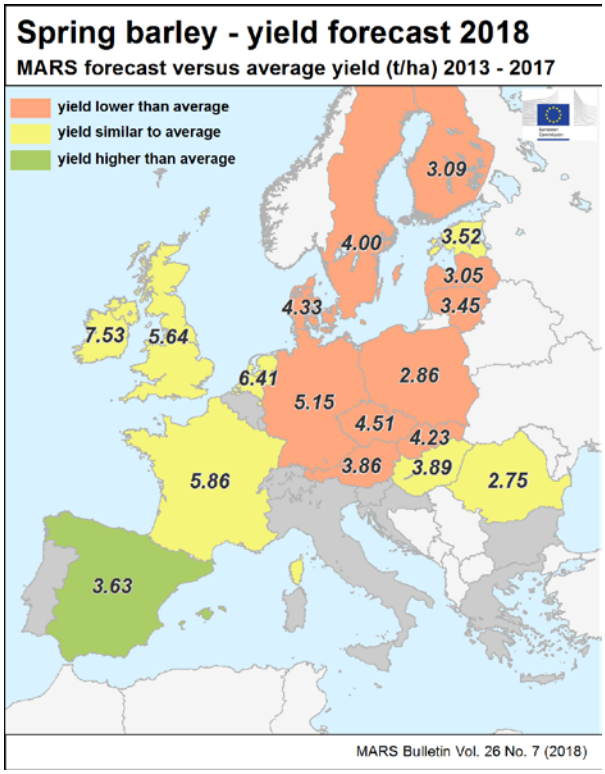
Country	DURUM WHEAT (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	3,40	3,51	**3,48**	+2,4	-0,9
AT	4,74	4,02	**4,41**	-7,0	+10
BE	-	-	**-**	-	-
BG	3,66	4,10	**4,00**	+9,2	-2,6
CY	-	-	**-**	-	-
CZ	-	-	**-**	-	-
DE	5,55	5,76	**5,17**	-6,7	-10
DK	-	-	**-**	-	-
EE	-	-	**-**	-	-
ES	2,54	2,73	**2,94**	+16	+7,5
FI	-	-	**-**	-	-
FR	5,18	5,73	**5,16**	-0,4	-10
GR	2,77	2,85	**2,85**	+3,0	-0,1
HR	-	-	**-**	-	-
HU	4,78	4,71	**4,92**	+2,8	+4,5
IE	-	-	**-**	-	-
IT	3,26	3,23	**3,29**	+0,8	+1,7
LT	-	-	**-**	-	-
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	-	-	**-**	-	-
PL	-	-	**-**	-	-
PT	-	-	**-**	-	-
RO	-	-	**-**	-	-
SE	-	-	**-**	-	-
SI	-	-	**-**	-	-
SK	4,40	4,26	**3,53**	-20	-17
UK	-	-	**-**	-	-



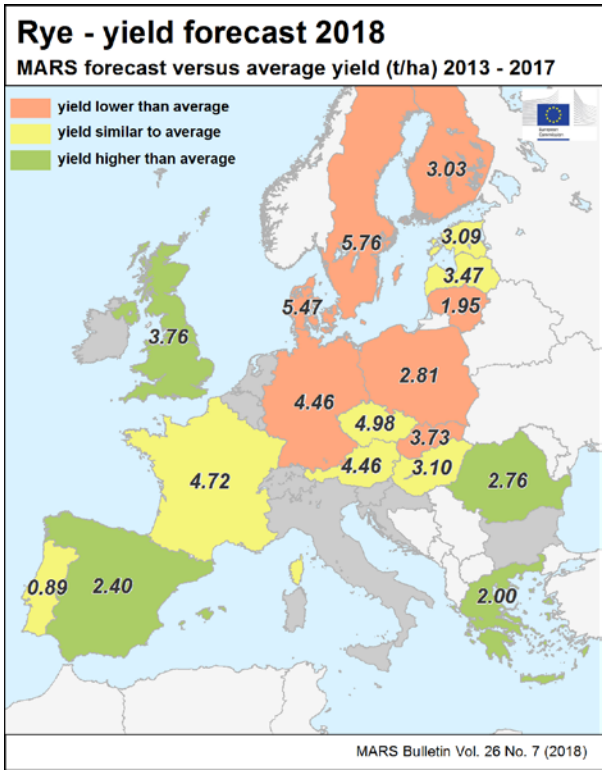
Country	WINTER BARLEY (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	5,79	5,98	**5,60**	-3,3	-6,4
AT	6,33	6,59	**6,03**	-4,7	-8,5
BE	8,35	8,68	**8,74**	+4,6	+0,7
BG	4,10	4,68	**4,38**	+6,6	-6,5
CY	1,44	1,81	**1,41**	-2,0	-22
CZ	5,52	5,85	**5,13**	-7,2	-12
DE	7,36	7,35	**6,35**	-14	-14
DK	6,54	6,78	**6,11**	-6,5	-9,8
EE	-	-	**-**	-	-
ES	2,41	2,00	**2,68**	+11	+34
FI	-	-	**-**	-	-
FR	6,51	6,48	**6,50**	-0,1	+0,3
GR	2,64	2,69	**2,75**	+4,2	+2,3
HR	4,36	4,98	**4,83**	+11	-3,0
HU	5,02	5,44	**5,09**	+1,3	-6,4
IE	9,33	9,11	**9,18**	-1,6	+0,7
IT	3,81	3,93	**3,86**	+1,1	-1,9
LT	-	-	**-**	-	-
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	-	-	**-**	-	-
PL	4,38	4,66	**3,85**	-12	-17
PT	2,06	1,90	**2,45**	+19	+29
RO	3,95	4,90	**4,03**	+1,9	-18
SE	6,11	6,42	**5,83**	-4,6	-9,2
SI	4,63	4,81	**4,66**	+0,8	-3,0
SK	5,17	5,27	**5,33**	+3,0	+1,1
UK	6,98	6,97	**6,75**	-3,2	-3,2



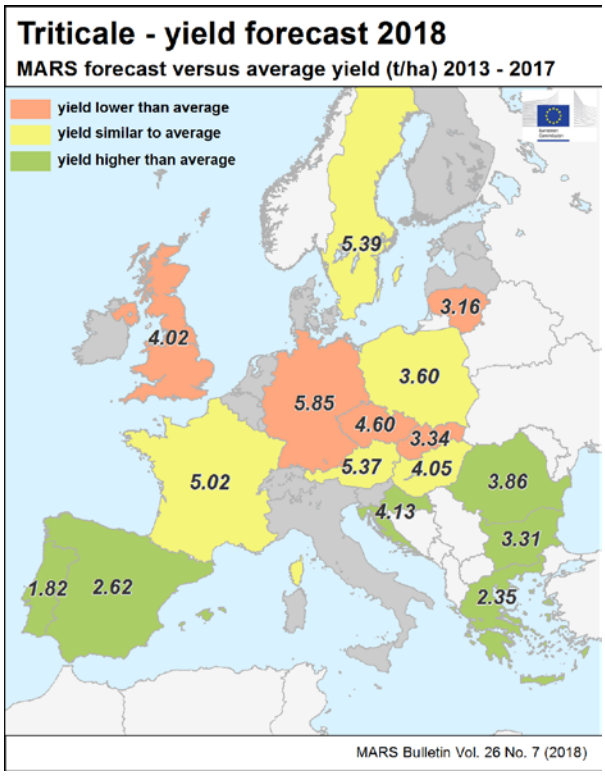
Country	SPRING BARLEY (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	4,25	4,07	**4,13**	-2,9	+1,6
AT	4,65	3,99	**3,86**	-17	-3,4
BE	-	-	**-**	-	-
BG	-	-	**-**	-	-
CY	-	-	**-**	-	-
CZ	5,21	4,96	**4,51**	-13	-9,1
DE	5,49	5,40	**5,15**	-6,2	-4,7
DK	5,71	5,82	**4,33**	-24	-26
EE	3,55	4,10	**3,52**	-0,9	-14
ES	2,99	2,29	**3,63**	+22	+59
FI	3,68	4,08	**3,09**	-16	-24
FR	5,97	5,91	**5,86**	-1,9	-0,8
GR	-	-	**-**	-	-
HR	-	-	**-**	-	-
HU	3,75	4,37	**3,89**	+3,6	-11
IE	7,50	7,93	**7,53**	+0,3	-5,1
IT	-	-	**-**	-	-
LT	3,60	3,65	**3,45**	-4,2	-5,5
LU	-	-	**-**	-	-
LV	3,31	3,32	**3,05**	-7,8	-8,1
MT	-	-	**-**	-	-
NL	6,67	6,09	**6,41**	-3,8	+5,3
PL	3,63	3,77	**2,86**	-21	-24
PT	-	-	**-**	-	-
RO	2,66	3,31	**2,75**	+3,3	-17
SE	4,97	5,21	**4,00**	-20	-23
SI	-	-	**-**	-	-
SK	4,49	4,26	**4,23**	-5,7	-0,7
UK	5,76	5,60	**5,64**	-2,1	+0,8



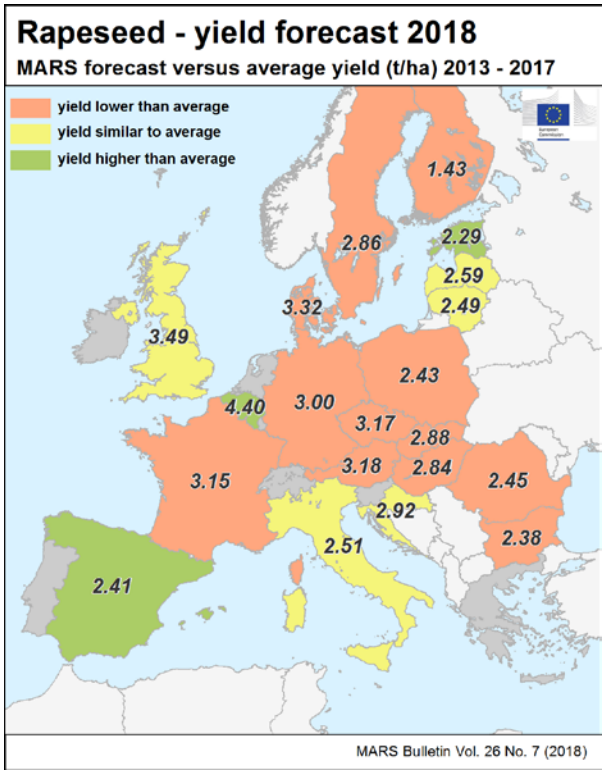
Country	RYE (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	3,93	3,76	**3,48**	-12	-7,6
AT	4,37	3,46	**4,46**	+2,0	+29
BE	-	-	**-**	-	-
BG	-	-	**-**	-	-
CY	-	-	**-**	-	-
CZ	4,90	4,92	**4,98**	+1,4	+1,2
DE	5,66	5,01	**4,46**	-21	-11
DK	6,09	6,49	**5,47**	-10	-16
EE	3,15	3,93	**3,09**	-1,9	-21
ES	2,00	1,22	**2,40**	+20	+96
FI	3,34	3,93	**3,03**	-9,3	-23
FR	4,64	4,59	**4,72**	+1,7	+2,8
GR	1,79	1,91	**2,00**	+12	+4,9
HR	-	-	**-**	-	-
HU	2,99	3,32	**3,10**	+3,7	-6,6
IE	-	-	**-**	-	-
IT	-	-	**-**	-	-
LT	2,33	2,44	**1,95**	-16	-20
LU	-	-	**-**	-	-
LV	3,60	4,07	**3,47**	-3,6	-15
MT	-	-	**-**	-	-
NL	-	-	**-**	-	-
PL	2,98	3,08	**2,81**	-5,6	-8,8
PT	0,87	0,85	**0,89**	+2,1	+4,2
RO	2,55	3,20	**2,76**	+8,0	-14
SE	6,25	6,65	**5,76**	-7,8	-14
SI	-	-	**-**	-	-
SK	3,95	4,45	**3,73**	-5,6	-16
UK	2,63	1,42	**3,76**	+43	+165



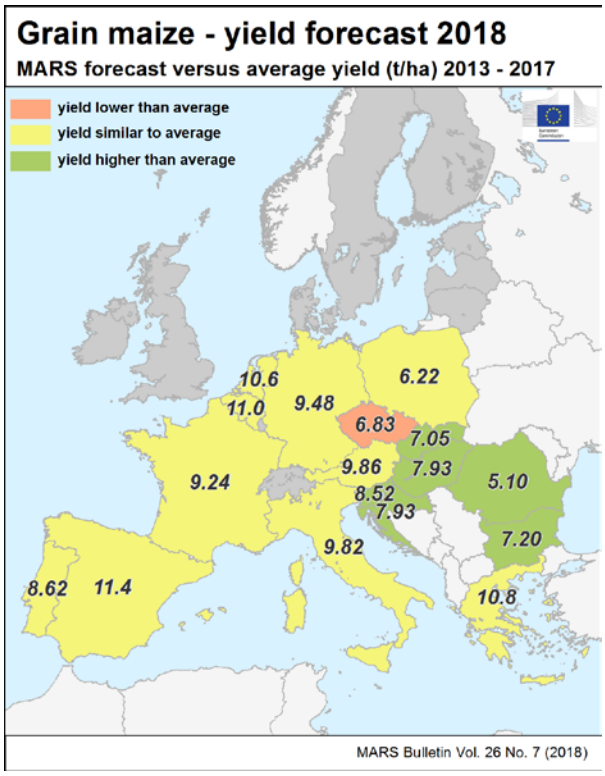
Country	TRITICALE (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	4,23	4,25	**4,10**	-2,9	-3,4
AT	5,45	5,16	**5,37**	-1,5	+4,1
BE	-	-	**-**	-	-
BG	3,07	3,17	**3,31**	+8,0	+4,5
CY	-	-	**-**	-	-
CZ	4,82	4,89	**4,60**	-4,5	-5,8
DE	6,44	5,96	**5,85**	-9,1	-1,7
DK	-	-	**-**	-	-
EE	-	-	**-**	-	-
ES	2,26	1,84	**2,62**	+16	+42
FI	-	-	**-**	-	-
FR	5,09	5,20	**5,02**	-1,3	-3,4
GR	2,21	2,22	**2,35**	+6,5	+6,1
HR	3,92	4,50	**4,13**	+5,4	-8,2
HU	4,03	3,97	**4,05**	+0,5	+2,1
IE	-	-	**-**	-	-
IT	-	-	**-**	-	-
LT	3,36	3,26	**3,16**	-6,1	-3,3
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	-	-	**-**	-	-
PL	3,74	3,93	**3,60**	-3,7	-8,5
PT	1,63	1,48	**1,82**	+12	+23
RO	3,68	4,39	**3,86**	+4,8	-12
SE	5,60	5,81	**5,39**	-3,8	-7,2
SI	-	-	**-**	-	-
SK	3,72	3,56	**3,34**	-10	-6,0
UK	4,30	4,50	**4,02**	-6,6	-11



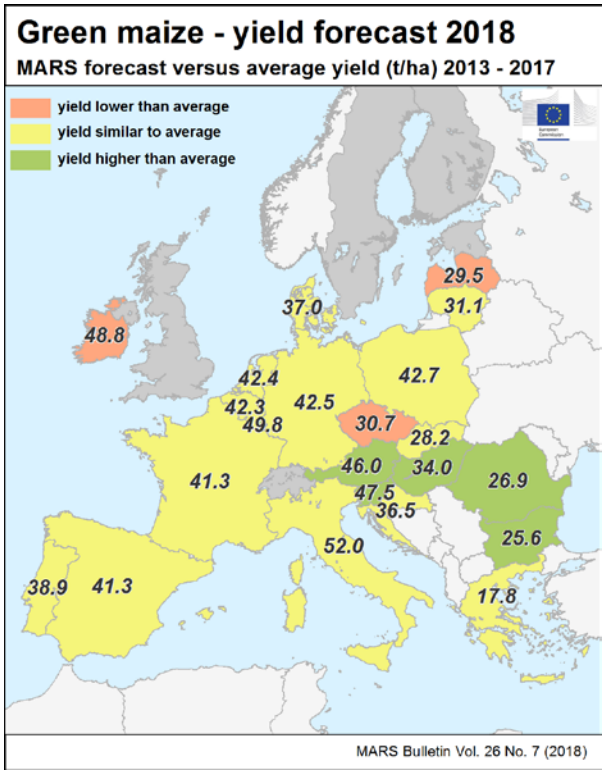
Country	RAPE AND TURNIP RAPE (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	3,29	3,29	**2,89**	-12	-12
AT	3,34	2,88	**3,18**	-5,0	+10
BE	4,22	4,26	**4,40**	+4,3	+3,2
BG	2,75	2,98	**2,38**	-14	-20
CY	-	-	**-**	-	-
CZ	3,44	2,91	**3,17**	-7,9	+8,9
DE	3,82	3,27	**3,00**	-22	-8,2
DK	3,96	4,18	**3,32**	-16	-21
EE	2,11	2,24	**2,29**	+8,5	+2,2
ES	2,16	1,56	**2,41**	+12	+55
FI	1,54	1,65	**1,43**	-7,7	-14
FR	3,43	3,84	**3,15**	-8,4	-18
GR	-	-	**-**	-	-
HR	2,88	2,80	**2,92**	+1,3	+4,3
HU	3,17	3,44	**2,84**	-10	-18
IE	-	-	**-**	-	-
IT	2,42	2,66	**2,51**	+3,6	-5,5
LT	2,51	3,00	**2,49**	-0,6	-17
LU	-	-	**-**	-	-
LV	2,67	2,91	**2,59**	-3,0	-11
MT	-	-	**-**	-	-
NL	-	-	**-**	-	-
PL	2,95	3,00	**2,43**	-18	-19
PT	-	-	**-**	-	-
RO	2,66	2,79	**2,45**	-8,0	-12
SE	3,18	3,30	**2,86**	-10	-13
SI	-	-	**-**	-	-
SK	3,05	2,99	**2,88**	-5,6	-3,5
UK	3,49	3,85	**3,49**	+0,2	-9,2



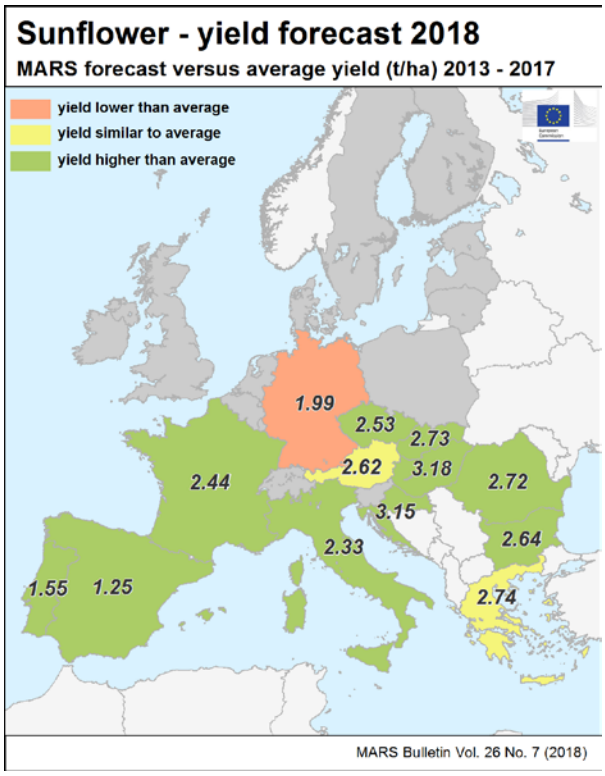
Country	GRAIN MAIZE (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	7,30	7,86	**7,64**	+4,6	-2,9
AT	9,76	10,0	**9,86**	+1,0	-0,9
BE	11,0	12,3	**11,0**	+0,0	-10
BG	6,24	6,44	**7,20**	+15	+12
CY	-	-	**-**	-	-
CZ	7,56	6,84	**6,83**	-9,7	-0,2
DE	9,74	10,5	**9,48**	-2,7	-10
DK	-	-	**-**	-	-
EE	-	-	**-**	-	-
ES	11,2	11,2	**11,4**	+1,6	+1,5
FI	-	-	**-**	-	-
FR	9,00	10,1	**9,24**	+2,7	-8,7
GR	10,8	9,92	**10,8**	+0,6	+9,3
HR	7,16	6,33	**7,93**	+11	+25
HU	6,84	6,89	**7,93**	+16	+15
IE	-	-	**-**	-	-
IT	9,71	9,30	**9,82**	+1,2	+5,5
LT	-	-	**-**	-	-
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	10,5	13,4	**10,6**	+0,2	-21
PL	6,43	7,15	**6,22**	-3,3	-13
PT	8,45	9,24	**8,62**	+2,0	-6,7
RO	4,55	5,95	**5,10**	+12	-14
SE	-	-	**-**	-	-
SI	8,00	7,11	**8,52**	+6,5	+20
SK	6,37	5,74	**7,05**	+11	+23
UK	-	-	**-**	-	-



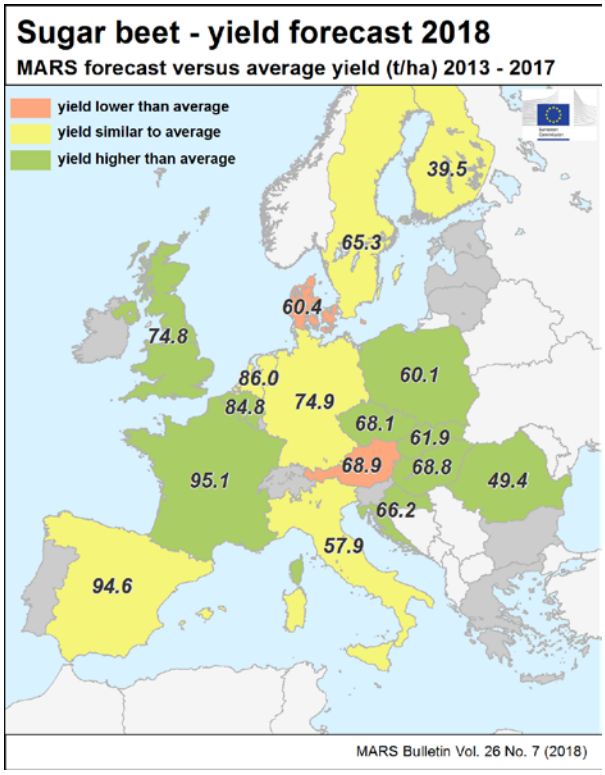
Country	GREEN MAIZE (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU*	41,8	43,7	**41,1**	-1,6	-6,0
AT	44,0	45,0	**46,0**	+4,5	+2,2
BE	43,4	44,6	**42,3**	-2,5	-5,1
BG	21,1	21,3	**25,6**	+21	+20
CY	-	-	**-**	-	-
CZ	35,5	34,8	**30,7**	-14	-12
DE	43,7	47,5	**42,5**	-2,6	-10
DK	37,1	38,7	**37,0**	-0,1	-4,3
EE	-	-	**-**	-	-
ES	40,4	38,9	**41,3**	+2,3	+6,3
FI	-	-	**-**	-	-
FR	41,9	45,3	**41,3**	-1,3	-8,8
GR	17,1	20,9	**17,8**	+3,8	-15
HR	36,1	32,4	**36,5**	+1,1	+13
HU	27,7	30,4	**34,0**	+23	+12
IE	51,4	55,7	**48,8**	-5,1	-12
IT	51,0	NA	**52,0**	+2,1	NA
LT	30,1	26,5	**31,1**	+3,4	+18
LU	47,5	55,8	**49,8**	+4,9	-11
LV	30,8	31,1	**29,5**	-4,3	-5,3
MT	-	-	**-**	-	-
NL	42,7	48,9	**42,4**	-0,6	-13
PL	44,1	NA	**42,7**	-3,0	NA
PT	39,2	35,5	**38,9**	-0,6	+9,6
RO	25,5	27,7	**26,9**	+5,6	-2,7
SE	-	-	**-**	-	-
SI	43,0	39,8	**47,5**	+10	+19
SK	27,9	25,3	**28,2**	+1,2	+11
UK	-	-	**-**	-	-



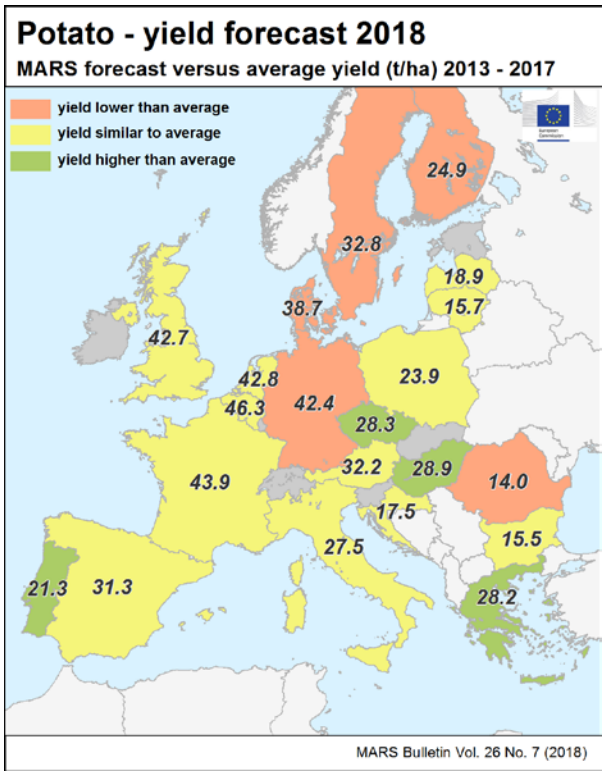
Country	SUNFLOWER (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	2,12	2,45	**2,47**	+17	+0,9
AT	2,54	2,33	**2,62**	+3,2	+13
BE	-	-	**-**	-	-
BG	2,26	2,29	**2,64**	+17	+15
CY	-	-	**-**	-	-
CZ	2,36	2,46	**2,53**	+7,3	+2,9
DE	2,13	2,20	**1,99**	-6,6	-9,4
DK	-	-	**-**	-	-
EE	-	-	**-**	-	-
ES	1,13	1,24	**1,25**	+10	+0,8
FI	-	-	**-**	-	-
FR	2,27	2,76	**2,44**	+7,5	-12
GR	2,69	2,85	**2,74**	+1,7	-4,0
HR	2,93	3,12	**3,15**	+7,7	+1,2
HU	2,74	2,95	**3,18**	+16	+7,7
IE	-	-	**-**	-	-
IT	2,22	2,13	**2,33**	+5,0	+9,3
LT	-	-	**-**	-	-
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	-	-	**-**	-	-
PL	-	-	**-**	-	-
PT	1,12	1,19	**1,55**	+39	+31
RO	2,17	2,97	**2,72**	+25	-8,4
SE	-	-	**-**	-	-
SI	-	-	**-**	-	-
SK	2,54	2,51	**2,73**	+7,6	+9,0
UK	-	-	**-**	-	-



Country	SUGAR BEETS (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	74,8	81,4	**77,9**	+4,1	-4,3
AT	73,3	70,1	**68,9**	-6,1	-1,8
BE	81,4	93,7	**84,8**	+4,1	-9,5
BG	-	-	**-**	-	-
CY	-	-	**-**	-	-
CZ	64,9	66,6	**68,1**	+4,9	+2,2
DE	75,5	83,8	**74,9**	-0,9	-11
DK	65,6	71,4	**60,4**	-7,9	-15
EE	-	-	**-**	-	-
ES	93,0	95,0	**94,6**	+1,6	-0,4
FI	38,7	36,6	**39,5**	+2,0	+8,0
FR	89,6	95,1	**95,1**	+6,1	+0,0
GR	-	-	**-**	-	-
HR	61,1	NA	**66,2**	+8,3	NA
HU	61,4	NA	**68,8**	+12	NA
IE	-	-	**-**	-	-
IT	57,3	NA	**57,9**	+1,0	NA
LT	-	-	**-**	-	-
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	84,0	93,3	**86,0**	+2,4	-7,8
PL	56,8	57,6	**60,1**	+5,8	+4,3
PT	-	-	**-**	-	-
RO	40,5	40,8	**49,4**	+22	+21
SE	65,8	63,2	**65,3**	-0,7	+3,4
SI	-	-	**-**	-	-
SK	58,5	55,0	**61,9**	+5,8	+13
UK	71,3	NA	**74,8**	+4,9	NA



Country	POTATO (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
EU	33,6	35,3	**33,3**	-0,7	-5,6
AT	30,9	28,4	**32,2**	+4,0	+13
BE	46,3	47,6	**46,3**	+0,0	-2,6
BG	15,5	17,8	**15,5**	+0,3	-13
CY	-	-	**-**	-	-
CZ	26,8	29,4	**28,3**	+5,7	-3,8
DE	44,5	46,8	**42,4**	-4,7	-9,5
DK	42,3	43,7	**38,7**	-8,4	-11
EE	-	-	**-**	-	-
ES	31,5	31,9	**31,3**	-0,6	-2,1
FI	27,1	28,9	**24,9**	-8,1	-14
FR	43,4	44,4	**43,9**	+1,2	-1,0
GR	26,8	28,3	**28,2**	+5,5	-0,1
HR	17,0	NA	**17,5**	+3,1	NA
HU	24,7	NA	**28,9**	+17	NA
IE	-	-	**-**	-	-
IT	26,9	NA	**27,5**	+2,4	NA
LT	15,8	12,3	**15,7**	-0,2	+28
LU	-	-	**-**	-	-
LV	18,8	NA	**18,9**	+0,8	NA
MT	-	-	**-**	-	-
NL	43,6	46,0	**42,8**	-2,0	-7,0
PL	23,9	25,3	**23,9**	-0,4	-5,7
PT	19,7	21,7	**21,3**	+7,8	-1,9
RO	15,9	18,2	**14,0**	-12	-23
SE	34,7	34,7	**32,8**	-5,3	-5,3
SI	-	-	**-**	-	-
SK	-	-	**-**	-	-
UK	44,0	NA	**42,7**	-2,9	NA



Country	WHEAT (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
BY	3,59	3,65	**3,76**	+4,6	+2,9
DZ	1,62	1,57	**1,86**	+15	+18
MA	1,86	1,91	**2,14**	+15	+12
TN	1,91	1,90	**1,84**	-3,9	-3,2
TR	2,71	2,78	**2,92**	+7,7	+5,1
UA	3,93	4,11	**3,90**	-1,0	-5,2

Country	BARLEY (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
BY	3,25	3,14	**3,16**	-2,7	+0,7
DZ	1,35	1,27	**1,44**	+6,7	+14
MA	1,25	1,50	**1,68**	+34	+12
TN	1,12	1,21	**1,09**	-3,5	-10
TR	2,58	2,40	**2,76**	+7,1	+15
UA	2,98	3,31	**2,90**	-2,8	-13

Country	GRAIN MAIZE (t/ha)				
	Avg 5yrs	2017	MARS 2018 forecasts	%18/5yrs	%18/17
BY	5,39	5,00	**5,52**	+2,5	+10
DZ	-	-	**-**	-	-
MA	-	-	**-**	-	-
TN	-	-	**-**	-	-
TR	9,21	9,40	**9,52**	+3,4	+1,3
UA	6,07	5,44	**6,20**	+2,1	+14

Note: Yields are forecast for crops with more than 10000 ha per country.

Sources: 2018 yields come from MARS CROP YIELD FORECASTING SYSTEM (output up to 20/07/2018)

* The EU figures do not include green maize forecasts for Sweden and the United Kingdom since recent data on yields were not consistent.

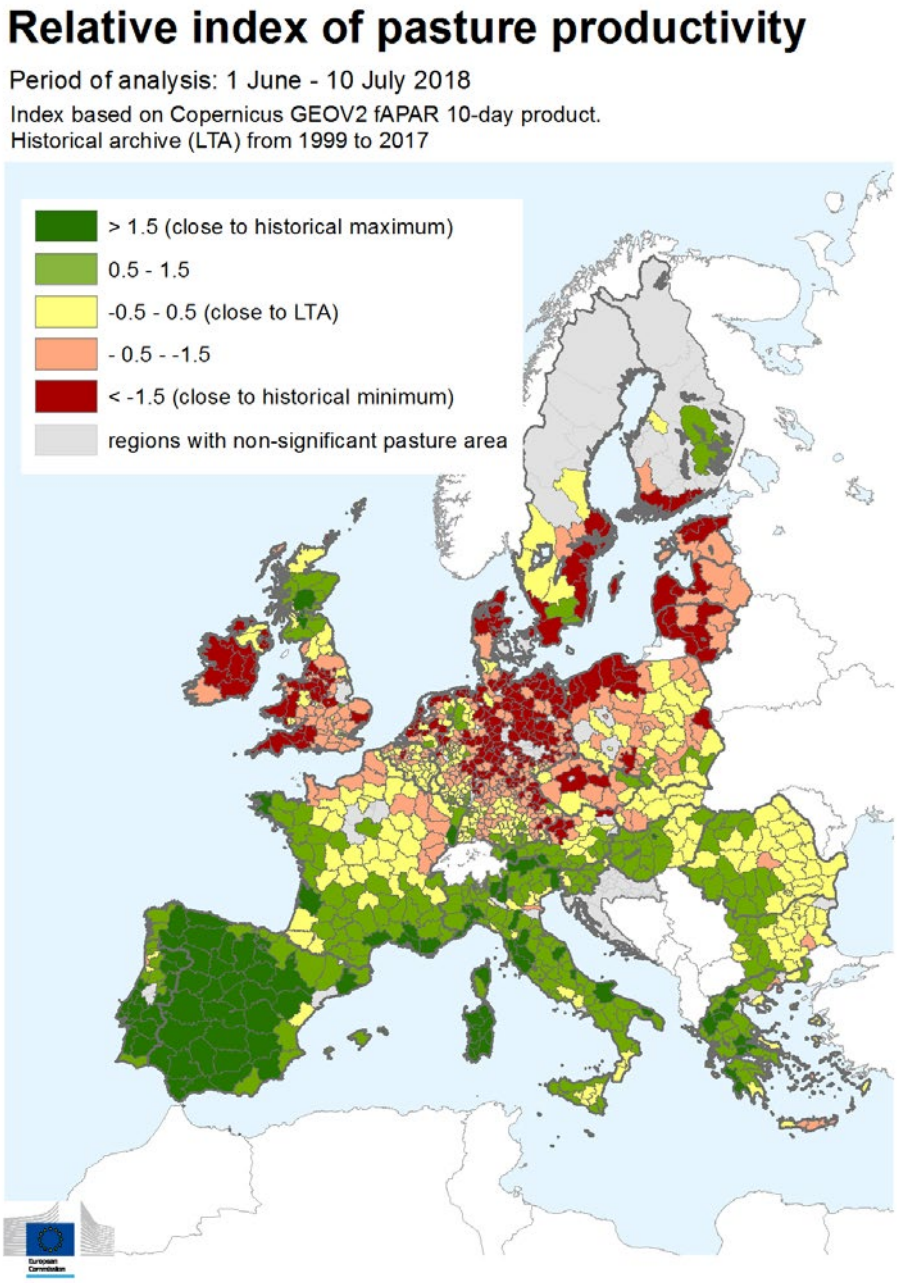
EU. 2013-2018 data come from DG AGRICULTURE short term Outlook data (dated June 2018, received on 09/07/2018), EUROSTAT Eurobase (last update: 06/07/2018) and EES (last update: 15/11/2017)

Non-EU. 2013-2017 data come from USDA, DSASI-MADR Algeria, INRA Maroc, Ministère de l'Agriculture et de la Pêche Maritime Maroc, CNCT Tunisie, Ministère de l'agriculture des ressources hydrauliques et de la pêche Tunisie, Turkish Statistical Institute (TurkStat), EUROSTAT Eurobase (last update: 06/07/2018),State Statistics Service of Ukraine, FAO and PSD-online

NA = Data not available.

5. Pastures in Europe — regional monitoring

Dry and hot conditions affect pasture growth in the northern half of Europe



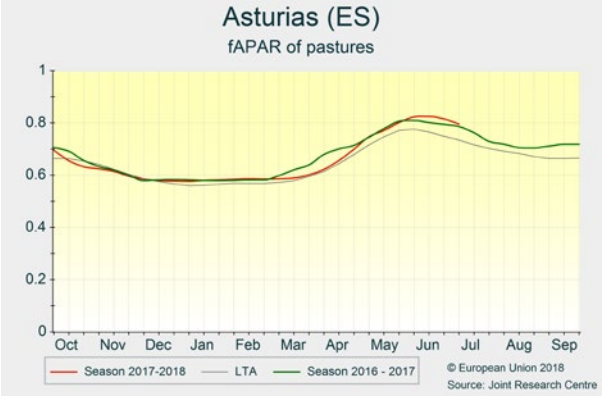
Methodological note

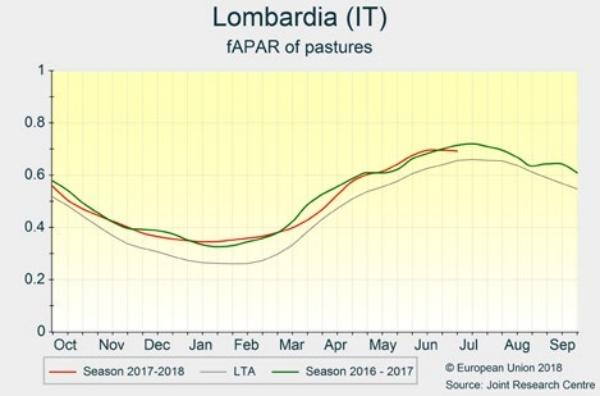
The relative index of pasture productivity is a synthetic indicator of biomass formation based on the integration of the fraction of absorbed photosynthetically active radiation (fAPAR) remote sensing product of pasture areas at country level over a period of interest (in this bulletin, from 1 June to 10 July). The spatial aggregation from remote sensing image pixels to a country-level index was made using a pastures mask from the Common Agricultural Policy Regionalised Impact model (CAPRI, http://www.capri-model.org). The index shows the relative position of the current season within the historical series from 1999 to 2017, and its values range approximately from − 3 to 3. A value of 0 indicates that biomass production in the current season is similar to the long-term average. Values higher than 2 and below − 2 indicate that biomass production in the current season is close to, respectively, the historical maximum and minimum of the period 1999-2017.

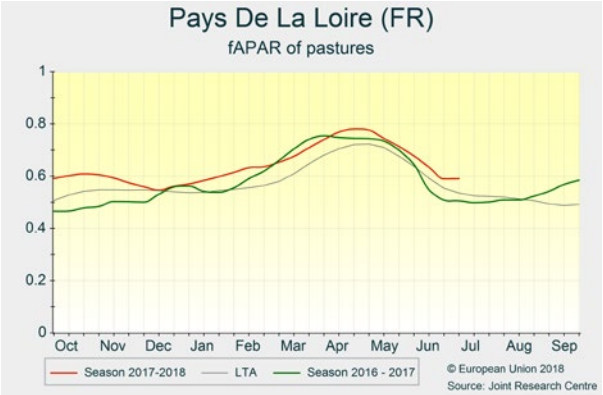
Pasture productivity in the southern half of Europe since the beginning of June has been persistently above the average. Grassland growth in **Spain**, **Portugal**, and southern and western **France** (*Pays de la Loire*, *Bretagne*) is unusually high thanks to the abundant rainfall in May and June. Similarly favourable conditions have been experienced in **Romania**, **Bulgaria** and **Hungary**, where biomass formation in the main pasture areas has been persistently above the LTA and the outlook until the end of July is positive. In **Italy** and **Austria**, pasture conditions are also favourable in the main producing areas. However, weather conditions in the northernmost regions of Italy (*Lombardia*, *Piemonte*) have been rather dry since June, and the growth of fodder maize may be constrained in the second half of July if weather conditions remain dry.

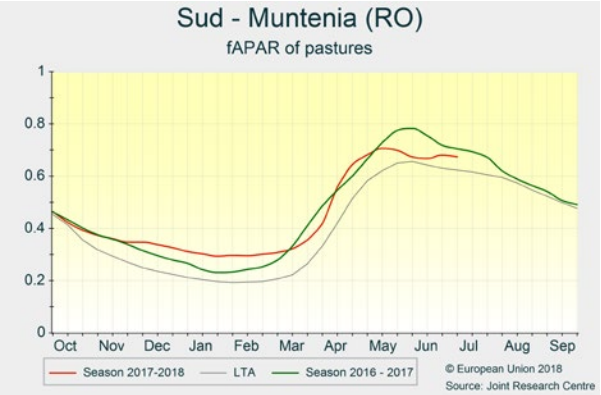
In central Europe, the dry and hot conditions being experienced since early May are severely affecting pasture productivity. Biomass formation in the main grassland areas of **Germany**, the **Czech Republic** and the western half of **Poland** has sharply decreased in the last month, down to unusually low values on account of water stress. The outlook until the end of July is unfavourable. Also in the Baltic Sea area, water stress is affecting grassland productivity as a consequence of the persisting hot and dry conditions observed since mid May or before. Biomass formation in the main pasture areas of **Denmark**, **Sweden**, **Finland**, **Estonia**, **Latvia** and **Lithuania** is significantly below the average. Only in eastern **Poland** (*Mazowieckie*, *Warminsko-Mazurskie*) did rainfall in the second half of June mitigate the impact of water stress on grassland growth.

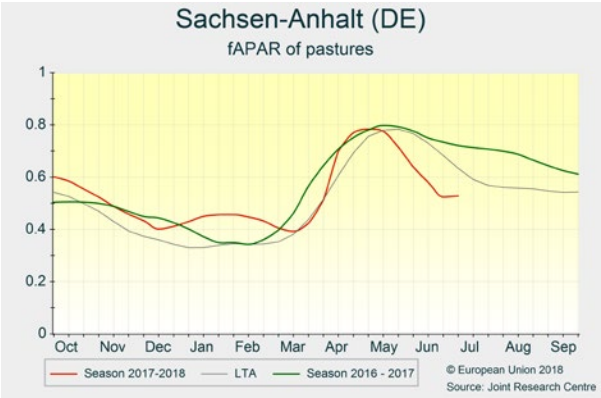
Water stress also caused a decrease in pasture productivity in **Ireland** and the **United Kingdom**, where only scarce rainfall was registered during June, while daily temperatures were, on average, 3-4 °C above seasonal values. The exception is **Scotland**, where significant rainfall in the first half of June prevented water stress.

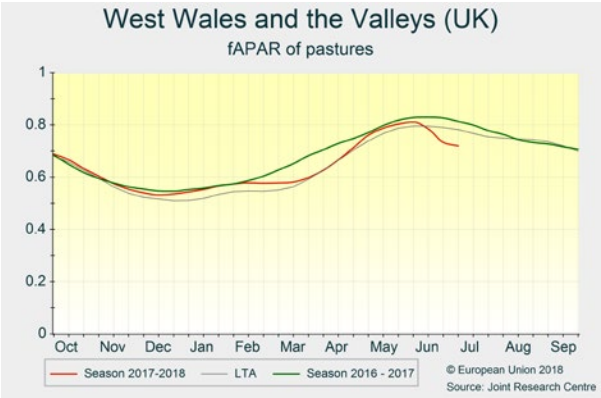


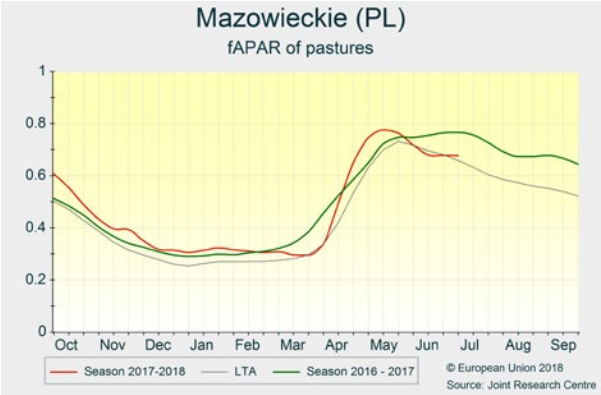


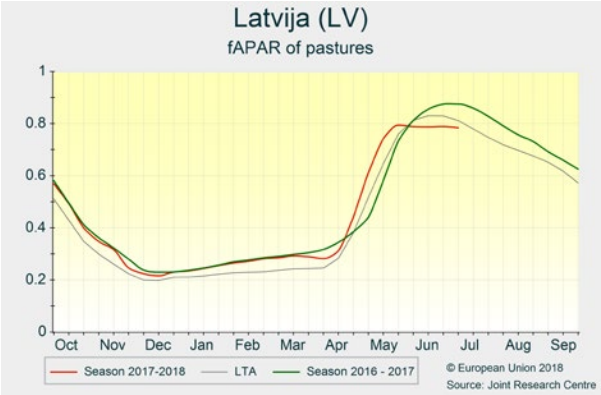





Sachsen-Anhalt (DE)
fAPAR of pastures
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2017-2018
LTA
Season 2016 - 2017
© European Union 2018
Source: Joint Research Centre

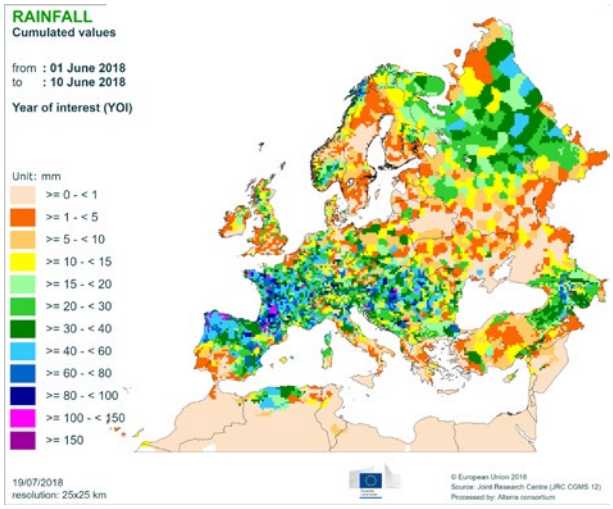

West Wales and the Valleys (UK)
fAPAR of pastures
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2017-2018
LTA
Season 2016 - 2017
© European Union 2018
Source: Joint Research Centre

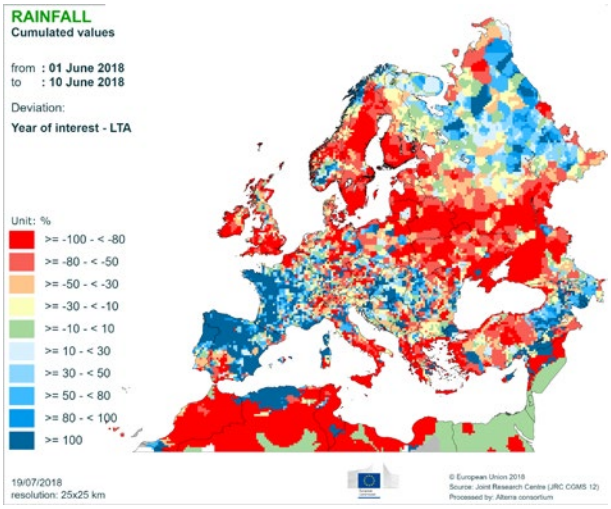

Mazowieckie (PL)
fAPAR of pastures
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2017-2018
LTA
Season 2016 - 2017
© European Union 2018
Source: Joint Research Centre

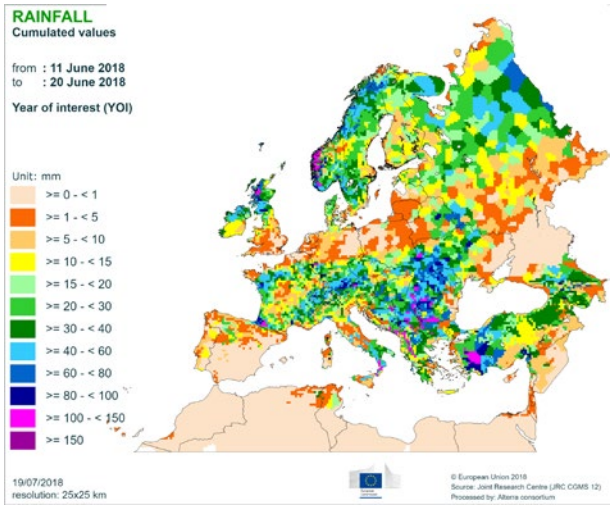

Latvija (LV)
fAPAR of pastures
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2017-2018
LTA
Season 2016 - 2017
© European Union 2018
Source: Joint Research Centre

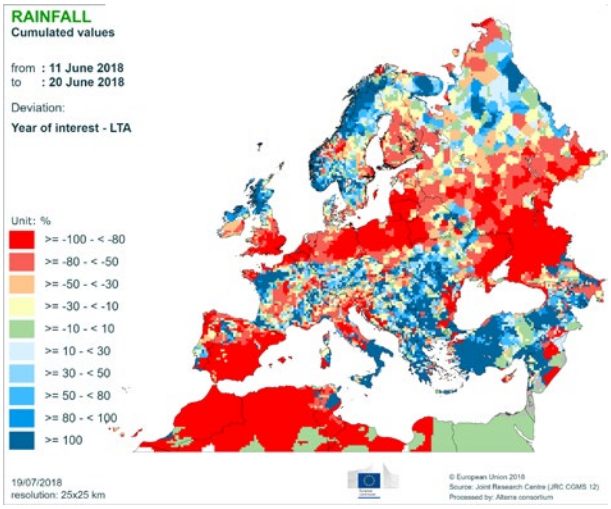
6. Atlas

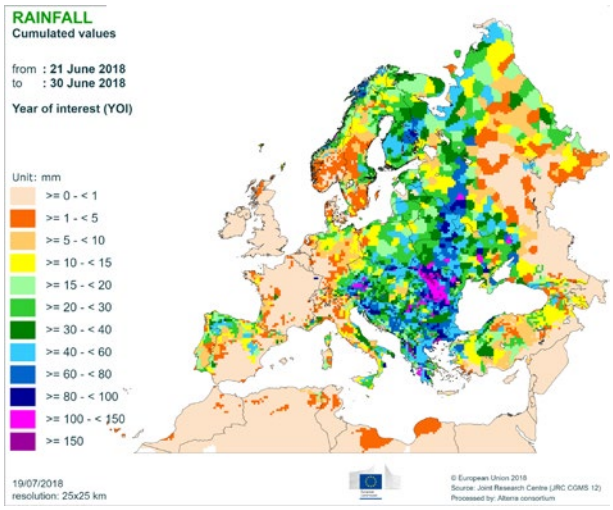
Precipitation

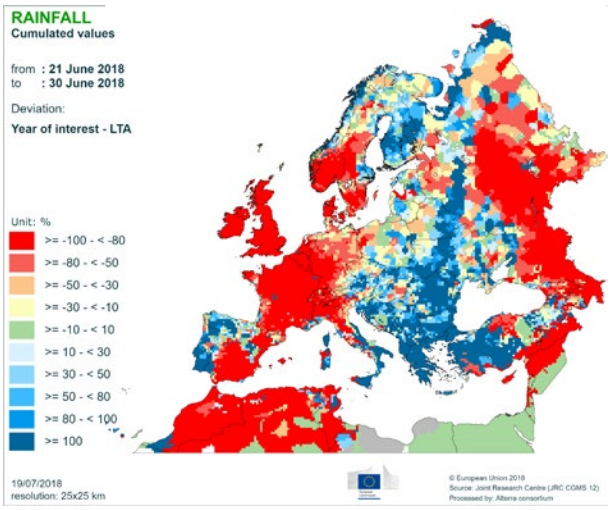


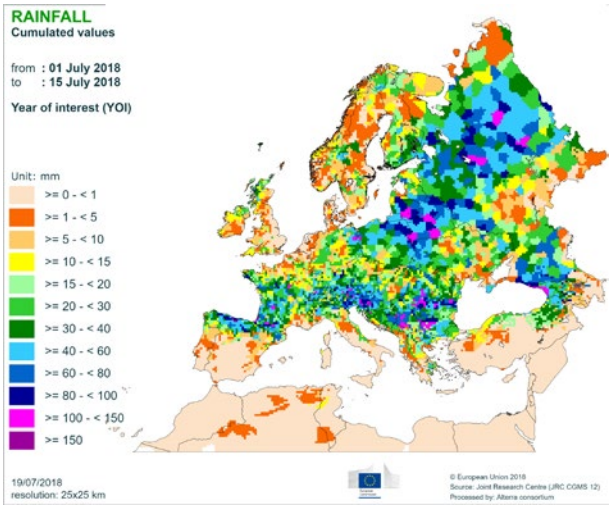


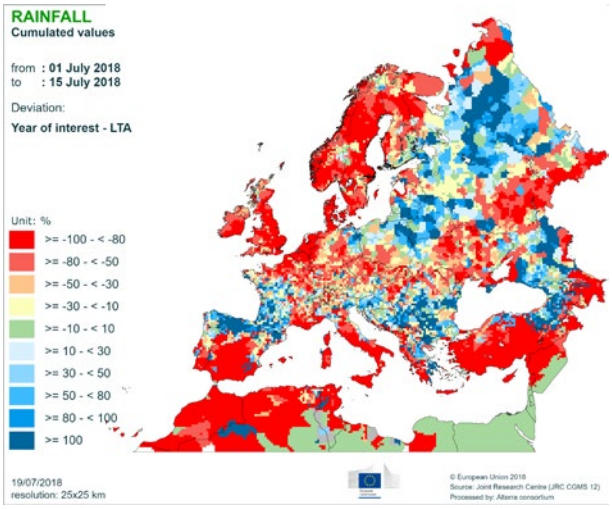




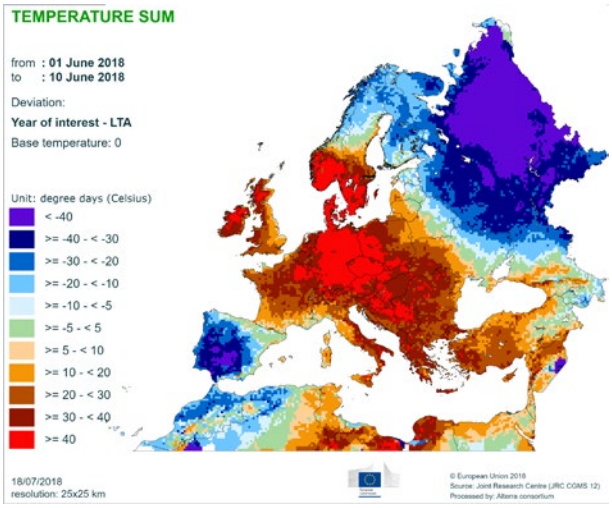


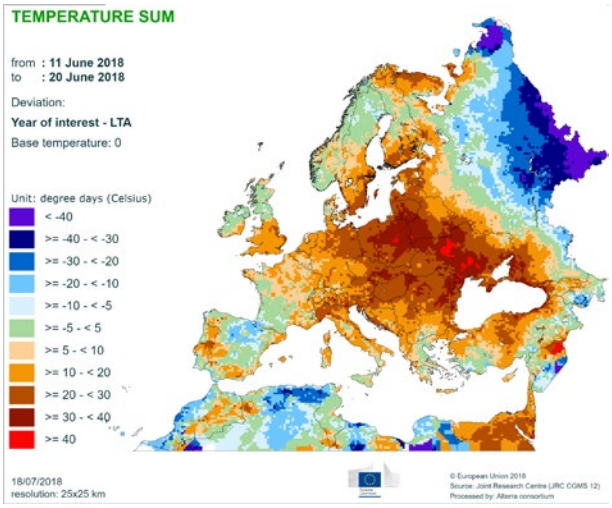


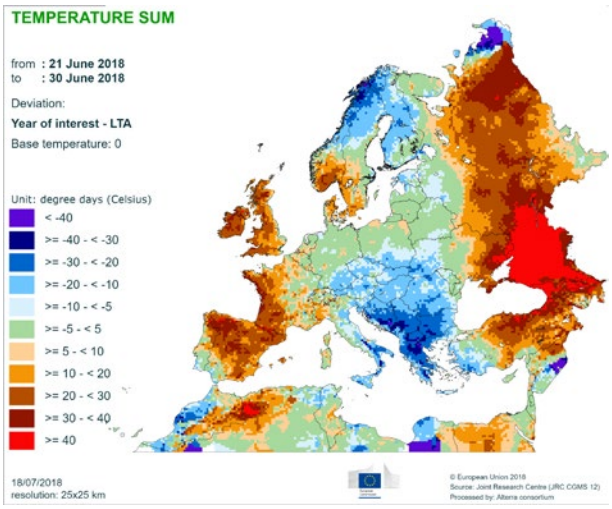


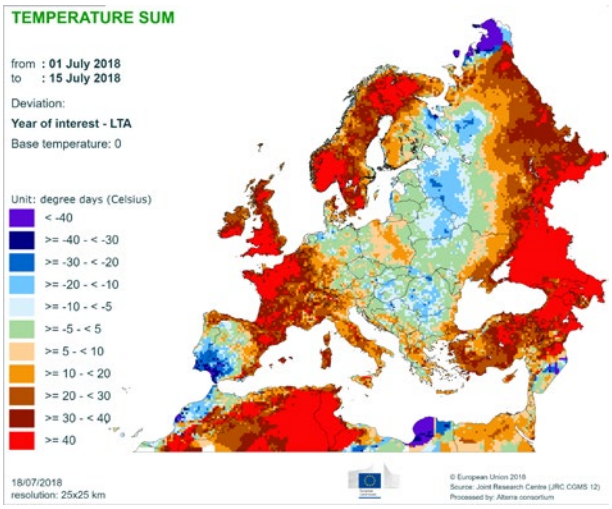


Temperature regime

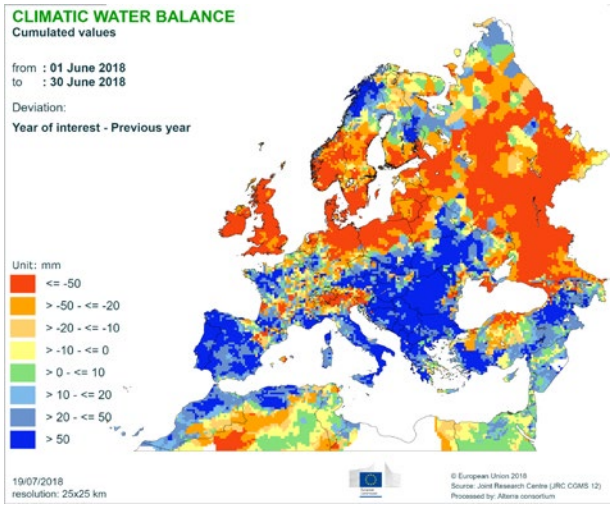


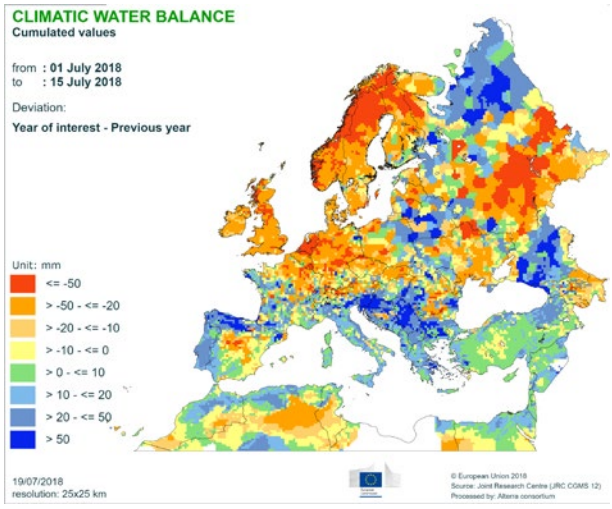




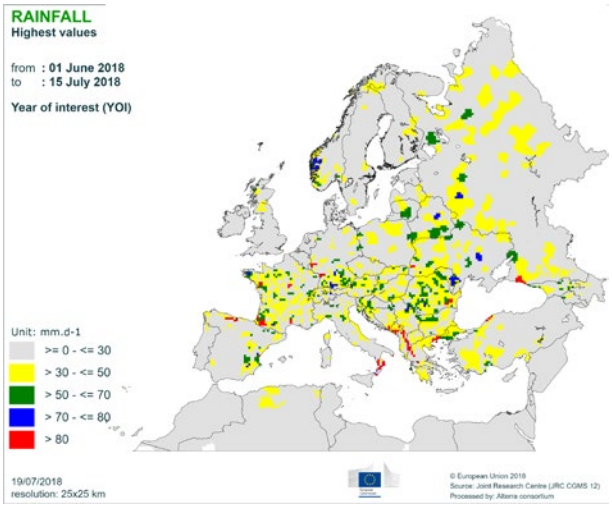


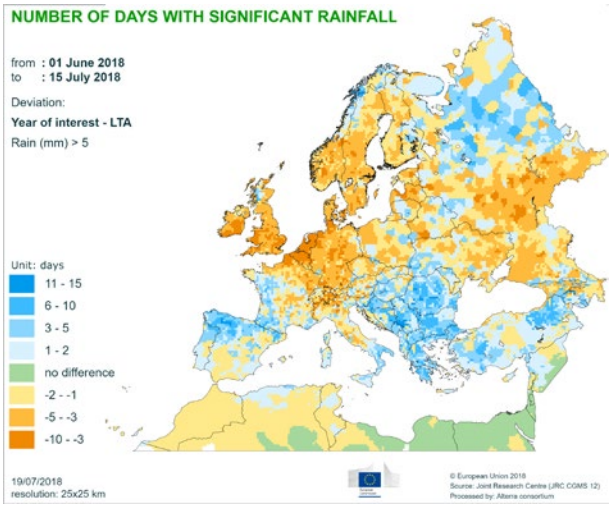
Climatic water balance

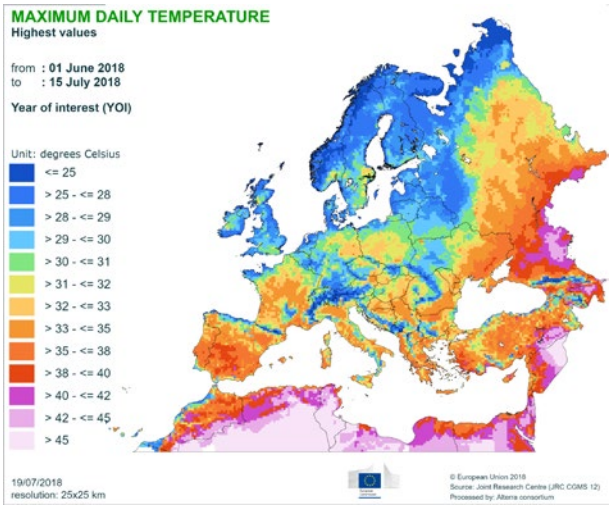


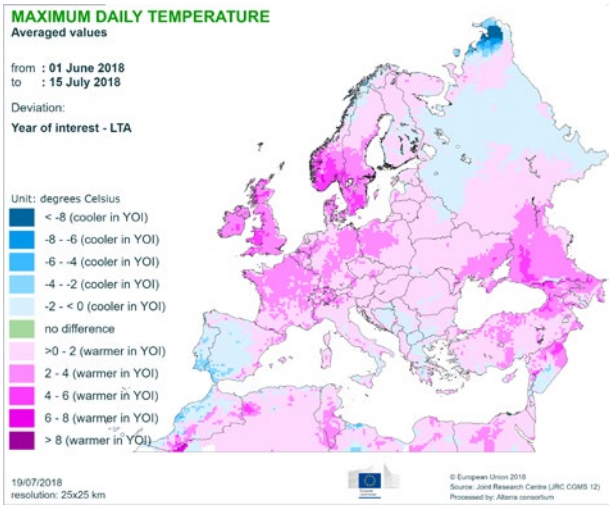


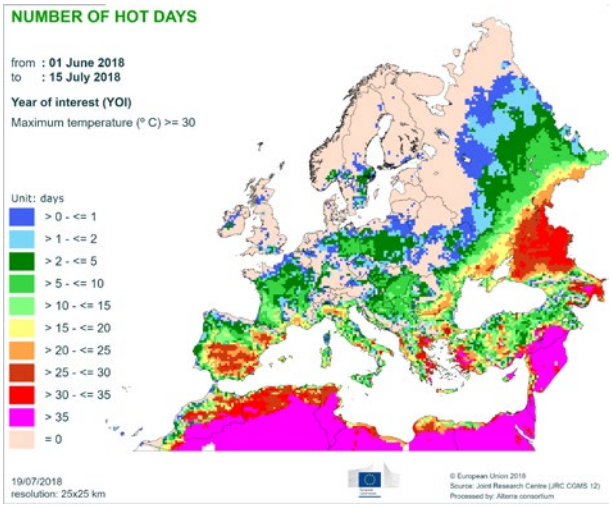
Weather events

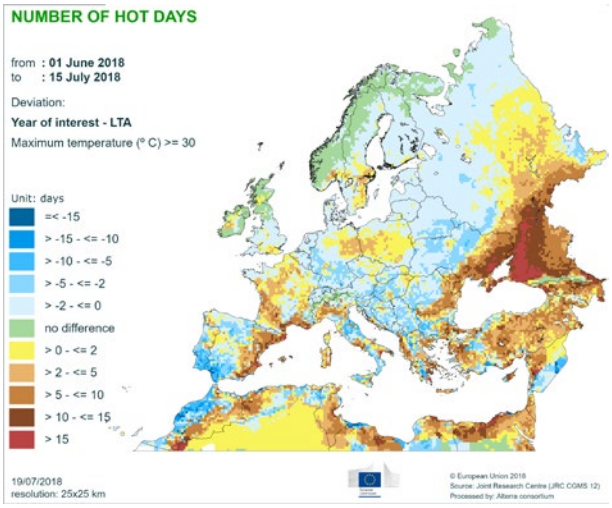




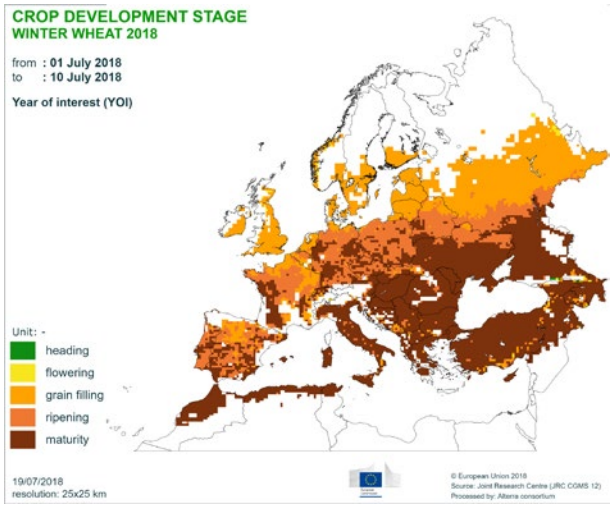


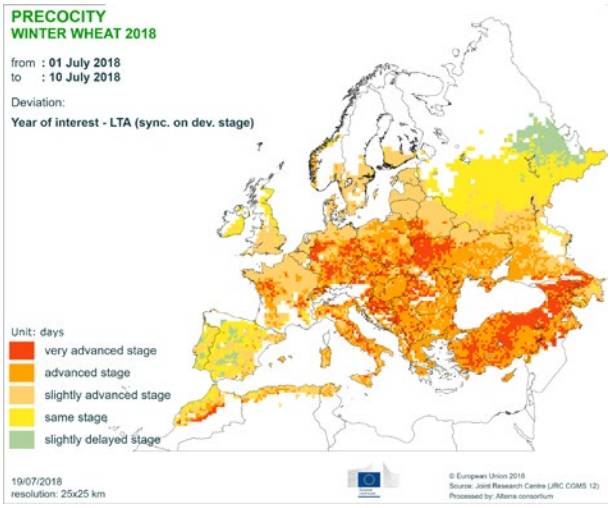


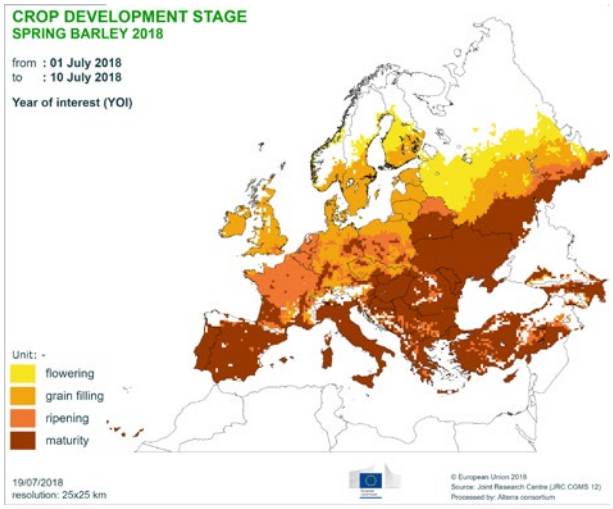


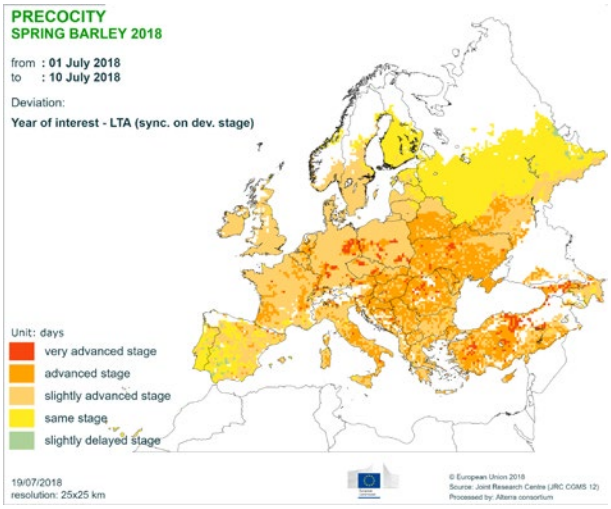


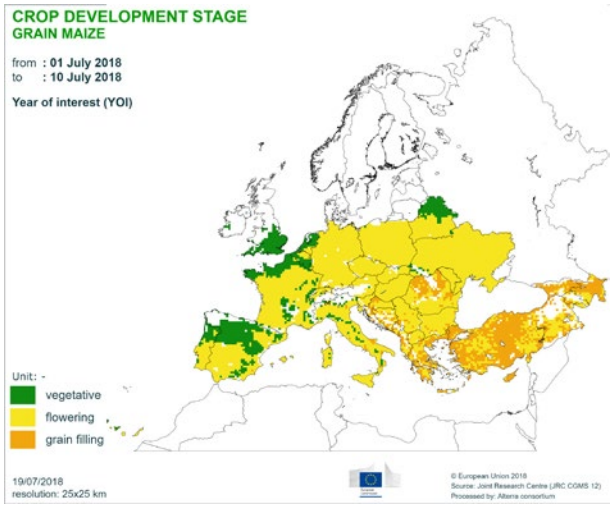
Crop development stages and precocity

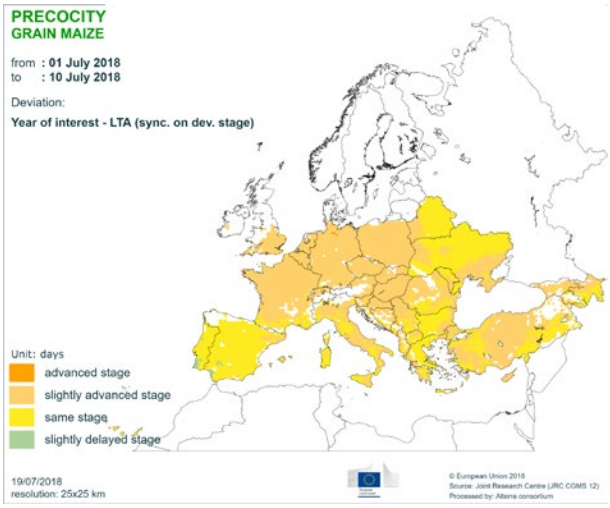


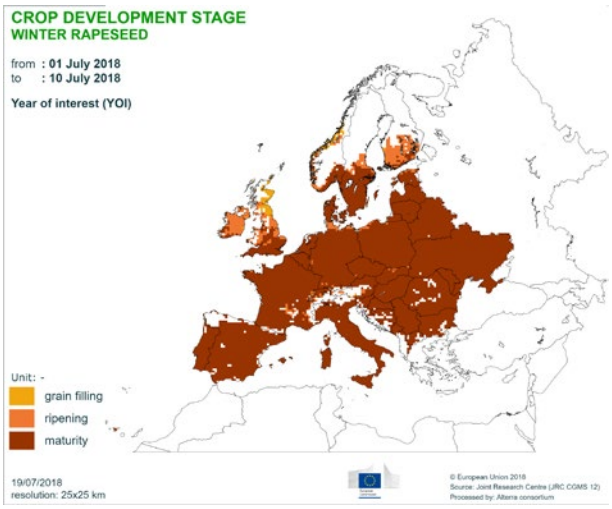


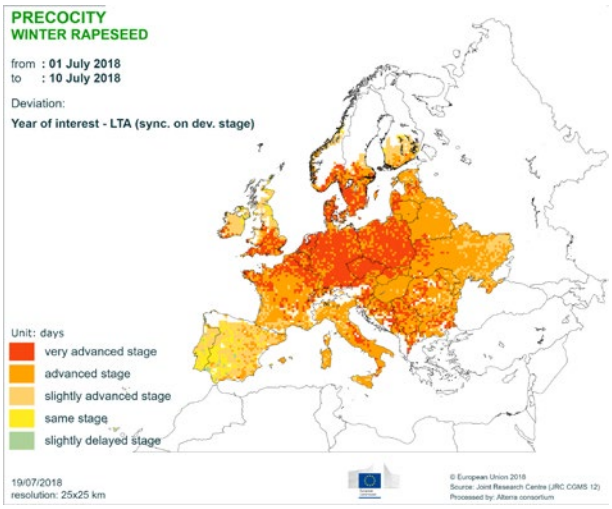


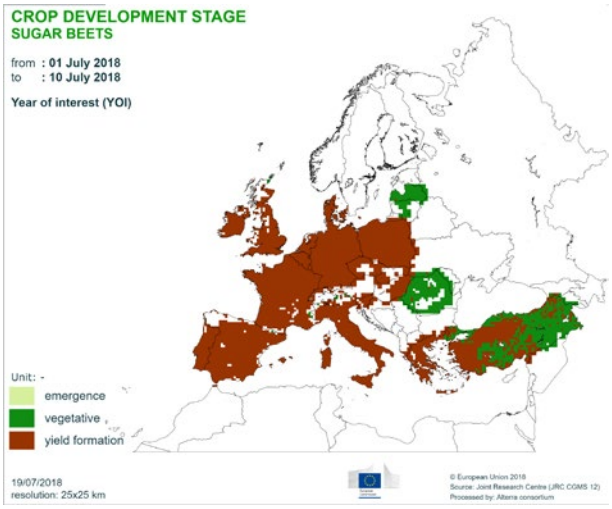


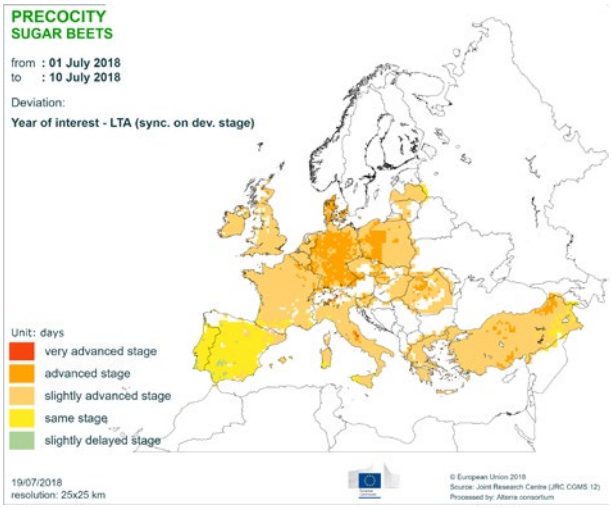




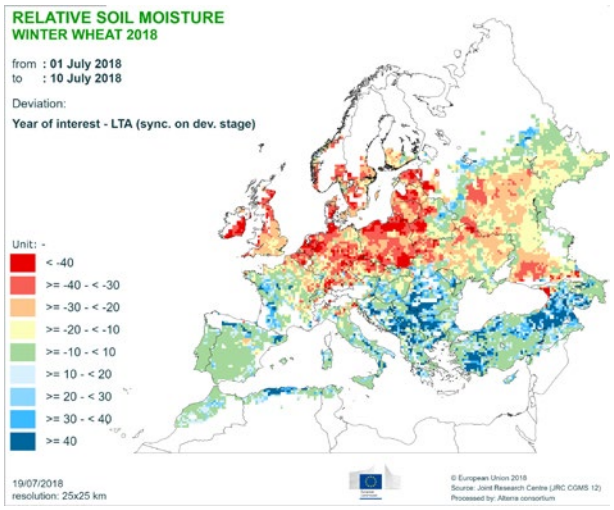

CROP DEVELOPMENT STAGE
WINTER RAPESEED
from : 01 July 2018
to : 10 July 2018
Year of interest (YOI)
Unit: -
grain filling
ripening
maturity
19/07/2018
resolution: 25x25 km
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

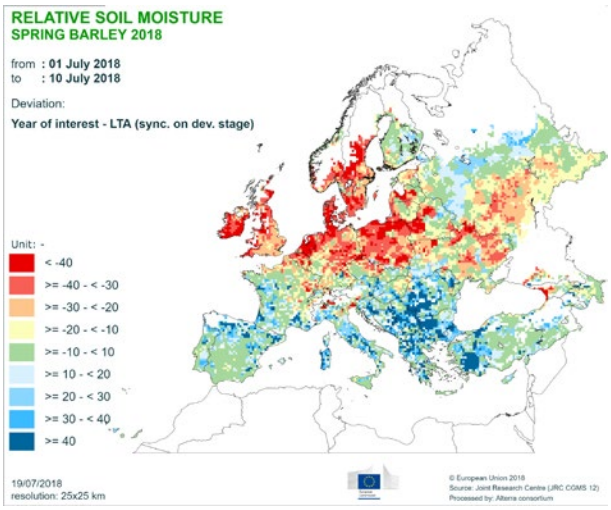

PRECOCITY
WINTER RAPESEED
from : 01 July 2018
to : 10 July 2018
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
very advanced stage
advanced stage
slightly advanced stage
same stage
slightly delayed stage
19/07/2018
resolution: 25x25 km
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

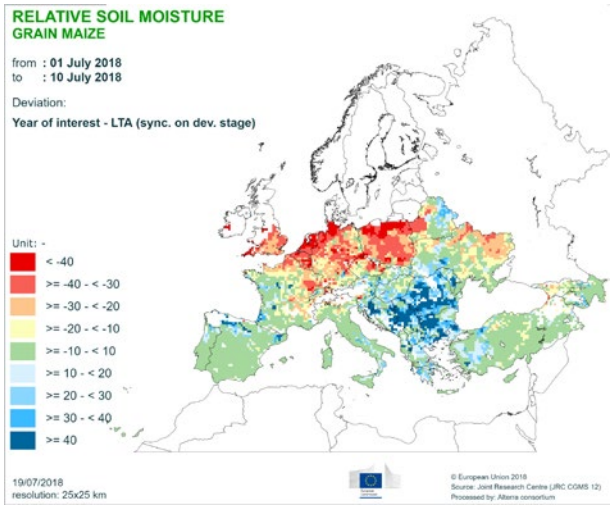

CROP DEVELOPMENT STAGE
SUGAR BEETS
from : 01 July 2018
to : 10 July 2018
Year of interest (YOI)
Unit: -
emergence
vegetative
yield formation
19/07/2018
resolution: 25x25 km
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

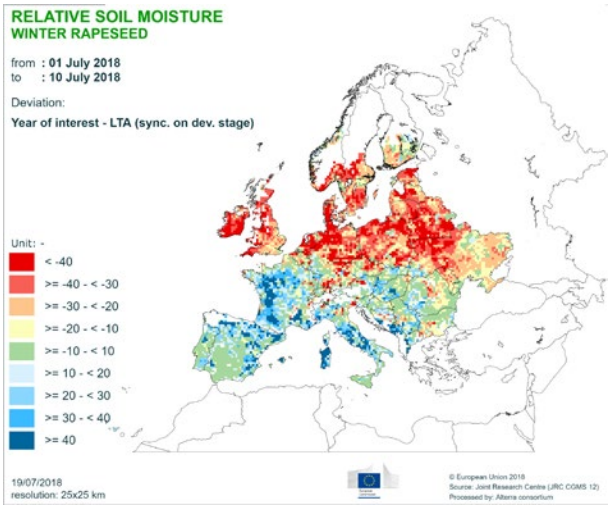

PRECOCITY
SUGAR BEETS
from : 01 July 2018
to : 10 July 2018
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
very advanced stage
advanced stage
slightly advanced stage
same stage
slightly delayed stage
19/07/2018
resolution: 25x25 km
© European Union 2018
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

Relative soil moisture

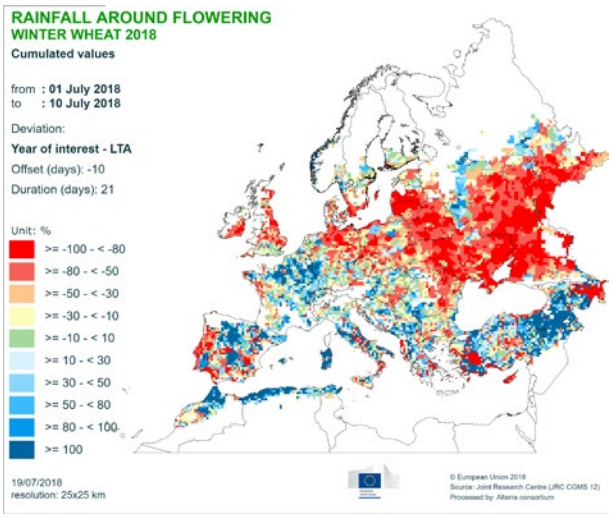


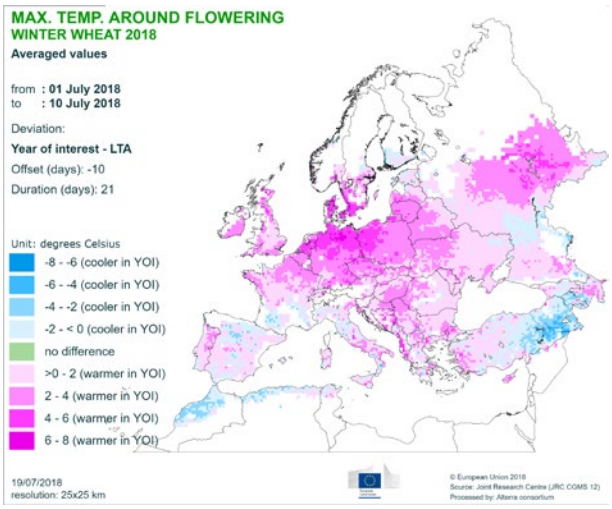


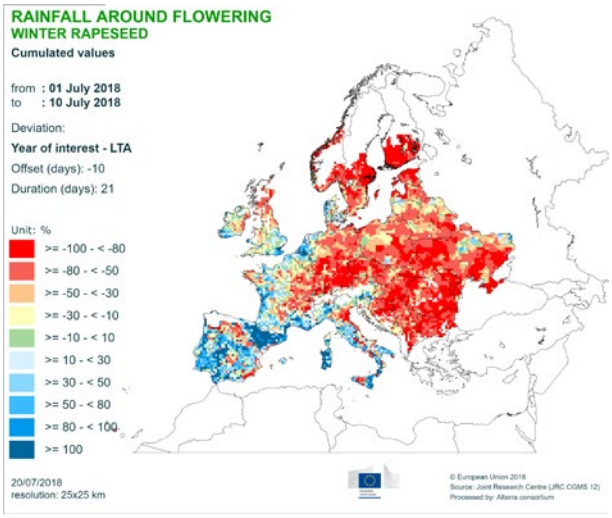


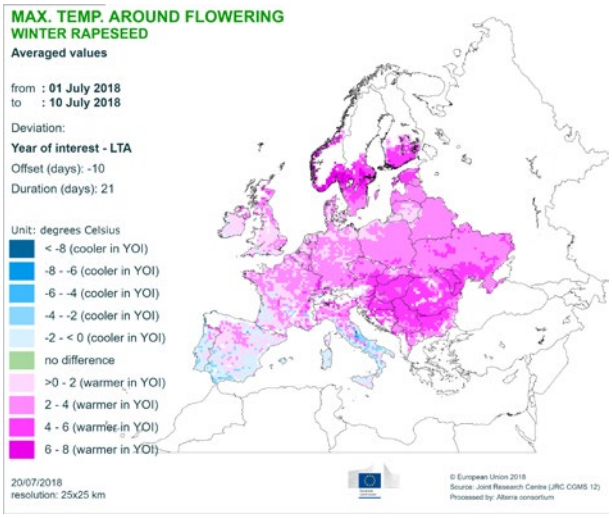


Precipitation and temperature anomalies around flowering

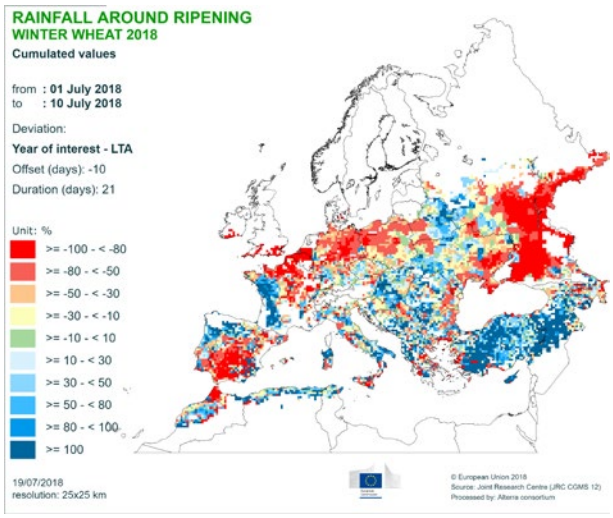


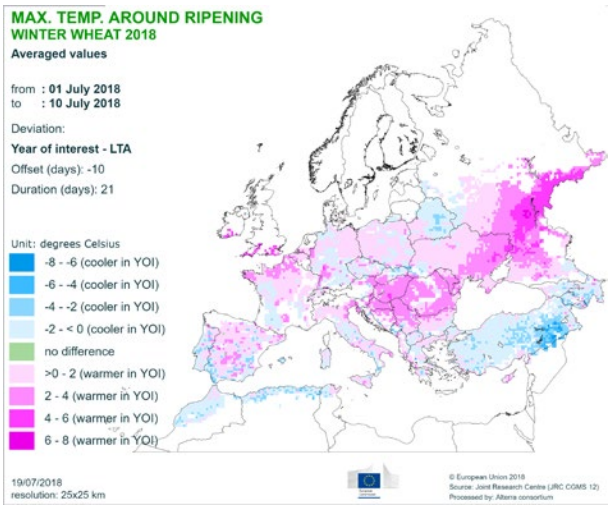


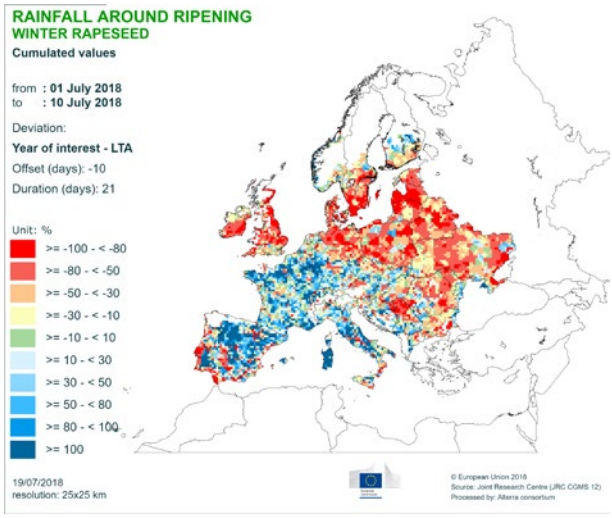


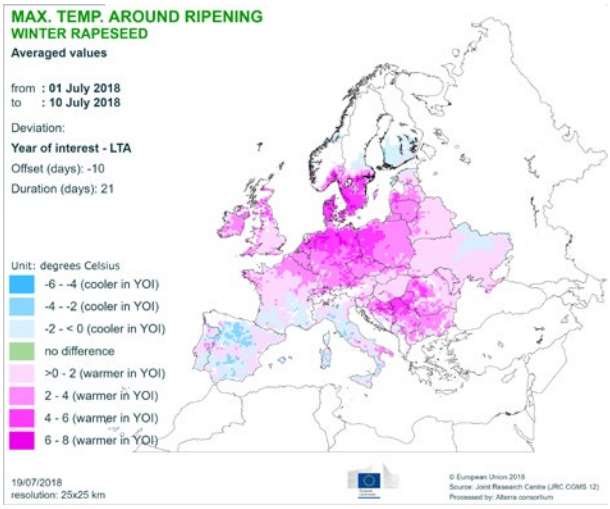


Precipitation and temperature anomalies around ripening

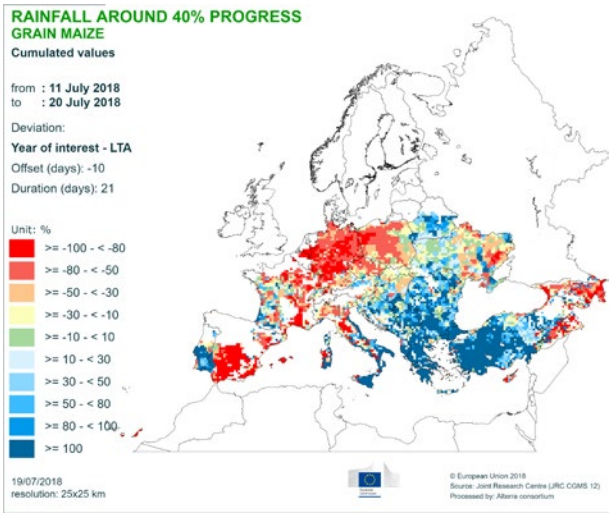


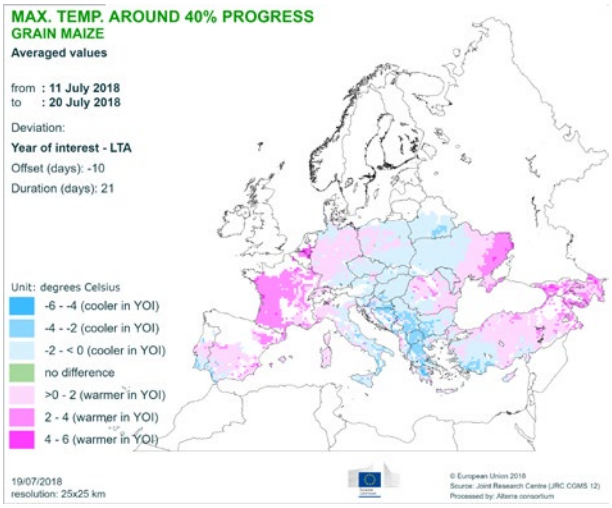


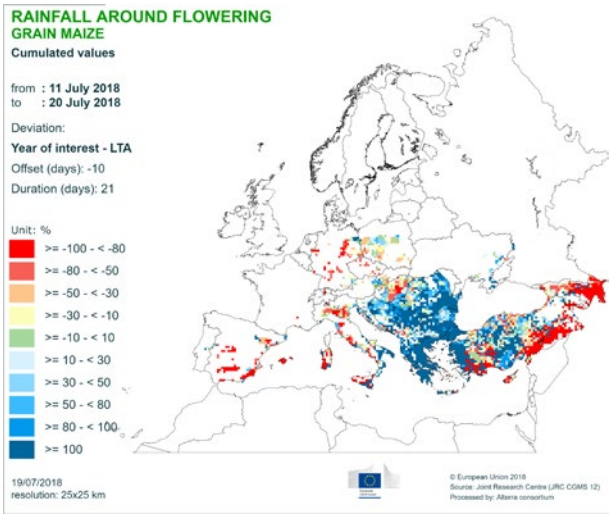


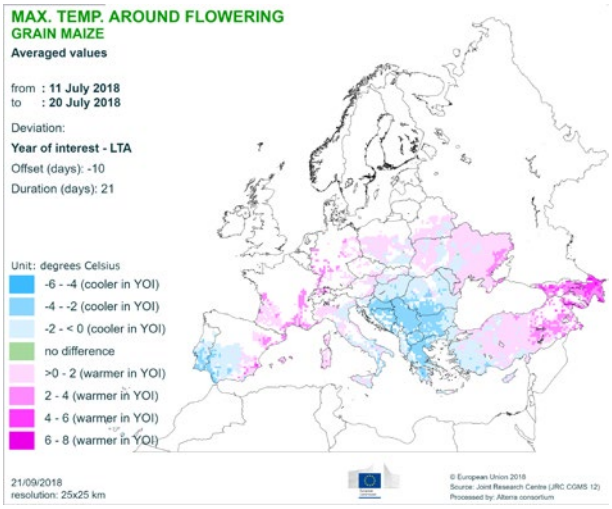


Maize: precipitation and temperature anomalies around crop development









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JRC MARS Bulletins 2018

Date	Publication	Reference
22 Jan	Agromet analysis	Vol. 26 No 1
19 Feb	Agromet analysis, durum wheat update and yield forecast	Vol. 26 No 2
19 Mar	Agromet analysis, yield forecast, pasture analysis	Vol. 26 No 3
16 Apr	Agromet analysis, remote sensing, yield forecast, sowing conditions, pasture analysis	Vol. 26 No 4
22 May	Agromet analysis, remote sensing, yield forecast, sowing update, pasture analysis	Vol. 26 No 5
18 Jun	Agromet analysis, remote sensing, yield forecast, pasture update, rice analysis	Vol. 26 No 6
23 Jul	Agromet analysis, remote sensing, yield forecast, harvesting conditions, pasture update	Vol. 26 No 7
27 Aug	Agromet analysis, remote sensing, yield forecast, pasture update, harvesting update	Vol. 26 No 8
17 Sep	Agromet analysis, remote sensing, yield forecast, harvesting update	Vol. 26 No 9
22 Oct	Agromet analysis, remote sensing, yield forecast, rice analysis, harvesting update, sowing conditions	Vol. 26 No 10
26 Nov	Agromet analysis and yield forecast, harvesting update, sowing updates	Vol. 26 No 11
17 Dec	Agromet analysis	Vol. 26 No 12

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*MARS stands for Monitoring Agricultural Resources

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The long-term average (LTA) used within this bulletin as a reference is based on an archive of data covering 1975–2017.

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