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European Commission

Period covered: 1 July-15 August
Issued: 22 August 2016

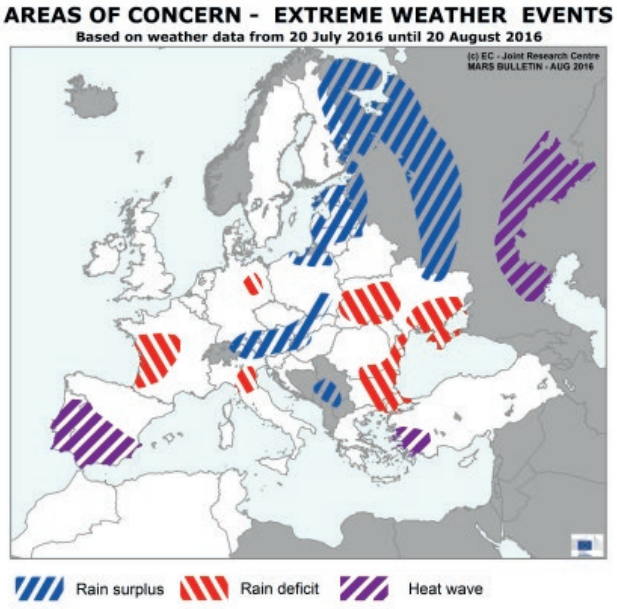
JRC MARS Bulletin
Crop monitoring in Europe
August 2016

Winter cereals back to five-year average

Grain maize and sunflower yield prospects remain positive

Total EU-28 cereal yield is estimated around the five-year average after having been lowered by 2.9 % compared to the July Bulletin. This is mostly due to yield estimates for soft wheat in France being lowered by 11 % compared to the July forecast due to knock-on effects of large rainfall amounts, low radiation and consequent high disease pressure during late May and June. Grain maize and sunflower yield prospects remain positive (respectively + 4.4 % and + 5.8 % above the five-year average). EU-28 yields for potato and sugar beet are slightly above last year's yield and the five-year average.

While July was warmer than usual the first half of August was characterised by a cold weather anomaly in central Europe, suboptimal for winter and spring cereals as well as harvesting activities. The growth of summer crops is slightly delayed in most of Europe. Hot conditions prevailed in the Iberian peninsula, but the campaign of irrigated summer crops is proceeding without difficulties. Exceptionally high maize yields are forecast for Hungary (+ 29.6 % above the five-year average) but the forecast was lowered in Bulgaria and Romania, where dry conditions compromised the maize yield potential.



Crop	Yield t/ha				
	Avg 5yrs	july Bulletin	MARS 2016 forecasts	% Diff 16/5yrs	% Diff july
TOTAL CEREALS	5.32	5.52	**5.36**	+ 0.8	- 2.9
Total Wheat	5.60	5.85	**5.63**	+ 0.5	- 3.8
soft wheat	5.83	6.10	**5.86**	+ 0.6	- 3.9
durum wheat	3.33	3.46	**3.46**	+ 4.0	+ 0.0
Total Barley	4.72	4.99	**4.88**	+ 3.5	- 2.2
spring barley	4.13	4.32	**4.20**	+ 1.9	- 2.8
winter barley	5.57	5.90	**5.77**	+ 3.6	- 2.2
Grain maize	6.93	7.42	**7.23**	+ 4.4	- 2.6
Rye	3.76	3.79	**3.75**	- 0.1	- 1.1
Triticale	4.20	4.18	**4.12**	- 1.9	- 1.4
Rape and turnip rape	3.20	3.22	**3.20**	+ 0.1	- 0.6
Potato	32.07	32.97	**32.61**	+ 1.7	- 1.1
Sugar beet	71.80	73.18	**72.78**	+ 1.4	- 0.5
Sunflower	1.94	2.08	**2.05**	+ 5.8	- 1.4

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Joint Research Centre

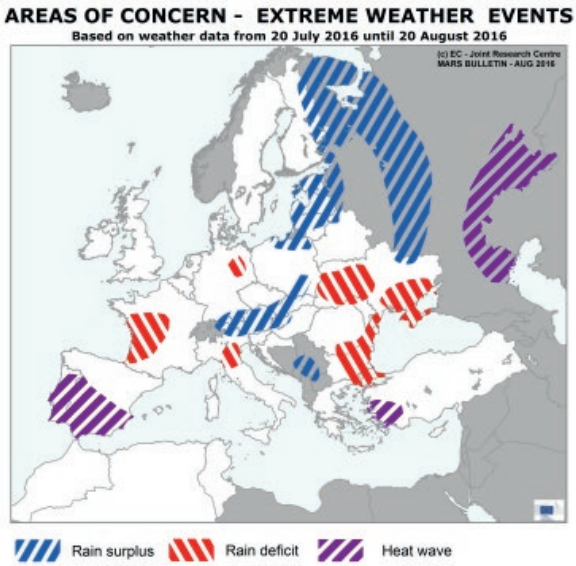
1. Agro-meteorological overview

1.1. Areas of concern

The map depicts the main weather events between 20 July and 20 August. In **Spain** and **Portugal**, the heatwave, already displayed in our AOC maps of July, lasted until the first ten days of August with maximum temperatures often between 35 °C and 40 °C but with no impact on the irrigated summer crops. In central and western **France**, summer crops received very little rain and soil moisture is now significantly below the seasonal average. Nevertheless, no impact on crops has occurred yet but rains are necessary to avoid early senescence and yield reductions. In **Germany** rainfall cumulates were low almost everywhere during the analysis period, and especially in Sachsen-Anhalt, but with no impact on crops, so far.

In eastern Europe sparse precipitation occurred in **eastern Bulgaria** and **eastern Romania**. Here summer crops are in grain filling and rains are needed in order not to further compromise yield expectations. Similar crops conditions were found in western and southern **Ukraine** where few and sparse rains provided some support to the summer crop development.

Austria and **eastern Slovakia** experienced a significant rain surplus, with the main events concentrated in a few days at the end of July or the beginning of August. Almost uninterrupted precipitation occurred in August in **western Russia**, in the **Baltic countries** and in **Poland.**



1.2. Meteorological review (1 July-16 August)

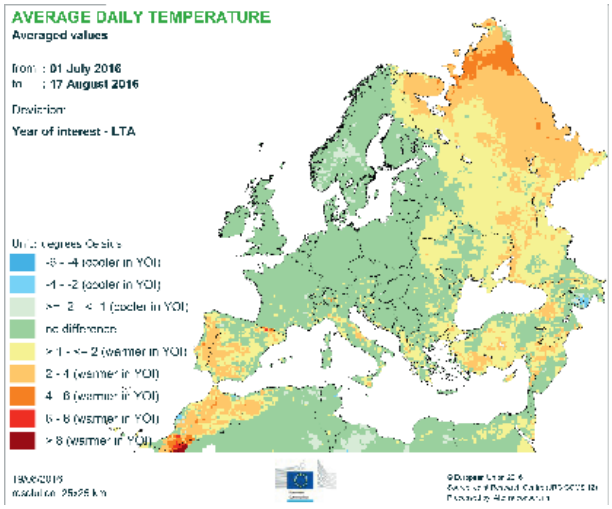
July was warmer than usual in the Iberian peninsula, Italy, south-eastern Europe, Austria, the Czech Republic, Slovakia, eastern Europe, western Turkey and the Maghreb, with temperature anomalies between 1 °C and 4 °C above the long-term average. Average to slightly above-average July temperatures predominated in other parts of Europe. Temperatures above 35 °C were limited to the Iberian peninsula, the Maghreb, south-eastern Europe, Turkey, eastern Ukraine and the southern part of European Russia. Temperature conditions in Portugal and Spain were among the three warmest in our record.

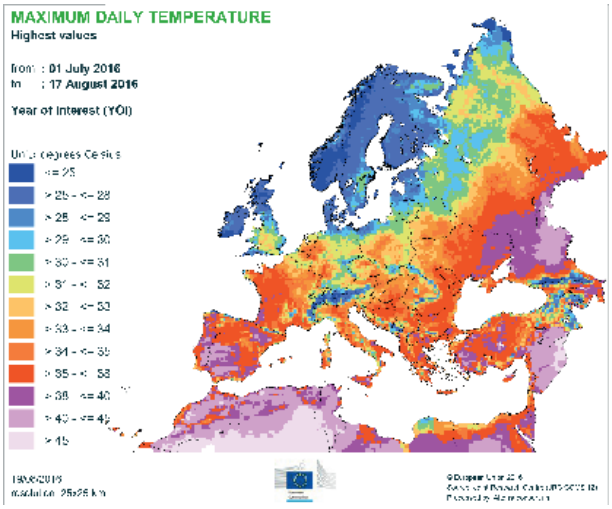
The first half of August was characterised by a cold weather anomaly in central Europe, northern and western Balkans and Scandinavia, with temperatures down to 4 °C below the long-term average. Substantially warmer-than-usual weather continued in the western half of the Iberian peninsula, the Maghreb, Turkey and eastern Europe.

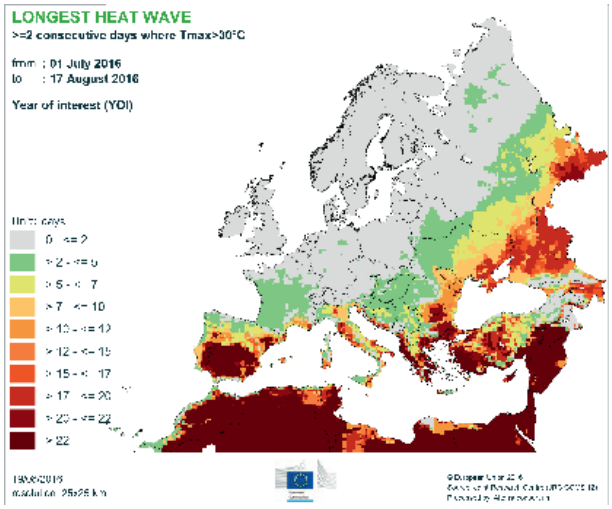
The longest heatwaves with maximum daily temperatures above 30 °C occurred in the southern half of the Iberian peninsula, south-eastern Romania, eastern Bulgaria, Greece, western Turkey, south-eastern Ukraine and southern parts of European Russia. The heatwave duration for a majority of these regions exceeded 20 days. Maximum temperatures exceeding 40 °C were recorded in southern European Russia, eastern Ukraine, the southern half of the Iberian peninsula, south-eastern and western Turkey. Maximum temperatures close to 38 °C were recorded in south-eastern Romania, Bulgaria, Greece, southern Italy and south-western France.

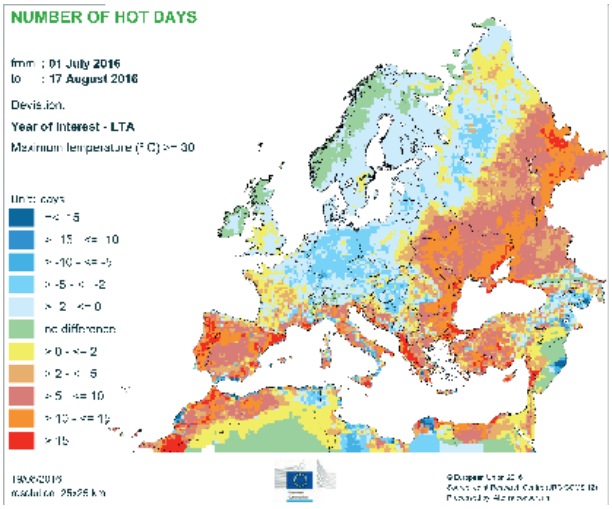
Drier-than-usual conditions were recorded in many regions of the Iberian peninsula, western France, southern UK, regionally in Germany, northern Italy, western Black Sea areas, Ukraine and many regions in Turkey. Rainfall cumulates in these regions did generally not exceed 30 mm; moreover, the southern half of the Iberian peninsula, the western-most part of Turkey and south-eastern Turkey remained dry. A noticeable rainfall deficit has developed in eastern Bulgaria, south-eastern Romania, Ukraine, western France, regionally in Germany, in the southern UK and in central parts of European Russia.

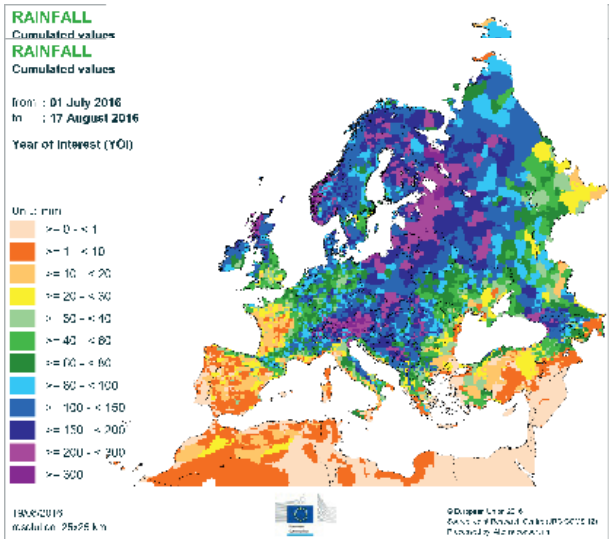
Abundant rainfall was recorded for the western and northern Balkans, Austria, Hungary, Slovakia, northern Poland, the Baltic countries and major parts of Scandinavia and regionally in western European Russia. The normal cumulates in many of these regions were exceeded by more than half. July was among the three wettest months in our database in Austria and Slovakia. Intensive rainfall events during the second dekad of July resulted in local waterlogging in central Hungary, eastern Croatia and northern Poland. Exceptional rainfall events in the former Yugoslav Republic of Macedonia on 6 and 7 August resulted in locally severe flash flooding and waterlogging.

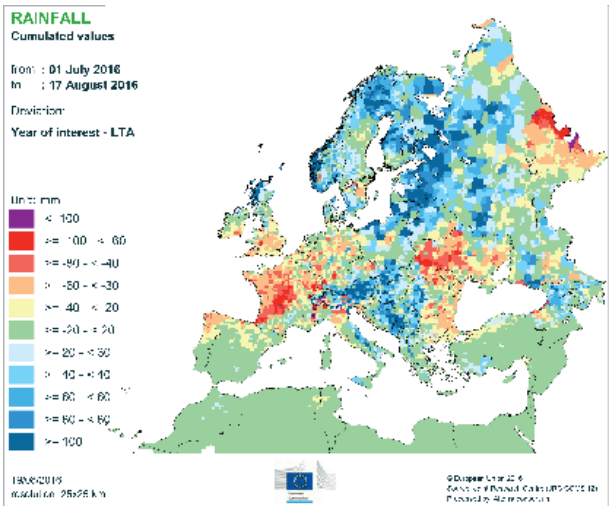

AVERAGE DAILY TEMPERATURE
Averaged values
from : 01 July 2016
to : 17 August 2016
Deviation
Year of interest - LTA
Unit: degrees Celsius
-8 - -4 (cooler in YOI)
-4 - -2 (cooler in YOI)
>= -2 < 1 (cooler in YOI)
no difference
> 1 - <= 2 (warmer in YOI)
2 - 4 (warmer in YOI)
4 - 6 (warmer in YOI)
6 - 8 (warmer in YOI)
> 8 (warmer in YOI)

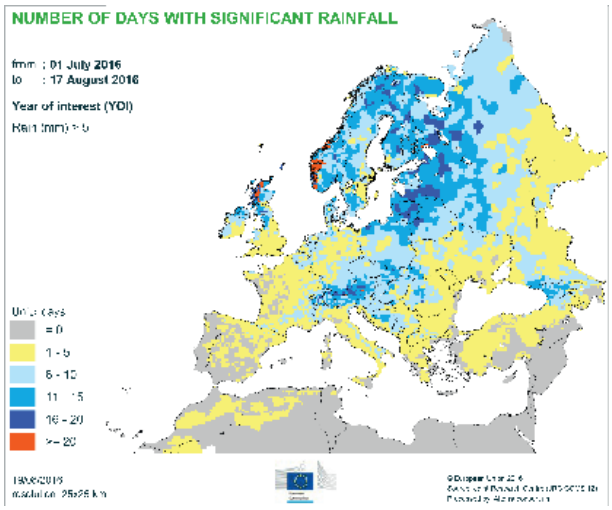

MAXIMUM DAILY TEMPERATURE
Highest values
from : 01 July 2016
to : 17 August 2016
Year of interest (YOI)
Unit: degrees Celsius
<= 25
> 25 - <= 28
> 28 <= 29
> 29 <= 30
> 30 - <= 31
> 31 - <= 32
> 32 <= 33
> 33 - <= 34
> 34 - <= 35
> 35 - <= 38
> 38 <= 40
> 40 - <= 45
> 45

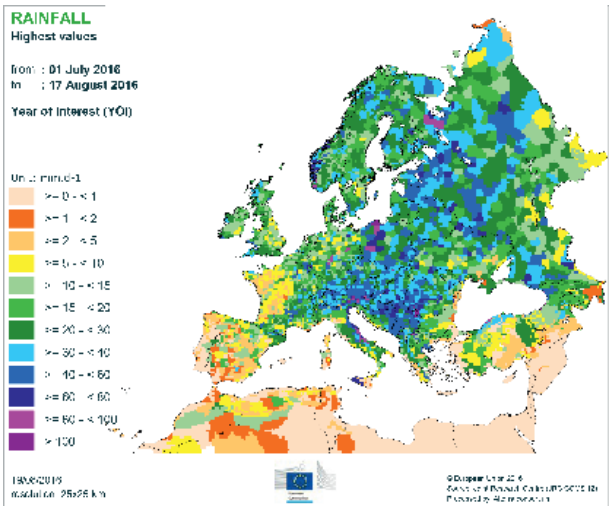

LONGEST HEAT WAVE
>=2 consecutive days where Tmax>30°C
from : 01 July 2016
to : 17 August 2016
Year of interest (YOI)
Unit: days
0 <= 2
> 2 - <= 5
> 5 - < 7
> 7 <= 10
> 10 - <= 12
> 12 - <= 15
> 15 - < 17
> 17 <= 20
> 20 - <= 22
> 22


NUMBER OF HOT DAYS
from : 01 July 2016
to : 17 August 2016
Deviation
Year of Interest - LTA
Maximum temperature (° C) >= 30
Unit: days
<= -15
> -15 <= -10
> -10 - <= -5
> -5 - < -2
> -2 <= 0
no difference
> 0 - <= 2
> 2 - < 5
> 5 <= 10
> 10 - <= 15
> 15


RAINFALL
Cumulated values
RAINFALL
Cumulated values
from : 01 July 2016
to : 17 August 2016
Year of Interest (YOI)
Unit: mm
>= 0 - < 1
>= 1 < 10
>= 10 < 20
>= 20 - < 30
> 30 - < 40
>= 40 < 60
>= 60 - < 80
>= 80 - < 100
> 100 - < 150
>= 150 < 200
>= 200 - < 300
>= 300


RAINFALL
Cumulated values
from : 01 July 2016
to : 17 August 2016
Deviation
Year of interest - LTA
Unit: mm
< 100
>= -100 < -60
>= -80 - < -40
> -50 - < -30
>= -40 < 20
>= -20 - < 20
>= 20 - < 30
> 40 - < 10
>= 60 < 80
>= 80 - < 60
>= 100

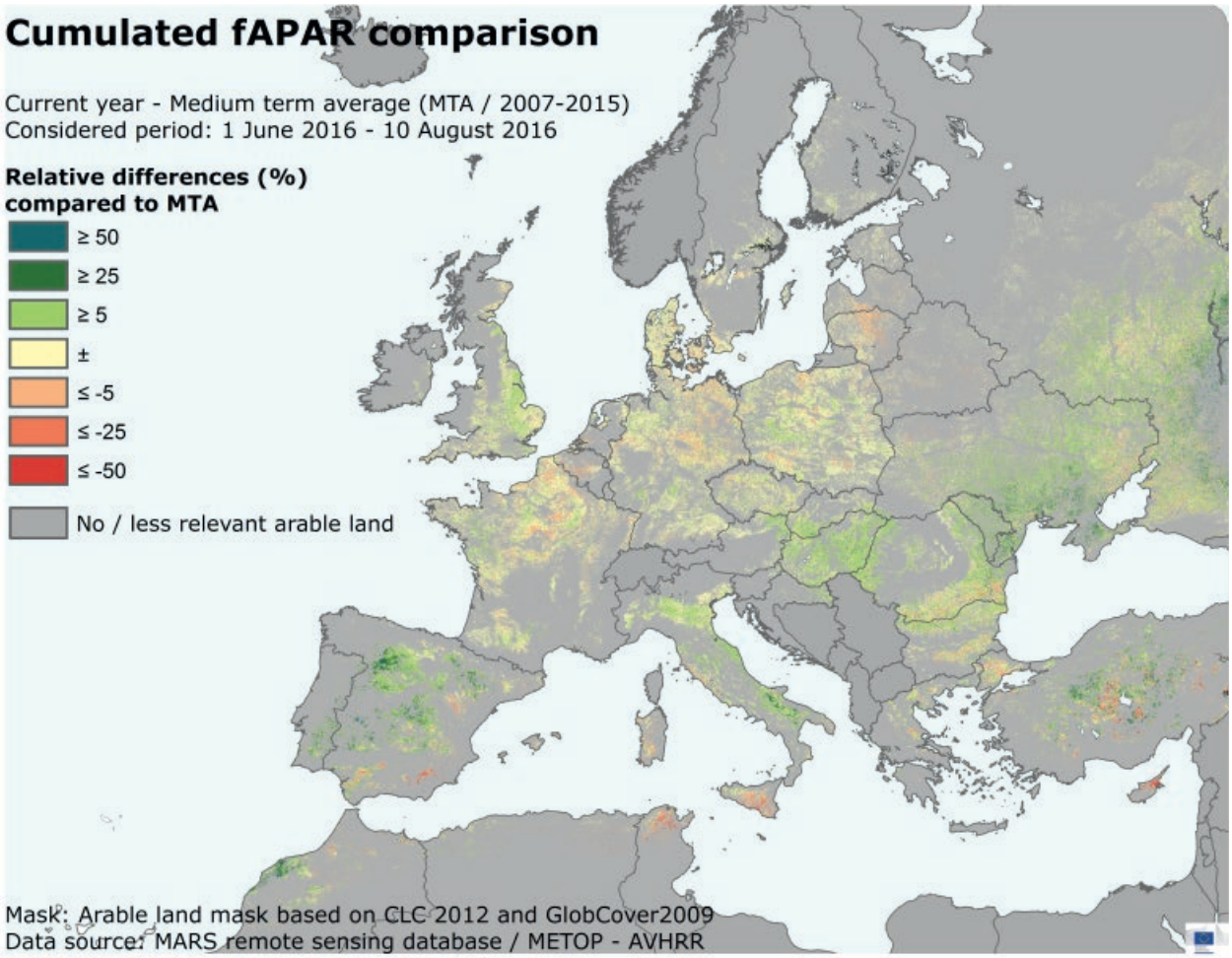

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from : 01 July 2016
to : 17 August 2016
Year of interest (YOI)
= 0
1 - 5
6 - 10
16 - 20

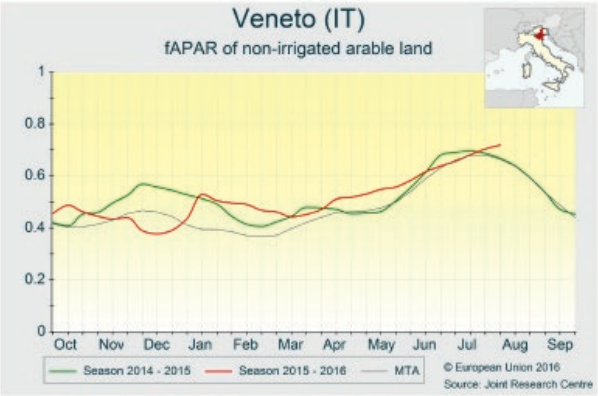

RAINFALL
Highest values
from : 01 July 2016
to : 17 August 2016
Year of interest (YOI)

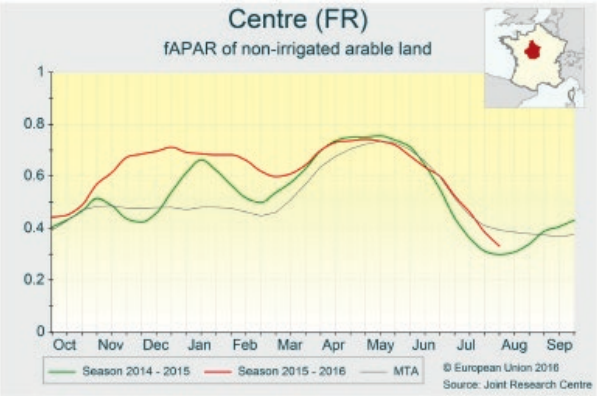
2. Remote sensing — Observed canopy conditions

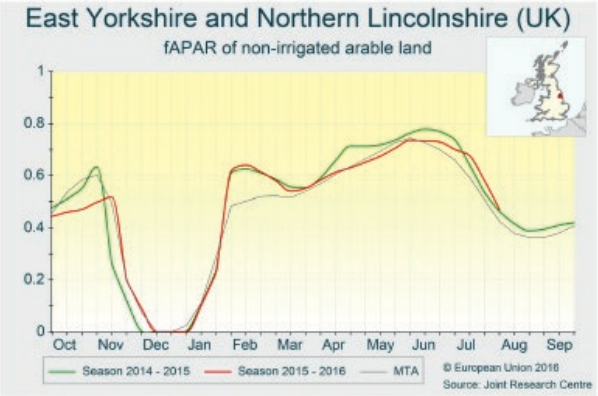
Summer crops development slightly delayed in most of Europe

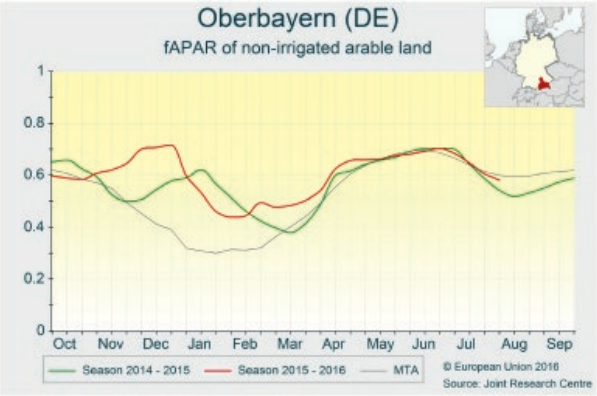
The map displays the differences between the fraction of absorbed photosynthetically active radiation (fAPAR) cumulated during the period from 1 June to 10 August 2016 and the medium-term average (MTA, 2007-2015) for the same period. In northern **Spain**, where most of the summer crops are grown, water supply for irrigation is sufficient and temperatures are slightly above the average, thus allowing good yield expectations. In **Italy**, maize development is delayed and flowering just ended in early August; sufficient rain and seasonal temperatures determined optimal leaf expansion up to the moment of analysis (e.g. Veneto). In northern **Italy** the harvesting of winter crops finished in July. In regions of northern **France** (e.g. Centre), negative fAPAR anomalies are visible, where the late spring rains left their mark on winter and spring crops grain filling. In western regions drier-than-usual weather, lasting since June, determined very low soil moisture under summer crops: rains are necessary to avoid early senescence. In the **United Kingdom**, spring cereals and winter crops are around maturity with some delay compared to the MTA. In **Germany**, during July and August, the sparse precipitation in some regions led to rapidly decreased soil moisture contents under summer crops, but, at the same time, lower-than-usual temperatures reduced the crops' water demand: the result is a suboptimal biomass accumulation that still remains around the average (e.g. Rheinhessen-Pfalz). In **Poland**, winter crops reached maturity while summer crop biomass accumulation slowed down due to lower-than-usual temperatures at the end of July and subsequent below-average radiation in August. In **central Europe** (Czech Republic, Hungary, Austria Slovakia) overall precipitation, especially during late July, was abundant. In August temperature dropped — with a minimum temperature frequently between 10 °C and 15 °C — and slowed down the development of summer crops from advanced to normal stages. Where weather conditions were warmer and drier (eastern Slovakia and eastern Hungary, e.g. Eszak-Magyarorszag) summer crop leaf area expansion had a boost in August and is now above the average. In **Romania** and **Bulgaria**, summer crop canopy expansion is optimal in the western regions while eastern regions suffered from a shortening of the grain-filling stage (e.g. Severen Tsentralen) due to hot temperatures and a persistent lack of precipitation since early July. The recent rains of mid August partially restored the soil moisture. In **Ukraine** summer crops canopy accumulation has been significantly above average since the beginning of June. High, but seasonal, temperatures and sufficient soil moisture determined optimal flowering in late July while crops are now starting grain filling (e.g. Poltavs'ka). In **Turkey**, summer crops growth in the main producing regions is above the average thanks to well-distributed rains and optimal temperatures (e.g. Kastamonu). In **Russia**, the optimal weather conditions determined a large grain-filling period with excellent final yield expectations

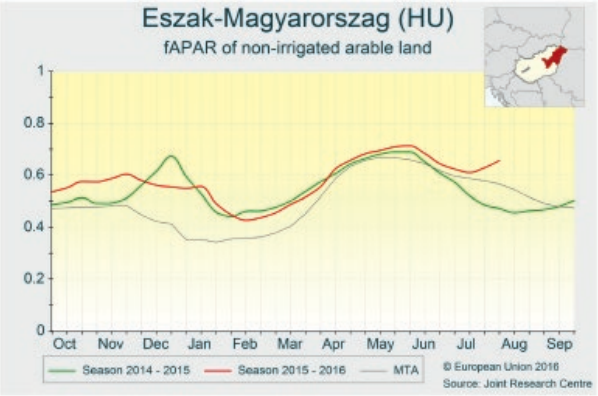


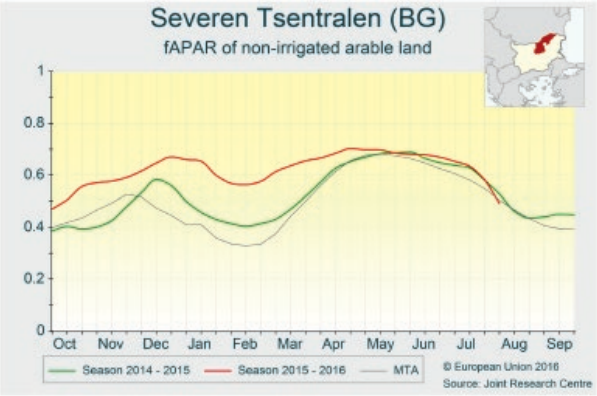

Veneto (IT)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre

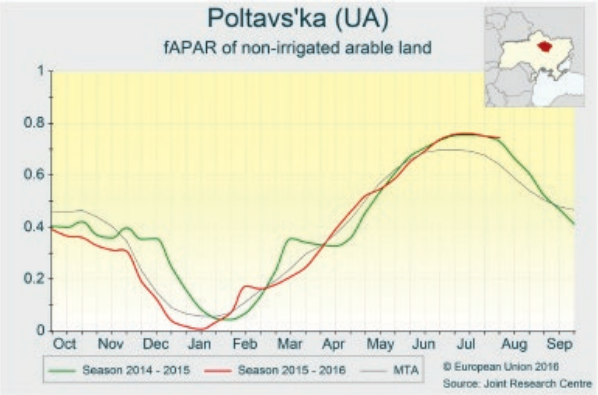

Centre (FR)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre

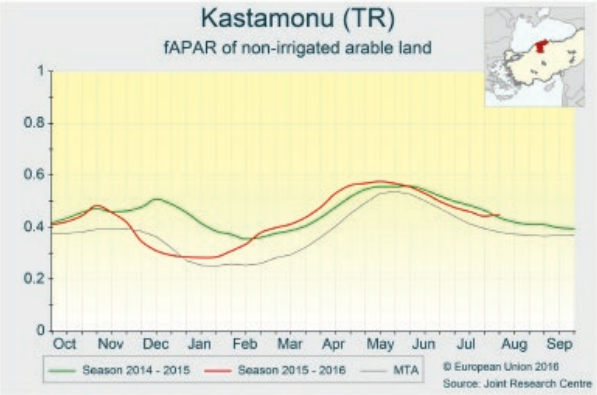

East Yorkshire and Northern Lincolnshire (UK)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre


Oberbayern (DE)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre


Eszak-Magyarorszag (HU)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre


Severen Tsentralen (BG)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre


Poltavs'ka (UA)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre

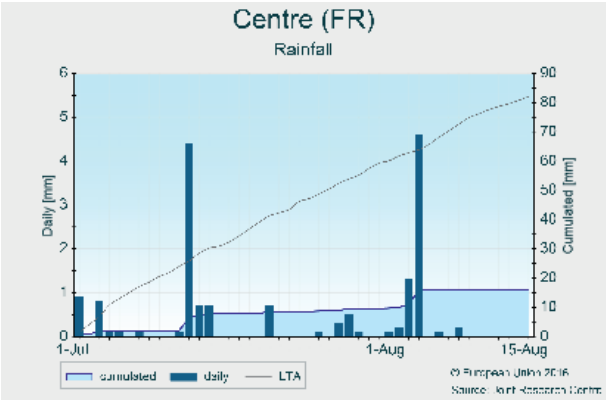

Kastamonu (TR)
fAPAR of non-irrigated arable land
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016
Source: Joint Research Centre

3. Country analysis

3.1. European Union

France

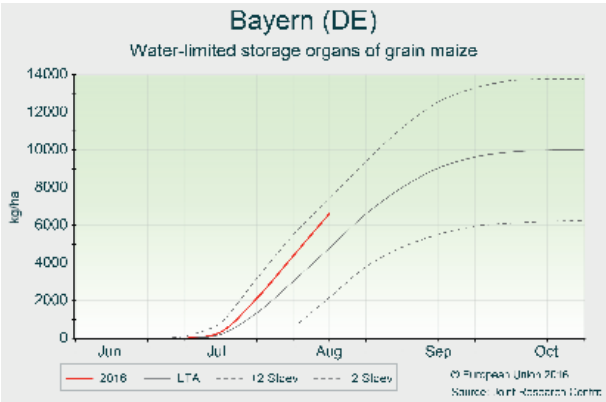
Since the beginning of July, only a few rainfall events have been recorded and, except in the south-eastern regions, cumulated rainfall is largely below the average. Temperatures fluctuated strongly, between an average daily temperature of 14 °C and 25 °C. The dry weather followed a wet period that started at the end of May with exceptional downpours and low radiation levels throughout June. Weather conditions remained wet in June and had various negative consequences on wheat and barley growth: an increased pest and disease pressure, anoxia and lodging. The lack of radiation, present especially in the most productive regions in central France, slowed down crop development and particularly impacted wheat and barley, which were reaching the grain filling stage, and diminished the spikelet fertility. All crops have been impacted by the overwet conditions except sunflower. Our yield forecasts for wheat and barley were lowered substantially and are now based on remote sensing data or meteorological indicators. Grain maize and green maize are forecast slightly below the average due to the overly wet conditions at sowing but also considering the dry conditions observed recently. Sunflower was sown late and the yield is also forecast below the average.



Germany

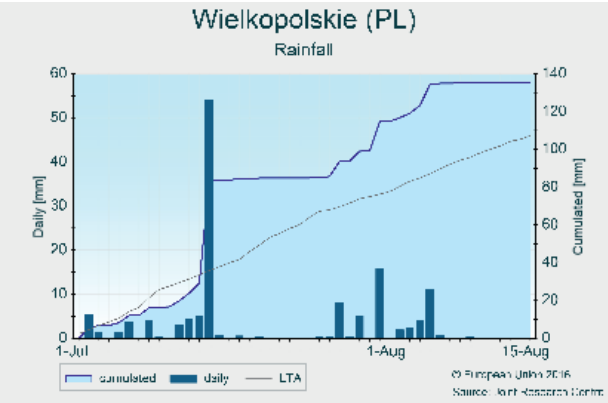
Temperature accumulation for the period under review was around average, apart from a few hot days in July and a rather fresh August without any hot days so far. The unsettled summer weather continued. Overall rainfall accumulation is below average with some very dry spots in Rheinland-Pfalz and Sachsen-Anhalt. However, frequent events with small amounts of rainfall in the north-west (Schleswig-Holstein, Niedersachsen, Nordrhein-Westfalen) hampered harvest activities, but dry weather is now expected for the coming days.

Forecasts for winter and spring cereals remain mostly unchanged compared to our last bulletin, with the exception of a lowered soft wheat and winter barley forecast due to the suboptimal last phase of the grain filling and complicated harvest conditions. Soft wheat and winter barley yield forecasts are well below those of last year, but are still around average. Maize simulations now show a normal to favourable development after the difficult start to the season and the forecast is clearly above last year's yield, when the yield was negatively impacted by dry and hot conditions. Sugar beet and potato are currently forecast close to average.



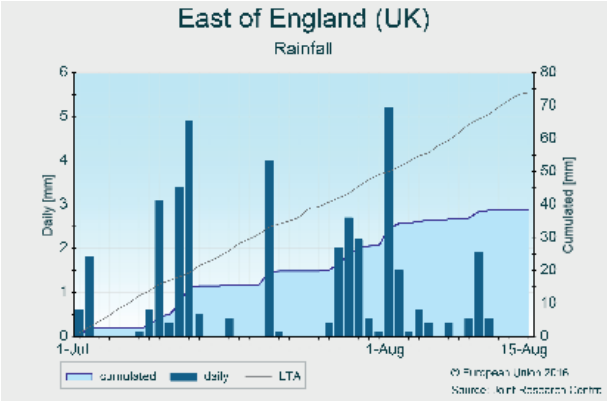
Poland

Weather conditions were favourable for the period of analysis. Cumulated rainfall was close to the average in the south and far above the average in the northern regions. Temperatures stayed close to the average and went above 30 °C on only two days since the beginning of July. Farmers benefited from rain-free days during the second half of July which provided good conditions for the harvest of wheat and barley. Conditions are beneficial for maize, sugar beet and potatoes and yields are forecast above the average. Forecasts for soft wheat, winter barley, rapeseed, rye and triticale are maintained slightly below the average. Grain maize, green maize, sugar beet and potato benefited from the favourable conditions observed in July and are forecast above the average.



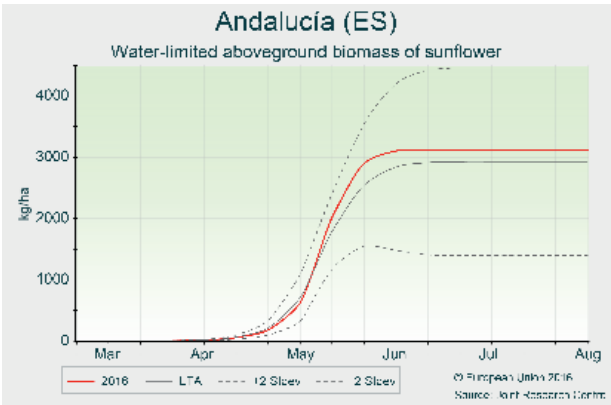
United Kingdom and Ireland

Temperatures in the UK and Ireland fluctuated around the average, to somewhat below average in the north. Rainfall was well below average in the southern half of the UK and Ireland, albeit with a fairly high frequency of events in most regions. In northern parts of the UK and Ireland rainfall was above average. Overall these weather conditions provided good opportunities for the harvesting of winter and spring cereals in the most important cropland areas, as well as for the yield formation of sugar beet and potato crops. Impacts of the excessively humid and overcast conditions mentioned in the previous bulletin have become clearer now. Negative effects appear to have been particularly strong on rapeseed and winter barley in the southern and central-eastern parts of the UK (see also section on France). The forecasts for these crops were revised further downwards and are now below the five-year average. The harvesting of winter wheat and spring barley is now under way and first results suggest around average yields, in line with our forecast.



Spain and Portugal

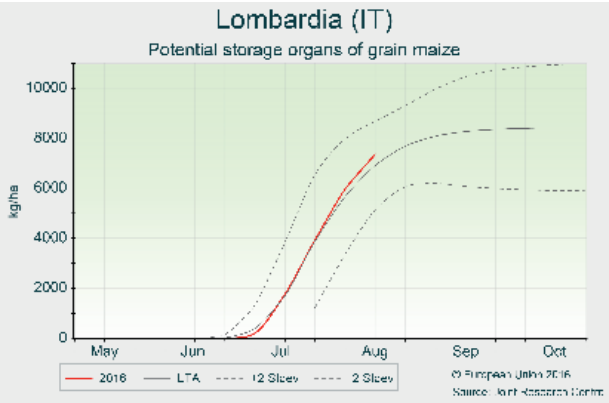
Weather conditions were warmer than usual in most of the Iberian peninsula. Precipitation was sparse, and mainly concentrated in the north (Aragón, Cataluña and North of Castilla y León). Sunflower started ripening in the centre and northern half, whereas the harvest is already under way in Andalucía. Yield expectations are far above the low results of 2015, thanks to the abundant rainfalls registered in April and May. The outlook for grain maize and sugar beet is close to the average, as the irrigation campaign is progressing adequately, without major limitations.



Italy

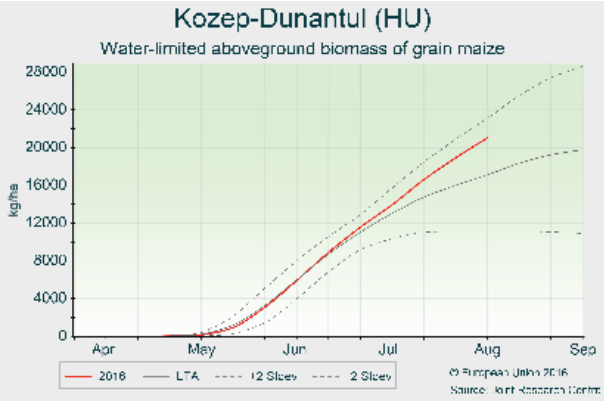
This summer has so far been mild and rainy in many regions across Italy. Rainfall was close to average in the north, and above average in the south. Summer crops are slightly delayed; however, yield expectations for grain maize are good, since vegetative growth has been favoured by abundant precipitation since the beginning of the season.

Model simulations for sunflower also suggest above-average yield formation, due to higher-than-usual soil moisture levels registered since June in central Italy. However, the overall yield expectation for sunflower is close to average because of failed crops reported in some fields due to the abundant precipitation registered in the previous months.



Hungary

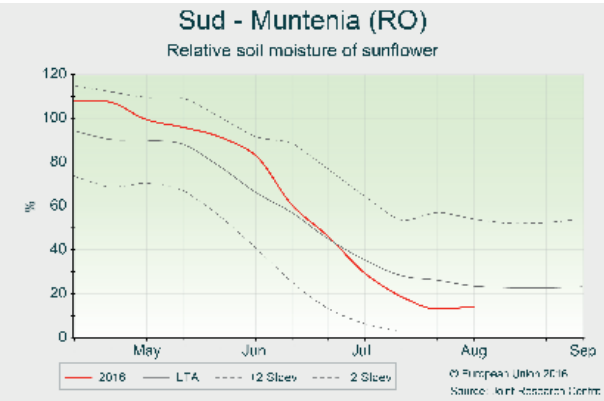
In the first half of July two short heatwaves occurred, but near or below-normal temperatures prevailed later on. Ample and well-distributed precipitation maintained soil moisture at an above-average level under summer crops. Summer crops are in a very good shape; both leaf area expansion and biomass accumulation well exceed the average. The yield potential of grain maize, sunflower and root crops is very high, therefore our former positive yield forecast was further revised upwards. The harvest of winter cereals suffered local delays and a decrease of grain quality due to the excessive rainfall of mid July, but no significant yield losses are expected and the yield outlook remains at record level.



Romania

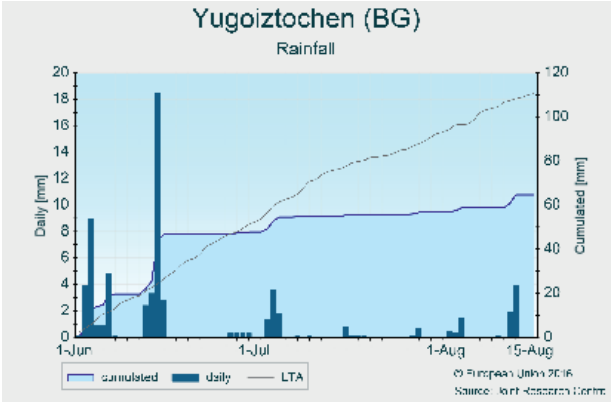
Western Romania was characterised by near-normal thermal conditions and plentiful precipitation. In the eastern regions drier and warmer-than-usual weather prevailed; precipitation remained below the average by 40-90 mm and the number of hot days exceeded the average by 5-14 days during the review period.

Harvesting conditions were optimal in the eastern regions, but in western Romania the frequent and plentiful rains caused some delay and deterioration of grain quality. The water supply conditions of summer crops are favourable in the western areas where biomass accumulation is positive. By contrast, soil moisture has decreased to below average level in the main crop- producing eastern regions since early July. Our model simulations indicate a negative effect of limited water supply and high temperatures resulting in reduced biomass accumulation and a decrease of the leaf area index of all summer crops; consequently, our previous yield forecast was revised downwards.



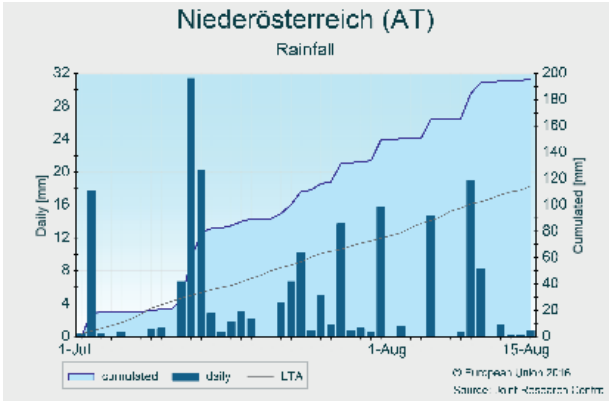
Bulgaria

Daily maximum temperatures typically exceeded the long-term average by 2-4 °C, with the exception of a short cooling with significant rainfall after 10 August. Between 15 June and 10 August, Bulgaria experienced a very dry period. The western half of the country received 30-70 mm while the eastern regions received only 5-20 mm of precipitation. The harvest of winter crops went smoothly, therefore our earlier record yield forecast was maintained. The continued hot and dry weather constrained the yield formation of summer crops, however, and led to an early senescence of the canopy, therefore our previous optimistic yield outlook for grain maize and sunflower was revised considerably downwards.



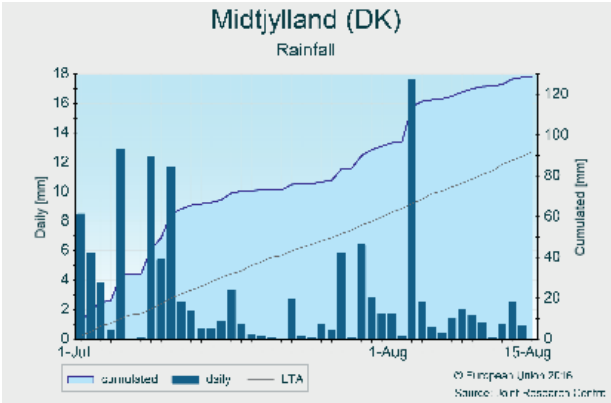
Austria, Slovakia and the Czech Republic

Unstable atmospheric conditions resulted in strong temperature variations and abundant rainfall, especially in Austria. Temperatures were close to normal during the first two dekads of July, whereas the third dekad was substantially warmer than usual. Slightly cooler-than-normal temperatures prevailed during the first half of August. Heatwaves occurred in eastern Austria and large parts of Slovakia; however, maximum temperatures recorded were generally below 35 °C. Rainfall during the analysis period exceeded the long-term average by more than 50 % in Austria and Slovakia. Heavy rainfall accompanied by hail and wind locally caused severe damage to summer crops, especially in Austria. In contrast, a rainfall deficit was recorded in the central Czech Republic. In the absence of heat and drought stress, summer crops are progressing well. Wet conditions could have increased pest and disease pressure, however. The forecasts of grain maize yields have been revised upwards as compared to our previous bulletin; the maize yield outlook is well above the five-year average.



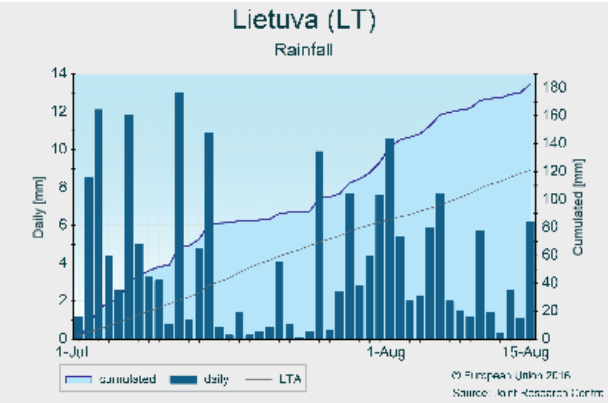
Denmark and Sweden

Temperatures in Denmark and southern Sweden were seasonal or below average during the period under review with several rainfall events during cooler episodes. Only during the third dekad of July were temperatures warmer than usual and precipitation limited. During this warm and almost dry window, harvesting activities started in Denmark for winter cereals as well as early-sown spring barley (e.g. in the islands). However, the harvesting was interrupted because of frequent rains during the first half of August and, according to weather forecasts, more rain is expected. The wet conditions at the end of the crop development cycle caused yield loses. Our yield forecasts for Denmark for cereals and rapeseed have been revised downwards, below the five-year average. Cereal forecasts have also been revised downwards for Sweden. Sugar beet and potato forecasts are kept at the same level as in the previous bulletin.



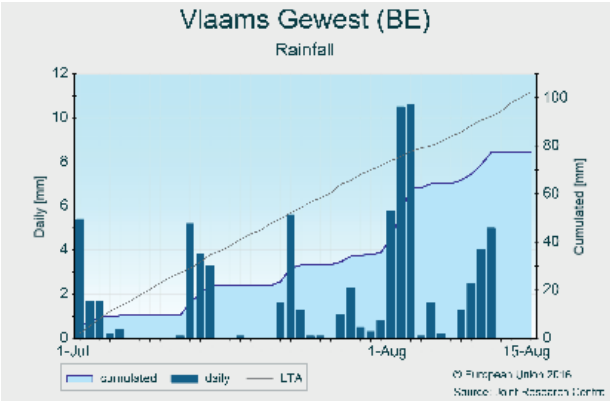
Finland, Lithuania, Latvia and Estonia

The second half of July was characterised by above-average temperatures and below-average precipitation. This helped to reduce somewhat over-wet soil conditions in Estonia and Finland. Prevailing mild conditions during most of the growing season advanced the harvest of winter crops, which started during the first week of August. At the same time, however, above-seasonal precipitation (unusually high in Lithuania and Latvia) set in. The excess of rainfall decreased the high expectations of grain quality, and a large window of rainless days is now needed to complete the harvest without adverse effects. Weather conditions were favourable for potato, sugar beet and maize, for which the forecast was revised slightly upwards. Forecasts for the remaining crops are close to those of our previous bulletin.



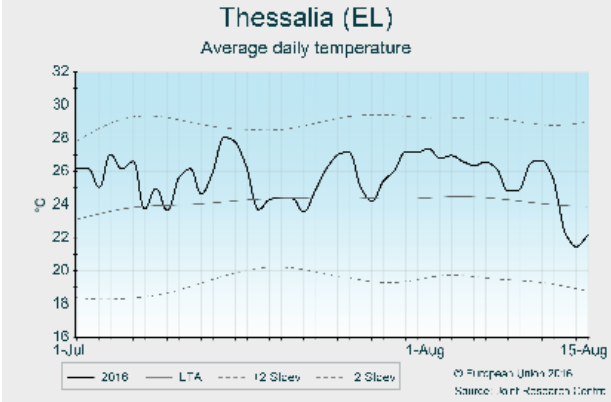
Belgium, the Netherlands and Luxembourg

Temperature conditions for the period under review were around average, with below-average temperatures prevailing in August so far. Rainfall was below average but with frequent events, especially during the last dekad of July and the first dekad of August in Belgium and the southern Netherlands, and also during the first two dekads of July in the northern Netherlands. Luxembourg experienced very high rainfall in the range of 60 mm from 20 to 22 July. The relatively cool conditions and frequent rainfall events affected ripening of winter and spring cereals and hampered harvesting, which is now, however, well under way. Impacts of the overly wet conditions and low radiation in previous months are becoming clearer now. In addition to potatoes and sugar beet, these impacts appear to have been particularly strong on rapeseed, winter barley and early winter wheat varieties, especially in the southern parts of the Netherlands and Belgium where the wetness was most extreme (see also section on France). The forecasts for these crops were revised further downwards and are now below the five-year average. The outlook for grain maize remains positive.



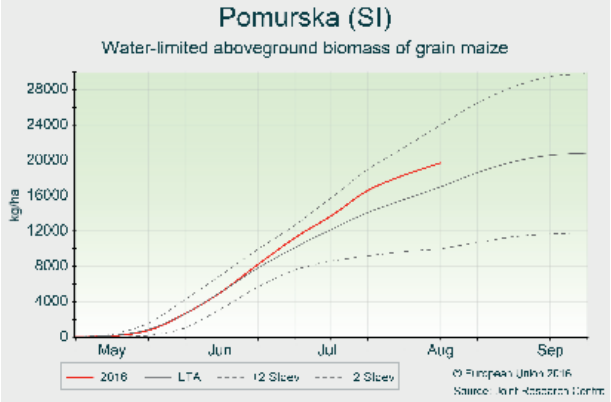
Greece and Cyprus

Very high temperatures prevailed in Greece during July and the first half of August with average daily temperatures consistently above the long-term average. July was almost dry in central and northern regions but several rainfall events occurred in the southern regions. At the beginning of August significant rainfall events occurred in the whole country. The winter cereals season has been completed in the whole country and the forecasts of our last bulletin remain unchanged. The high temperatures accelerated the development of grain maize and sunflower, which is slightly advanced and currently in the final stages of the grain-filling phase. Forecasts are at the five-year average levels. In Cyprus, the review period was completely dry and average daily temperatures were consistently above average. Winter barley was harvested in May and June with low yields.



Slovenia and Croatia

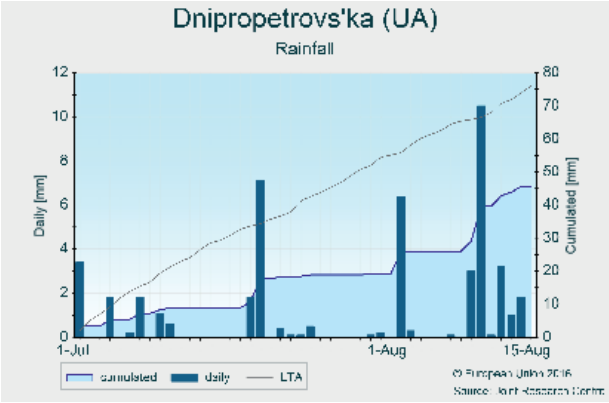
July was generally warmer than usual in Slovenia and central Croatia. A moderate heatwave of up to 5 days occurred during the third dekad of July with maximum daily temperatures reaching 35 °C in major agricultural areas. Temperatures returned to normal or slightly below average during the first half of August. Above-average rainfall cumulates during the analysis period were recorded in eastern Slovenia, alpine areas and eastern Croatia. The Adriatic coastal areas experienced substantially drier-than-normal weather, with rainfall cumulates below 40 mm during the period analysed. Weather conditions were mainly favourable for summer crops. The outlook for summer crops has therefore been revised upwards.



3.2 Black Sea area

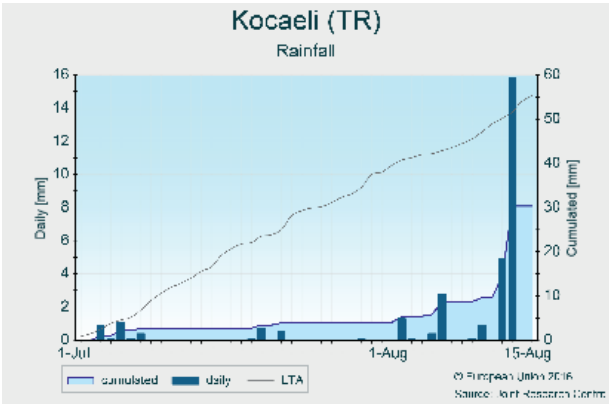
Ukraine

Average temperatures have stayed 1 °C above the average since the beginning of July. A heatwave was observed in mid July with maximum temperatures exceeding 35 °C. The period of review was rather dry; only a few significant rainfall events were observed and cumulated rainfall over the review period is 50 % below the average. The dry and warm weather was particularly beneficial for the harvest of barley and wheat in July, raising the yield forecast close to a record level. Nevertheless, soil moisture decreased substantially during the last weeks and some rain will be needed in the coming weeks to sustain the growth of summer crops. Grain maize is currently forecast above the average but could be revised down if no substantial rainfall is recorded soon.



Turkey

Warm and dry conditions prevailed in most of the country during the period under review. Only a few days presented temperatures below the long-term average, mainly during the first half of July in the central-eastern regions. Precipitation was sparse throughout the period but after 10 August significant rainfalls occurred and improved the cumulated values that, however, remain below the long-term average in most of the regions. The winter cereals season was completed by mid July. The forecasts of our last bulletin, which were slightly below the five-year average, remain unchanged. The development of grain maize is slightly advanced. Currently maize is at the grain-filling stage and approaching maturity. The grain maize forecast is set above the five-year average.



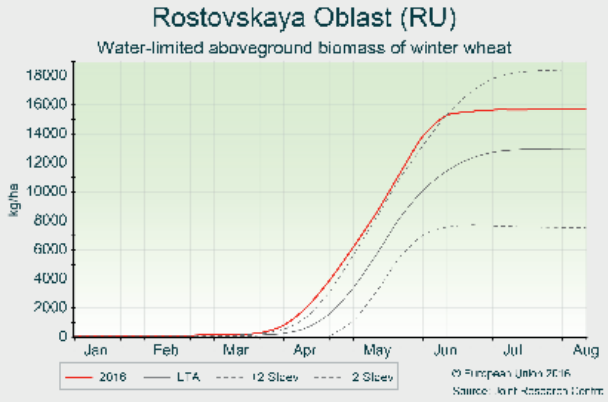
3.3 European Russia and Belarus

European Russia

From 1 July to 15 August mostly above-average daily temperatures and near average precipitation characterised European Russia. The second dekad of July was especially warm in south-western regions and a strong positive thermal anomaly was experienced in the whole country during the first half of August. A rainfall deficiency was detectable only in the eastern regions of Near Volga Okrug, while a precipitation surplus occurred in the northern regions of the Central Okrug.

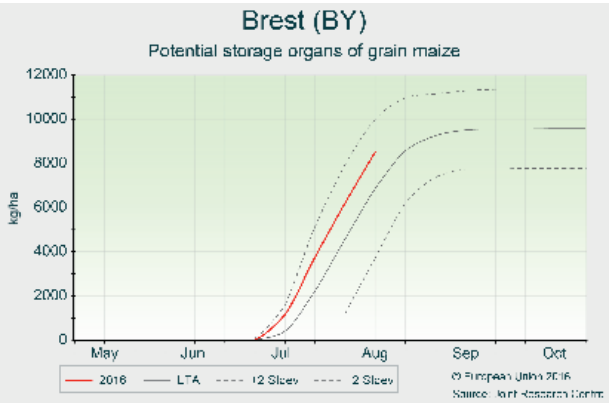
In this cropping season, biomass accumulation of winter wheat was exceptionally high, primarily in the southern and northern Caucasian Okrugs, therefore a near-record yield is forecast. The weather conditions allowed a good progress of the harvest; heavy rainfall caused only local delays. No considerable harvesting losses or decrease of grain quality is expected.

The sufficient precipitation of July and August provided good water supply conditions for the flowering and grain-filling period of maize so far, therefore the yield outlook is also positive.



Belarus

During the period under review, weather conditions were mostly close to average with higher-than-usual rainfall registered in the north-eastern regions. As a consequence, soil moisture levels increased in most of the country, improving the conditions, particularly for summer crops. The yield forecast was therefore revised upwards for maize and it is now slightly above the five-year average. Winter and spring cereals harvests are almost completed and yield forecasts remain well above the five-year average for spring barley and above average for winter wheat.



4. Crop yield forecasts

Country	TOTAL WHEAT t/ha					TOTAL BARLEY t/ha				
	2015	2016	Avg 5yrs	% 16/15	% 16/5yrs	2015	2016	Avg 5yrs	% 16/15	% 16/5yrs
EU-28	6.03	**5.63**	5.60	- 6.7	+ 0.5	5.02	**4.88**	4.72	- 2.8	+ 3.5
AT	5.70	**5.76**	5.39	+ 1.1	+ 6.7	5.54	**5.61**	5.38	+ 1.4	+ 4.3
BE	9.36	**7.80**	8.83	- 16.7	- 11.7	9.28	**7.90**	8.62	- 14.9	- 8.4
BG	4.53	**5.07**	4.10	+ 11.8	+ 23.4	4.04	**4.37**	3.86	+ 8.1	+ 13.1
CY	-	**-**	-	-	-	2.49	**1.04**	1.82	- 58.3	- 42.9
CZ	6.36	**5.98**	5.71	- 5.9	+ 4.7	5.44	**4.87**	4.93	- 10.5	- 1.3
DE	8.09	**7.78**	7.81	- 3.9	- 0.5	7.17	**6.65**	6.61	- 7.2	+ 0.7
DK	7.95	**7.30**	7.34	- 8.2	- 0.6	6.11	**5.24**	5.78	- 14.3	- 9.5
EE	4.79	**3.84**	3.82	- 19.9	+ 0.3	4.23	**3.39**	3.38	- 20.0	+ 0.1
ES	2.92	**3.52**	3.07	+ 20.4	+ 14.7	2.46	**3.43**	2.73	+ 39.2	+ 25.3
FI	4.10	**3.89**	3.82	- 5.1	+ 1.8	3.46	**3.55**	3.54	+ 2.3	+ 0.2
FR	7.79	**6.46**	7.20	- 17.0	- 10.2	7.09	**6.20**	6.49	- 12.6	- 5.4
GR	2.99	**2.93**	2.99	- 2.2	- 2.2	2.51	**2.70**	2.78	+ 7.6	- 2.9
HR	5.39	**5.26**	4.96	- 2.4	+ 6.1	4.39	**4.61**	4.36	+ 5.1	+ 5.9
HU	5.14	**5.42**	4.49	+ 5.4	+ 20.6	4.82	**4.96**	4.24	+ 3.0	+ 17.2
IE	10.66	**9.84**	9.23	- 7.7	+ 6.7	8.58	**8.15**	7.78	- 5.0	+ 4.7
IT	3.93	**3.98**	3.89	+ 1.4	+ 2.4	3.91	**3.85**	3.72	- 1.7	+ 3.4
LT	5.24	**4.65**	4.53	- 11.2	+ 2.8	4.00	**3.49**	3.46	- 12.8	+ 0.8
LU	6.28	**6.44**	6.05	+ 2.4	+ 6.4	-	**-**	-	-	-
LV	5.03	**4.19**	3.90	- 16.6	+ 7.6	3.83	**2.83**	2.93	- 26.1	- 3.3
MT	-	**-**	-	-	-	-	**-**	-	-	-
NL	9.04	**8.88**	8.88	- 1.7	+ 0.0	6.43	**6.25**	6.66	- 2.8	- 6.2
PL	4.57	**4.26**	4.44	- 6.9	- 4.0	3.53	**3.60**	3.62	+ 2.1	- 0.5
PT	2.16	**2.30**	1.62	+ 6.5	+ 41.7	2.32	**2.32**	1.76	+ 0.0	+ 31.5
RO	3.82	**3.92**	3.44	+ 2.6	+ 13.8	3.45	**3.55**	3.14	+ 2.7	+ 12.9
SE	7.21	**6.73**	6.34	- 6.6	+ 6.2	5.25	**4.84**	4.80	- 7.6	+ 0.9
SI	5.11	**5.06**	5.08	- 1.0	- 0.4	4.63	**4.88**	4.56	+ 5.3	+ 7.1
SK	5.53	**4.95**	4.68	- 10.6	+ 5.7	4.82	**4.37**	4.10	- 9.6	+ 6.5
UK	8.98	**8.08**	7.89	- 10.0	+ 2.4	6.69	**6.05**	6.12	- 9.6	- 1.2

Country	SOFT WHEAT t/ha					DURUM WHEAT t/ha				
	2015	2016	Avg 5yrs	% 16/15	% 16/5yrs	2015	2016	Avg 5yrs	% 16/15	% 16/5yrs
EU-28	6.28	**5.86**	5.83	- 6.7	+ 0.6	3.49	**3.46**	3.33	- 0.8	+ 4.0
AT	5.77	**5.82**	5.44	+ 0.9	+ 7.0	4.64	**4.96**	4.53	+ 7.0	+ 9.4
BE	9.36	**7.80**	8.83	- 16.7	- 11.7	-	**-**	-	-	-
BG	4.54	**5.08**	4.12	+ 11.8	+ 23.3	3.29	**3.74**	3.17	+ 13.4	+ 17.9
CY	-	**-**	-	-	-	-	**-**	-	-	-
CZ	6.36	**5.98**	5.71	- 5.9	+ 4.7	-	**-**	-	-	-
DE	8.11	**7.78**	7.83	- 4.0	- 0.5	4.64	**5.61**	5.23	+ 20.7	+ 7.1
DK	7.95	**7.30**	7.34	- 8.2	- 0.6	-	**-**	-	-	-
EE	4.79	**3.84**	3.82	- 19.9	+ 0.3	-	**-**	-	-	-
ES	2.99	**3.69**	3.24	+ 23.6	+ 14.0	2.59	**2.69**	2.18	+ 3.7	+ 23.2
FI	4.10	**3.89**	3.82	- 5.1	+ 1.8	-	**-**	-	-	-
FR	7.92	**6.56**	7.34	- 17.1	- 10.6	5.62	**5.05**	5.25	- 10.1	- 3.8
GR	3.25	**3.07**	3.20	- 5.7	- 4.1	2.86	**2.86**	2.90	- 0.2	- 1.6
HR	5.39	**5.26**	4.96	- 2.4	+ 6.1	-	**-**	-	-	-
HU	5.14	**5.42**	4.49	+ 5.5	+ 20.8	4.83	**5.03**	4.39	+ 4.0	+ 14.4
IE	10.66	**9.84**	9.23	- 7.7	+ 6.7	-	**-**	-	-	-
IT	5.41	**5.63**	5.43	+ 4.0	+ 3.6	3.31	**3.30**	3.18	- 0.3	+ 3.7
LT	5.24	**4.65**	4.53	- 11.2	+ 2.8	-	**-**	-	-	-
LU	6.28	**6.44**	6.05	+ 2.4	+ 6.4	-	**-**	-	-	-
LV	5.03	**4.19**	3.90	- 16.6	+ 7.6	-	**-**	-	-	-
MT	-	**-**	-	-	-	-	**-**	-	-	-
NL	9.04	**8.88**	8.88	- 0.6	+ 0.0	-	**-**	-	-	-
PL	4.57	**4.26**	4.44	- 6.9	- 4.0	-	**-**	-	-	-
PT	2.16	**2.30**	1.62	+ 6.5	+ 41.7	-	**-**	-	-	-
RO	3.82	**3.92**	3.44	+ 2.6	+ 13.8	-	**-**	-	-	-
SE	7.21	**6.73**	6.34	- 6.6	+ 6.2	-	**-**	-	-	-
SI	5.11	**5.06**	5.08	- 1.0	- 0.4	-	**-**	-	-	-
SK	5.56	**4.92**	4.70	- 11.4	+ 4.8	5.14	**5.20**	4.25	+ 1.1	+ 22.2
UK	8.98	**8.08**	7.89	- 10.0	+ 2.4	-	**-**	-	-	-

Country	SPRING BARLEY t/ha					WINTER BARLEY t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	4.18	**4.20**	4.13	+ 0.7	+ 1.9	6.13	**5.77**	5.57	- 5.8	+ 3.6
AT	4.92	**4.37**	4.66	- 11.2	- 6.2	5.99	**6.33**	5.99	+ 5.7	+ 5.6
BE	-	-	-	-	-	9.28	**7.90**	8.62	- 14.9	- 8.4
BG	-	-	-	-	-	4.04	**4.37**	3.86	+ 8.1	+ 13.1
CY	-	-	-	-	-	2.49	**1.04**	1.82	- 58.3	- 42.9
CZ	5.43	**4.72**	4.96	- 13.1	- 4.8	5.46	**5.18**	4.87	- 5.1	+ 6.5
DE	5.42	**5.56**	5.70	+ 2.5	- 2.5	7.69	**6.98**	6.92	- 9.2	+ 0.8
DK	5.96	**5.08**	5.67	- 14.8	- 10.5	6.76	**6.10**	6.31	- 9.8	- 3.3
EE	4.23	**3.39**	3.38	- 20.0	+ 0.1	-	-	-	-	-
ES	2.51	**3.47**	2.79	+ 37.9	+ 24.2	2.11	**3.15**	2.40	+ 48.9	+ 30.9
FI	3.46	**3.55**	3.54	+ 2.3	+ 0.2	-	-	-	-	-
FR	6.50	**5.10**	5.97	- 21.5	- 14.5	7.30	**6.55**	6.69	- 10.3	- 2.1
GR	-	-	-	-	-	2.51	**2.70**	2.78	+ 7.6	- 2.9
HR	-	-	-	-	-	4.39	**4.61**	4.36	+ 5.1	+ 5.9
HU	3.89	**4.05**	3.68	+ 4.2	+ 10.0	5.14	**5.26**	4.49	+ 2.3	+ 17.3
IE	7.72	**7.36**	7.29	- 4.7	+ 0.9	10.21	**9.37**	9.31	- 8.2	+ 0.7
IT	-	-	-	-	-	3.91	**3.85**	3.72	- 1.7	+ 3.4
LT	4.00	**3.49**	3.46	- 12.8	+ 0.8	-	-	-	-	-
LU	-	-	-	-	-	-	-	-	-	-
LV	3.83	**2.83**	2.93	- 26.1	- 3.3	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-	-
NL	6.43	**6.25**	6.66	- 2.8	- 6.2	-	-	-	-	-
PL	3.30	**3.51**	3.49	+ 6.3	+ 0.5	4.13	**3.97**	4.10	- 3.8	- 3.2
PT	-	-	-	-	-	2.32	**2.32**	1.76	+ 0.0	+ 31.5
RO	2.38	**2.48**	2.50	+ 4.2	- 0.9	3.90	**3.96**	3.40	+ 1.4	+ 16.3
SE	5.20	**4.78**	4.76	- 8.0	+ 0.5	6.18	**5.84**	5.86	- 5.4	- 0.2
SI	-	-	-	-	-	4.63	**4.88**	4.56	+ 5.3	+ 7.1
SK	4.74	**4.31**	4.04	- 9.2	+ 6.6	5.08	**4.52**	4.41	- 11.1	+ 2.4
UK	6.05	**5.56**	5.71	- 8.1	- 2.6	7.65	**6.83**	6.86	- 10.7	- 0.4

Country	GRAIN MAIZE t/ha					RYE t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	6.30	**7.33**	6.93	+ 14.8	+ 4.4	4.00	**3.75**	3.76	- 6.3	- 0.1
AT	8.68	**10.88**	9.98	+ 25.3	+ 9.0	4.32	**4.58**	4.40	+ 5.8	+ 4.1
BE	11.87	**11.47**	10.96	- 3.4	+ 4.6	-	-	-	-	-
BG	5.41	**5.09**	5.62	- 5.9	- 9.4	-	-	-	-	-
CY	-	-	-	-	-	-	-	-	-	-
CZ	5.54	**8.21**	7.64	+ 48.3	+ 7.4	4.91	**5.10**	4.84	+ 4.0	+ 5.4
DE	8.72	**10.73**	9.95	+ 23.0	+ 7.8	5.66	**5.65**	5.50	- 0.3	+ 2.7
DK	-	-	-	-	-	6.33	**5.90**	6.08	- 6.7	- 3.0
EE	-	-	-	-	-	3.83	**3.18**	3.00	- 16.9	+ 6.0
ES	11.30	**11.26**	11.08	- 0.3	+ 1.6	1.91	**2.31**	1.99	+ 21.2	+ 16.0
FI	-	-	-	-	-	3.44	**3.22**	3.03	- 6.5	+ 6.2
FR	8.36	**8.83**	9.11	+ 5.6	- 3.1	4.71	**4.41**	4.84	- 6.4	- 8.9
GR	11.22	**11.35**	11.37	+ 1.1	- 0.2	2.05	**1.91**	2.03	- 6.8	- 5.9
HR	6.49	**7.35**	6.01	+ 13.1	+ 22.2	-	-	-	-	-
HU	5.69	**7.48**	5.77	+ 31.5	+ 29.6	2.79	**2.77**	2.66	- 0.6	+ 4.3
IE	-	-	-	-	-	-	-	-	-	-
IT	9.72	**9.93**	9.28	+ 2.4	+ 7.3	-	-	-	-	-
LT	4.81	**6.77**	6.38	+ 40.8	+ 6.1	2.78	**2.52**	2.37	- 9.4	+ 6.4
LU	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	4.28	**3.33**	3.22	- 22.1	+ 3.6
MT	-	-	-	-	-	-	-	-	-	-
NL	10.82	**12.15**	10.79	+ 12.3	+ 12.7	-	-	-	-	-
PL	4.71	**6.71**	6.15	+ 42.5	+ 9.0	2.78	**2.69**	2.82	- 3.2	- 4.7
PT	8.39	**8.43**	8.29	+ 0.5	+ 1.7	0.84	**0.95**	0.86	+ 12.8	+ 10.9
RO	3.19	**4.37**	3.80	+ 37.1	+ 15.1	-	-	-	-	-
SE	-	-	-	-	-	6.35	**5.90**	6.02	- 7.0	- 2.0
SI	8.96	**8.31**	7.85	- 7.2	+ 5.8	-	-	-	-	-
SK	4.84	**6.50**	6.04	+ 34.3	+ 7.5	3.63	**3.10**	3.60	- 14.8	- 14.0
UK	-	-	-	-	-	-	-	-	-	-

Country	TRITICALE t/ha					RAPE AND TURNIP RAPE t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	4.14	**4.12**	4.20	- 0.5	- 1.9	3.34	**3.20**	3.20	- 4.1	+ 0.1
AT	5.29	**5.62**	5.26	+ 6.4	+ 6.9	2.98	**3.03**	3.23	+ 1.8	- 6.2
BE	-	-	-	-	-	4.28	**4.00**	4.37	- 6.6	- 8.5
BG	3.02	**3.36**	2.94	+ 11.1	+ 14.0	2.48	**2.91**	2.45	+ 17.6	+ 19.1
CY	-	-	-	-	-	-	-	-	-	-
CZ	4.72	**4.88**	4.64	+ 3.3	+ 5.3	3.43	**3.28**	3.28	- 4.5	- 0.1
DE	6.47	**6.42**	6.33	- 0.8	+ 1.4	3.90	**3.86**	3.80	- 1.2	+ 1.6
DK	5.13	**5.05**	5.41	- 1.4	- 6.6	4.28	**3.65**	3.94	- 14.6	- 7.2
EE	-	-	-	-	-	2.77	**2.33**	2.03	- 15.9	+ 14.9
ES	2.08	**2.65**	2.22	+ 27.3	+ 19.3	2.10	**2.71**	2.22	+ 28.7	+ 22.0
FI	-	-	-	-	-	1.54	**1.49**	1.46	- 3.3	+ 1.9
FR	5.41	**4.98**	5.30	- 8.0	- 6.1	3.56	**3.26**	3.43	- 8.6	- 5.1
GR	2.57	**2.51**	2.57	- 2.5	- 2.5	-	-	-	-	-
HR	3.82	**3.84**	3.93	+ 0.6	- 2.2	2.58	**3.05**	2.78	+ 18.1	+ 9.8
HU	3.99	**4.31**	3.75	+ 8.1	+ 15.1	2.63	**3.17**	2.66	+ 20.5	+ 19.4
IE	-	-	-	-	-	-	-	-	-	-
IT	-	-	-	-	-	2.29	**2.52**	2.32	+ 9.8	+ 8.6
LT	3.84	**3.51**	3.31	- 8.6	+ 6.0	3.13	**2.59**	2.25	- 17.2	+ 15.1
LU	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	3.33	**2.67**	2.31	- 19.9	+ 15.5
MT	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	-	-	-	-	-
PL	3.52	**3.43**	3.58	- 2.7	- 4.3	2.85	**2.62**	2.80	- 8.1	- 6.4
PT	1.72	**1.94**	1.39	+ 13.1	+ 39.5	-	-	-	-	-
RO	3.48	**3.78**	3.37	+ 8.7	+ 12.2	2.51	**2.73**	2.29	+ 9.0	+ 19.3
SE	5.81	**5.67**	5.50	- 2.4	+ 3.1	3.80	**3.42**	3.06	- 10.1	+ 11.8
SI	-	-	-	-	-	-	-	-	-	-
SK	-	-	-	-	-	2.69	**2.86**	2.64	+ 6.6	+ 8.5
UK	4.78	**4.02**	4.11	- 15.9	- 2.3	3.56	**3.30**	3.49	- 7.3	- 5.5

Country	SUGAR BEETS t/ha					POTATO t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	71.72	**72.18**	71.80	+ 1.5	+ 1.4	32.05	**32.61**	32.07	+ 1.7	+ 1.7
AT	62.80	**73.22**	70.59	+ 16.6	+ 3.7	26.34	**32.04**	31.37	+ 21.6	+ 2.1
BE	85.08	**77.77**	77.81	- 8.6	- 0.0	46.58	**43.00**	47.82	- 7.7	- 10.1
BG	-	-	-	-	-	14.95	**13.07**	13.51	- 12.6	- 3.3
CY	-	-	-	-	-	-	-	-	-	-
CZ	59.38	**67.09**	64.00	+ 13.0	+ 4.8	22.26	**25.99**	26.72	+ 16.7	- 2.8
DE	72.17	**71.50**	71.85	- 0.9	- 0.5	43.81	**43.99**	44.29	+ 0.4	- 0.7
DK	66.90	**64.75**	63.97	- 3.2	+ 1.2	42.10	**41.89**	41.02	- 0.5	+ 2.1
EE	-	-	-	-	-	-	-	-	-	-
ES	95.30	**97.68**	89.32	+ 2.5	+ 9.4	31.14	**32.19**	30.59	+ 3.4	+ 5.2
FI	32.74	**37.71**	36.65	+ 15.2	+ 2.9	24.31	**26.44**	26.30	+ 8.8	+ 0.6
FR	87.50	**88.23**	89.15	+ 0.8	- 1.0	42.50	**41.68**	44.23	- 1.9	- 5.8
GR	-	-	-	-	-	24.25	**25.66**	25.31	+ 5.8	+ 1.4
HR	54.49	**63.06**	52.45	+ 15.7	+ 20.2	17.06	**17.85**	16.81	+ 4.6	+ 6.1
HU	57.66	**69.16**	53.96	+ 19.9	+ 28.1	22.65	**27.28**	24.19	+ 20.4	+ 12.8
IE	-	-	-	-	-	-	-	-	-	-
IT	57.01	**57.84**	55.93	+ 1.4	+ 3.4	27.55	**26.36**	26.09	- 0.7	+ 4.9
LT	50.61	**53.38**	51.70	+ 5.5	+ 3.3	17.00	**17.11**	16.23	+ 0.6	+ 5.4
LU	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	18.00	**19.07**	17.97	+ 6.0	+ 6.2
MT	-	-	-	-	-	-	-	-	-	-
NL	83.30	**81.86**	81.21	- 1.7	+ 0.8	42.69	**42.50**	44.08	- 0.4	- 3.6
PL	52.00	**54.00**	52.79	+ 3.8	+ 2.3	21.70	**22.62**	22.26	+ 4.2	+ 1.6
PT	-	-	-	-	-	18.62	**19.31**	17.85	+ 3.7	+ 8.2
RO	39.40	**41.50**	36.73	+ 5.3	+ 13.0	14.37	**15.02**	14.92	+ 4.6	+ 0.7
SE	60.80	**63.56**	63.46	+ 4.5	+ 0.2	34.73	**33.23**	33.42	- 4.3	- 0.6
SI	-	-	-	-	-	-	-	-	-	-
SK	56.01	**57.06**	55.28	+ 1.9	+ 3.2	-	-	-	-	-
UK	66.50	**70.14**	70.19	+ 5.5	- 0.1	40.20	**43.36**	39.91	+ 8.7	+ 9.5

Country	SUNFLOWER t/ha					GREEN MAIZE t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	1.87	**2.05**	1.94	+ 9.4	+ 5.8	38.78	**44.071**	42.72	+ 13.6	+ 3.2
AT	2.00	**2.73**	2.47	+ 36.6	+ 10.4	41.39	**47.27**	44.63	+ 14.2	+ 5.9
BE	-	-	-	-	-	-	-	-	-	-
BG	2.11	**2.31**	2.12	+ 9.7	+ 9.2	19.00	**19.25**	18.76	+ 1.3	+ 2.6
CY	-	-	-	-	-	-	-	-	-	-
CZ	2.05	**2.39**	2.29	+ 16.7	+ 4.3	29.13	**38.17**	36.54	+ 31.0	+ 4.5
DE	1.92	**1.99**	2.14	+ 3.6	- 7.3	41.36-	**46.66**	44.35	+ 12.8	+ 5.2
DK	-	-	-	-	-	37.56	**40.53**	37.62	+ 7.9	+ 7.7
EE	-	-	-	-	-	-	-	-	-	-
ES	0.94	**1.10**	1.07	+ 17.2	+ 2.1	43.91	**44.21**	41.40	+ 0.7	+ 6.8
FI	-	-	-	-	-	-	-	-	-	-
FR	1.96	**2.24**	2.25	+ 14.0	- 0.8	38.37	**41.89**	42.94	+ 9.2	- 2.4
GR	2.71	**2.61**	2.53	- 3.5	+ 3.2	-	-	-	-	-
HR	2.73	**2.65**	2.54	- 2.7	+ 4.5	32.80	**38.20**	32.14	+ 16.5	+ 18.8
HU	2.51	**2.72**	2.42	+ 8.3	+ 12.0	23.41	**28.40**	24.84	+ 21.3	+ 14.3
IE	-	-	-	-	-	-	-	-	-	-
IT	2.17	**2.28**	2.23	+ 4.9	+ 2.0	48.66	**51.20**	50.79	+ 5.2	+ 0.8
LT	-	-	-	-	-	26.36	**34.57**	33.33	+ 31.1	+ 3.7
LU	-	-	-	-	-	41.14	**45.93**	45.88	+ 11.6	+ 0.1
LV	-	-	-	-	-	28.8	**28.19**	27.73	- 2.1	+ 1.6
MT	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	36.73	**44.96**	43.14	+ 22.4	+ 4.2
PL	-	-	-	-	-	35.70	**46.93**	45.07	+ 31.5	+ 4.1
PT	1.10	**0.90**	0.76	- 18.7	+ 17.4	-	-	-	-	-
RO	1.76	**1.89**	1.81	+ 7.7	+ 4.8	26.95	**30.42**	25380	+ 12.9	+ 17.9
SE	-	-	-	-	-	-	-	-	-	-
SI	-	-	-	-	-	48.70	**47.40**	42.10	- 2.7	+ 12.6
SK	2.31	**2.39**	2.33	+ 3.2	+ 2.3	22.95	**28.46**	27.04	+ 24.0	+ 5.2
UK	-	-	-	-	-	-	-	-	-	-

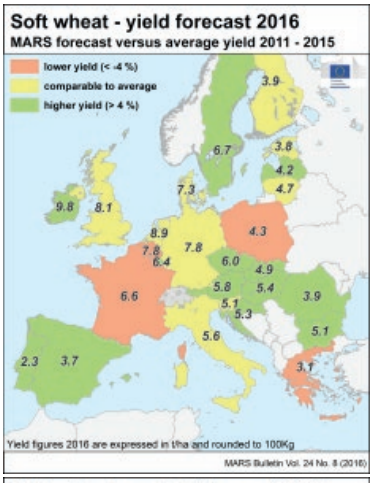
Note: Yields are forecast for crops with more than 10000 ha per country
Sources: 2011-2016 data come from DG AGRICULTURE short term Outlook data (dated July 2016, received on 29/07/2016), EUROSTAT Eurobase (last update: 08/08/2016) and EES (last update: 16/06/2016)
2016 yields come from MARS CROP YIELD FORECASTING SYSTEM (CGMS output up to 10/08/2016)
The EU-28 figures do not include green maize forecasts for Belgium, Ireland, Portugal, Sweden and the United Kingdom since recent data on yields was not available

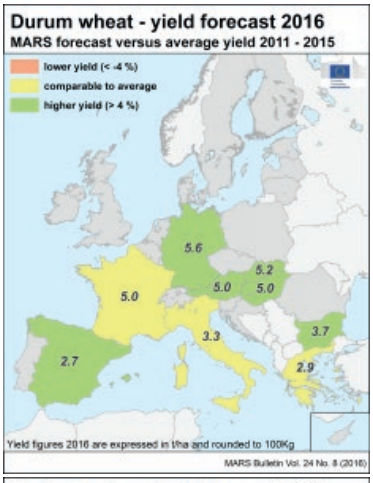
Country	WHEAT (t/ha)				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs
BY	3.43	**3.71**	3.47	+ 8.3	+ 7.0
TR	2.90	**2.69**	2.69	- 7.4	- 1.0
UA	3.88	**4.01**	3.52	+ 3.4	+ 14.0

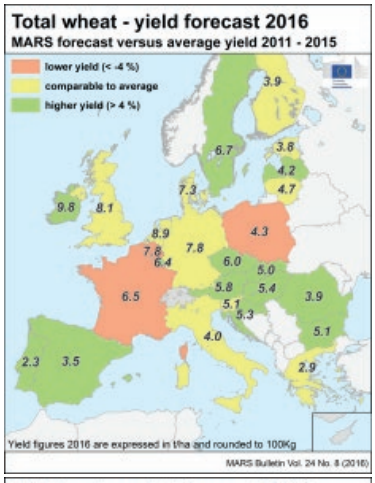
Country	BARLEY (t/ha)				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs
BY	3.33	**3.51**	3.24	+ 5.3	+ 8.1
TR	2.90	**2.59**	2.65	- 10.8	- 2.4
UA	2.95	**3.08**	2.57	+ 4.3	+ 19.8

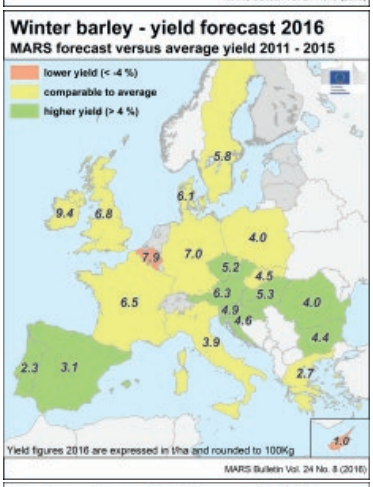
Country	GRAIN MAIZE (t/ha)				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs
BY	5.33	**5.66**	5.60	+ 6.1	+ 0.9
TR	9.30	**9.21**	8.39	- 0.9	+ 9.8
UA	5.71	**6.10**	5.77	+ 6.9	+ 5.7

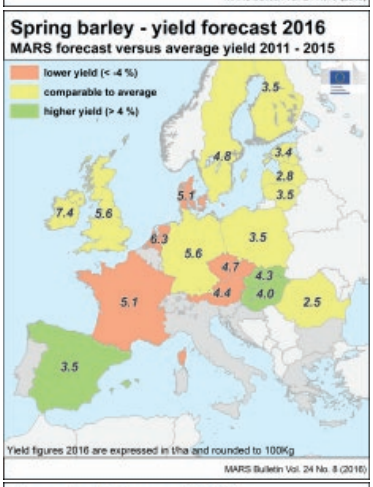
Note: Yields are forecast for crops with more than 10000 ha per country
Sources: 2011-2015 data come from USDA, State Statistics Service of Ukraine, FAO, Turkish Statistical Office, PSD-online
2016 yields come from MARS CROP YIELD FORECASTING SYSTEM (output up to 10/08/2016)

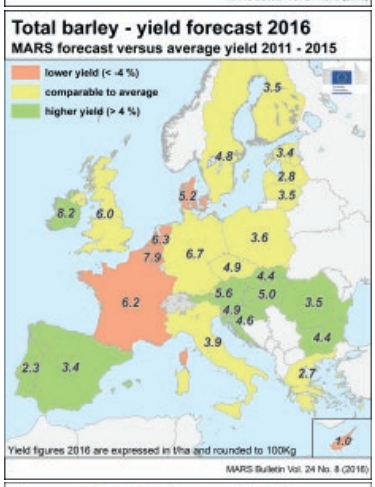

Soft wheat - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

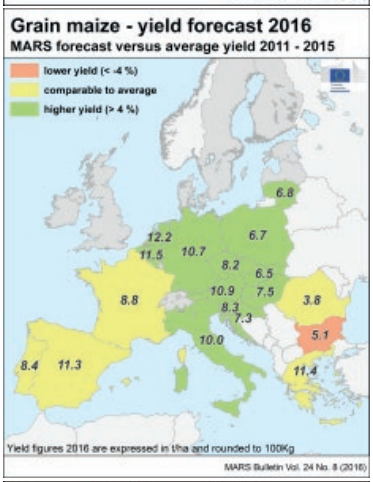

Durum wheat - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

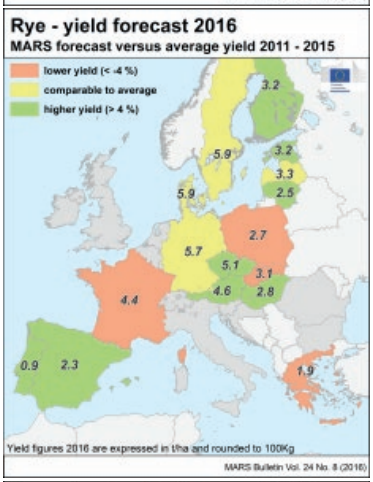

Total wheat - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

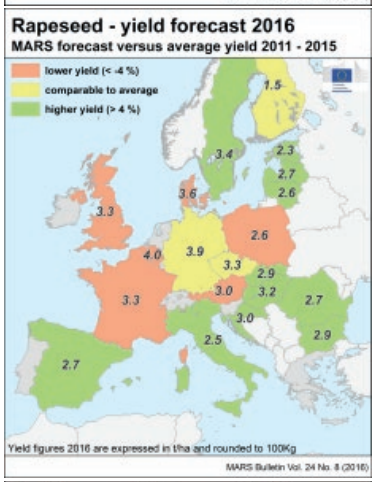

Winter barley - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

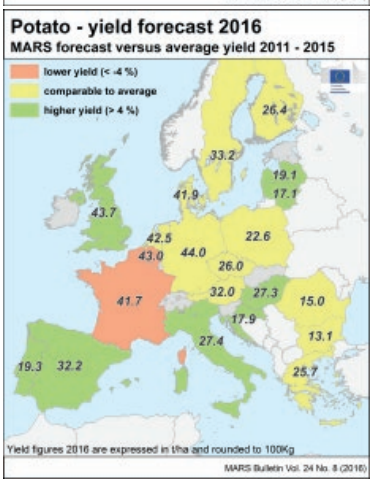

Spring barley - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

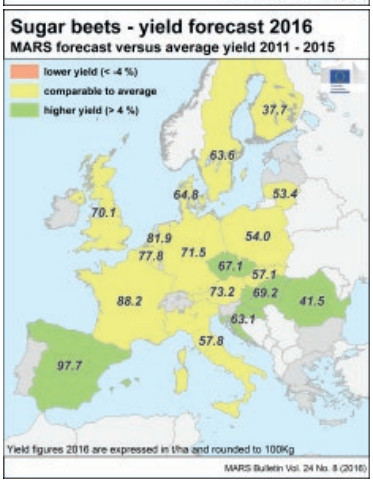

Total barley - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

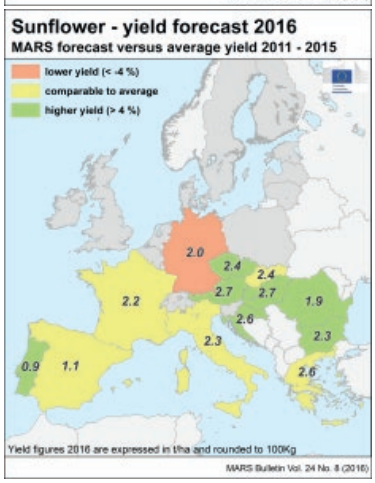

Grain maize - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)


Rye - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)


Rapeseed - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)


Potato - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

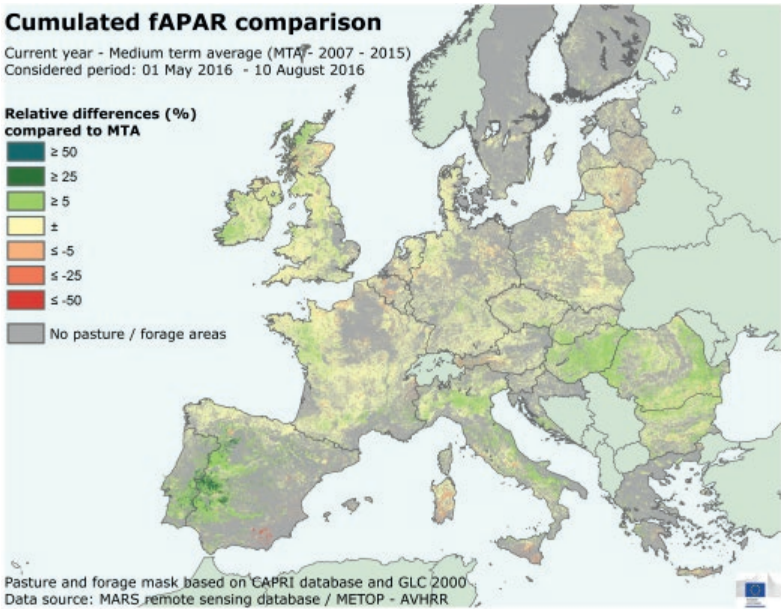

Sugar beets - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

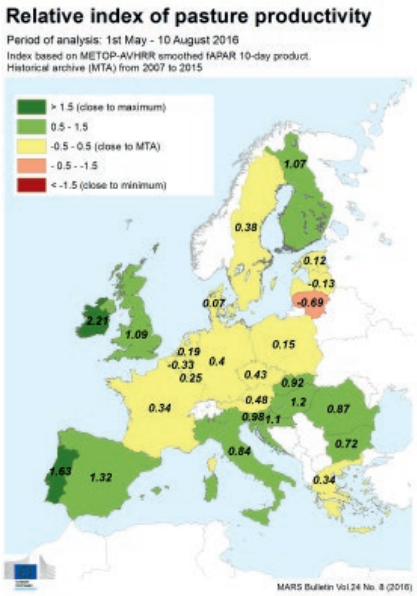

Sunflower - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)
Yield figures 2016 are expressed in t/ha and rounded to 100Kg
MARS Bulletin Vol. 24 No. 8 (2016)

5. Pastures in Europe — Regional monitoring

High biomass production in the Mediterranean and the Black Sea area

Above-average temperatures and precipitation favoured biomass production during summer in the Mediterranean and Black Sea areas. Positive conditions were observed as well in the UK and Ireland. In the centre–north of France and part of the Benelux an excess of rain in June constrained biomass production. Persistent cloud cover since mid June has constrained grasslands growth in the Baltic countries.





Methodological note

The relative index of pasture productivity is a synthetic indicator of biomass formation based on the integration of the fAPAR (fraction of absorbed photosynthetically active radiation) remote sensing product of pasture and green maize areas at country level over a period of interest (in this bulletin from 1 May to 10 August). The spatial aggregation from remote sensing image pixels to a country-level index has been made using a pasture and green maize 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 2007 to 2015 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 2008-2015. ***Please note, from this bulletin onwards green maize is also forecast (see crop yield tables)***

Positive season in the Iberian peninsula and Italy

The growing season of grasslands came to an end in July in the Dehesa area between **Spain** and **Portugal**. This year biomass production has been exceptionally high: mild temperatures at the end of winter favoured a rapid vegetative growth in spring and, thanks to the abundant rainfall in April and May, biomass formation rates remained higher than usual until July. In northern regions (Asturias, Cantabria) biomass production this summer has been slightly above the average, after a rather unfavourable start to the season. Temperatures from May to mid August were persistently higher than the average, and this facilitated a progressive recovery from the low biomass formation rates observed in spring.

In central and southern **Italy** abundant precipitation and above-average temperatures during practically the whole summer led to high grasslands productivity. Weather conditions in northern regions (Lombardia, Veneto, Emilia-Romagna) were favourable as well: the summer was more humid than usual and temperatures in July and the first half of August were above the norm. Thanks to that, fodder maize developed rapidly in May and June, and biomass production during the vegetative growth phase was higher than the average. The crop is currently in the grain-filling phase and yield expectations are above the 2015 season.

Rainfall excess in the Benelux and France, positive season for the UK and Ireland

In central and north-eastern **France** and parts of the **Benelux** exceptionally intense precipitations in May negatively impacted grasslands productivity due to water logging, low solar radiation levels and some lodging events. The area affected includes the regions of Limousine, the north of Auvergne, and Normandie in France, Belgium and the southern half of the Netherlands. Since the second half of June, most of these areas have progressively recovered biomass formation to near-average levels. In southern and eastern France, by contrast, summer precipitation was not as abundant as in the north–eastern parts, and biomass production in the main pasture areas was higher than usual, thus resulting in an overall national pasture productivity index slightly above the medium-term average.

In the **UK** and **Ireland**, grasslands growth in summer has been above seasonal values. High soil moisture levels and a slightly warmer–than–usual month of June led to an increase of photosynthetic activity in the main grassland areas. The outlook for the end of August and September is positive, as current soil-water conditions are optimal.

Average biomass production in central Europe

Grasslands productivity in **Germany** is close to an average year. In southern regions (Bayern, Baden-Wuerttemberg) biomass production is slightly above the medium-term average. In these regions, spring was favourable, with abundant rainfall and higher-than-usual temperatures. In July and August precipitation was close to the norm, and temperatures remained above the average, favouring grassland biomass formation. In the north (Schleswig-Holstein, Mecklenburg-Vorpommern), biomass formation rates are average. There, abundant precipitation from mid June to mid July were essential, after a rather dry spring, to prevent water constraints. Only in the eastern region of Sachsen-Anhalt did dry weather conditions in July and August lead to a decrease of grassland photosynthetic activity, currently below the medium-term average.

In the **Czech Republic** and eastern **Austria** grassland biomass production is close to seasonal levels, thanks to sufficient precipitation (copious in the case of Austria) during most of the summer. Two episodes of unusually high temperatures — daily averages above 25 °C — were observed in the last week of June and the second of July, but soil moisture was sufficient to prevent any constraint to grasslands growth. In the Tirol region, higher-than-usual temperatures at the end of June favoured a partial recovery of grasslands production, after a rather cold and humid spring. In **Slovakia** pasture productivity is substantially above the average, thanks to abundant precipitation in mid July and above-average temperatures.

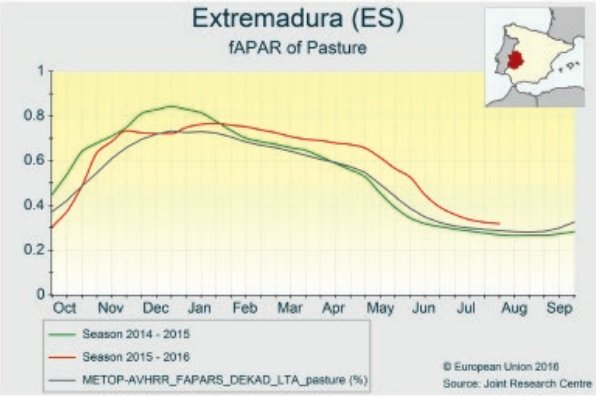
Persistent cloud cover limits pasture growth in the Baltic Sea area

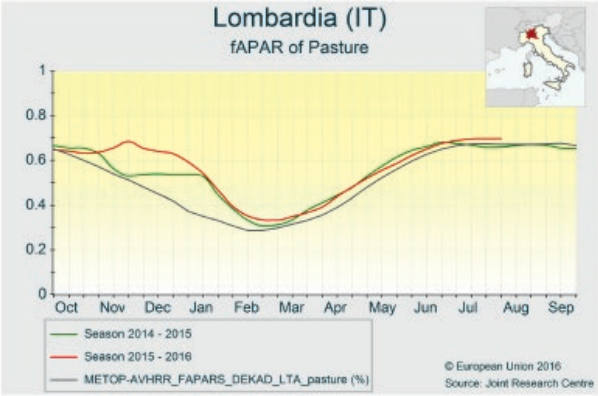
July and the first half of August have been very humid in **Lithuania**, **Estonia** and **Latvia**, with cumulated precipitation about 70 % above the average, especially in the eastern half of these countries. Cloud cover was almost continuous, which led to a deficit of incoming radiation and a decrease of grassland photosynthetic activity. As a consequence, biomass production is currently below the average, but soil moisture is high and the vegetation status may improve if radiation and temperatures increase in the second half of August.

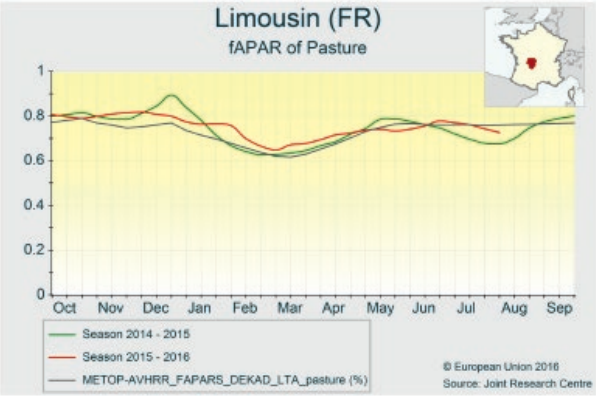
Pasture growth in **Poland** is average. Grasslands in north-eastern regions (Warminsko-Mazurskie, Podlaskie) suffered from the abovementioned radiation deficit due to cloud cover. In the rest of the country, by contrast, weather conditions were close to normal and grasslands growth did not experience any major constraint. Average biomass formation was also observed in the main pasture areas of **Denmark** and **Sweden**. In **Finland**, biomass formation levels have been above the medium-term average most of the summer, thanks to higher-than-usual temperatures in May and June. Soil moisture is high, as precipitations in July and August have been quite abundant, which may increase grasslands growth in the second half of August.

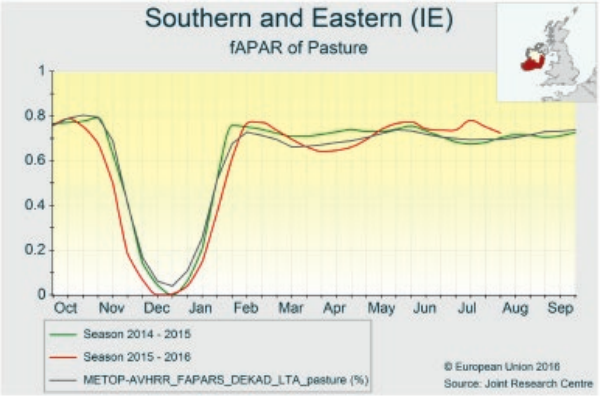
Biomass production in south-eastern Europe decreases due to a dry summer

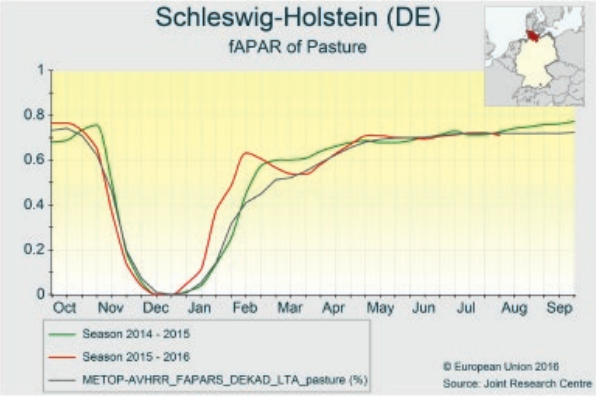
The highly favourable weather conditions in **Romania** and **Bulgaria** during most of winter and spring (abundant rainfall and above-average temperatures) were followed by a period with almost no significant precipitation and continued high temperatures. As a consequence, the exceptionally high biomass formation levels during the first half of the year decreased progressively from mid July onwards, and are currently around average. Overall, the pasture season remains positive, but rainfall is needed in the second half of August to prevent early senescence. In **Hungary**, by contrast, the outlook remains extremely favourable. Substantial precipitation was registered in mid July, thus allowing the maintenance of the high levels of pasture photosynthetic activity observed during the growing season so far.

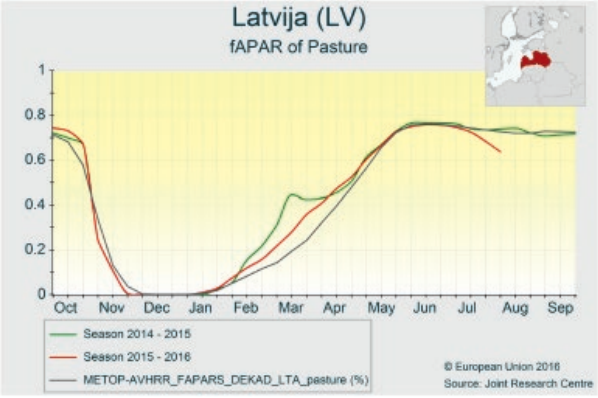

Extremadura (ES)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre

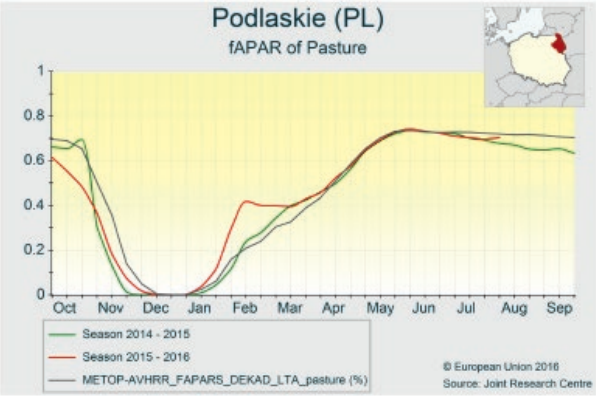

Lombardia (IT)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre

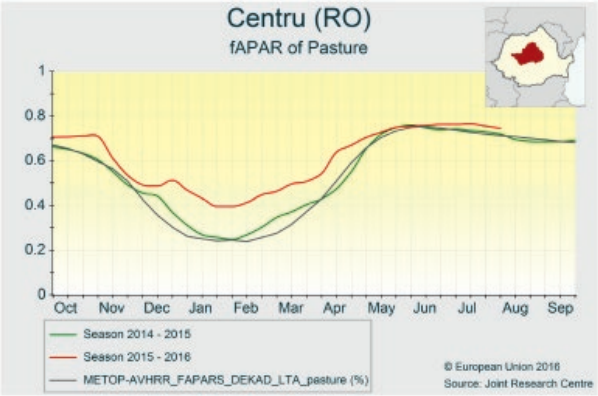

Limousin (FR)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre


Southern and Eastern (IE)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre


Schleswig-Holstein (DE)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre

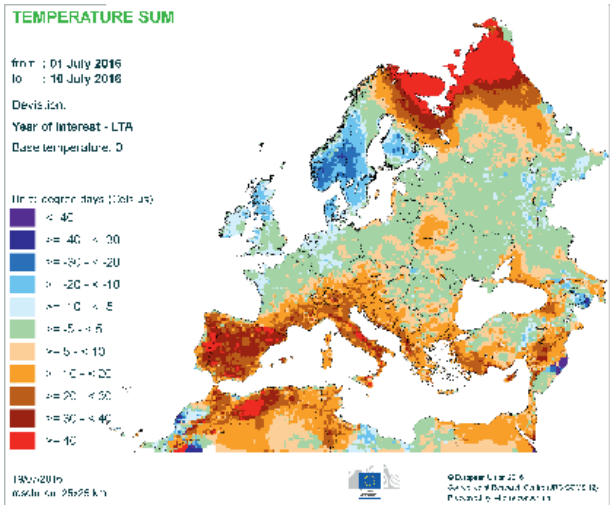

Latvija (LV)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre

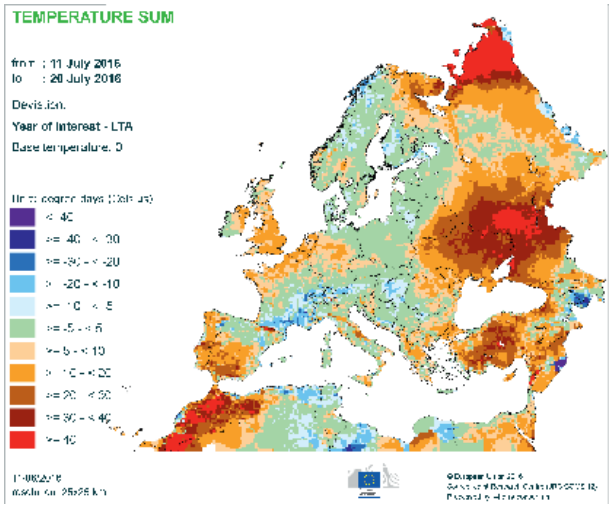

Podlaskie (PL)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre

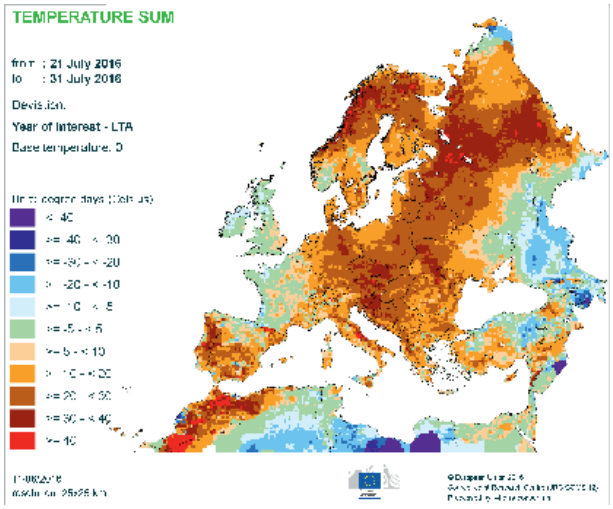

Centru (RO)
fAPAR of Pasture
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
METOP-AVHRR_FAPARS_DEKAD_LTA_pasture (%)
© European Union 2016
Source: Joint Research Centre

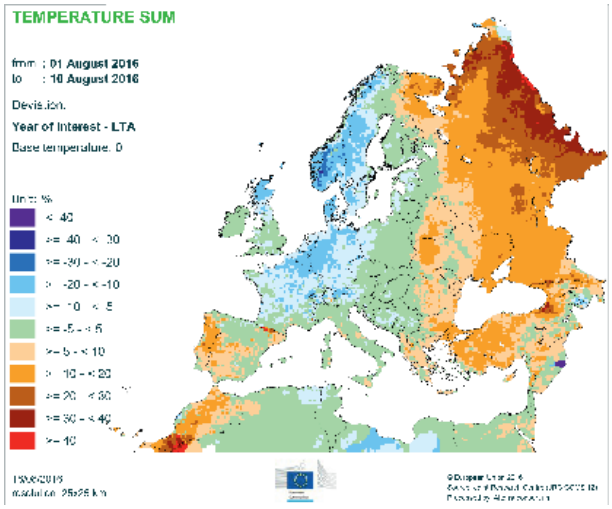
6. Atlas

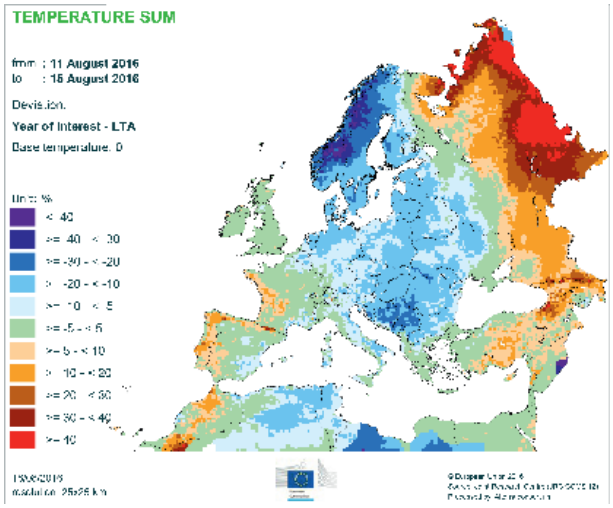
Temperatures

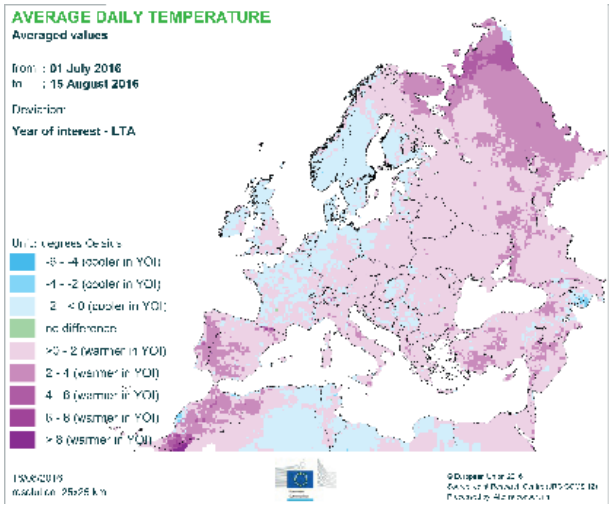




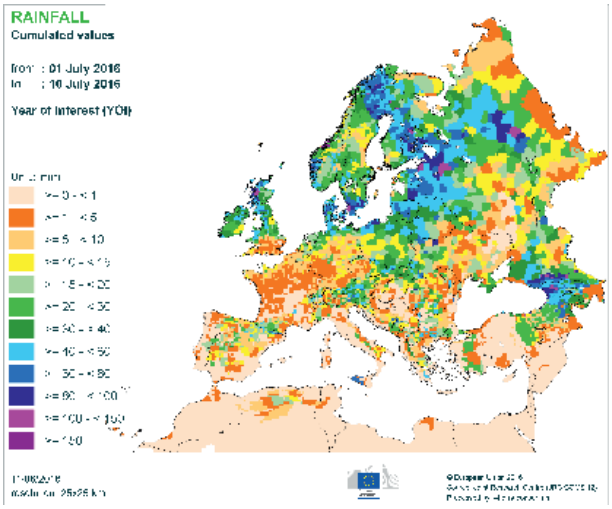


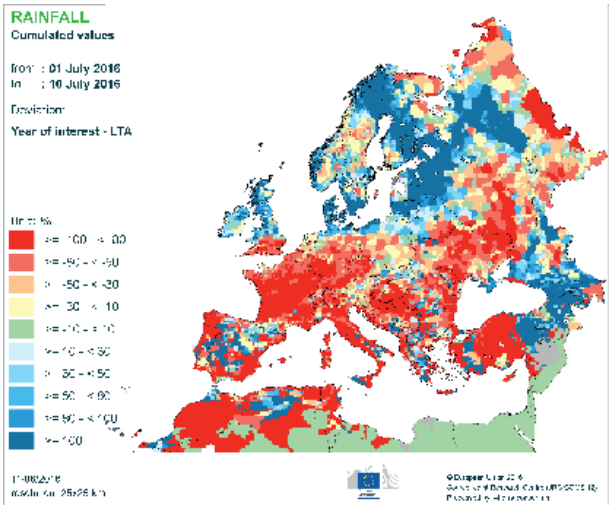


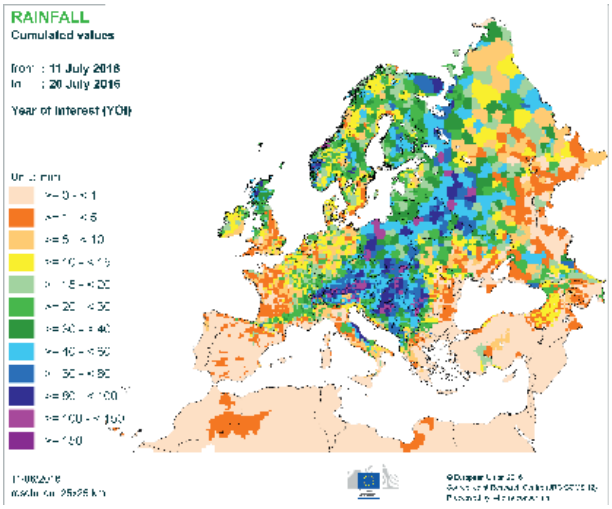


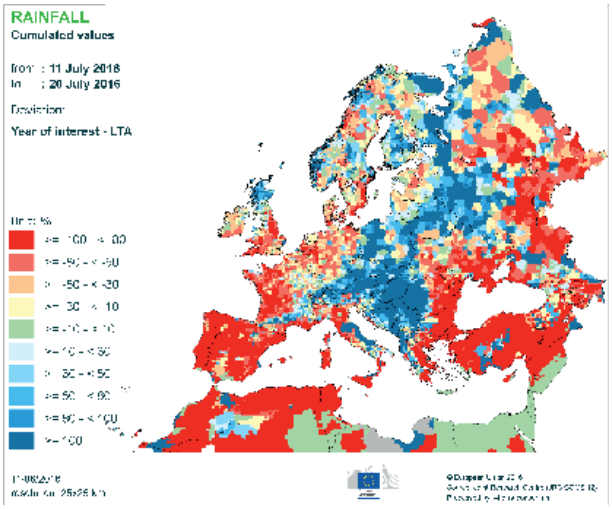


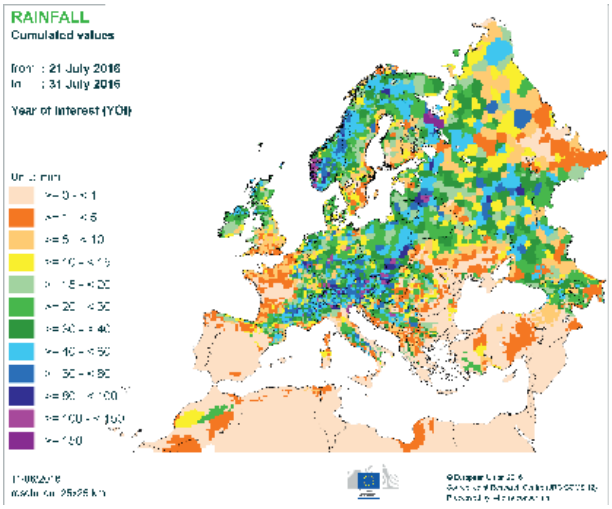
Precipitation

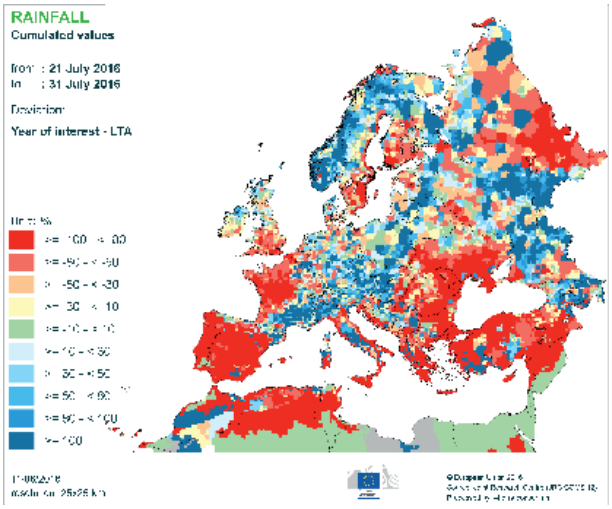


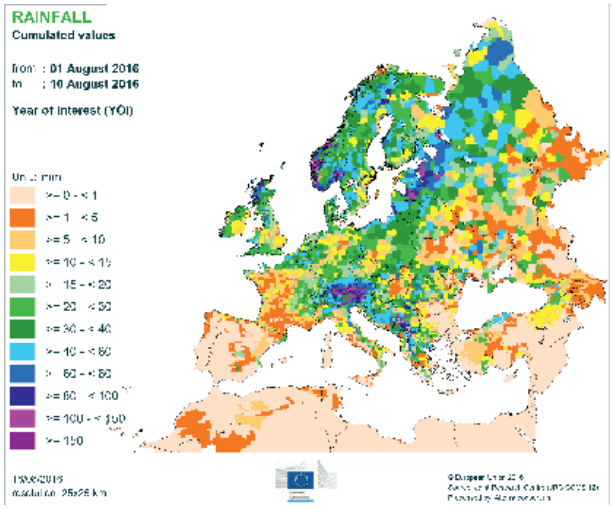


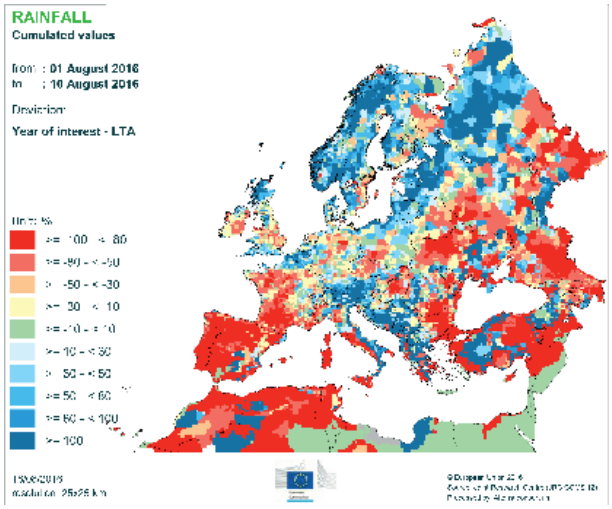


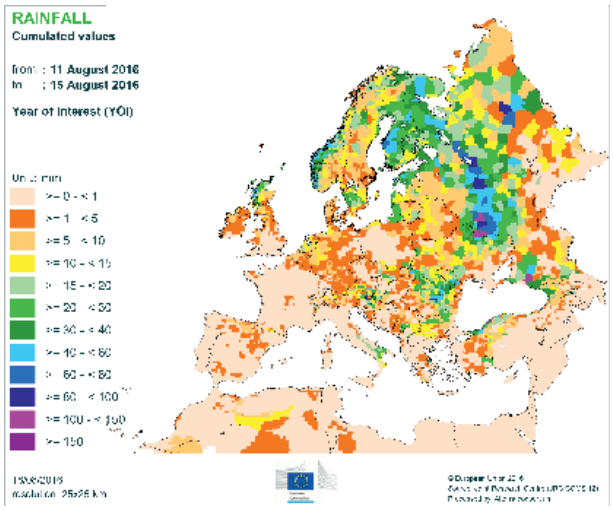


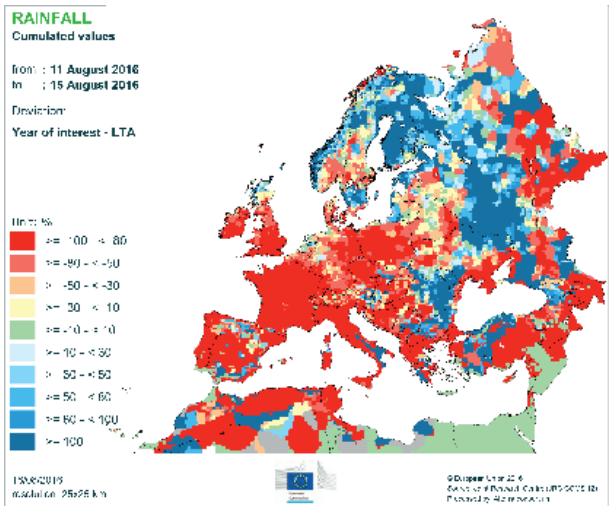




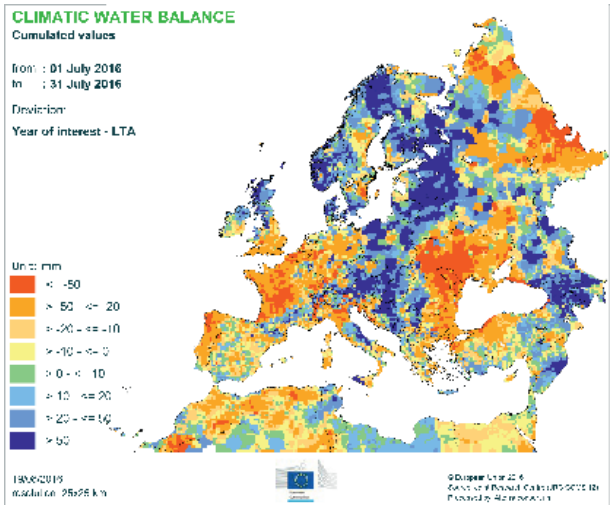


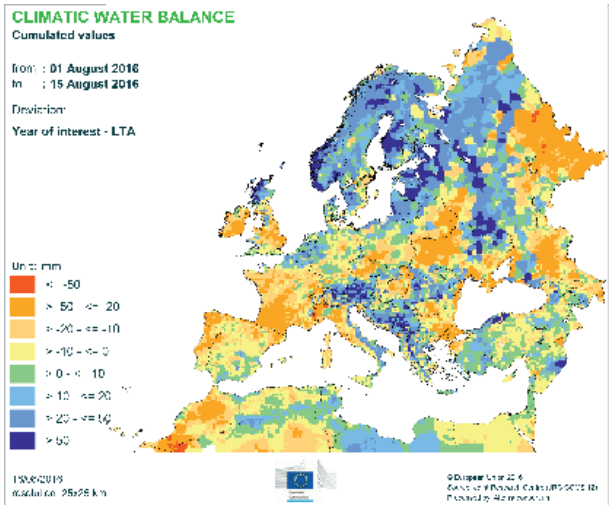




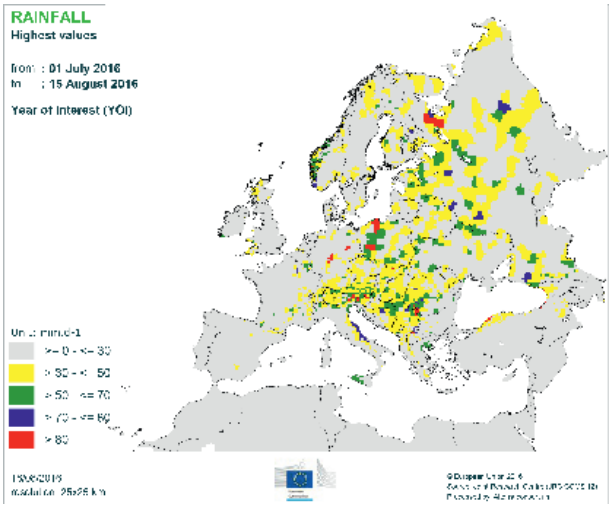


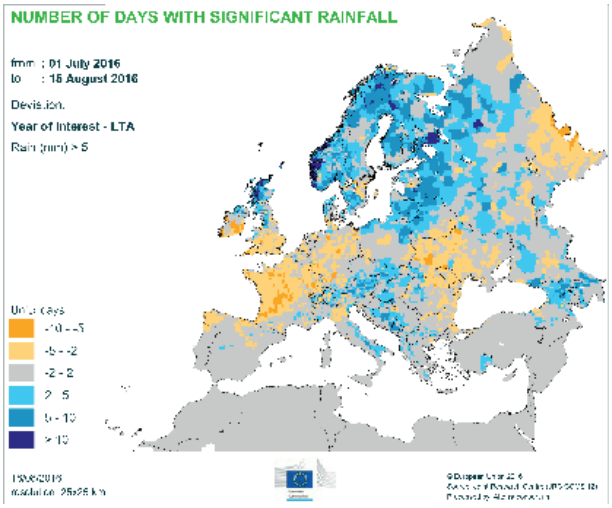
Climatic water balance

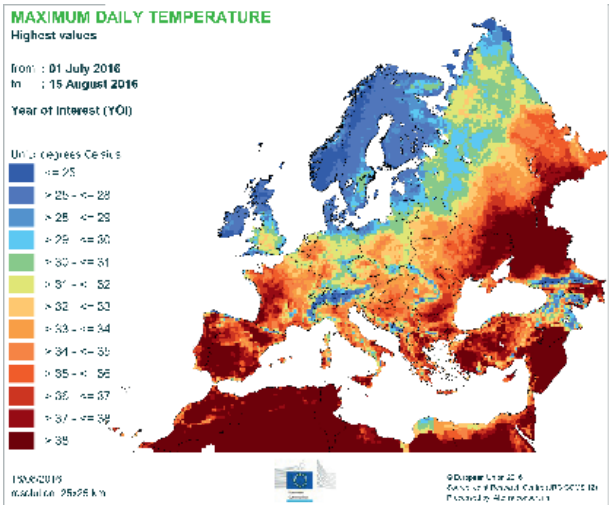


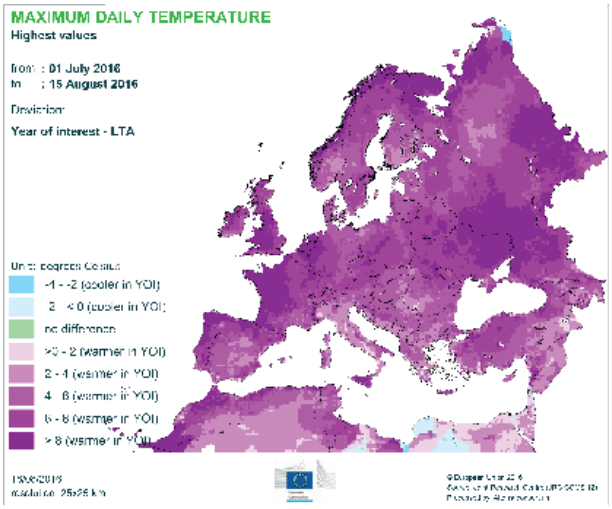


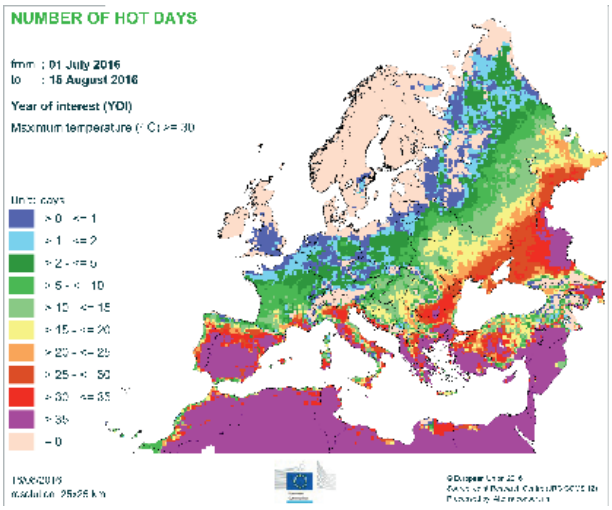
Weather events

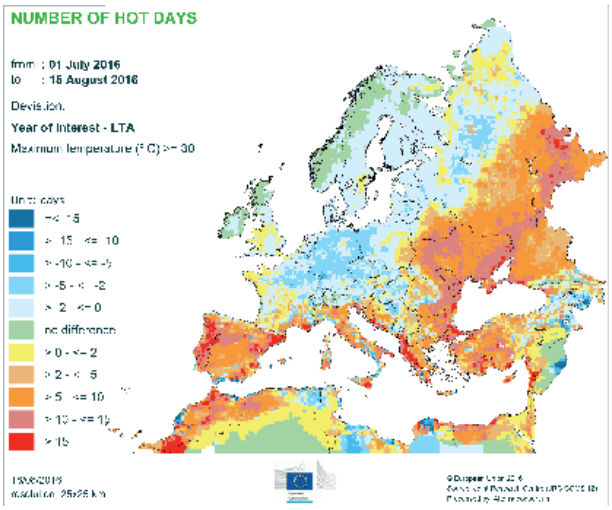




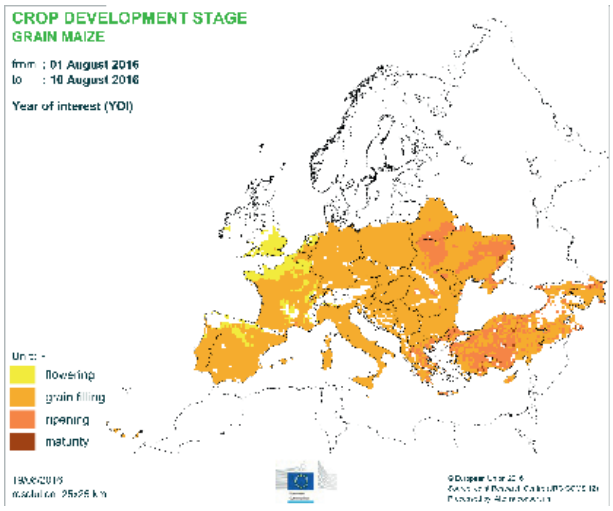


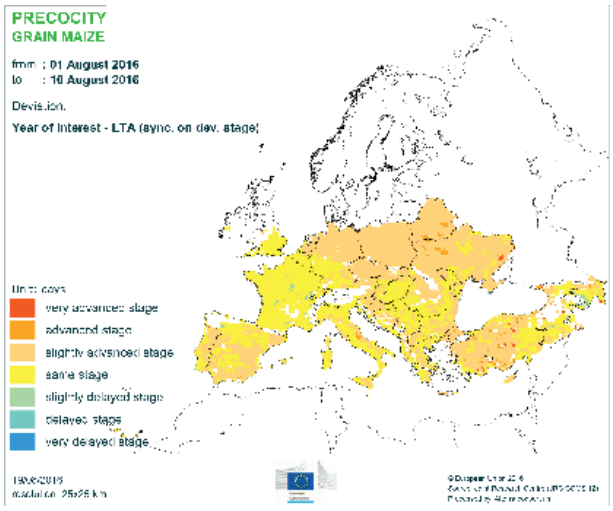


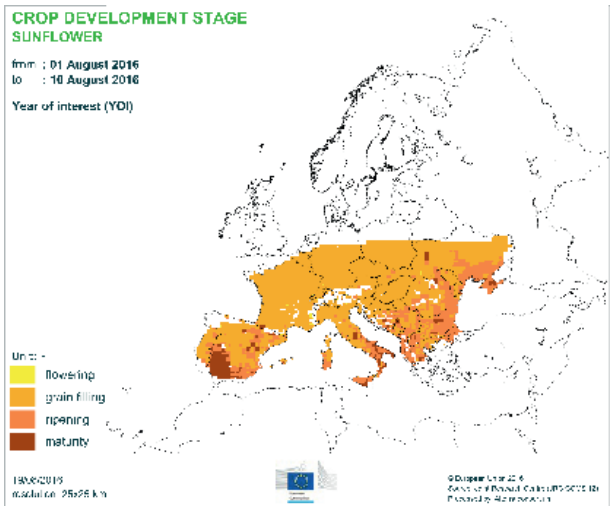


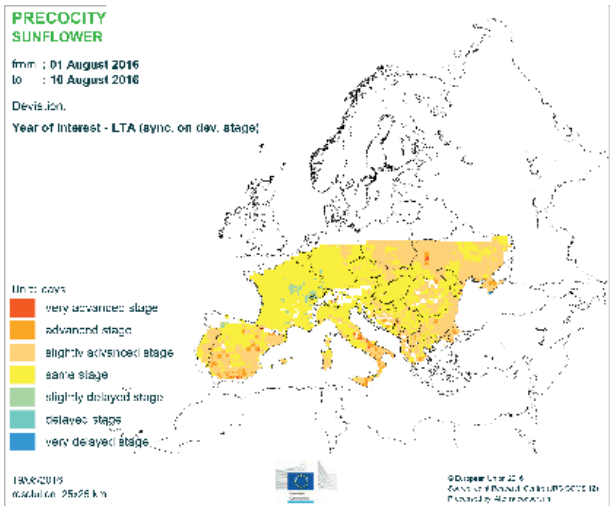


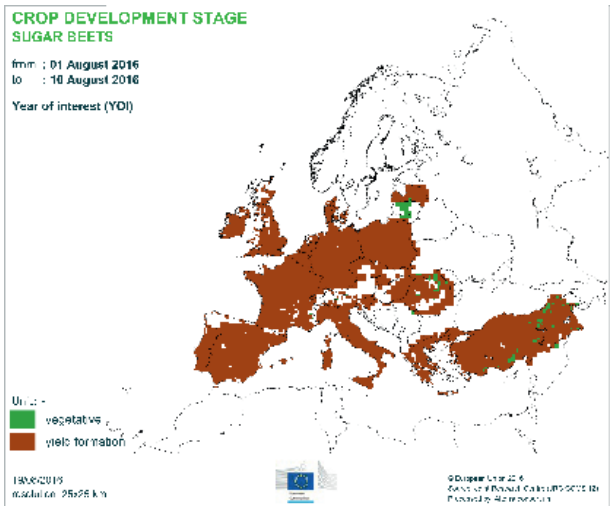
Crop development stages and precocity

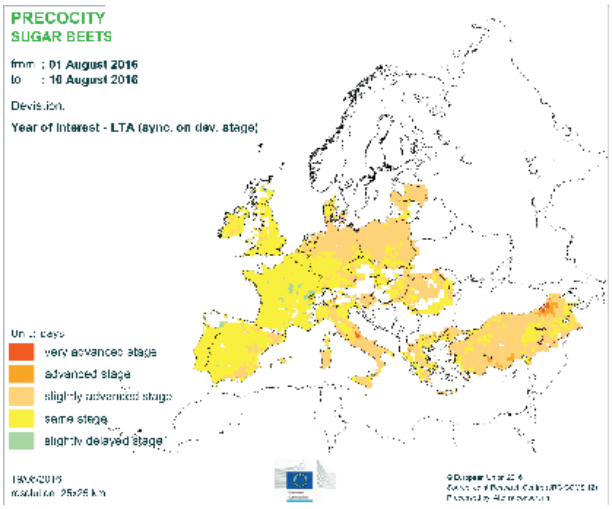


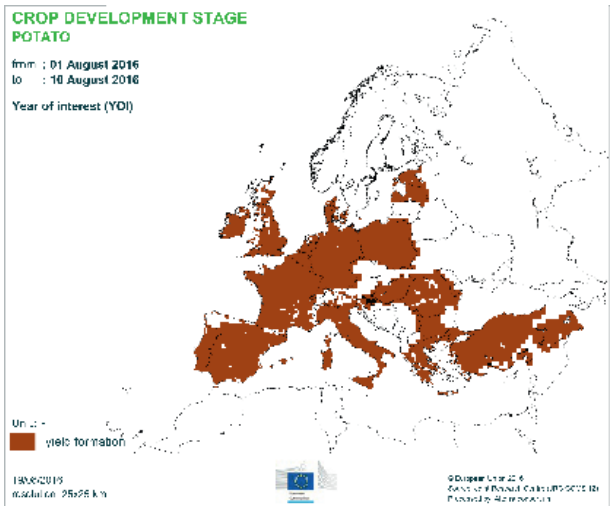


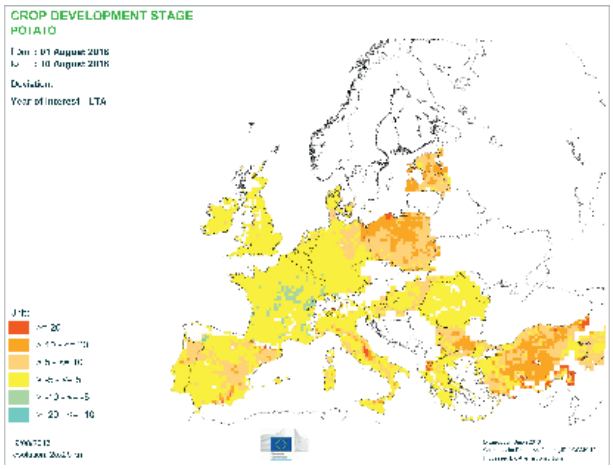




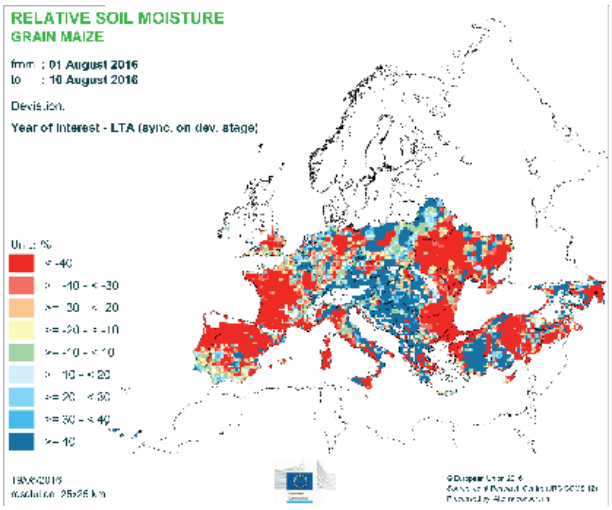

CROP DEVELOPMENT STAGE
SUGAR BEETS
from : 01 August 2016
to : 10 August 2016
Year of interest (YOI)
vegetative
yield formation

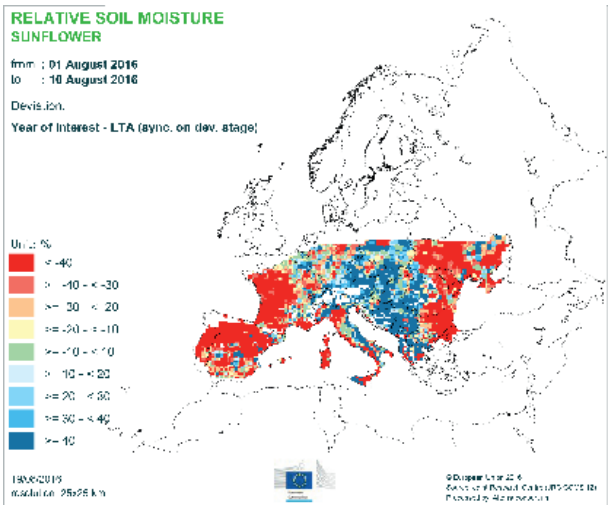

PRECOCITY
SUGAR BEETS
from : 01 August 2016
to : 10 August 2016
Deviation
Year of interest - LTA (avrg. on dev. stage)
very advanced stage
advanced stage
slightly advanced stage
same stage
slightly delayed stage

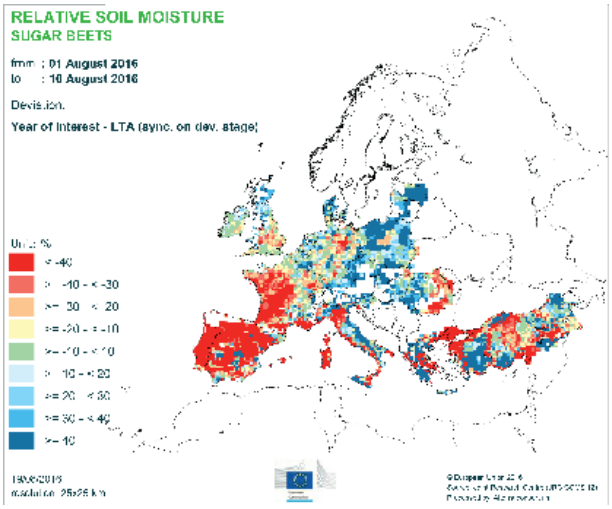

CROP DEVELOPMENT STAGE
POTATO
from : 01 August 2016
to : 10 August 2016
Year of interest (YOI)
yield formation

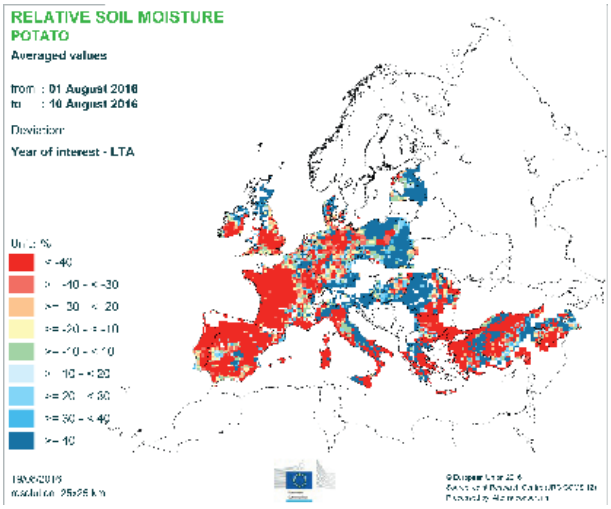

CROP DEVELOPMENT STAGE
POTATO
Deviation
Year of interest - LTA

Relative soil moisture

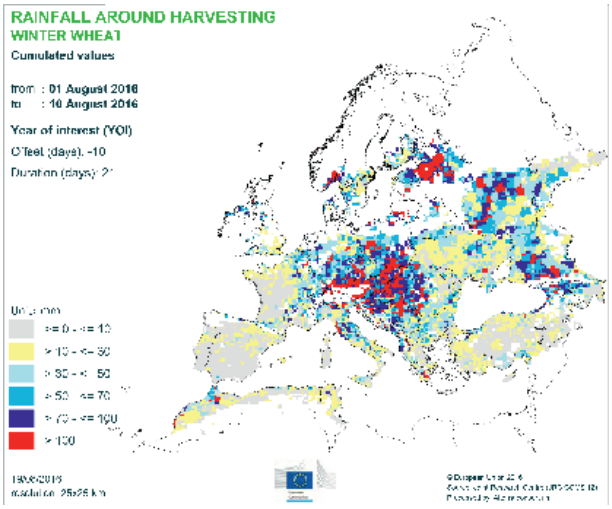


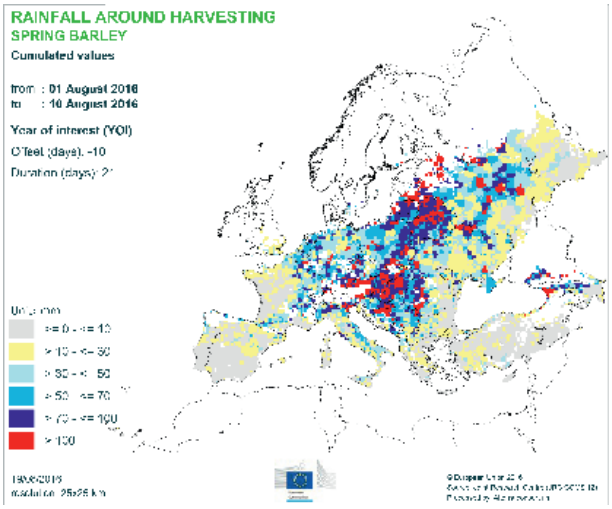


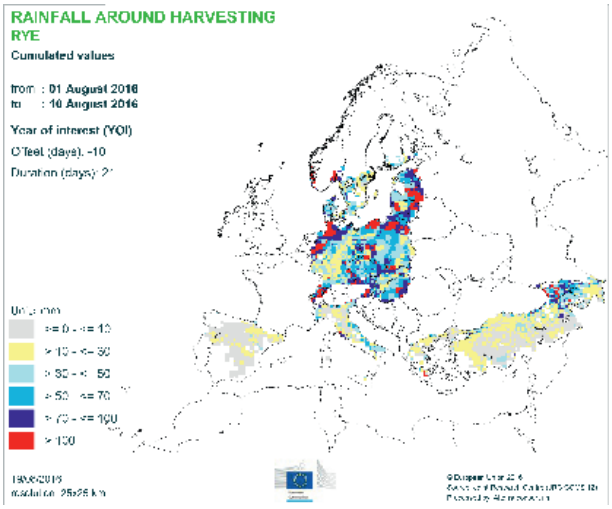


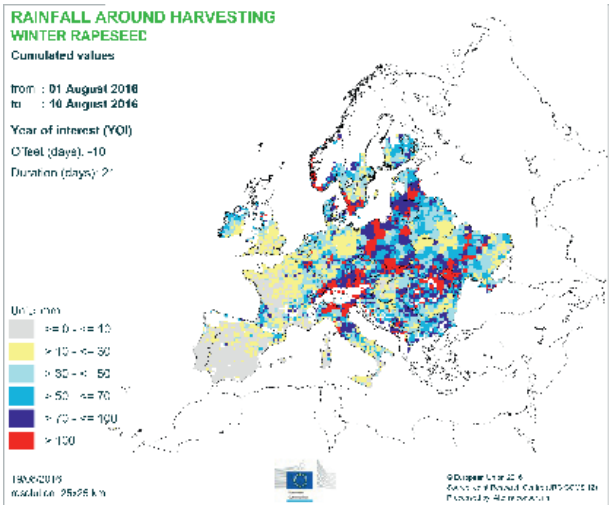


Rainfall around harvesting

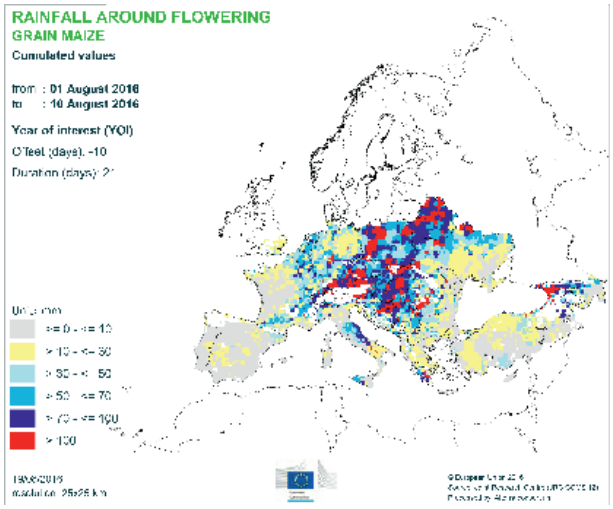


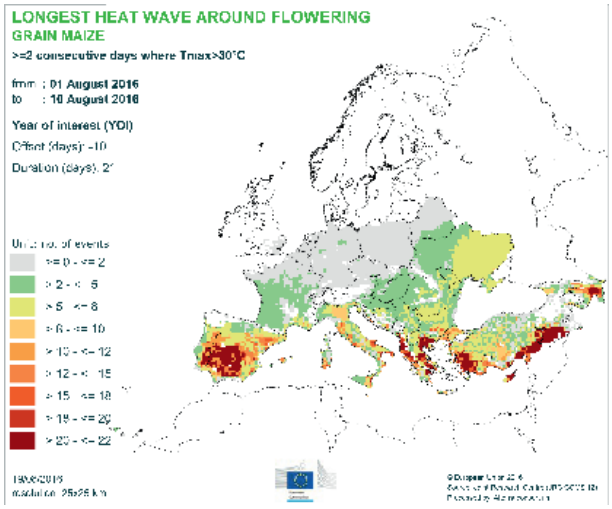


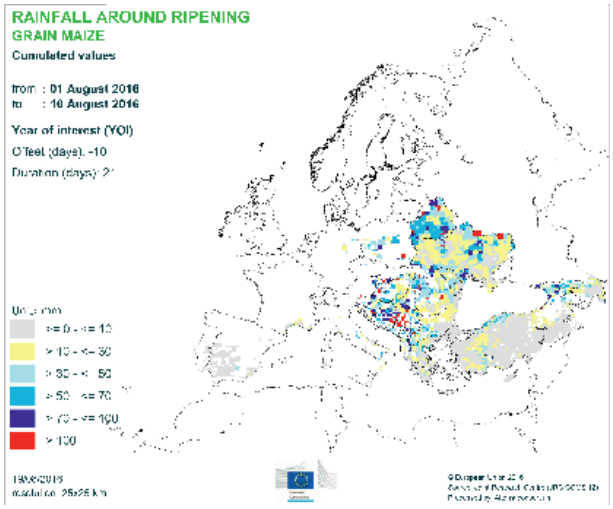


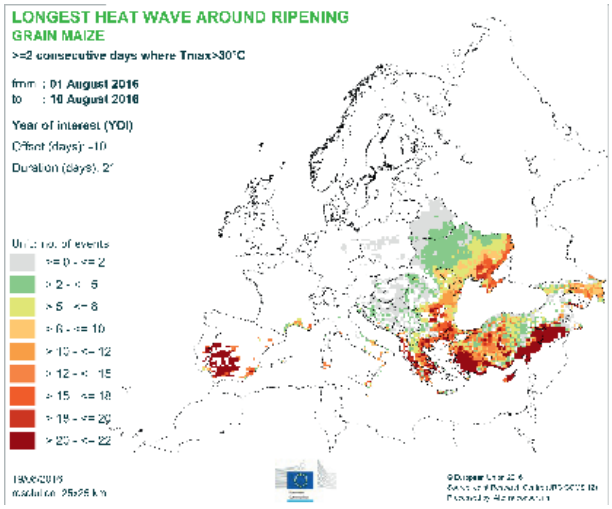


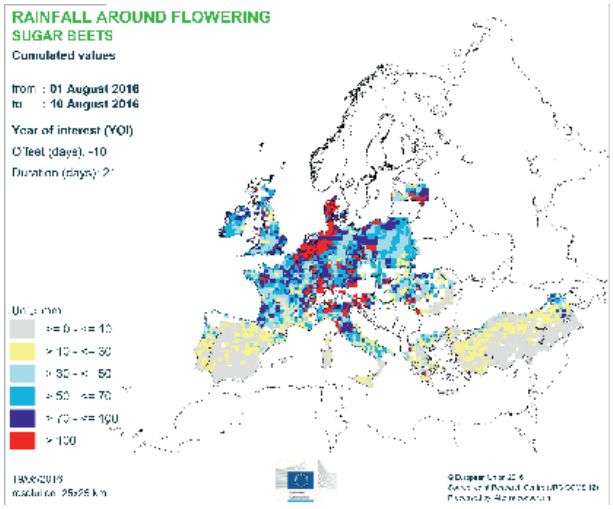
Rainfall and longest heat wave around certain crop development stages

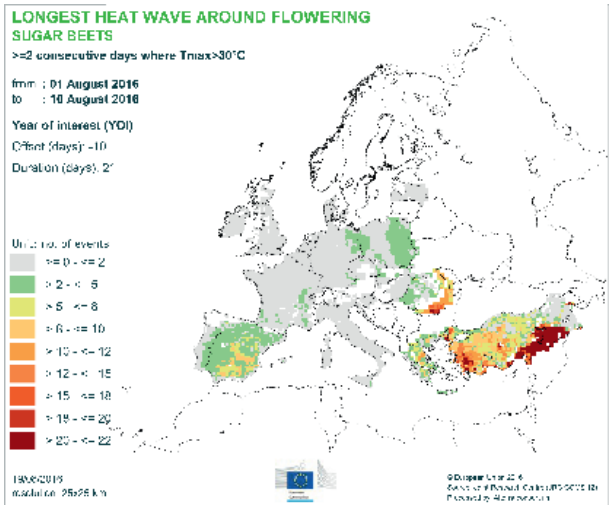












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JRC MARS Bulletins 2016

Date	Publication	Reference
25 Jan	Agromet analysis	Vol. 24 No 1
22 Feb	Agromet analysis	Vol. 24 No 2
21 Mar	Agromet analysis and yield forecast	Vol. 24 No 3
26 Apr	Agromet analysis, remote sensing, yield forecast and sowing conditions	Vol. 24 No 4
23 May	Agromet analysis, remote sensing, yield forecast, pasture analysis and sowing conditions	Vol. 24 No 5
20 Jun	Agromet analysis, remote sensing, yield forecast and pasture update	Vol. 24 No 6
25 Jul	Agromet analysis, remote sensing, yield forecast and rice analysis	Vol. 24 No 7
22 Aug	Agromet analysis, remote sensing, yield forecast and pasture update	Vol. 24 No 8
26 Sep	Agromet analysis, remote sensing, yield forecast and pasture update	Vol. 24 No 9
24 Oct	Agromet analysis, remote sensing, yield forecast and rice analysis	Vol. 24 No 10
21 Nov	Agromet analysis, yield forecast and sowing conditions	Vol. 24 No 11
19 Dec	Agromet analysis	Vol. 24 No 12

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*MARS stands for Monitoring Agricultural Resources

Technical note:
The long-term average (LTA) used within this bulletin as a reference is based on an archive of data covering 1975–2015.

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