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European Commission

25th Anniversary

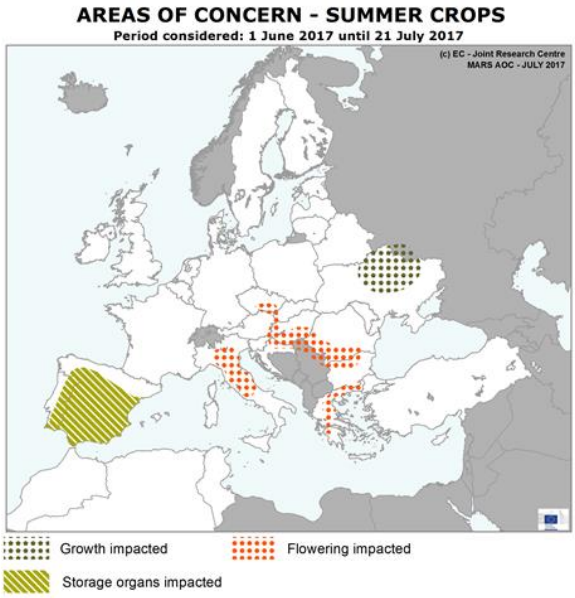
JRC MARS Bulletin
Crop monitoring in Europe
July 2017

Grain maize yields revised downwards

Heat waves affect maize producing regions in south-eastern Europe

Heat waves and low precipitation hampered winter and summer crops development in various parts of Europe. Heat waves particularly impacted summer crops in southern Europe.

Compared to last month, the EU-28 grain maize yield forecast was lowered by 4.3% and is now below the five-year average. Yield expectations were revised downwards considerably and particularly for Romania, Hungary, Austria and Croatia. The forecast for France – the EU's largest producer – remained stable, and for Poland it was revised upwards. Overall, the EU-28 soft wheat yield forecasts remained stable and slightly above the five-year average. The EU's durum wheat yield is 2.4% above the five-year average. On balance, the combined EU spring and winter barley yield forecasts slightly increased by 0.2% compared to last month, but remain below the 2016 and five-year average by 2.7 and 2.4% respectively. Rapeseed yield estimates were revised slightly downwards and while they are considerably above last year's level (+6.7%) they are slightly (-1.1%) below the five-year average.



Crop	Yield (t/ha)				
	Avg 5yrs	June Bulletin	MARS 2017 forecasts	% Diff 17/5yrs	% Diff June
TOTAL CEREALS	5.30	5.34	**5.27**	-0.4	-1.3
Total Wheat	5.60	5.61	**5.61**	+0.2	+0.0
soft wheat	5.84	5.86	**5.85**	+0.3	-0.2
durum wheat	3.33	3.35	**3.41**	+2.4	+1.8
Total Barley	4.83	4.70	**4.71**	-2.4	+0.2
spring barley	4.22	3.96	**3.94**	-6.7	-0.5
winter barley	5.68	5.68	**5.73**	+0.9	+0.9
Grain maize	6.88	7.14	**6.83**	-0.9	-4.3
Rye	3.89	3.77	**3.82**	-1.6	+1.3
Triticale	4.20	4.14	**4.18**	-0.6	+1.0
Rape and turnip rape	3.24	3.22	**3.21**	-1.1	-0.3
Potato	32.6	33.4	**33.5**	+2.9	+0.5
Sugar beet	72.0	73.9	**73.8**	+2.5	-0.1
Sunflower	1.94	2.18	**2.04**	+5.2	-6.4

Issued: 21 July 2017

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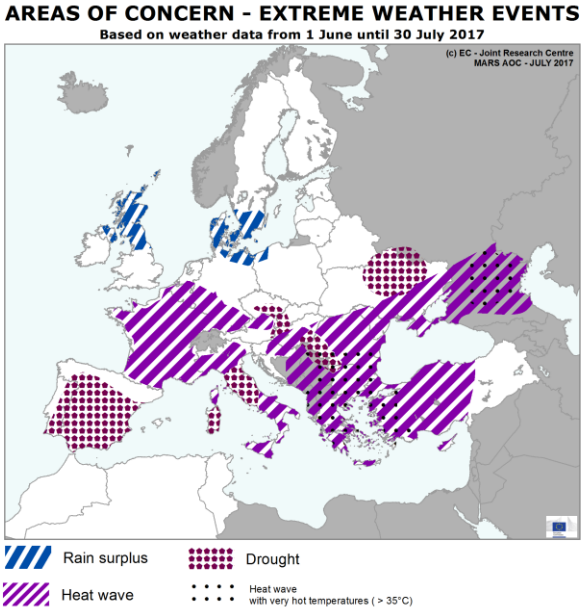
1. Agro-meteorological overview
2. Observed canopy conditions by remote sensing
3. Country analysis
4. Crop yield forecasts
5. Atlas

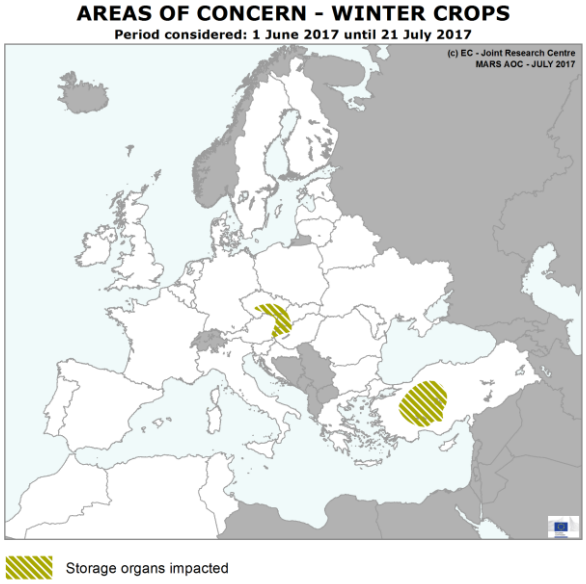
Covers the period from 1 June until 15 July

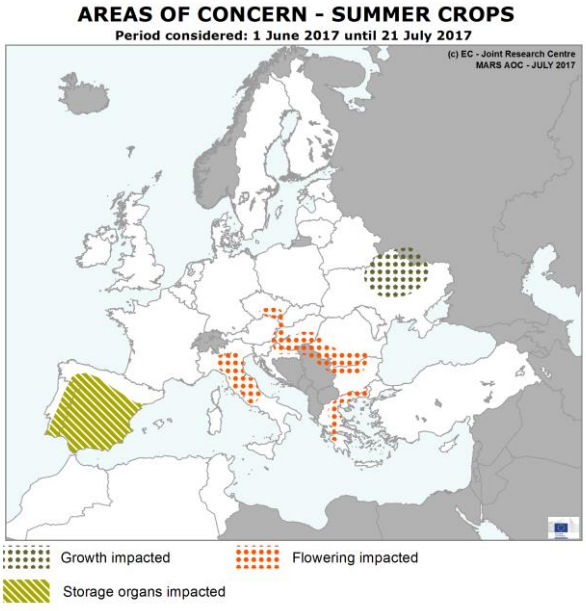
Joint Research Centre

1. Agro-meteorological overview

1.1 Areas of concern







Heat waves and low precipitation hampered winter and summer crops development in Eastern Europe, as shown in the above Areas of Concern maps - concerns for winter crops for France, Belgium, the Netherlands and Spain were reported already in the June bulletin and are not mapped again.

The drought in the **Iberian Peninsula**, lasting since several weeks, affected rainfed crops (sunflower) but so far did not lead to significant water restrictions for irrigation, as it is mainly the case with maize. **Italy** has faced persistently very hot temperatures in June and July which, in the central regions, led to drought conditions. The heat waves that occurred hampered summer crops during the flowering phase, although impacts were mitigated thanks to irrigation, especially in northern regions. In **France**, **Belgium** and the **southern Netherlands,** heat waves and limited precipitation did not allow winter crops to recover from the impacts on grain filling reported in June. In the **Czech Republic** and **Slovakia**, current drought conditions damaged both winter (grain filling shortened) and summer crops (flowering fertility reduced). Drought conditions are also present along the Danube valley in **Serbia**, **Hungary**, **Romania** and **Bulgaria.** In those regions the flowering of summer crops has been affected due to the very hot temperatures. Heat waves, with several days with maximum temperatures above 35°C, were recorded in **Greece** and **Turkey**. In **Greece** the high temperatures resulted unfavorable for maize and sunflower flowering while in **Turkey** they shortened the grain filling of winter crops in the central Anatolian regions. **Southern Ukraine** and south-**western Russia** were also affected by repeated heat waves. Even more severe conditions prevail in **northern Ukraine** where the persistent drought limits the biomass accumulation of summer crops.

1.2. Meteorological review (1 June – 15 July)

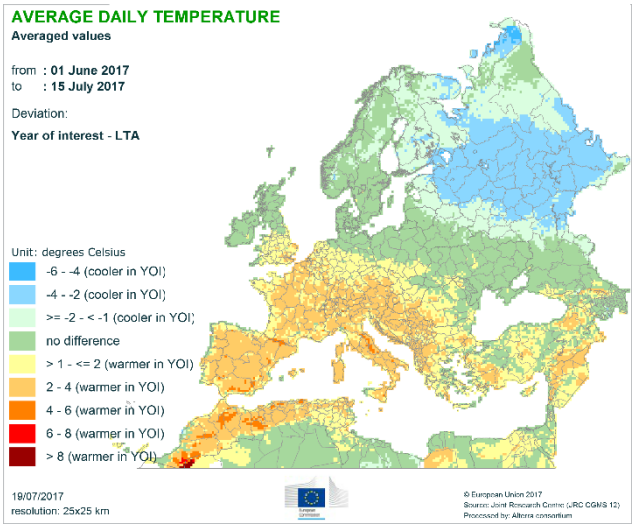
Warmer-than-usual weather conditions prevailed in the Iberian Peninsula, France, south-eastern UK, the Alpine region, Italy, the western part of the Balkan Peninsula, some smaller spots of Turkey and the Maghreb countries with mean temperature anomalies between 1°C and 5 °C. The most pronounced positive temperature anomalies were recorded in the Iberian Peninsula, Apennine Peninsula and western Maghreb. Active temperature sums (TBase=0°C) indicate a significant positive surplus between central Europe (around 50 GDD) and Portugal, Spain, Italy and the Maghreb countries (150-200 GDD).

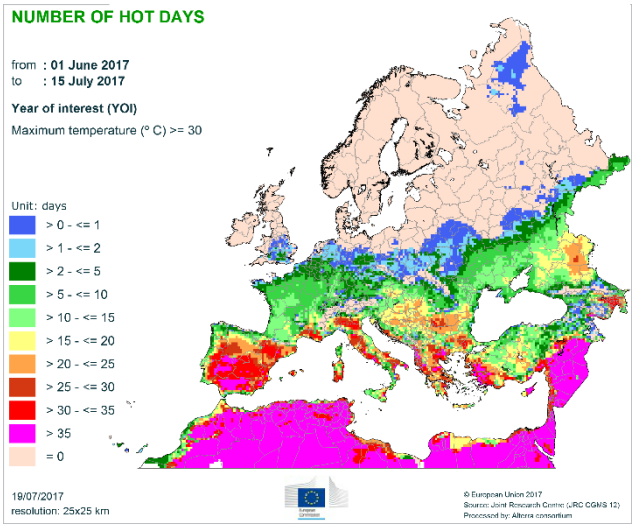
Extreme heat spell(s) affected the Iberian Peninsula, Italy, southern Romania, southern Hungary, most of the Balkan Peninsula and western Turkey as well as the Maghreb region. In the most affected southern regions the number of hot days (Tmax>30°C) exceeded 25 days and on the warmest days typical maximum temperatures of 38-45°C were recorded. **Heat waves** also affected France, the Benelux, southern Germany, Slovakia, Ukraine and southern Russia, where maximum temperatures typically reached well above 33 °C in the most affected areas.

Colder-than-usual weather conditions prevailed in large areas of north-eastern and eastern Europe, with mean temperature anomalies between -4 and -1°C. As regards the major agricultural areas, minimum temperatures dropped below 0°C regionally only over the agriculturally less important territories (southern Finland and North-western Federal District of Russia).

Drier-than-usual weather conditions prevailed in Belgium, Italy, the western Balkan, the Carpathian Basin, southern Poland, Belarus, Ukraine, southern Russia and eastern Turkey. **Dry conditions** with rainfall accumulation of less than 20 mm prevailed in the southern half of the Iberian Peninsula, southern and central parts of Italy, south-western coast of the Balkan Peninsula, most of Turkey (except the northern regions), some southern spots of Ukraine and Russia as well as in the Maghreb region.

Wetter-than-usual conditions characterised the northern part of the British Isles, southern and western Scandinavia, areas south of the Baltic Sea, the central and eastern areas of European Russia and eastern Greece with water surpluses exceeding 50% compared to average precipitation.





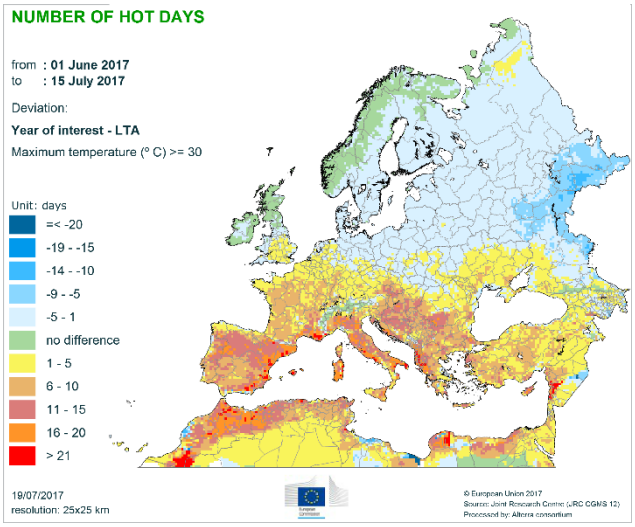
NUMBER OF HOT DAYS

from : **01 June 2017**
to : **15 July 2017**

Deviation:

Year of interest - LTA

Maximum temperature (° C) >= 30



19/07/2017
resolution: 25x25 km

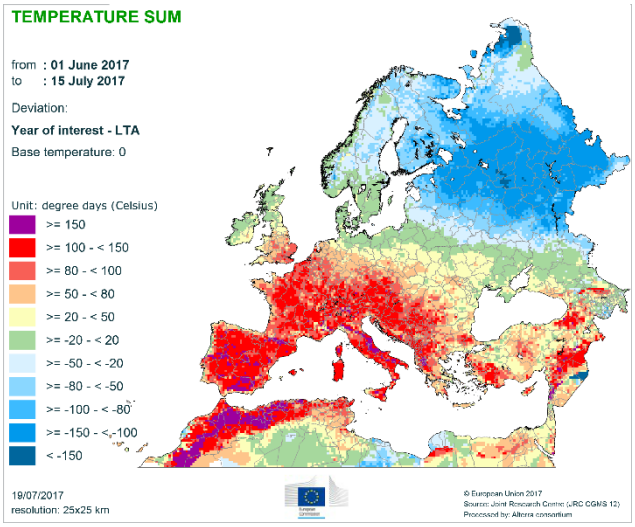
TEMPERATURE SUM

from : **01 June 2017**
to : **15 July 2017**

Deviation:

Year of interest - LTA

Base temperature: 0



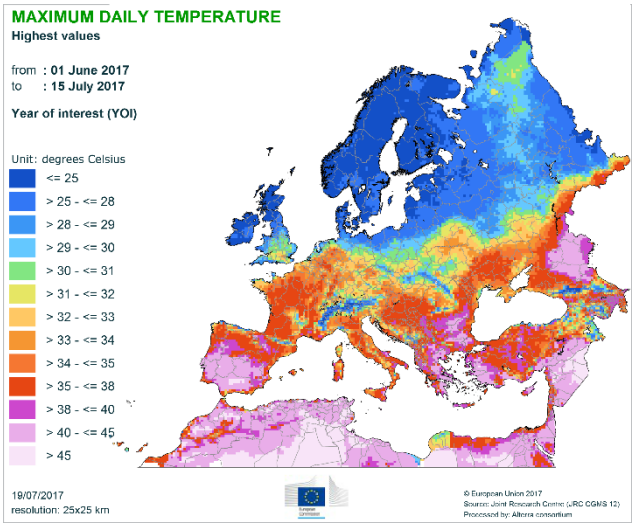
19/07/2017
resolution: 25x25 km

MAXIMUM DAILY TEMPERATURE

Highest values

from : **01 June 2017**
to : **15 July 2017**

Year of interest (YOI)



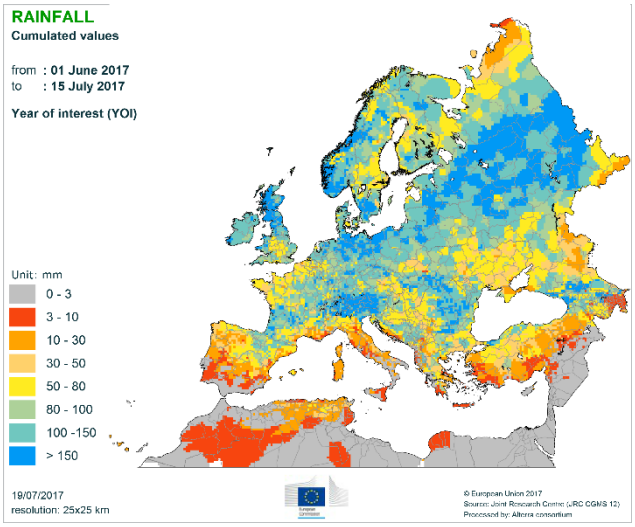
19/07/2017
resolution: 25x25 km

RAINFALL

Cumulated values

from : **01 June 2017**
to : **15 July 2017**

Year of interest (YOI)



19/07/2017
resolution: 25x25 km

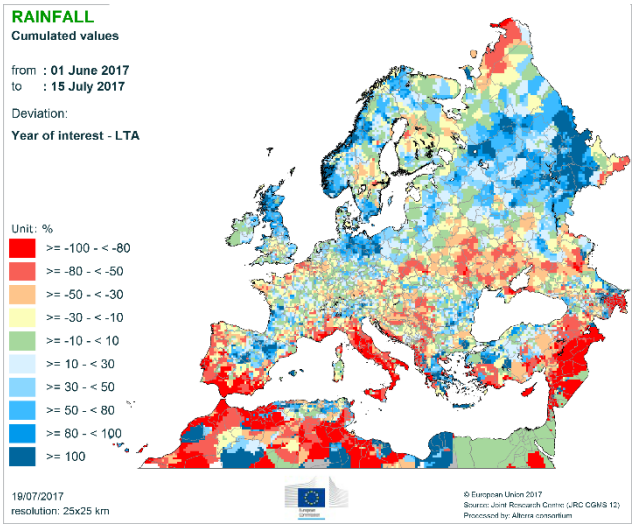
RAINFALL

Cumulated values

from : **01 June 2017**
to : **15 July 2017**

Deviation:

Year of interest - LTA



19/07/2017
resolution: 25x25 km

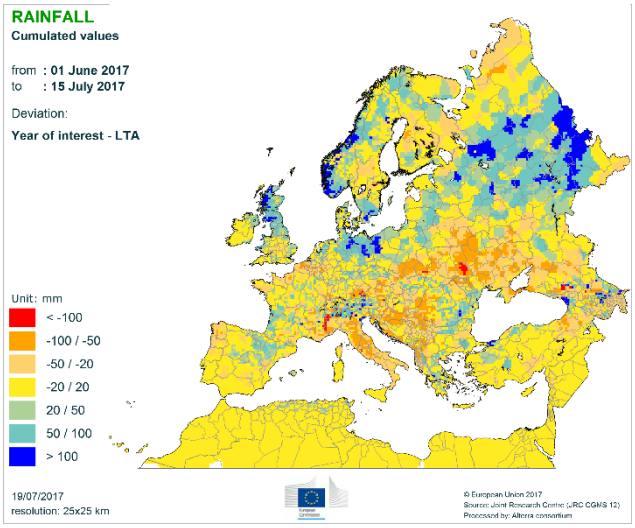
RAINFALL

Cumulated values

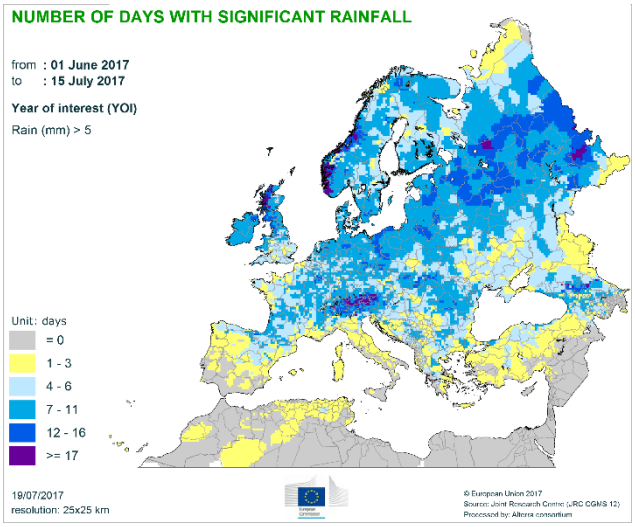
from : **01 June 2017**
to : **15 July 2017**

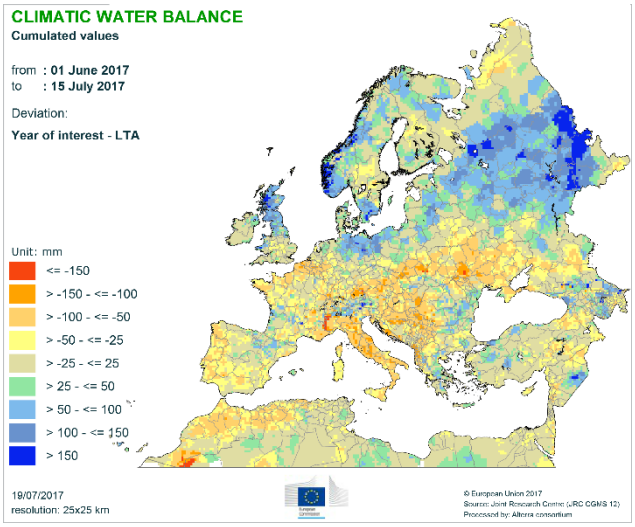
Deviation:

Year of interest - LTA



19/07/2017
resolution: 25x25 km





1.3 Weather forecast up to 29 July

A trough centred west of Ireland will move south-eastward favouring northerly cooler flows and precipitation events in central and northern Europe. A ridge expanding from north-western Africa towards the Mediterranean will cause high daily temperature and heat waves in the region during the first days of the forecast period. Then, the influence of the trough moving from the north will trigger precipitation events and local thunderstorms.

Warmer-than-usual weather conditions in most of the Iberian Peninsula, the entire Mediterranean region, south-eastern Europe, large areas in eastern Europe, northern Scandinavia and north-western Russia. Daily temperature anomalies (w.r.t. the long-term average) will be mainly comprised between 0.5 °C and 2 °C; whereas anomalies up to 4 °C will occur in the Po Valley, large areas in southern Italy and south-eastern Europe. In most of these regions, daily maximum temperatures will remain above 30 °C for more than four days during the forecast period and will exceed 35 °C on the hottest day(s) (39 °C in south-western part of the Iberian Peninsula and locally in southern Italy).

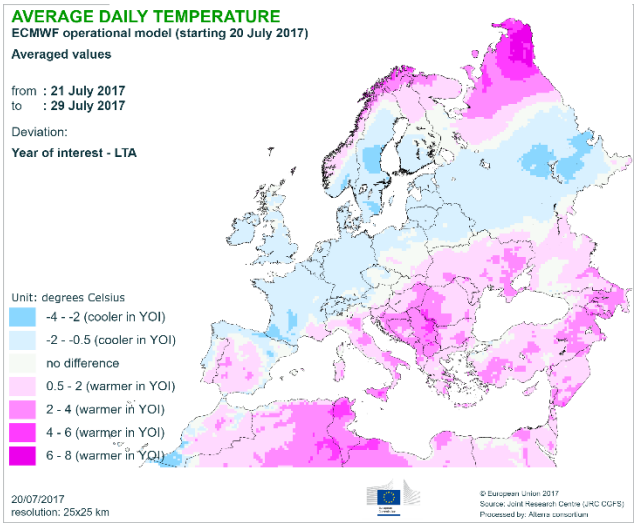
Colder-than-usual weather conditions in most of western, central, north-eastern and northern Europe. Daily temperature anomalies (w.r.t. the long-term average) will be mainly comprised between -2 °C and -0.5 °C.

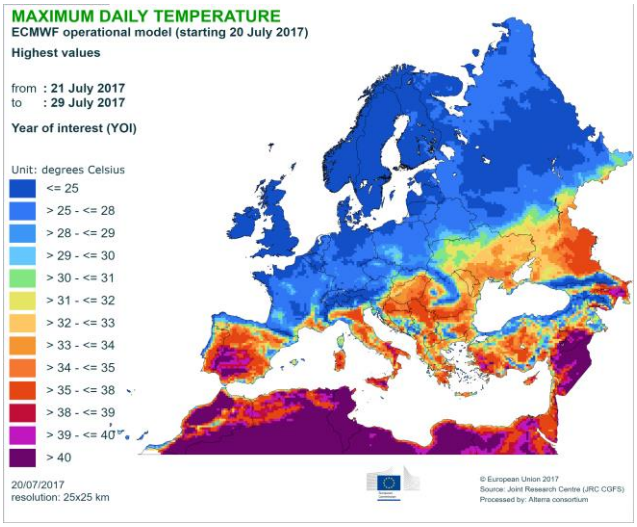
Dry conditions with rainfall cumulates less than 5 mm will occur in the western part of the Iberian Peninsula, southern Italy and large areas in south-eastern Europe and the eastern Mediterranean.

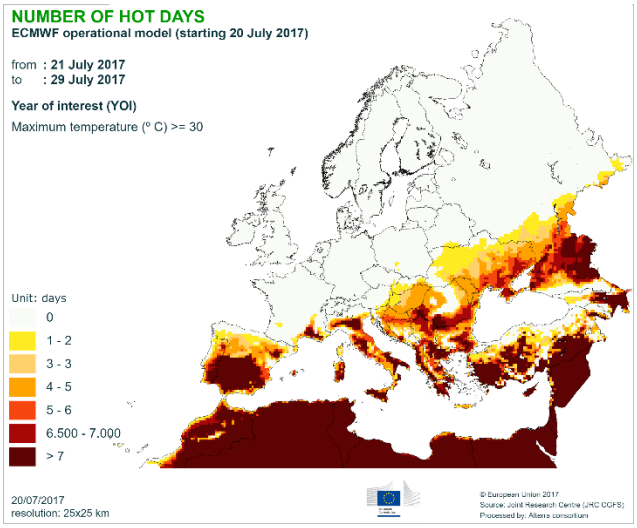
Precipitation between 20 and 40 mm (cumulated in the forecast period) will be observed in central Europe, large areas in eastern Europe and the UK.

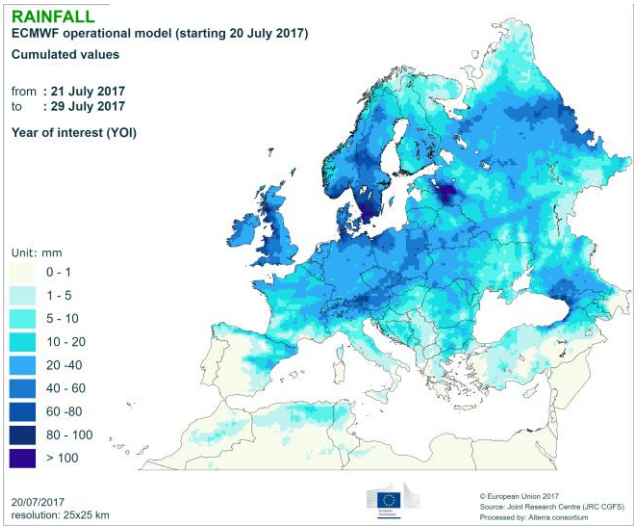
More abundant rainfall (mainly comprised between 40 mm and 60 mm, locally 80 mm) will occur in northern Germany, Denmark, large areas in Poland, Austria, the Czech Republic and large areas in the UK, in southern Sweden, precipitation will locally exceed 100 mm.

The long-range weather forecast for August-September-October shows very likely warmer-than-usual conditions in the Mediterranean region, western and northern Europe; and likely warmer-than-usual conditions in the rest of Europe.


AVERAGE DAILY TEMPERATURE
ECMWF operational model (starting 20 July 2017)
Averaged values
from : 21 July 2017
to : 29 July 2017
Deviation:
Year of interest - LTA
Unit: degrees Celsius
-4 - -2 (cooler in YOI)
-2 - -0.5 (cooler in YOI)
no difference
0.5 - 2 (warmer in YOI)
2 - 4 (warmer in YOI)
4 - 6 (warmer in YOI)
6 - 8 (warmer in YOI)
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CCFS)
Processed by: Alterra consortium

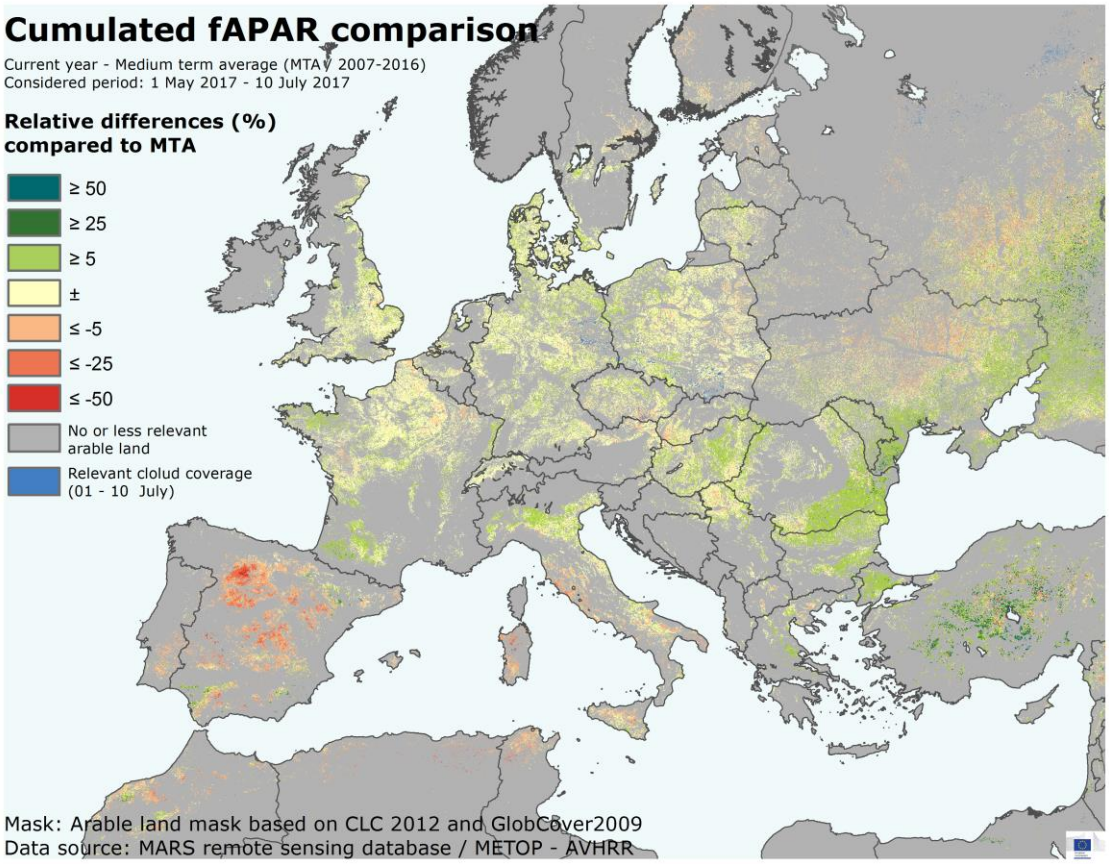

MAXIMUM DAILY TEMPERATURE
ECMWF operational model (starting 20 July 2017)
Highest values
from : 21 July 2017
to : 29 July 2017
Year of interest (YOI)
Unit: degrees Celsius
<= 25
> 25 - <= 28
> 28 - <= 29
> 29 - <= 30
> 30 - <= 31
> 31 - <= 32
> 32 - <= 33
> 33 - <= 34
> 34 - <= 35
> 35 - <= 38
> 38 - <= 39
> 39 - <= 40
> 40
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CCFS)
Processed by: Alterra consortium


NUMBER OF HOT DAYS
ECMWF operational model (starting 20 July 2017)
from : 21 July 2017
to : 29 July 2017
Year of interest (YOI)
Maximum temperature (° C) >= 30
Unit: days
0
1 - 2
3 - 3
4 - 5
5 - 6
6.500 - 7.000
> 7
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CCFS)
Processed by: Alterra consortium


RAINFALL
ECMWF operational model (starting 20 July 2017)
Cumulated values
from : 21 July 2017
to : 29 July 2017
Year of interest (YOI)
Unit: mm
0 - 1
1 - 5
5 - 10
10 - 20
20 -40
40 - 60
60 -80
80 - 100
> 100
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CCFS)
Processed by: Alterra consortium

2. Remote Sensing - Observed canopy conditions

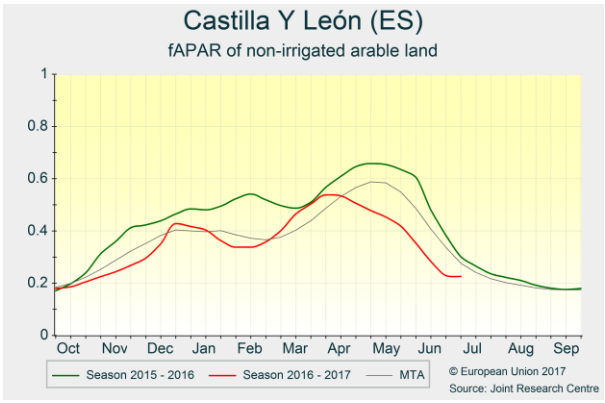
Winter crops season ends with accelerated senescence

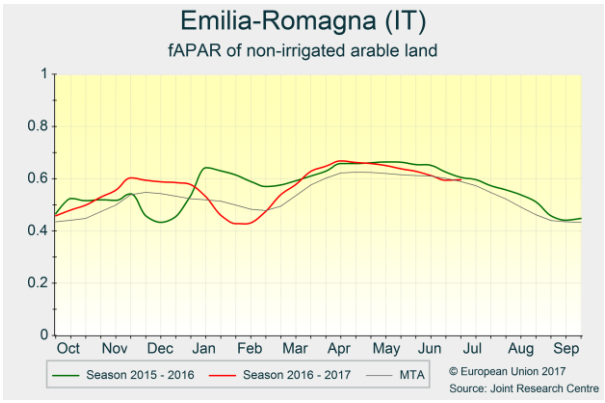


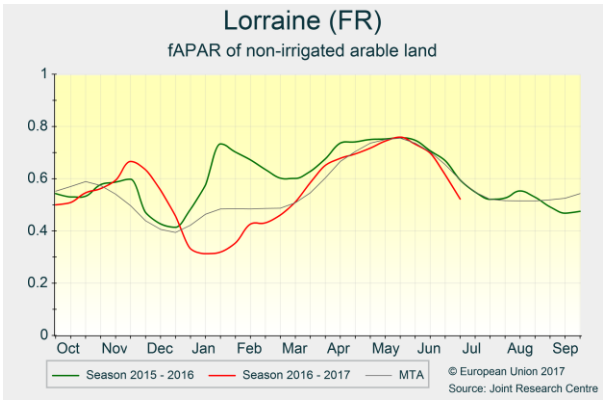
The map displays the differences between the fraction of Absorbed Photosynthetically Active Radiation (fAPAR) from 1 May to 10 July 2017, and the medium term average (MTA, 2007-2016) for the same period. Positive anomalies (in green) reflect above-average canopy density or advanced crop development, while negative anomalies (in red) reflect below-average biomass accumulation or delayed crop development.

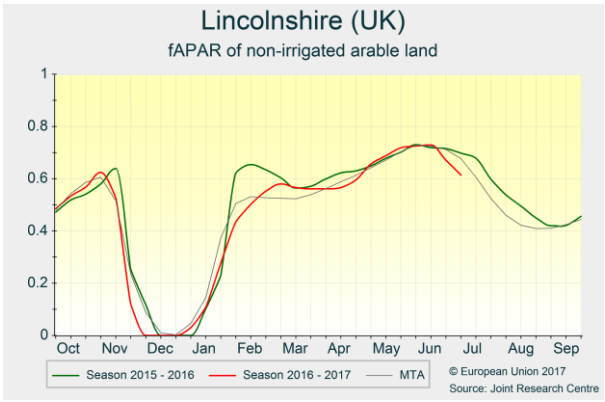
The map summarises the growing conditions since May throughout Europe. In central **Spain** (e.g. *Castilla y León*), the winter crops harvest ended in late June, earlier than usual, with a significant lower than average biomass accumulation due to the long lasting drought. In the Po valley in **Italy**, June conditions were hot and dry, especially in *Emilia-Romagna* but maize canopy did not suffer significant impact and biomass accumulation is average. Nevertheless, soil moisture remains lower than average and non-irrigated summer crops could face an early senescence. In **France,** the grain filling phase of winter crops was shortened (e.g. *Picardie*) due to the heat wave of the second dekad of June. Regarding summer crops, biomass accumulation is average although irrigation restrictions are in place for most of the producing regions. In the **United Kingdom**, warm temperatures mid-June slightly shortened the grain filling period for winter cereals. This led to an early maturity in July. In western **Germany** hot and dry weather resulted in a shortening of the grain filling period, while in central and eastern German regions (e.g. *Thüringen*) wet and not so hot weather (Tmax < 30°C) resulted in good soil moisture that sustained grain filling phase. In **Poland** (e.g. *Wielkopolskie*) weather conditions were favourable to winter crops flowering and grain filling, with slightly above the average temperatures and sufficient rainfall. In southern regions, a lack of precipitation significantly reduced soil moisture for both winter and summer crops. In central Europe (the **Czech Republic, Slovakia, Austria**) the heat waves of the second half of June significantly shortened the winter crops grain-filling period with repercussions on final yield. In **Hungary Romania** and **Bulgaria**: the high temperatures of June and July accelerated only the last days of the grain filling without a significant impact on final yield expectations. In **Turkey**, the high temperatures at the end of June accelerated the winter crop senescence and shortened grain filling. In **Ukraine**, June and July were hot and dry. Such conditions

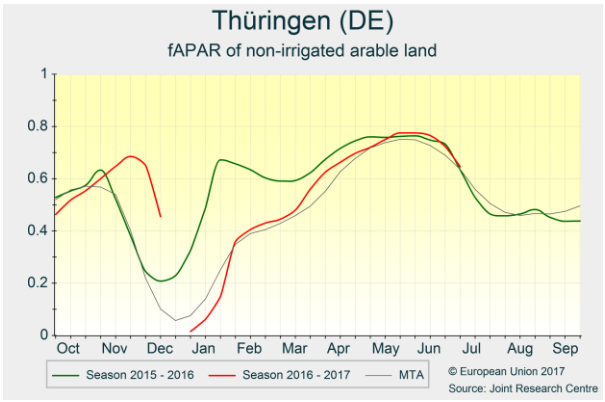
hampered winter crops grain filling while summer crops generally do not yet show any impact in terms of biomass accumulation, apart from north-eastern regions (e.g. *Poltavs'ka*) where remote sensing indicates a significant sub-optimal growth.

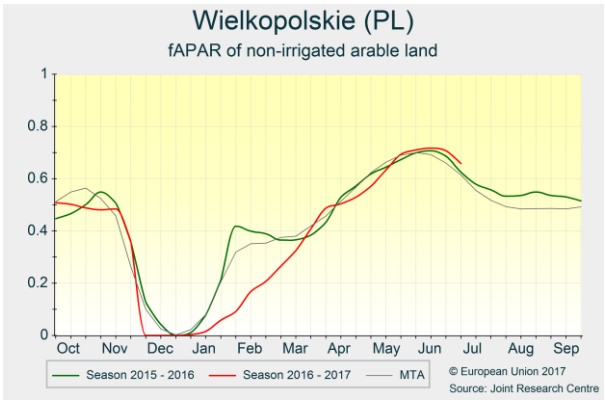


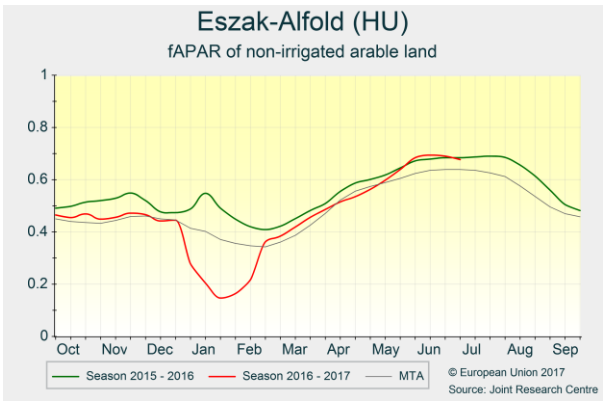


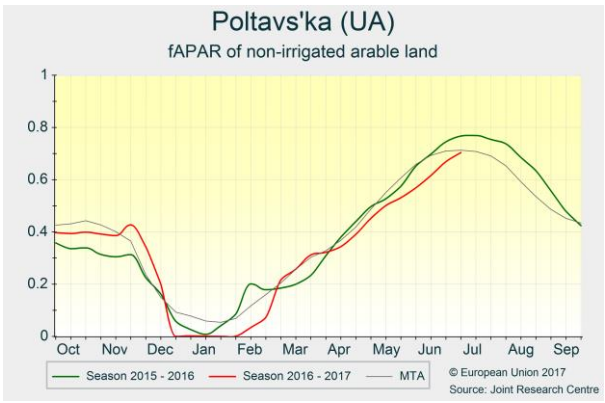












3. Country analysis

3.1 European Union

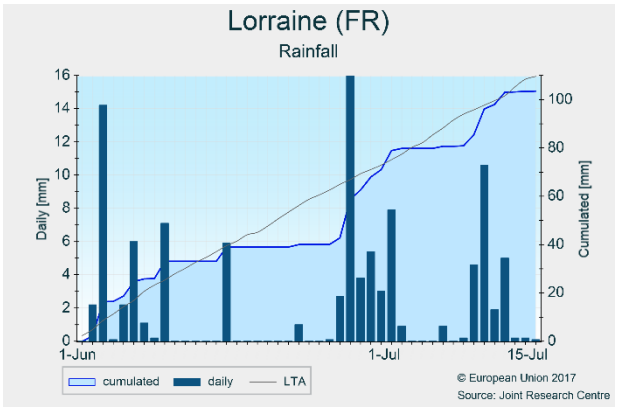
France

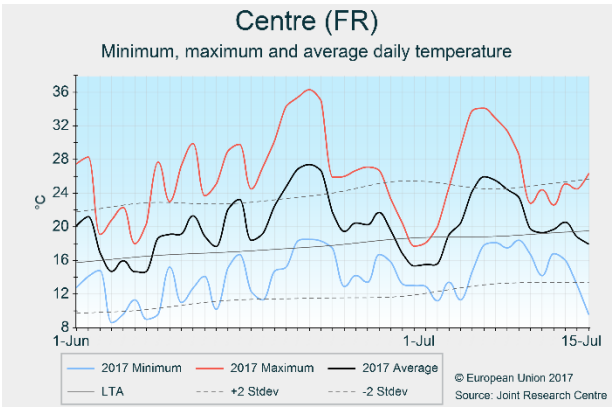
Crop development exceptionally advanced

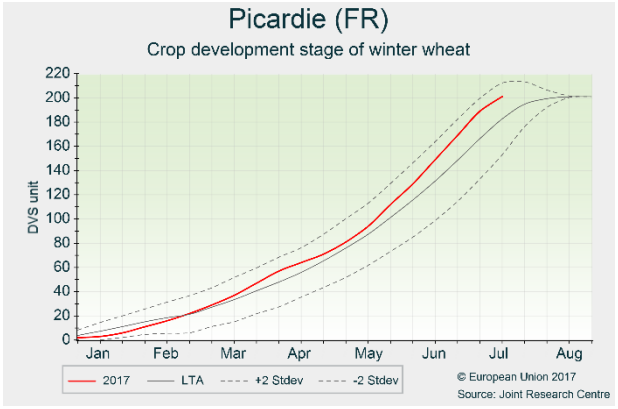
Since the beginning of June, temperatures remained well above average and accelerated substantially the development of all crops. The high temperatures shortened the grain filling of winter cereals and spring barley in line with expectations and so the yield forecasts remain mostly unchanged. Summer crops benefited from close to average rainfall.

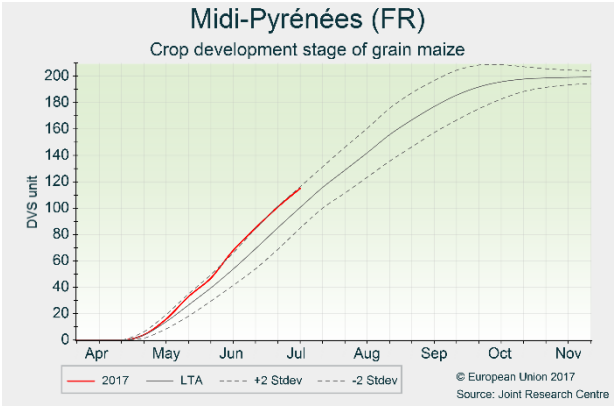
While the overall rain deficit is still a concern and irrigation restrictions are ongoing in several agricultural regions rainfall accumulated over the period of review has been close to the seasonal average. Conditions are heterogeneous as most of the rain came in the form of thunderstorms. The average temperature for the period as a whole remained 2.5°C above the long term average. An exceptional heat wave was observed in all regions around 20 June, lasting three days, with maximum temperatures reaching 35°C and minimum temperatures of around 19°C. The first dekad of July was also warmer than average but maximum temperatures remained closer to 30°C. With respect to winter cereals, the above average temperatures recorded since flowering shortened the grain-filling period by 10 days according to the crop model with negative impacts on yield, which were already reflected in last month's forecast. The impact of the heat wave was less severe on winter barley, which was already close to ripening. The thunderstorms observed during the first half of July locally delayed some of the harvest activities but no major impacts on yields are expected. On balance, the yield forecasts for winter cereals are maintained close to last month's levels, largely below the trend and close to the last five-year average (which was pushed down by last year's low yields).

Maize, sunflower, sugar beet and potato are benefiting from the rainfall observed since May but significant rain will still be needed in the weeks to come, particularly considering the ongoing irrigation restrictions. Due to this uncertainty, the yield forecasts of summer crops are maintained close to the average.









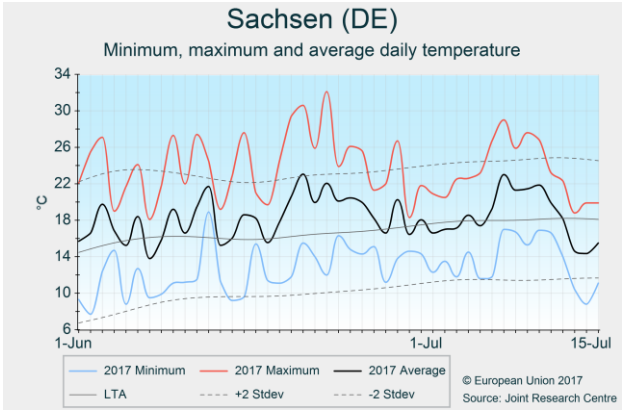
Germany

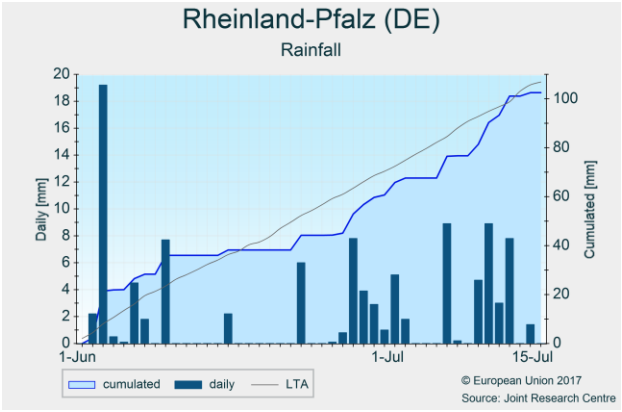
Average yields forecast for winter and spring cereals

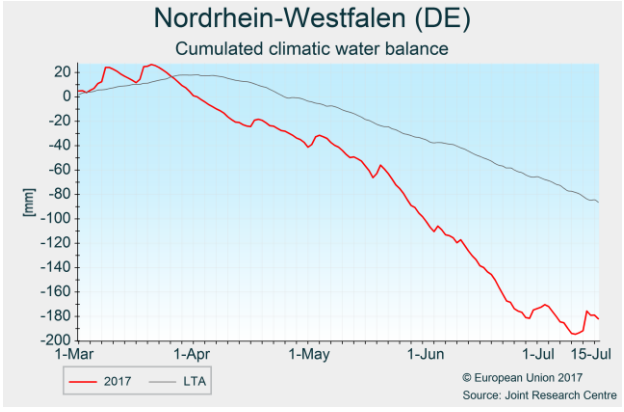
Rainfall since the end of June has improved the extremely dry situation in the whole country. North and North-Eastern Germany are on target to achieve high and very high yields, contrasted by lower yields in the remaining parts of the country, in particular in the centre-west, where the rain deficit has reduced yields significantly. At country-level, winter and spring crop yields are expected to be close to average, with winter barley and rapeseed slightly lower.

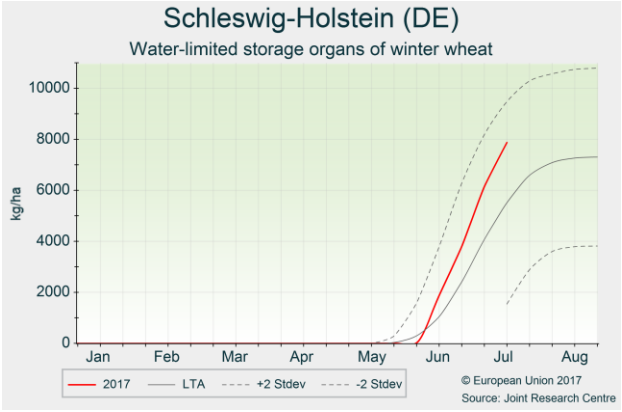
Thanks to abundant rainfall since the end of June, the existing extreme dryness has been alleviated across Germany. Most precipitation fell in *Niedersachsen, Schleswig-Holstein, Mecklenburg-Vorpommern,* and *Brandenburg.* Locally, storms, hail and heavy rainfall events have damaged crops. Despite the rainfall, the climatic water balance since 1 March remains negative in western Germany, where the water deficit often reaches values of less than -200 mm. Apart from the North and North East, the period under review was generally characterized by above average temperatures. Currently, cooler temperatures prevail.

Cereal yields are highly heterogeneous in Germany, with lower than usual yields in the center-west, due to the previous dryness, contrasted by generally higher than usual yields in the north and northeast. On a country-level, yields are forecast to be around the long-term average, with winter barley and rapeseed being at the lower edge. Late harvested winter cereals and spring cereals took benefit from the late rainfall compared to winter barley. While the harvest of small grain cereals and rapeseed is underway, interrupted now and then by rainfall, summer crops are proceeding well in development. Maize is flowering right now, soil moisture levels being higher than usual in the North and North East, and lower than usual in the South and West of the country. Particularly in *Rheinland-Pfalz, Saarland,* and *Nordrhein-Westfalen,* the long-lasting water balance deficit might have effects on non-irrigated summer crops such as maize and potatoes. Sugar beet yields are forecast around the long-term average, so far.









Poland

Positive outlook for maize grain production

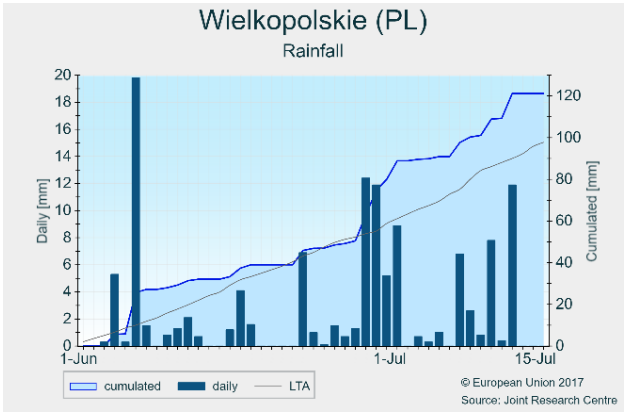
Positive outlook for grain maize yields, though rainfall during flowering could have an impact on grain quality. Winter cereals revised slightly downwards due to warmer than usual temperatures accelerating grain filling and to abundant precipitation favouring disease spread and development. Yields below average for spring barley are confirmed due to the negative impact of rainfall close to harvest.

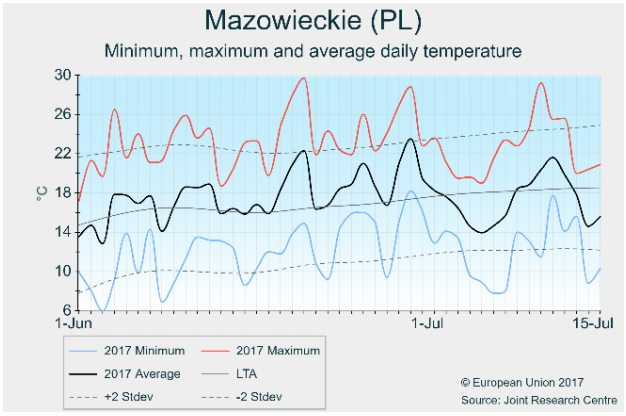
During the first two dekads of June temperatures oscillated around the long term average (LTA) while they were generally above during the third dekad of June with differences up to 5ºC compared to the LTA especially in the southern regions. Temperatures then dropped downwards during the first dekad of July in conjunction with higher-than-usual rainfalls that occurred during the last week of June and the first dekad of July.

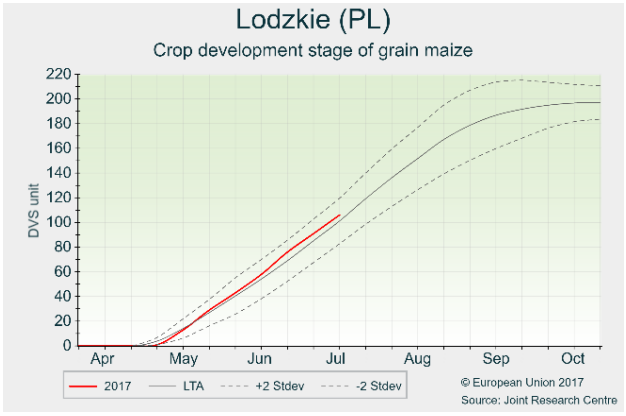
The higher-than-usual temperatures accelerated winter cereal grain filling and could determine a lower grain weight. In addition higher than usual precipitation can foster the development of fungal diseases, affecting both yield and quality, which also applies to spring barley. Precipitation is also creating some problems in those areas where harvest operations have already started. This is why the forecasts for winter cereals are reduced compared to the previous bulletin.

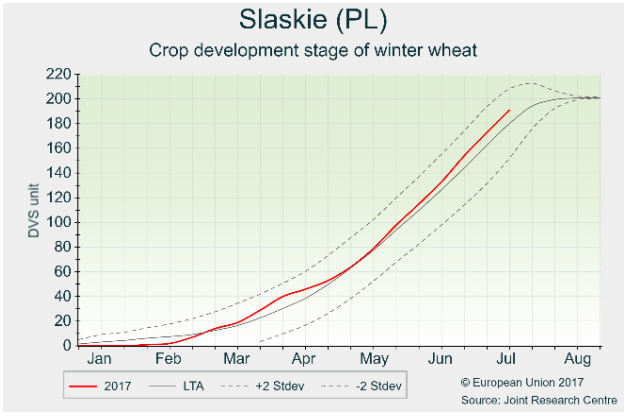
Grain maize is at the flowering stage (central-northern regions), or has started grain development (southern regions). Growing conditions have been favourable until now and thermal conditions are favouring a good grain development. Hence, the forecast was increased. The rainfall that occurred around flowering and at the beginning of grain development could enhance fungi infection affecting grain quality.

As already pointed out during our last bulletin, conditions for sugar beet development have been unfavourable this year. Our forecast was slightly revised upwards compared to the previous bulletin as growing conditions during the last month have not been critical but our forecast remains below average.









The United Kingdom and Ireland

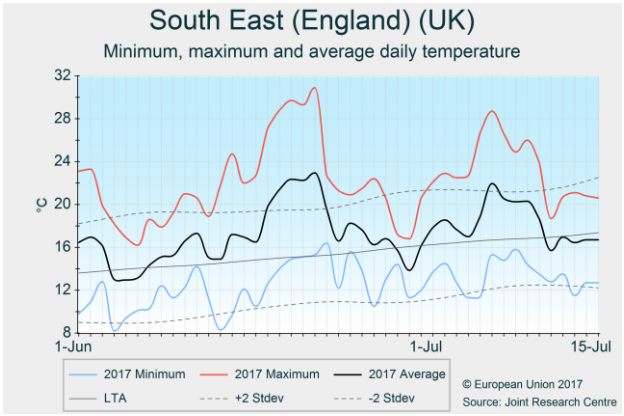
Positive yield outlook slightly tempered by shortened grain filling period

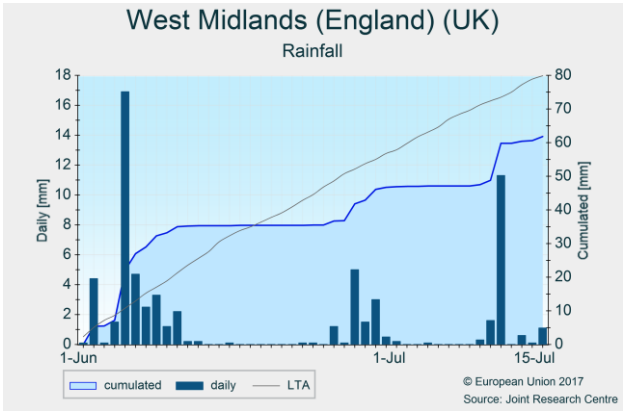
The review period was characterized by predominantly warmer than usual weather conditions and dry periods alternated with abundant rainfall. Crop development and biomass accumulation are mainly above average but yield formation is somewhat constrained due to a shortened grain filling period. The yield forecasts remain close to or slightly above the five-year average.

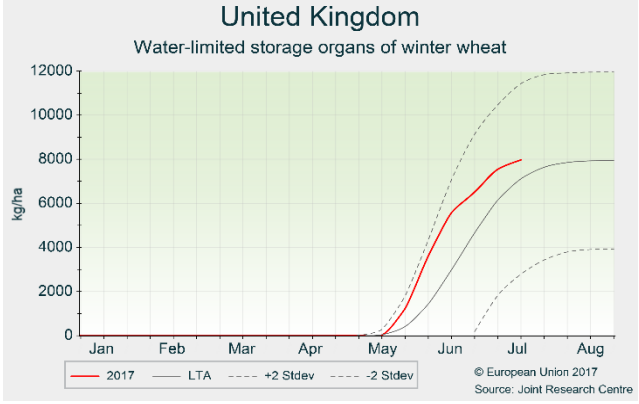
Above-average temperatures prevailed in the UK and Ireland throughout the review period (1 June to 15 July), however, with maximum temperatures exceeding 30°C only for two days in South-East England. Precipitation was close to average or above average, except in the West Midlands but strongly concentrated in short periods with thundershowers alternated with practically dry periods of one to three weeks. Due to the high temperatures cereals in general (winter wheat, winter barley and spring barley), including fodder maize in both countries, show advanced stages of development. Winter wheat is at the end of grain filling. Winter barley has reached maturity.

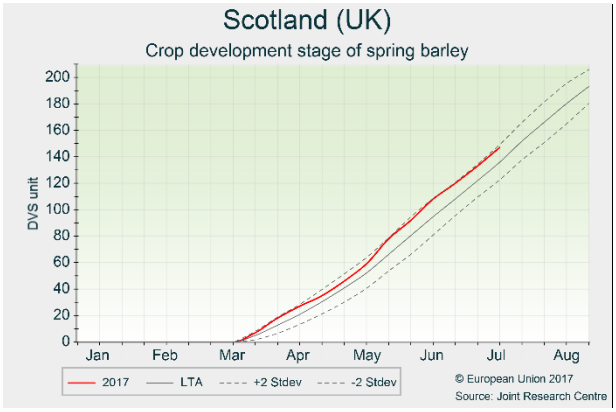
The rainfall in June was sufficient to increase the moisture profile to safe levels of soils cropped with winter cereals in Ireland, Scotland and western parts of the UK, but in other areas soil water levels remained close-to critical during most of June. Water stress was experienced on soils with unfavourable water holding properties (sandy, shallow, compacted soils) where part of the precipitation during major rainfall events is lost as runoff.

Model indicators continue showing above-average biomass accumulation of winter and spring crops, but also of fodder maize, potato and sugar beet. Winter barley and oilseed rape are now being harvested with reported mixed results for winter barley and positive yields for oilseed rape. For Ireland and the UK, the yield forecast for winter wheat and winter barley were revised slightly downwards, due to the above average temperature that shortened the duration of the grain filling in Ireland and the UK, combined with the somewhat below average levels of radiation in Ireland and suboptimal water supply in the south-eastern UK. However, the forecasts remain above the five-year average. Expectations are particularly good for spring barley in the UK due to the favorable weather conditions during crop growth in Scotland, which is one of the UK's main spring barley producing regions.









Spain and Portugal

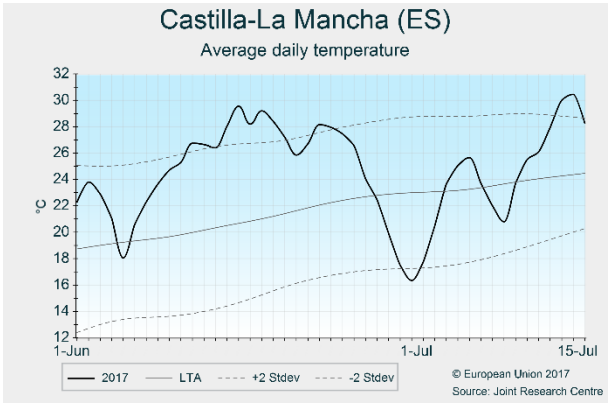
Unusually warm conditions persist

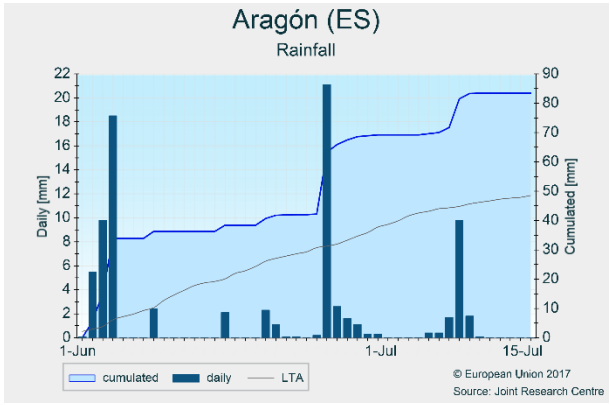
Daily temperatures were systematically 2-4°C above average across all regions. Rainfall was scarce in the southern half and in the North West of the Peninsula. Dry conditions are limiting sunflower grain filling. The irrigation campaign is progressing adequately for maize, sugar beet and potato.

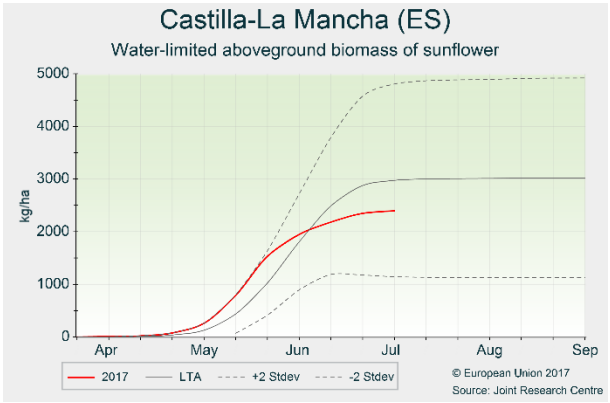
The unusually warm conditions experienced across the Iberian Peninsula during most of the spring persisted in June and into the first half of July. Daily temperatures were 2-4°C above seasonal values, reaching maximum values of 35°C in the second and third week of June and during mid-July. Precipitation since June was rather scarce in the southern half (*Andalucía*, *Alentejo*, south of *Castilla La Mancha*) and in the North West (most of *Castilla y León*, *Galicia*, *Norte*). Only in *Aragón* and central Spain total cumulated rainfall was above seasonal values, mostly associated with thunderstorms at the beginning and end of June and the first week of July.

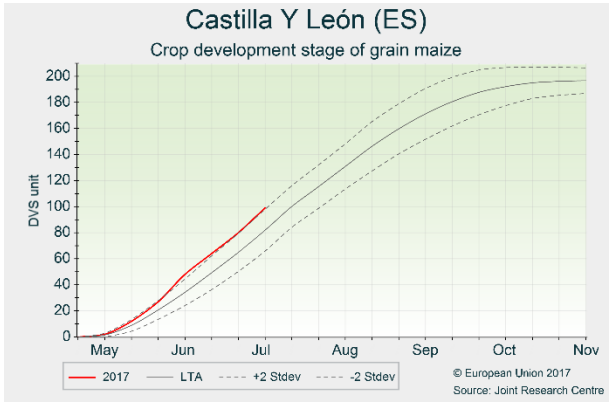
The harvest of winter cereals is nearing its end, and yield expectations are low due to the hot and dry conditions during most of the growing season. The lack of precipitation from May onwards also affects sunflower growth during the critical phase of grain filling, especially in southern and western regions.

The outlook for summer crops is average. The irrigation campaign is progressing adequately in most of the regions, and, due to the high temperatures, maize presents an earlier-than-usual development. Only in some locations of southern Portugal (e.g. *Alto Alentejo*) does remote sensing imagery indicate that summer crops may not have been sown, possibly due to water restrictions. Levels in water storage reservoirs in the western half of the Peninsula are low, and irrigation restrictions for summer crops may come into place during August.









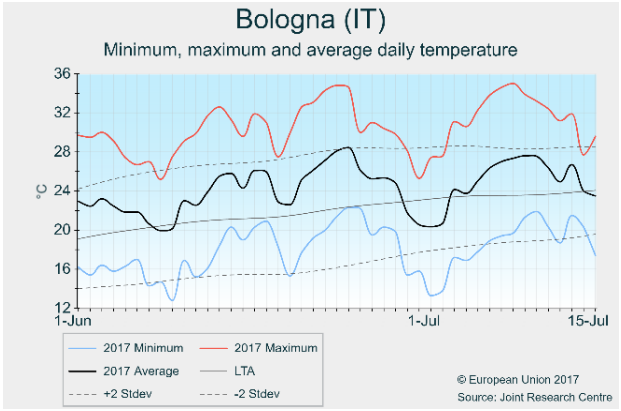
Italy

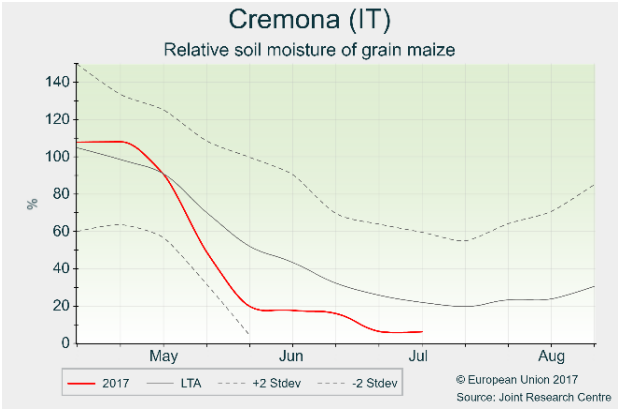
Summer crops affected by persisting dry conditions

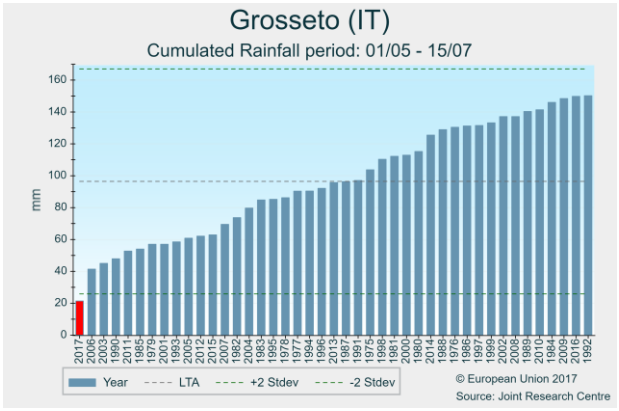
The dry conditions, experienced in several regions of the Peninsula, had a relatively little impact on winter cereals. Summer crops are suffering and a negative impact on yield is expected. Summer crop forecasts were revised downwards, to near or *below the* five-year *average.*

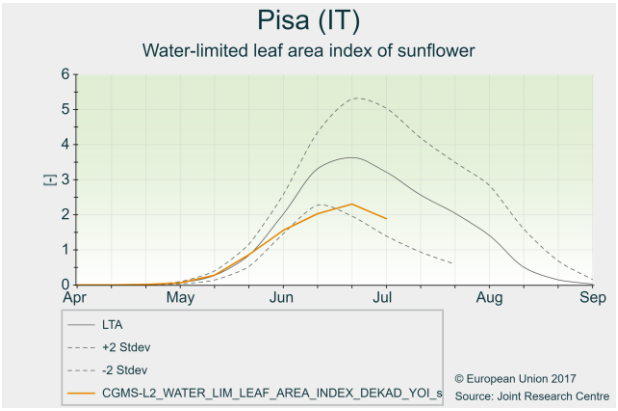
The very strong rain deficits since last winter, experienced in several regions of the Peninsula, did not have a strong impact on winter crops. The warmer-than-usual conditions that prevailed since the second dekad of May in the main area of winter wheat cultivation accelerated development during grain filling, thus causing early maturation and somewhat constrained grain weight. Thanks to the very dry conditions, disease pressure has been low and grain quality levels should be positive. Harvest operations are still ongoing in some areas but most of the fields have been harvested. Considering together some effect of the dry conditions and the accelerated grain filling, our forecast is confirmed slightly below the five-year average. Also in the case of durum wheat, harvesting operations are almost finished. As already pointed out in our last bulletin, generally good growing conditions were observed, but, also in this case, the drier-than-usual conditions and the accelerated grain filling limited performance and our forecast yield is confirmed just above the five-year average. First information from the field report very good quality levels (high specific weight and protein content, low fungi infection levels).

With respect to summer crops, the higher–than-usual temperatures and dry conditions are especially affecting maize. In some areas, supplementary irrigation started in June. In areas where maize is not irrigated production could be at risk. Moreover, the generally dry conditions could enhance the development of toxigenic fungi of Aspergillus genus, reducing drastically the quality of the final production. Hence, our forecast for grain maize was revised downwards and is now just above the five-year average. The forecasts for sunflower and sugar beet were also revised downwards and are now below the five-year average. Sunflower already suffered from dry conditions since sowing and emergence. The province of *Grosseto*, which is one of Italy's most important sunflower producing regions, experienced the lowest cumulated rainfall since May, since 1975.









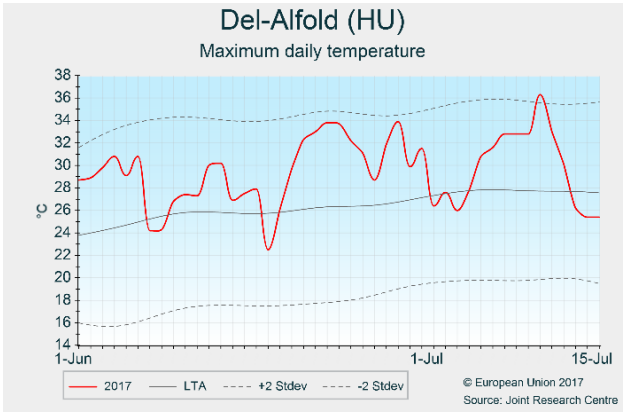
Hungary

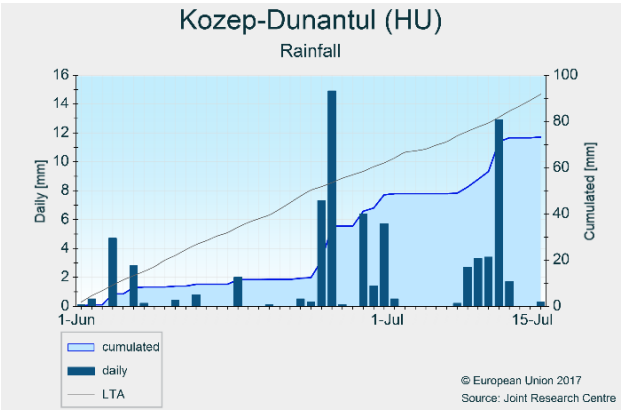
Decreased yield expectation of summer crops

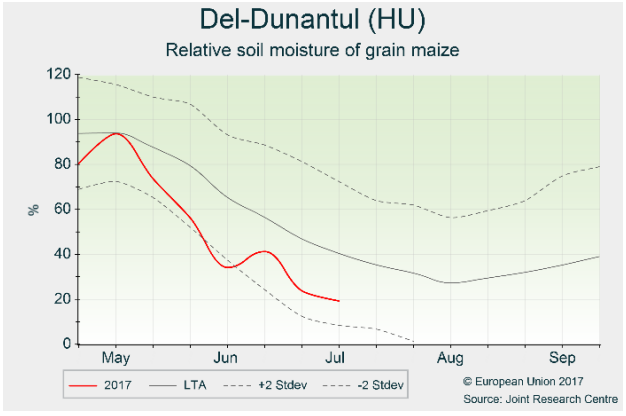
Since the beginning of June, Hungary has experienced warmer and drier than usual weather conditions. Heat waves occurred in the last dekad of June and during 5-10 days in July. These conditions negatively affected the yield potential of summer crops. Conditions for the harvesting of cereals were favourable.

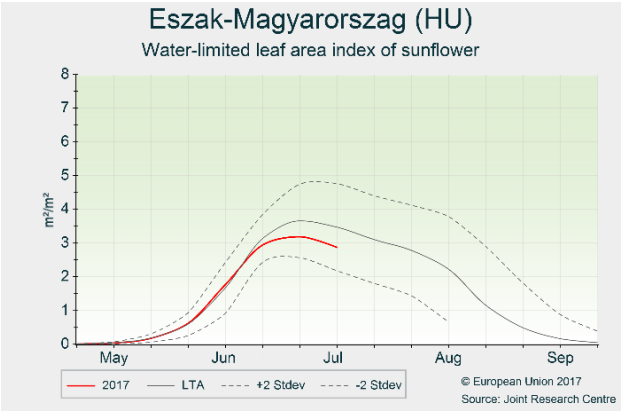
In the first two dekads of June, a slight positive thermal anomaly prevailed, but precipitation remained well under the long-term average (in most places 10-40 mm, corresponding to less than half the usual amount). In the last 10 days of June a heat wave occurred with 5-10 hot days (Tmax>30°C) with daily temperature maxima reaching 33-37°C on the hottest days, coinciding, however, with beneficial rainfall. Late June / early July turned cooler than seasonal but another heat wave was experienced from 5 to 12 July, most severely in the southern and western regions of Hungary (and yet another one setting in at the end of the review period). Precipitation tendency decreased significantly in July again. A rainfall deficit of 20-70 mm has been recorded since 1 June though the north-eastern areas received near-normal precipitation.

The heat wave in late June, compromised the late grain filling of winter wheat cereals (leading to decreased grain weight), though its impacts were less severe than estimated at its onset; therefore our yield forecast was moderately increased. The predominantly dry weather in July allowed good progress of the harvest with no losses. Crop development of maize and sunflower is advanced by 1-2 weeks. Soil moisture levels have remained below average since the start of the season. The hot spell(s) and intensifying water stress led to reduced biomass accumulation and below optimal canopy expansion of all summer crops. Moreover, the extremely high temperatures could negatively affect the pollination of grain maize which is currently in the flowering phase. Consequently the yield forecast for summer crops was revised downwards, with further negative outlook in the event of drought.









Romania

High yield potential despite heat waves

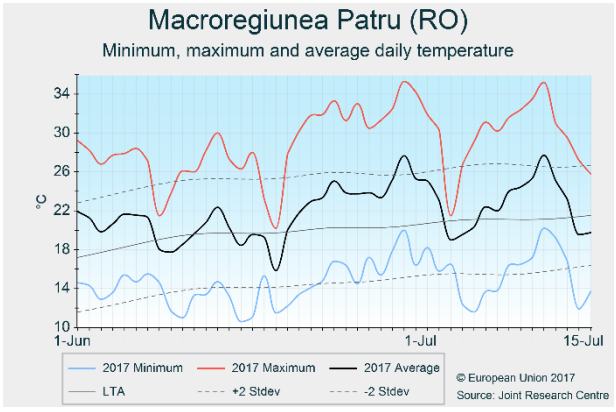
The yield outlook for winter cereals is close to a record high. The harvest of winter cereals progressed well until early July, when it was hampered by abundant rainfall in south-eastern regions. The overall conditions for summer crops are still promising, but south-western and western Romania are facing intensifying water deficits.

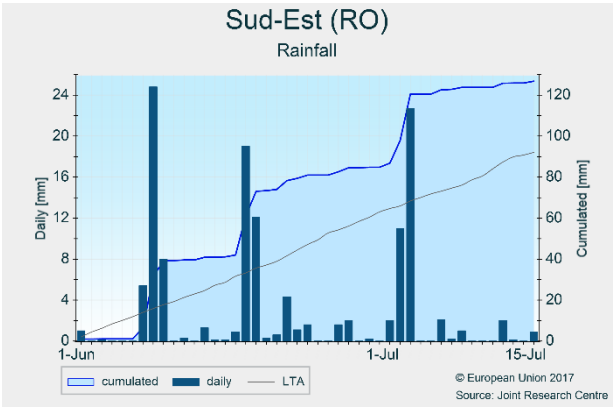
Considering the review period as a whole (1 June - 15 July), Romania experienced moderately (1-2°C) warmer than usual weather. An extremely warm period started on 21 June and lasted until 2 July. The southern regions were most affected, with temperatures reaching 38-42°C on the hottest days. The number of hot days (Tmax>30°C) exceeded the long-term average by 5 to 10 days along the southern, western and eastern borders. The heat wave ended with a sharp drop in temperatures but hot weather returned around 10 July, albeit in a less extreme form.

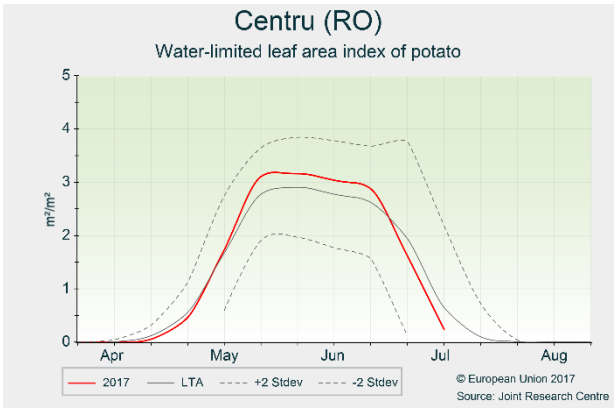
Precipitation was abundant in the south-eastern and central territories, reaching 20-50% surplus compared to the seasonal average. Excessive rainfall was experienced on 2 and 3 July in these areas, with totals locally reaching 140 mm. However, the south-western and north-eastern areas remained drier than usual by 50-80 mm.

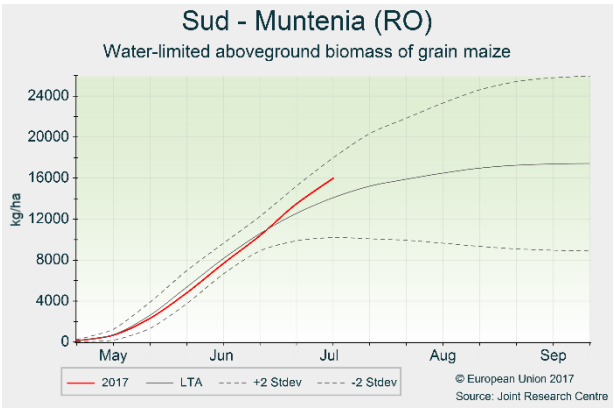
Harvesting of winter cereals started early and progressed well until the beginning of July, when it was hampered by the heavy rainfall in the south-eastern regions. The heat wave in June affected winter soft wheat only in the western and eastern areas where crop development was less advanced. As a consequence, our yield forecast was revised slightly downwards but remains close to a record high.

In the most important *Sud-Est* and *Sud-Muntenia* regions for summer crops, soil moisture levels are at or above average. However, in *Macroregiunea Patru*, southern parts of *Nord-Vest* and some spots of *Nord-Est* regions, the crop water supply is limited and constrains biomass accumulation. The hot spells affected the flowering of sunflowers and grain maize in south-western Romania, but had limited significance elsewhere, where the water supply was adequate. As our crop model simulations indicate near or above average biomass accumulation of summer crops, our yield forecast remains positive, but it was revised downwards taking into consideration the impacts of the heat waves and the risk of developing drought.







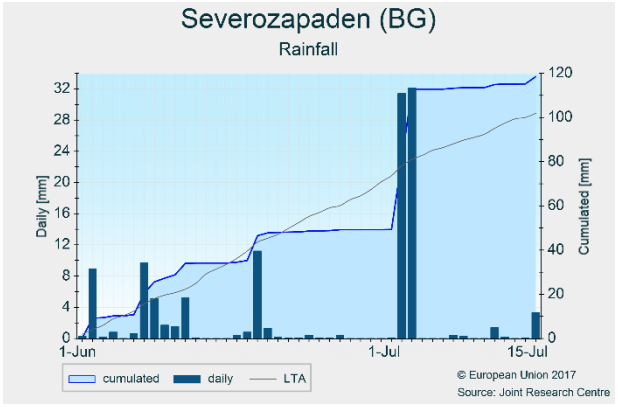


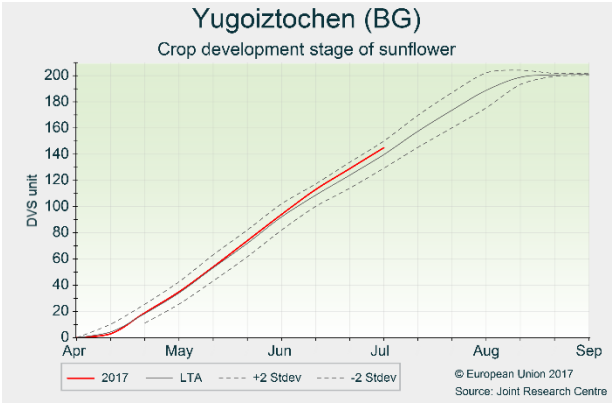
Bulgaria

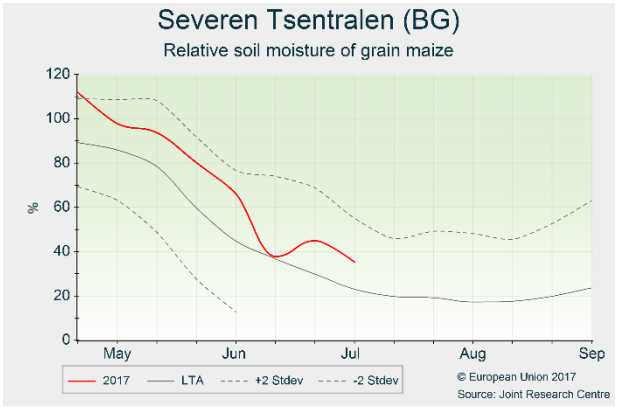
High yield expectations

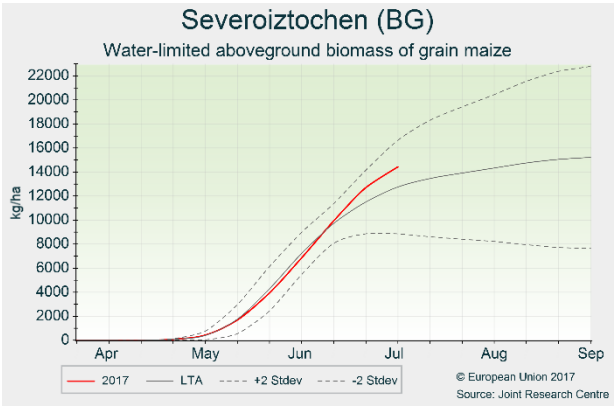
Abundant rain in northern and eastern Bulgaria caused delays to the harvest of winter crops but benefited maize and sunflower crops. Southern regions experienced moderate water deficiency. Losses due to the heat waves of late June and early July are deemed to be limited. Overall, indicators for summer crops are positive and the yield forecasts are above the 5-year average.

During the first 20 days of June, overall thermal conditions were close to average, but daily temperatures fluctuated far above the average during the last dekad of the month and the first days of July. Maximum temperatures frequently exceeded 30°C and reached 37-42°C on the hottest days. A shorter and less intensive heat-wave occurred between 6 and 13 July. Precipitation, during the review period (1 June -15 July), was abundant and well distributed in time over the northern regions. In southern Bulgaria the first half of June was wet, but precipitation has been scarce since then and *Yugoiztochen* and some partsof *Yuzhen Tsentralen* indicate water deficiency. The harvesting of winter cereals started after mid-June, earlier than usual, due to advanced crop development. The intense (locally excessive) rains in early July temporarily hampered the harvest in northern and eastern parts of the country and likely affected grain quality. The heat wave of late June had no considerable negative impact on winter cereals, as wheat was already ripening or ripened when it arrived. The yield forecast for winter cereals was revised up slightly. Summer crops benefited from the rainfall of early July, which favourably increased soil moisture contents during the flowering stage, which is crucial for determining yield. The two heat waves, which coincided with the flowering of sunflower and maize respectively, are likely to have had limited negative effects thanks to the adequate water supply. Sunflower and potato present near-normal canopy development and biomass accumulation according to model simulations and consequently the yield outlook is close to the average for these crops. In the case of grain maize, our model results and remote sensing images indicate a very well developed crop canopy and well above-average biomass accumulation and therefore the yield outlook is positive. Further rains are needed, however, to realize these expectations.









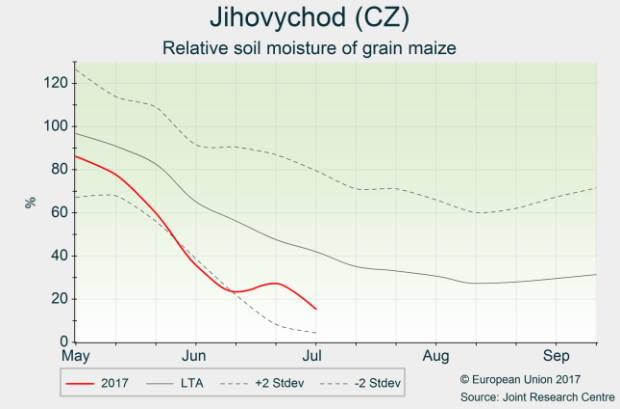
Austria, Slovakia and the Czech Republic

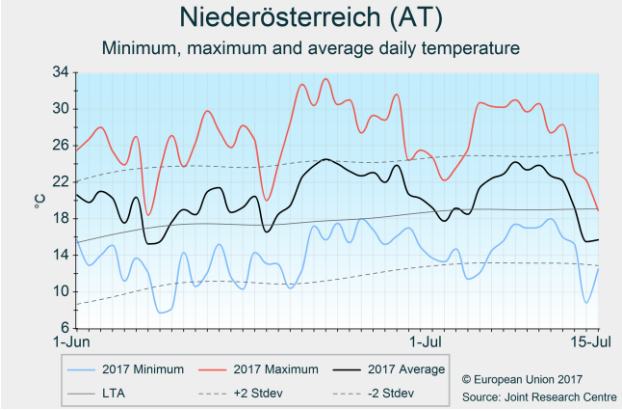
Soil moisture deficit regionally limits crop growth

June has been among the warmest on our records. The lack of rainfall and consequent dry soils limit crop growth in southern parts of the Czech Republic, north-eastern Austria and western parts of Slovakia. The yield forecast for grain maize is currently below the five-year average.

June was among the warmest on our records in the major agricultural areas. Daily temperature anomalies were between 2 and 4 °C above the long-term-average, with maximum values close to 35 °C. A less pronounced warm weather anomaly continued in July especially in Austria and southern parts of the Czech Republic. Heat wave events characterized the analysis period especially in *Jihovychod, Niederösterreich, Burgenland, Steiermark, Zapadne Slovensko* and *Bratislavsky Kraj*. A rainfall deficit has mainly been recorded in *Jihovychod, Zapadne Slovensko* and *Niederösterreich*; the most affected areas saw less than 40 mm of rainfall during the analysis period, which roughly corresponds to 50 % below the long term average.

The warm weather anomaly accelerated the phenological development of winter wheat, now at maturity stages. Winter wheat yield outlook is well below the values recorded last year, and also below the five-year average, due to unfavourable seasonal weather conditions. The soil moisture deficit is substantially limiting the growth of summer crops in *Jihovychod, Niederösterreich* and *Zapadne Slovensko*. These conditions will likely reduce the yield potential, as maize is currently around the sensitive stage of flowering. Consequently, the yield forecast for grain maize has been revised downwards, and currently points to values below the five-year average.





Denmark and Sweden

Good yield outlook

Good weather continues providing favourable conditions for crop growth in the most important agricultural areas. Generally, all crops show advanced development stages with good yield expectations. The yield forecasts for winter and spring crops remain close to the average.

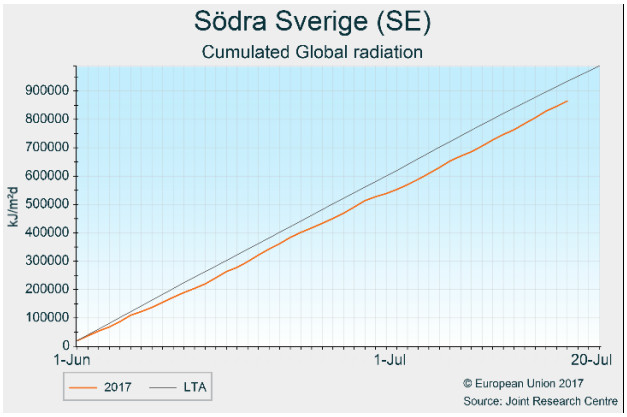
In the first two dekads of June, weather conditions continued to be warmer than usual in Denmark and Sweden, while average temperatures decreased slightly below the long-term average in the last dekad of June and at the beginning of July. Generally, all crops present advanced development stages with good yield expectations. Winter crops are in general at the end of the grain-filling stage and spring barley is at grain filling stage in all the regions. Grain maize development in Denmark is well advanced, with model indicators showing above average biomass accumulation for maize.

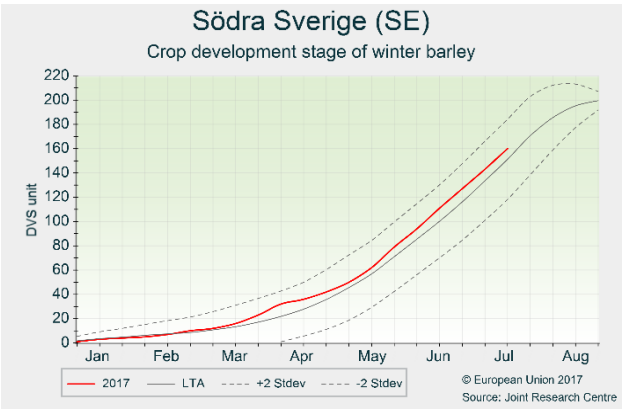
Cumulated rainfall for the review period was above average in both countries, except for a few days and only in one region of the south-east of Sweden (*Östra Sverige*) at the beginning of July. In south Sweden (*Södra Sverige*) the cumulated rainfall was particularly substantial, being 39% higher than the long term average. Consequently, the *Södra Sverige* region experienced low radiation levels for this period.

The growth conditions have been favourable for potato and sugar beet and cumulated biomass is slightly above

the average for all these crops.
The yield forecast for both winter and spring crops is close to the average of the past five years.

The forecast has been confirmed and revised slightly upwards particularly for potato and sugar beet in Sweden due to the favorable temperatures of the review period.



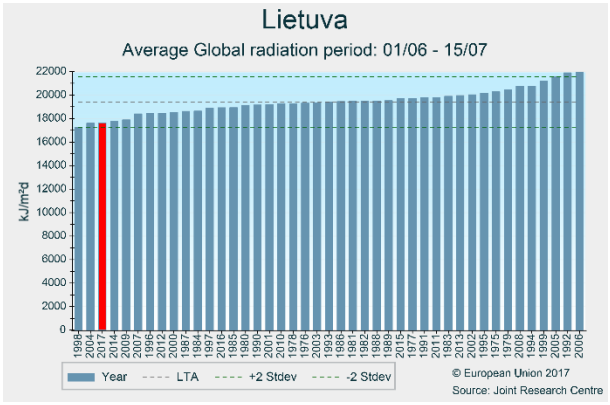


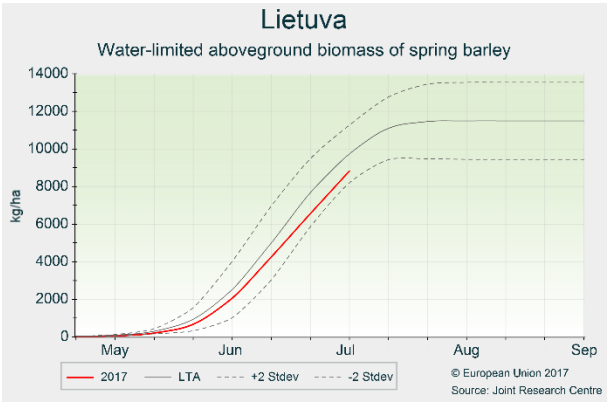
Finland, Lithuania, Latvia and Estonia

Yield forecast for spring crops in the Baltics revised downwards

Chilly conditions have prevailed during much of the period under review. This resulted in unfavourable conditions for spring crops in the Baltics reducing the forecast to below average. In Finland the outlook is for average yields. The forecasts for winter crops remain close to average.

In June, temperatures fluctuated around the average but maximum temperatures did not reach values above 24°C. Since 1 July, temperatures have been 1–4°C below the long term average in all countries. Rainfall was relatively well distributed in time but unevenly spatially distributed. Considering the period as a whole, rainfall accumulation was close to the average in the main agricultural regions of all countries, except in Lithuania where intense rains marked July. In Finland, global radiation was close to average in the main cropland areas and even above average in some areas (e.g *Uusimaa*). This helped to sustain adequate growth of spring crops during the beginning of flowering, which is currently under way. Model results and remote sensing indicators show an average biomass accumulation and canopy status. In the Baltics, however, radiation was below average (especially marked in Lithuania). This lack of sunshine, combined with the colder-than-usual conditions which prevailed since May, created poor conditions for spring crops during flowering. Flowering is still ongoing in Estonia whilst crops in Latvia and Lithuania are in the grain-filling period. Simulated biomass accumulation for spring crops in these countries is below average (in a lesser degree in Latvia), and the yield forecasts were revised downwards accordingly. Winter crops are reaching the ripening phase (maturity for rapeseed). The weather conditions were adequate for grain-filling and the yield forecasts remain close to the five-year average. In Estonia and Finland, the yield outlook of winter crops is less promising (e.g due to winter and spring frost episodes reported in previous Bulletins). However, the share of these crops is less than 20% of national production. The outlook for sugarbeet and potato, which are still in canopy formation, is according to the average.





Belgium, the Netherlands and Luxembourg

Rain alleviates drought concerns in the South, but insufficient to improve yield outlook

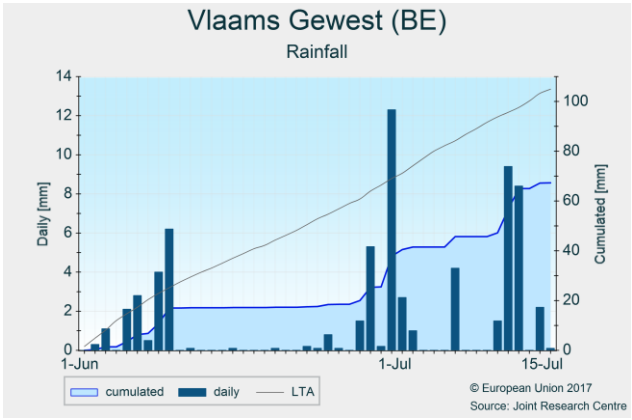
Substantial rain in the end of June and the first half of July alleviated water deficits, but arrived too late to improve the yield outlook for winter crops in the affected regions. In the most affected regions in Belgium, soil water contents remain below average levels. Continued above-average temperatures put an additional constraint to winter crop yields. Yield forecasts were maintained or slightly revised downwards.

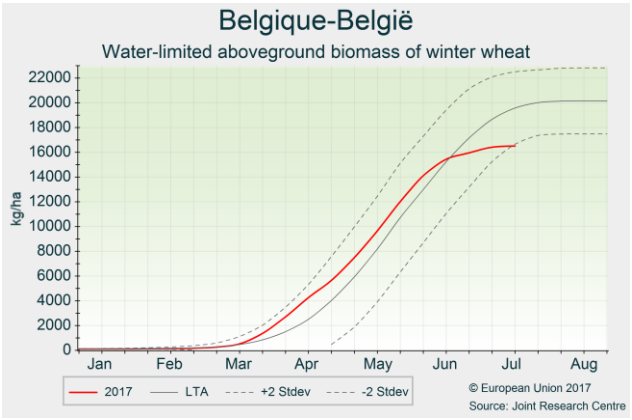
Significant rainfall mainly occurred in the first and last dekad of June and several periods during the first half of July. Rainfall totals, for the period as a whole, exceeded the long-term average (LTA) in most of the Netherlands and part of Luxembourg, but remained below the LTA in most of Belgium.

Temperatures remained above the long-term average during most of the review period. June was particularly warm; among the warmest on our records (since 1975). Maximum temperatures above 30oC occurred from 19 to 22 June in all areas except the coastal areas in the Netherlands. During the hottest days, temperatures exceeding 35 oC were recorded in Luxembourg and south-eastern parts of the Netherlands.

The continued warmer-than-usual conditions (prevailing since the first dekad of May) led to further accelerated crop development. Winter cereals are now advanced by about two weeks. Rapeseed and winter barley have finished or almost finished their growth cycle whereas winter wheat and spring barley are ending the grain filling stage or are at the start of ripening. Summer crops are also advanced.

The rainfall observed during the current review period helped to alleviate the water deficit concerns but was insufficient to significantly revise the yield outlooks. For winter crops they arrived too late for crops to recover from the water stress impacts on yield potentials that already occurred in Belgium, Luxembourg and southern parts of the Netherlands. Moreover, the accelerated phenological development during grain filling, due to continued above-average temperatures, put an additional constraint to winter crop yields. Also for summer crops, the rains which were mainly on average or even below the long-term average did not lead to an upward revision. As a consequence, the yield forecasts were maintained or slightly revised downwards, and remain below the five-year average for most crops (except rapeseed and sugar beet) in Belgium and Luxembourg, and above or very close to the five-year average in the Netherlands.



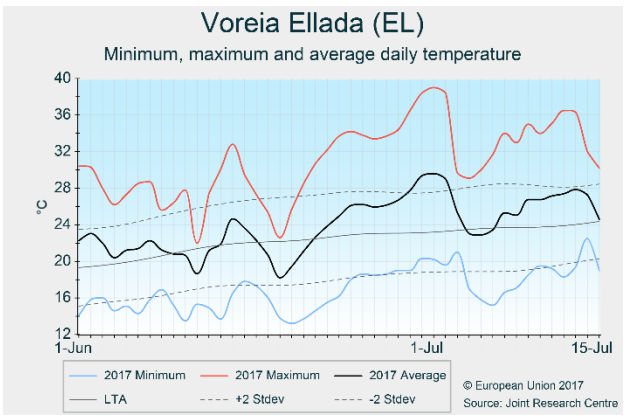


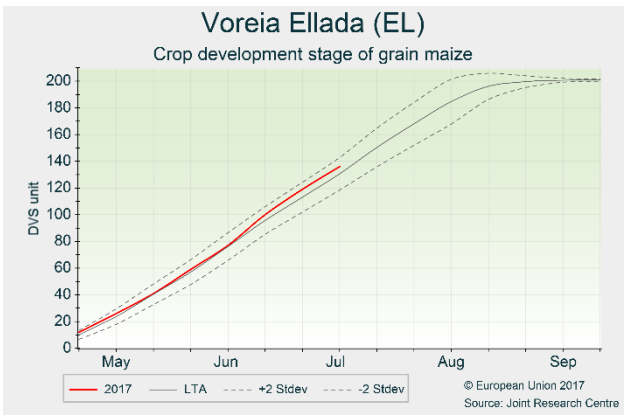
Greece and Cyprus

Heat waves hamper summer crops flowering

In Greece in June the ripening of winter crops was completed and harvesting took place. The very hot temperatures in the second half of June and the beginning of July negatively affected the flowering and start of grain filling of summer crops. Compared to the June Bulletin, yield forecasts were maintained for winter crops and revised downwards for summer crops.

Weather conditions in the first half of June were around average with few precipitation events and maximum temperatures mostly below 30°C. In the second half of June, average temperatures, which first oscillated between 20°C and 25°C, jumped to 30°C. The heat wave lasted for around ten days (22/06 -02/07), with maximum temperatures exceeding 35°C and three or four consecutive days with temperatures close to 40°C. A second heat wave, slightly less intense (Tmax < 40°C) occurred only a few days after the first. Weather conditions at the end of the winter crops cycle (mainly half June) were adequate and the June yield forecasts are maintained. By the date of analysis harvest activities should have been completed in most of the country. The maximum temperatures recorded during the two consecutive heat waves are known to have a negative impact on maize flowering fertility and maize grain weight. As maize in Greece is mostly irrigated, however, canopy temperatures should not have reached critical levels: as a consequence the yield forecast is revised downward by only 4%. Green maize is usually not irrigated and the high temperatures slowed down biomass accumulation and shortened the length of the growth cycle. Yield expectations are below the five-year average. In sunflower crops, often cultivated under rain fed conditions, the high temperatures in June are likely to have reduced the number of fertile flowers while the second heat wave increased the probability of unfilled grains or diminished grain weight. Such impacts were partially mitigated by the sharp decrease in temperatures mid July, accompanied by unusual precipitation. On the balance, this led to a significant downward revision (-17%) of the sunflower yield forecast, which, however, remains above the five-year average.





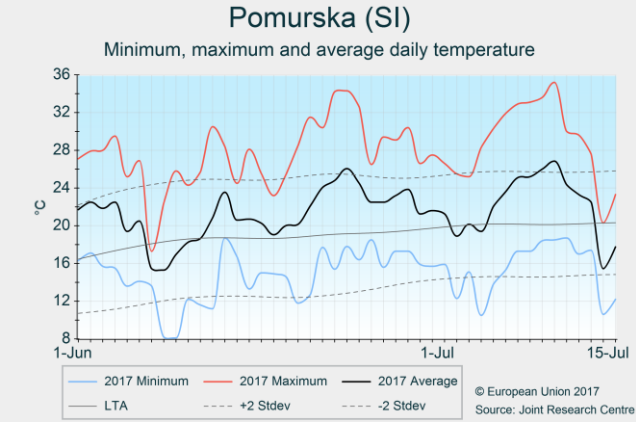
Slovenia and Croatia

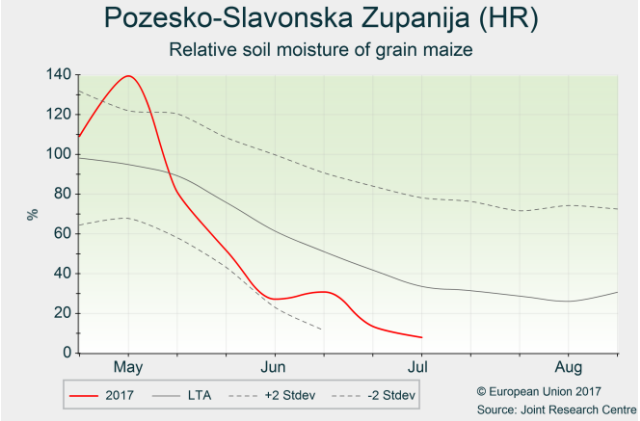
Heat and drought stress decreases the yield potential of summer crops

The review period was among the warmest on our records. Heat waves with more than 35 °C occurred in major agricultural areas. The rainfall deficit has regionally resulted in a strong lack of soil moisture, negatively affecting summer crops.

The review period was among the warmest on our records, with average temperatures between 2 and 4 °C above the long-term-average. Maximum recorded air temperatures reached between 35 and 38 °C in Croatia and eastern Slovenia. Several heat waves persisted, with the longest one around 8 days in main agricultural areas. A rainfall deficit has been recorded in major parts of Croatia and eastern Slovenia.

The harvesting campaign for winter wheat is ending soon with expected yield outcomes close to last year. High temperatures and the lack of soil moisture are limiting the growth of spring sown crops especially in eastern Croatia and Adriatic coast, and eastern Slovenia. Grain maize, which is in advanced development stage due to the warm weather anomaly, was exposed to extremely high air temperatures (above 35 °C in eastern Croatia and eastern Slovenia) while flowering. Consequently, the formation of generative organs was negatively affected. The yield forecast for grain maize was therefore revised downwards and is currently well below the level of last year's yield.





3.2 Black Sea Area

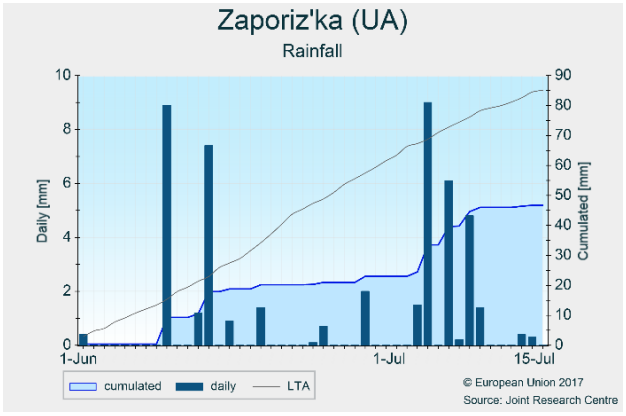
Ukraine

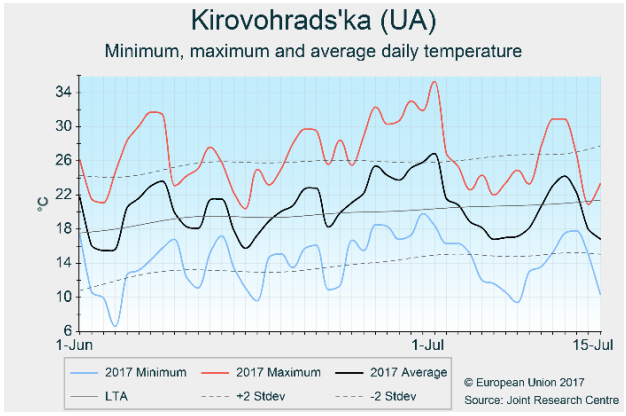
Persistent dry conditions

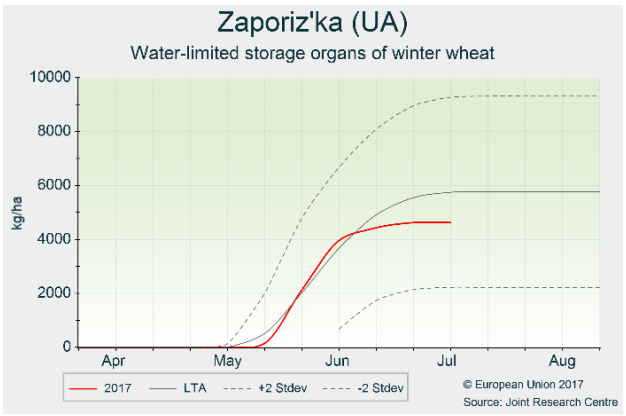
The rain deficit observed during the previous review persisted and extended to southern and eastern oblasts. Wheat and barley yields are revised downwards. Grain maize yield will highly depend on the amount of rainfall during the coming weeks.

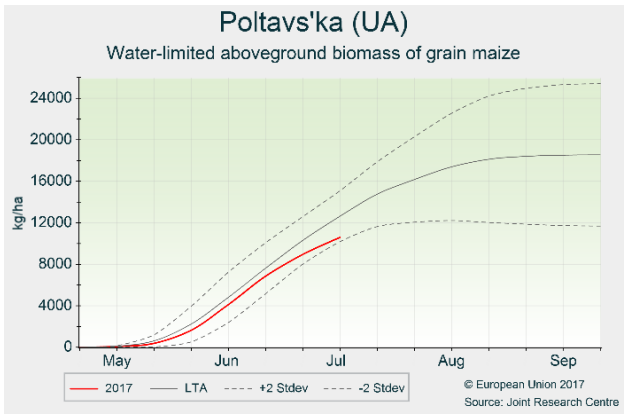
Southern and eastern oblasts received almost no precipitation during the period of review and the rain deficit persisted for central Ukraine. Only 50% of the average cumulated rainfall was recorded from 1 June to mid-July. Only western oblasts were spared from the dry conditions. Most of the rainfall was recorded mid-July and fell during thunderstorms. Temperatures remained around the average for the analysis period. However, two heat waves occurred, the first one in early June with maximum temperatures close to 31°C lasting 2-3 days, and the second one during the end of June and the beginning of July that lasted a week with maximum temperatures reaching 35°C in the northern oblasts. The prolonged dry conditions in the central oblasts further affected winter cereals. In southern and eastern oblasts, soil moisture was still sufficient for wheat and barley during early June, but moisture availability sharply decreased until mid-July. Therefore, winter wheat and barley yields are slightly revised downward with respect to last month's forecasts. The heat waves had no major impact on winter cereals.

The rain deficit is also becoming a concern for summer crops, particularly grain maize. The amount of rain that will fall in the coming weeks will be determinant for maize yield. For now, the forecast remains close to average. Weather forecasts are currently pessimistic and dry days can be expected in central, southern and eastern Ukraine for the dekad to come, and this could substantially affect maize yields.









Turkey

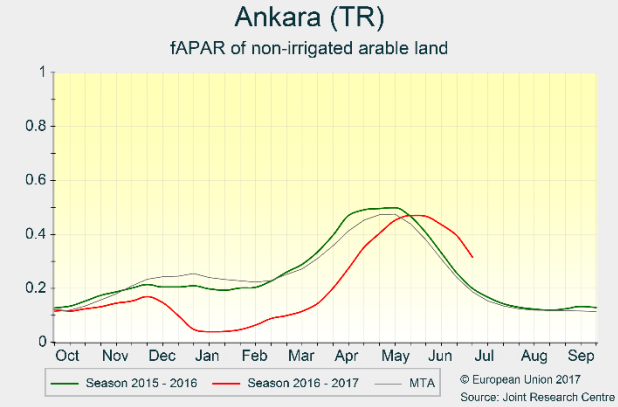
Very hot temperatures but no relevant impact upon cereals productivity

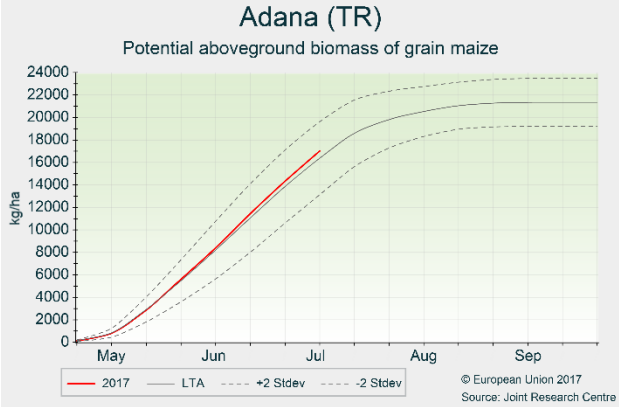
In central and western Anatolia, the first half of June was wet and slightly less warm than usual. Such conditions were favourable for the winter crops grain filling. The heat wave of late June accelerated the senescence of barley and wheat and slightly reduced yield expectations. The heat wave has most likely not hampered irrigated summer crops flowering.

In western Turkey and in central Anatolian regions, the beginning of June was wetter than usual with around 50 mm of cumulated precipitation, well distributed during the first 15 days. Such conditions coupled with average temperatures were favourable for winter crops grain filling. Weather conditions changed around 20 June when, after a significant drop of temperature, a heat wave occurred in the main agricultural regions with maximum temperatures around 35°C for several consecutive days. In Anatolia and western Turkey accelerated senescence resulted in a shortened grain-filling phase, and as a consequence yield expectations are slightly reduced. Winter barley (-4% vs June forecast) is more impacted than wheat (-2% vs June forecast) as the share of barley area impacted was larger than wheat. In July, crops entered maturity and harvest activities will start before the end of the month: Winter crops in the eastern regions are still at the beginning of grain filling.

The southern Turkish coast experienced the same weather conditions as rest of the country, wetter than usual at the beginning of June and very hot temperatures at the end of the month. The peak of temperatures in *Adana* and *Osmaniye* regions occurred at the beginning of July, when maize was flowering. No relevant impact is likely to occur thanks to irrigation practices that should have lowered canopy temperature and thus avoided flower sterility. In south-eastern agricultural areas, maize growing regions faced much hotter conditions with almost twenty days of maximum temperatures around 35°C from mid-June.

Once more irrigation was fundamental to maintain average productivity. The overall picture for grain maize in Turkey remains almost identical to the one depicted in June, with the forecast in line with the trend.





3.3 European Russia and Belarus

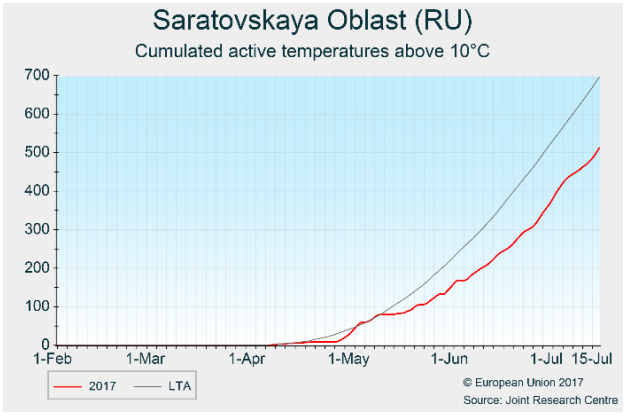
European Russia

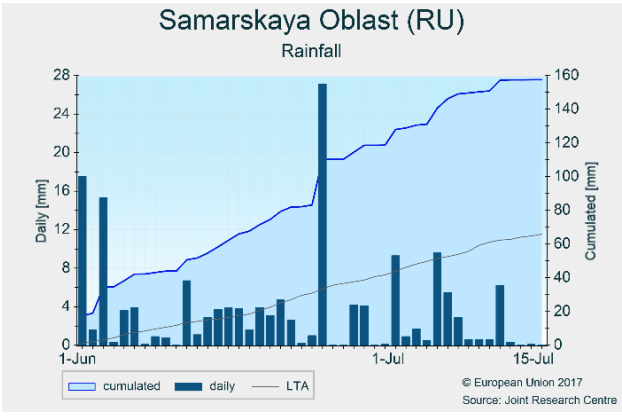
Cold and rainy weather

Below average thermal conditions characterised the majority of European Russia during the review period review (1 June – 15 July). The precipitation was abundant with only some areas north of the Caucasus and along the Ukrainian border being drier than usual. Crop model simulations predominantly indicate ample biomass accumulation for winter cereals therefore the yield expectations are high, but the wet weather delayed the harvest and is jeopardising production to some extent. The crop development of spring and summer crops is considerably delayed (except in south-western areas) indicating the possibility not to reach the ripening phase in time, therefore facing difficulties during the harvest and potential losses.

Since beginning of June, daily temperatures mostly fluctuated below the long term average resulting in a negative thermal anomaly of 1-4°C. Normal or moderately warmer than usual temperatures were recorded between the Black and Caspian Sea, although in late June and early July a hot spell of around seven days persisted with daily maximum temperatures above 30-35°C. Precipitation was frequent and abundant during the whole review period in eastern and northern territories of cereal production providing a 50-200% surplus above the average. Precipitation was less frequent in the western part of the Central and Southern Okrug just as in most of the Northern Caucasian Okrug. This resulted in a deficit of 20-60 mm compared to the average.

Winter wheat harvest started on time, but frequent and plentiful rainfall caused significant delays. The simulated very high biomass accumulation indicates above average yield potential, but there is a risk of significant losses and a decrease of grain quality (low protein content and fungal contamination) because of over-wet conditions. The sowing of spring and summer crops was delayed and additionally the cumulated active temperature (both Tbase=0°C and Tbase=10°C) shows a huge deficit consequently crop development is retarded. Considering the shorter vegetation period of Russia, this time-lag can endanger a timely harvest. Soil moisture content is below optimal in some areas along the Ukrainian border, but adequate in southern Russia, whilst being excessive elsewhere. The over-wet soil conditions can decrease biomass accumulation and the heavy rains negatively impact on pollination, therefore the yield expectations of spring wheat and spring barley have been revised downwards.





Belarus

Average expectations for winter cereals and grain maize

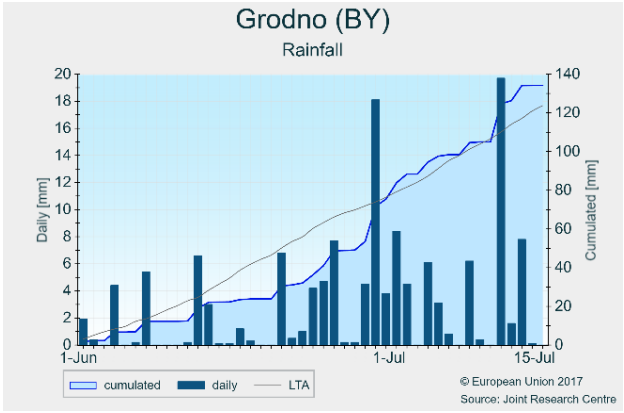
Lower than usual temperatures at the beginning of July slightly hampered development of grain maize and grain filling in winter cereals. Generally positive conditions, but the almost constant precipitation could foster disease spread and impact upon yield and quality.

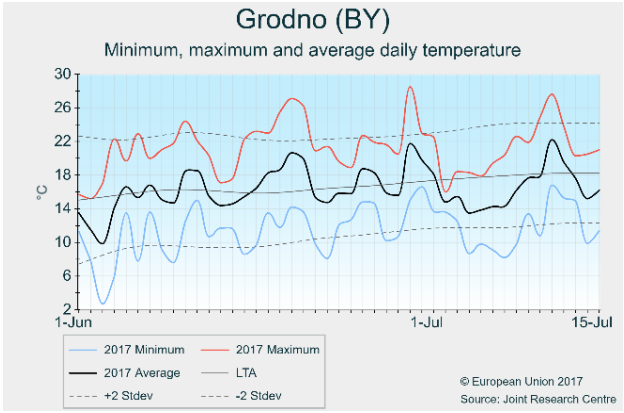
Thermal conditions oscillated around the long-term average (LTA) until the end of June. During the first week of July temperatures dropped 2-3ºC compared to the LTA. Since the end of June precipitation has occurred almost daily.

Flowering of winter cereals occurred around the middle of June with temperatures around the LTA and with little rain. The first phase of grain filling was slightly slowed down by the colder than usual temperatures of the first week of July, which allowed a higher than usual dry matter allocation. On the other hand, the constant precipitation could stimulate the development of fungi that could negatively impact both yield and quality.

Grain maize growing conditions have been generally positive until now. Development was slightly slowed down by the colder than usual temperature of July. The crop is now at the flowering stage and the ongoing precipitation could support the dispersal of spores to the tassel and the receptive silks, allowing the development of fungi inside the grain.

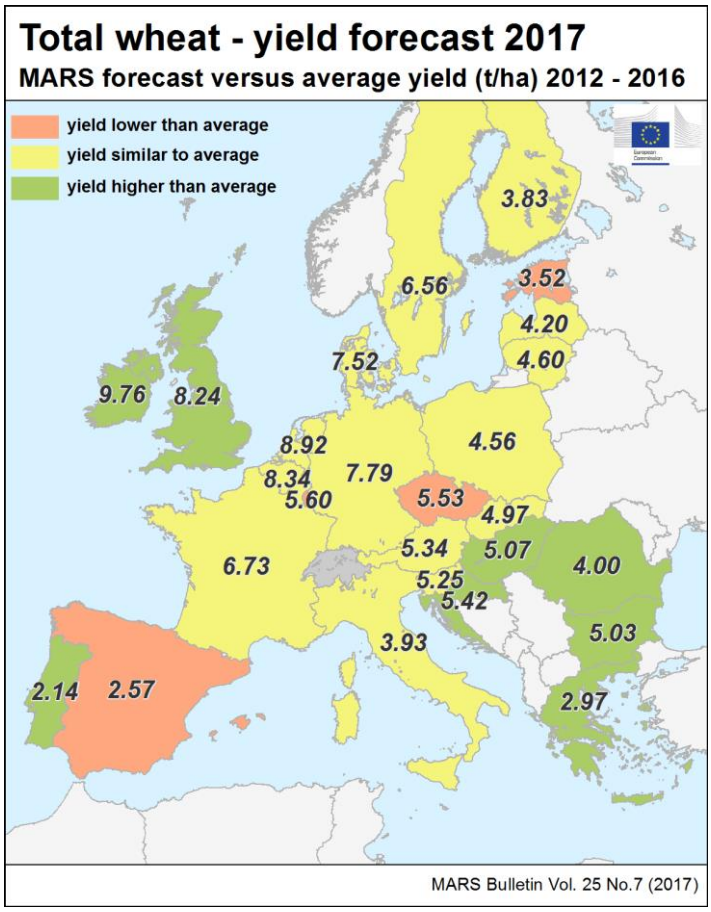
Our average yield expectations for winter cereals and grain maize are confirmed.



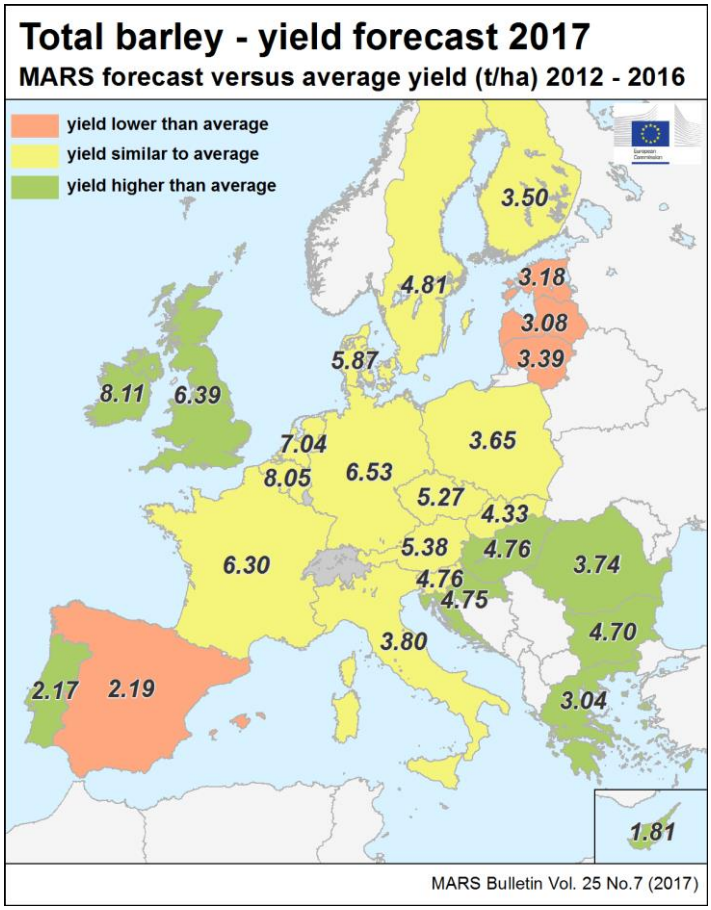


4. Crop yield forecasts

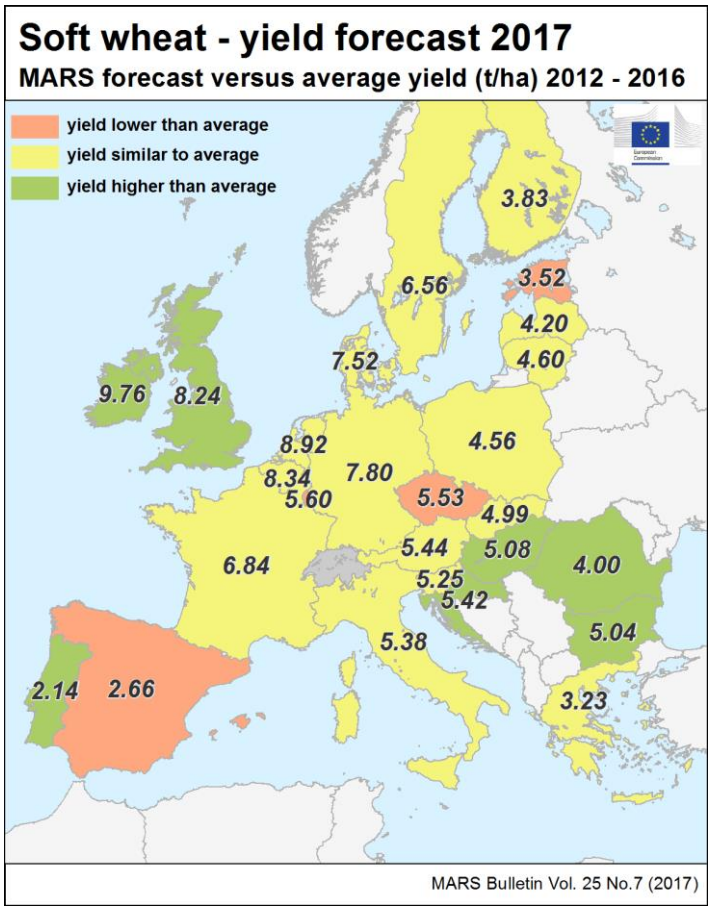
Country	TOTAL WHEAT (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	5.60	5.35	**5.61**	+0.2	+4.9
AT	5.48	6.22	**5.34**	-2.5	-14
BE	8.52	6.64	**8.34**	-2.2	+26
BG	4.28	4.75	**5.03**	+18	+6.0
CY	-	-	**-**	-	-
CZ	5.88	6.50	**5.53**	-6.0	-15
DE	7.95	7.65	**7.79**	-2.0	+1.8
DK	7.54	7.21	**7.52**	-0.3	+4.4
EE	3.77	2.77	**3.52**	-6.7	+27
ES	3.07	3.53	**2.57**	-16	-27
FI	3.89	3.77	**3.83**	-1.5	+1.7
FR	6.94	5.30	**6.73**	-3.1	+27
GR	2.83	2.35	**2.97**	+5.1	+26
HR	5.01	5.50	**5.42**	+8.1	-1.4
HU	4.72	5.38	**5.07**	+7.4	-5.6
IE	9.11	9.54	**9.76**	+7.1	+2.3
IT	3.96	4.20	**3.93**	-0.9	-6.5
LT	4.66	4.36	**4.60**	-1.2	+5.5
LU	5.95	5.07	**5.60**	-6.0	+10
LV	4.20	4.30	**4.20**	-0.1	-2.5
MT	-	-	**-**	-	-
NL	8.89	8.01	**8.92**	+0.4	+11
PL	4.52	4.54	**4.56**	+0.8	+0.4
PT	1.82	2.31	**2.14**	+18	-7.6
RO	3.50	3.93	**4.00**	+15	+1.7
SE	6.53	6.32	**6.56**	+0.3	+3.7
SI	5.08	5.19	**5.25**	+3.3	+1.1
SK	4.95	5.92	**4.97**	+0.4	-16
UK	7.87	7.89	**8.24**	+4.6	+4.4



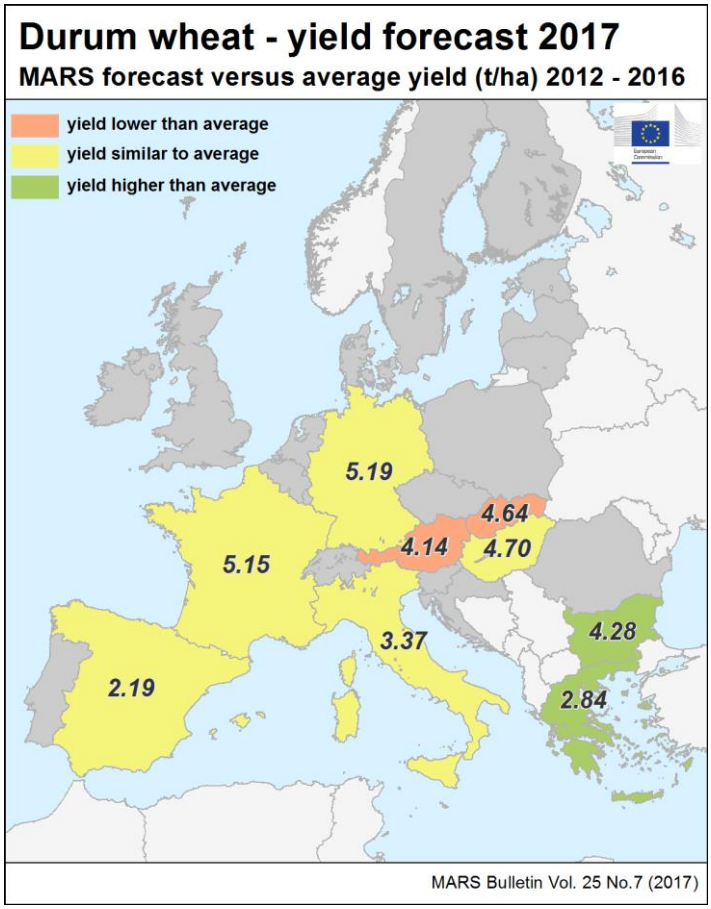
Country	TOTAL BARLEY (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	4.83	4.85	**4.71**	-2.4	-2.7
AT	5.39	6.12	**5.38**	-0.2	-12
BE	8.20	6.28	**8.05**	-1.9	+28
BG	3.90	4.32	**4.70**	+21	+8.7
CY	1.72	0.70	**1.81**	+5.8	+159
CZ	5.08	5.66	**5.27**	+3.7	-7.0
DE	6.79	6.69	**6.53**	-3.9	-2.5
DK	5.78	5.59	**5.87**	+1.6	+5.1
EE	3.39	2.64	**3.18**	-6.4	+20
ES	2.91	3.62	**2.19**	-25	-39
FI	3.49	3.20	**3.50**	+0.1	+9.3
FR	6.45	5.41	**6.30**	-2.3	+17
GR	2.79	2.31	**3.04**	+9.0	+32
HR	4.46	4.72	**4.75**	+6.3	+0.6
HU	4.43	5.14	**4.76**	+7.4	-7.5
IE	7.71	7.82	**8.11**	+5.2	+3.7
IT	3.81	4.13	**3.80**	-0.2	-8.0
LT	3.55	3.13	**3.39**	-4.4	+8.2
LU	-	-	**-**	-	-
LV	3.22	2.96	**3.08**	-4.3	+4.2
MT	-	-	**-**	-	-
NL	7.02	6.82	**7.04**	+0.4	+3.4
PL	3.72	3.75	**3.65**	-1.8	-2.6
PT	2.04	2.62	**2.17**	+6.3	-17
RO	3.23	3.80	**3.74**	+16	-1.5
SE	4.89	4.80	**4.81**	-1.5	+0.2
SI	4.61	4.78	**4.76**	+3.3	-0.4
SK	4.31	5.13	**4.33**	+0.3	-16
UK	6.10	5.93	**6.39**	+4.7	+7.7



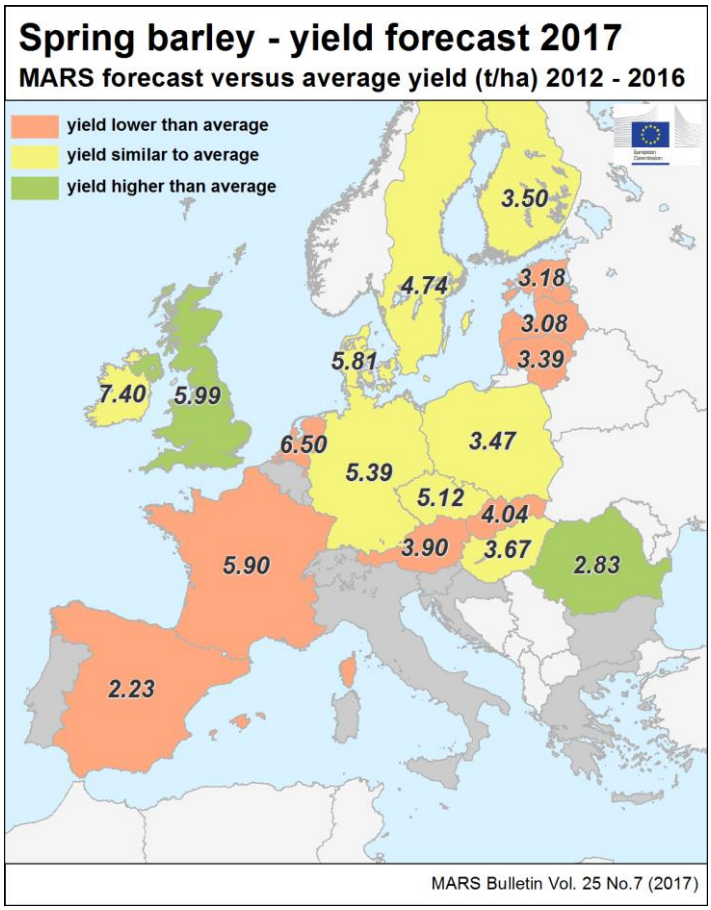
Country	SOFT WHEAT (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	5.84	5.56	**5.85**	+0.3	+5.2
AT	5.52	6.29	**5.44**	-1.5	-14
BE	8.52	6.64	**8.34**	-2.2	+26
BG	4.29	4.75	**5.04**	+17	+6.0
CY	-	-	**-**	-	-
CZ	5.88	6.50	**5.53**	-6.0	-15
DE	7.96	7.67	**7.80**	-2.0	+1.7
DK	7.54	7.21	**7.52**	-0.3	+4.4
EE	3.77	2.77	**3.52**	-6.7	+27
ES	3.25	3.84	**2.66**	-18	-31
FI	3.89	3.77	**3.83**	-1.5	+1.7
FR	7.07	5.38	**6.84**	-3.2	+27
GR	3.10	2.33	**3.23**	+4.0	+39
HR	5.01	5.50	**5.42**	+8.1	-1.4
HU	4.72	5.39	**5.08**	+7.6	-5.7
IE	9.11	9.54	**9.76**	+7.1	+2.3
IT	5.51	5.65	**5.38**	-2.4	-4.8
LT	4.66	4.36	**4.60**	-1.2	+5.5
LU	5.95	5.07	**5.60**	-6.0	+10
LV	4.20	4.30	**4.20**	-0.1	-2.5
MT	-	-	**-**	-	-
NL	8.89	8.01	**8.92**	+0.4	+11
PL	4.52	4.54	**4.56**	+0.8	+0.4
PT	1.82	2.31	**2.14**	+18	-7.6
RO	3.50	3.93	**4.00**	+15	+1.7
SE	6.53	6.32	**6.56**	+0.3	+3.7
SI	5.08	5.19	**5.25**	+3.3	+1.1
SK	4.95	5.94	**4.99**	+0.9	-16
UK	7.87	7.89	**8.24**	+4.6	+4.4



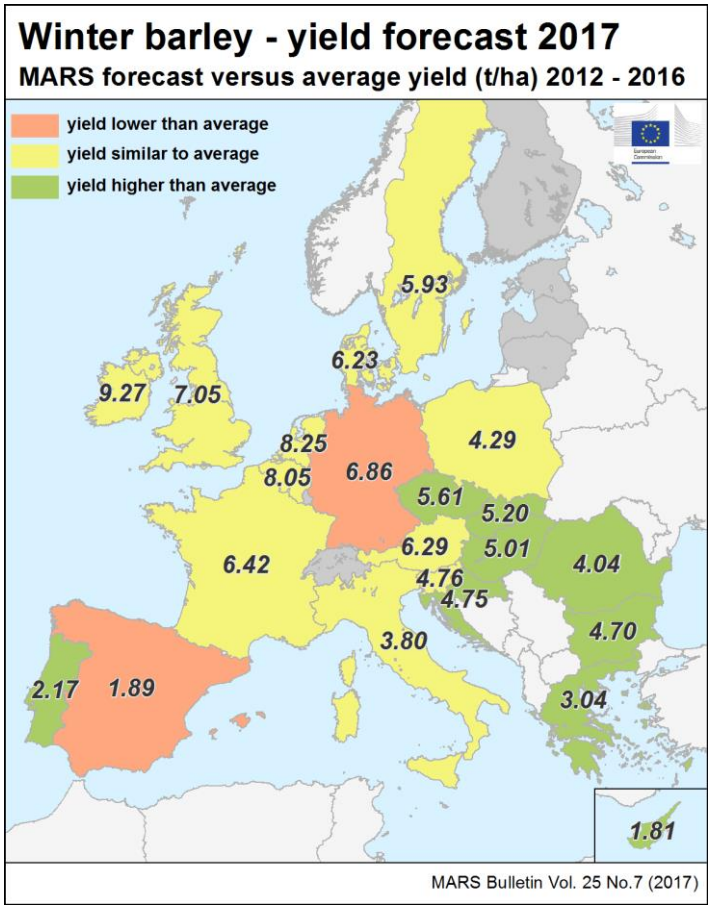
Country	DURUM WHEAT (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	3.33	3.42	**3.41**	+2.4	-0.3
AT	4.65	5.33	**4.14**	-11	-22
BE	-	-	**-**	-	-
BG	3.28	4.03	**4.28**	+30	+6.1
CY	-	-	**-**	-	-
CZ	-	-	**-**	-	-
DE	5.36	5.31	**5.19**	-3.2	-2.2
DK	-	-	**-**	-	-
EE	-	-	**-**	-	-
ES	2.16	2.29	**2.19**	+1.4	-4.6
FI	-	-	**-**	-	-
FR	5.13	4.24	**5.15**	+0.3	+21
GR	2.70	2.36	**2.84**	+5.4	+21
HR	-	-	**-**	-	-
HU	4.64	4.97	**4.70**	+1.1	-5.6
IE	-	-	**-**	-	-
IT	3.28	3.65	**3.37**	+2.9	-7.5
LT	-	-	**-**	-	-
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	-	-	**-**	-	-
PL	-	-	**-**	-	-
PT	-	-	**-**	-	-
RO	-	-	**-**	-	-
SE	-	-	**-**	-	-
SI	-	-	**-**	-	-
SK	4.87	5.70	**4.64**	-4.7	-19
UK	-	-	**-**	-	-



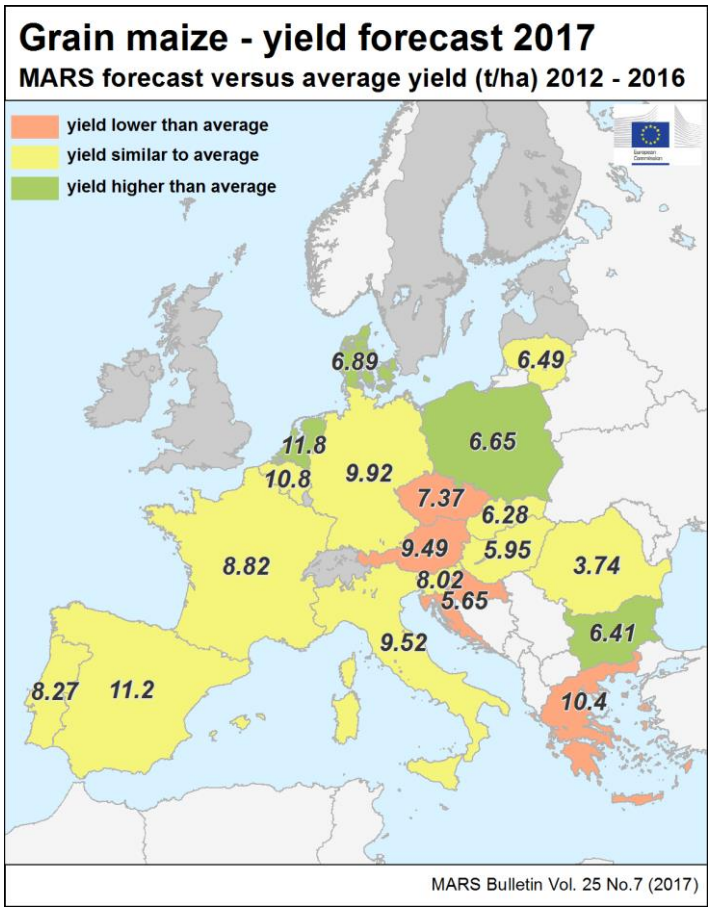
Country	SPRING BARLEY (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	4.22	4.31	**3.94**	-6.7	-8.7
AT	4.49	5.31	**3.90**	-13	-27
BE	-	-	-	-	-
BG	-	-	-	-	-
CY	-	-	-	-	-
CZ	5.05	5.45	**5.12**	+1.5	-6.0
DE	5.55	5.26	**5.39**	-3.0	+2.4
DK	5.64	5.48	**5.81**	+2.9	+5.9
EE	3.39	2.64	**3.18**	-6.4	+20
ES	3.00	3.74	**2.23**	-26	-40
FI	3.49	3.20	**3.50**	+0.1	+9.3
FR	6.16	5.00	**5.90**	-4.2	+18
GR	-	-	-	-	-
HR	-	-	-	-	-
HU	3.55	4.18	**3.67**	+3.4	-12
IE	7.17	7.29	**7.40**	+3.2	+1.5
IT	-	-	-	-	-
LT	3.55	3.13	**3.39**	-4.4	+8.2
LU	-	-	-	-	-
LV	3.22	2.96	**3.08**	-4.3	+4.2
MT	-	-	-	-	-
NL	6.77	6.53	**6.50**	-4.0	-0.5
PL	3.59	3.62	**3.47**	-3.4	-4.2
PT	-	-	-	-	-
RO	2.44	2.80	**2.83**	+16	+1.2
SE	4.83	4.74	**4.74**	-1.9	+0.0
SI	-	-	-	-	-
SK	4.21	5.03	**4.04**	-4.0	-20
UK	5.66	5.61	**5.99**	+5.9	+6.8



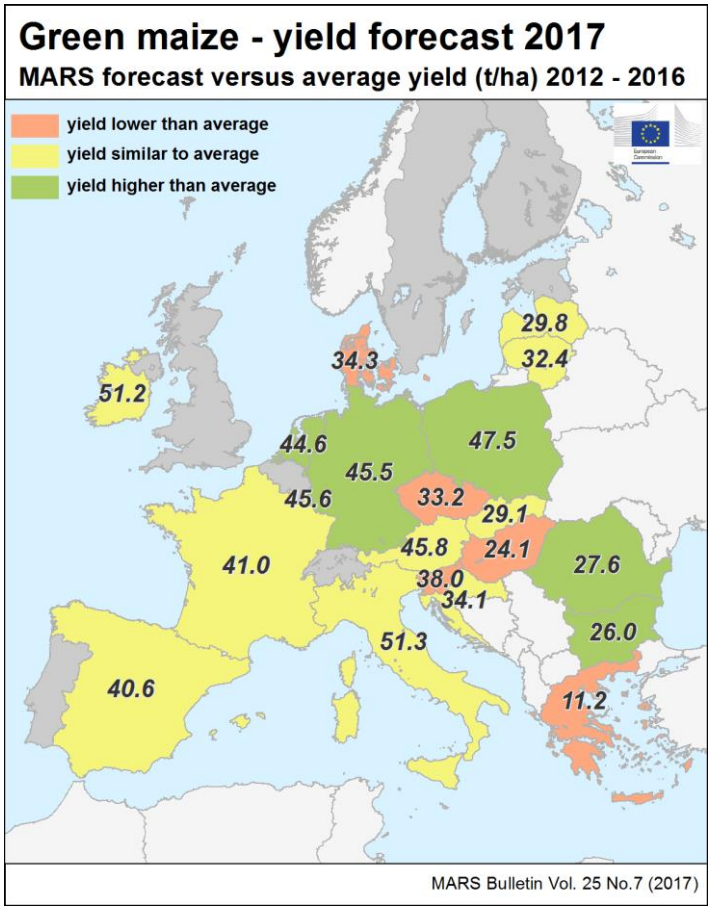
Country	WINTER BARLEY (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	5.68	5.53	**5.73**	+0.9	+3.5
AT	6.08	6.59	**6.29**	+3.5	-4.5
BE	8.20	6.28	**8.05**	-1.9	+28
BG	3.90	4.32	**4.70**	+21	+8.7
CY	1.72	0.70	**1.81**	+5.8	+159
CZ	5.17	6.13	**5.61**	+8.7	-8.4
DE	7.20	7.08	**6.86**	-4.8	-3.1
DK	6.46	6.17	**6.23**	-3.4	+1.1
EE	-	-	-	-	-
ES	2.37	2.66	**1.89**	-20	-29
FI	-	-	-	-	-
FR	6.56	5.53	**6.42**	-2.1	+16
GR	2.79	2.31	**3.04**	+9.0	+32
HR	4.46	4.72	**4.75**	+6.3	+0.6
HU	4.74	5.31	**5.01**	+5.6	-5.7
IE	9.16	8.64	**9.27**	+1.2	+7.3
IT	3.81	4.13	**3.80**	-0.2	-8.0
LT	-	-	-	-	-
LU	-	-	-	-	-
LV	-	-	-	-	-
MT	-	-	-	-	-
NL	8.00	7.53	**8.25**	+3.1	+10
PL	4.21	4.28	**4.29**	+1.8	+0.1
PT	2.04	2.62	**2.17**	+6.3	-17
RO	3.52	4.13	**4.04**	+15	-2.1
SE	6.09	5.77	**5.93**	-2.7	+2.7
SI	4.61	4.78	**4.76**	+3.3	-0.4
SK	4.73	5.37	**5.20**	+10	-3.1
UK	6.88	6.43	**7.05**	+2.6	+10



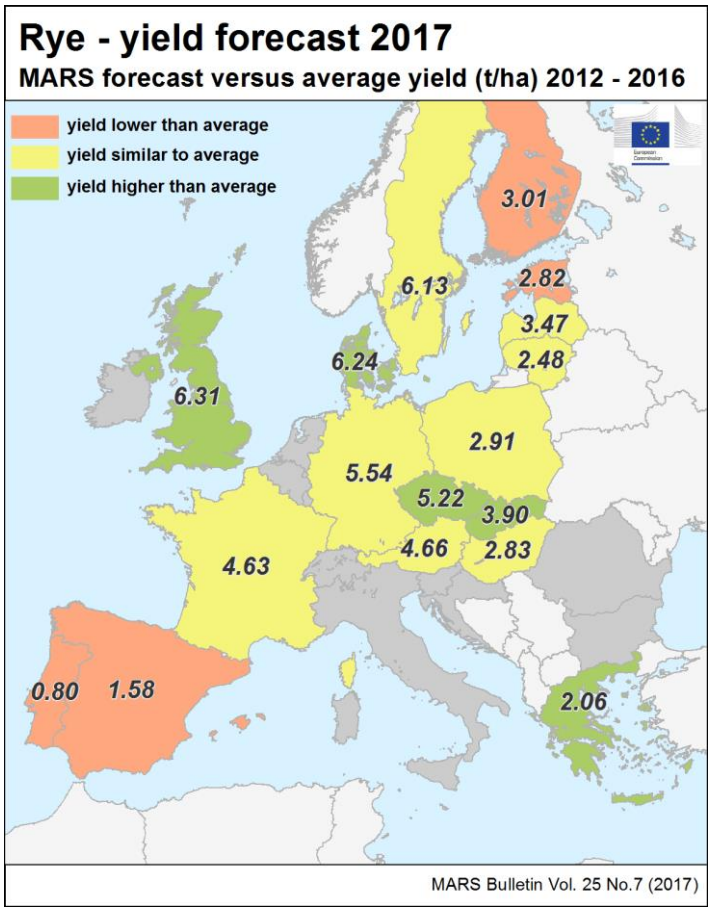
Country	GRAIN MAIZE (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	6.88	7.10	**6.83**	-0.9	-3.9
AT	9.92	11.2	**9.49**	-4.3	-15
BE	10.8	10.2	**10.8**	-0.1	+5.5
BG	5.66	5.45	**6.41**	+13	+18
CY	-	-	**-**	-	-
CZ	7.74	9.79	**7.37**	-4.7	-25
DE	9.62	8.79	**9.92**	+3.1	+13
DK	6.39	7.68	**6.89**	+7.9	-10
EE	-	-	**-**	-	-
ES	11.1	11.1	**11.2**	+1.1	+0.8
FI	-	-	**-**	-	-
FR	8.82	8.19	**8.82**	+0.0	+7.7
GR	10.8	10.1	**10.4**	-4.1	+2.4
HR	6.46	8.41	**5.65**	-13	-33
HU	6.15	8.61	**5.95**	-3.3	-31
IE	-	-	**-**	-	-
IT	9.45	10.4	**9.52**	+0.7	-8.1
LT	6.32	6.91	**6.49**	+2.6	-6.0
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	10.2	7.84	**11.8**	+15	+51
PL	6.33	7.17	**6.65**	+5.2	-7.2
PT	8.28	8.03	**8.27**	-0.1	+3.0
RO	3.65	3.49	**3.74**	+2.6	+7.3
SE	-	-	**-**	-	-
SI	8.00	9.54	**8.02**	+0.3	-16
SK	6.44	8.53	**6.28**	-2.6	-26
UK	-	-	**-**	-	-



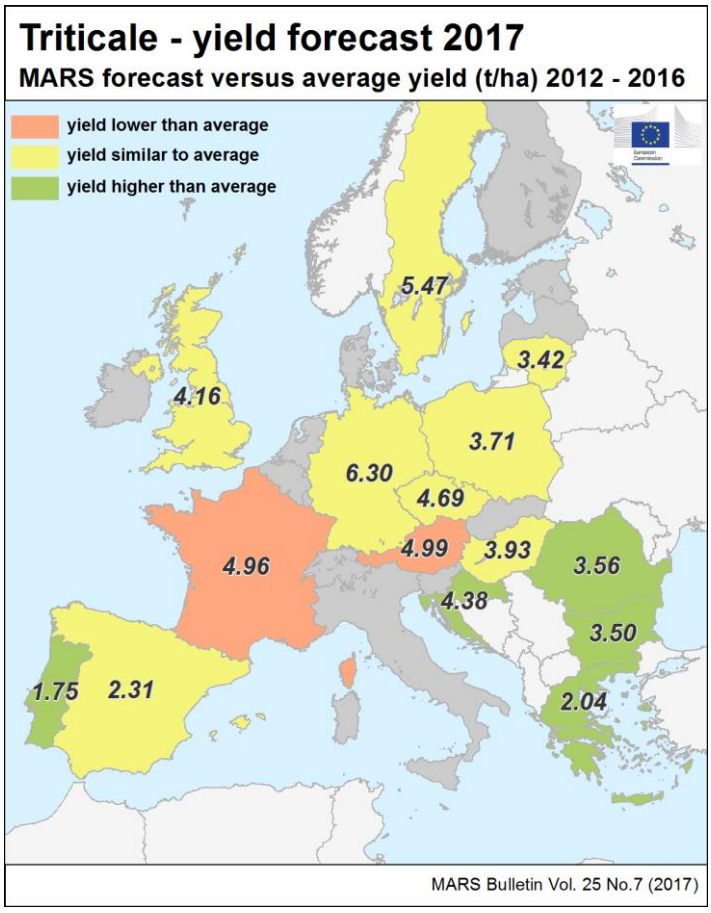
Country	GREEN MAIZE (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU*	41.9	41.2	**42.9**	+2.6	+4.3
AT	44.7	49.3	**45.8**	+2.5	-7.1
BE	-	-	**-**	-	-
BG	20.2	24.0	**26.0**	+29	+8.5
CY	-	-	**-**	-	-
CZ	36.5	40.7	**33.2**	-9.1	-19
DE	43.5	43.1	**45.5**	+4.6	+5.5
DK	36.0	30.6	**34.3**	-4.7	+12
EE	-	-	**-**	-	-
ES	41.3	40.8	**40.6**	-1.7	-0.6
FI	-	-	**-**	-	-
FR	41.2	35.6	**41.0**	-0.3	+15
GR	15.2	11.0	**11.2**	-27	+1.4
HR	34.4	42.3	**34.1**	-0.8	-19
HU	25.7	32.5	**24.1**	-6.3	-26
IE	50.5	49.5	**51.2**	+1.4	+3.4
IT	51.0	53.4	**51.3**	+0.6	-3.9
LT	32.0	32.7	**32.4**	+1.5	-0.8
LU	45.6	42.3	**45.6**	+0.0	+8.0
LV	29.5	33.1	**29.8**	+1.2	-9.8
MT	-	-	**-**	-	-
NL	42.2	40.9	**44.6**	+5.6	+9.1
PL	45.2	49.3	**47.5**	+5.0	-3.7
PT	-	-	**-**	-	-
RO	23.9	24.5	**27.6**	+15	+13
SE	-	-	**-**	-	-
SI	42.8	48.7	**38.0**	-11	-22
SK	28.1	34.9	**29.1**	+3.5	-16
UK	-	-	**-**	-	-



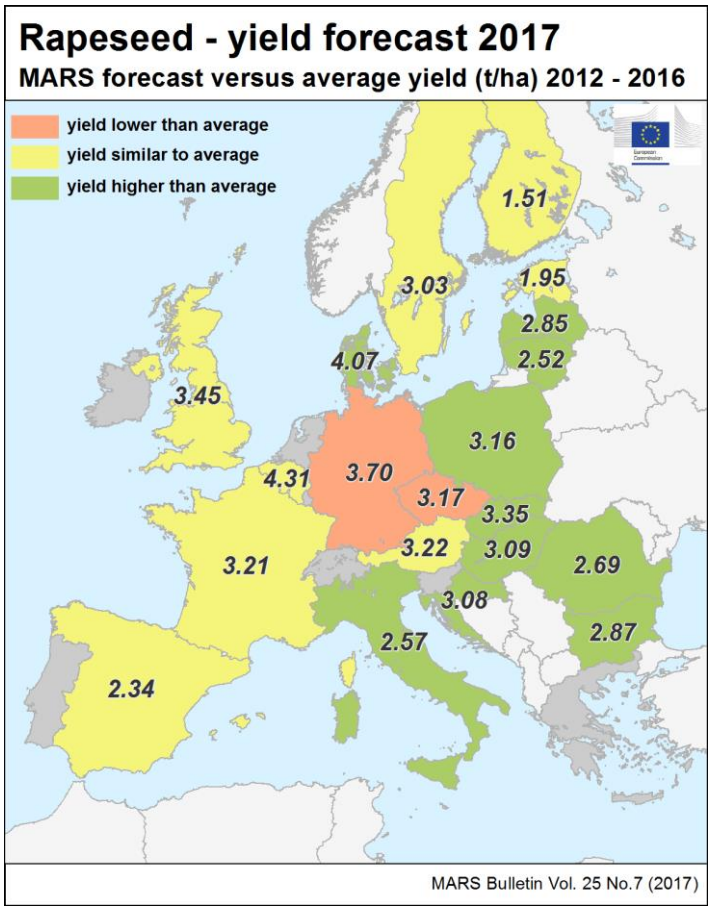
Country	RYE (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	3.89	3.89	**3.82**	-1.6	-1.6
AT	4.49	5.05	**4.66**	+3.7	-7.8
BE	-	-	-	-	-
BG	-	-	-	-	-
CY	-	-	-	-	-
CZ	4.88	4.98	**5.22**	+7.0	+4.8
DE	5.71	5.55	**5.54**	-2.9	-0.2
DK	5.97	5.80	**6.24**	+4.5	+7.7
EE	3.06	2.61	**2.82**	-7.9	+7.8
ES	2.01	2.50	**1.58**	-22	-37
FI	3.16	3.26	**3.01**	-4.9	-7.9
FR	4.75	3.97	**4.63**	-2.7	+17
GR	1.87	1.48	**2.06**	+9.9	+39
HR	-	-	-	-	-
HU	2.77	3.03	**2.83**	+1.9	-6.6
IE	-	-	-	-	-
IT	-	-	-	-	-
LT	2.44	2.38	**2.48**	+1.8	+4.2
LU	-	-	-	-	-
LV	3.48	3.94	**3.47**	-0.1	-12
MT	-	-	-	-	-
NL	-	-	-	-	-
PL	2.91	2.89	**2.91**	-0.1	+0.7
PT	0.85	0.90	**0.80**	-5.5	-11
RO	-	-	-	-	-
SE	6.19	6.12	**6.13**	-1.0	+0.1
SI	-	-	-	-	-
SK	3.70	3.78	**3.90**	+5.6	+3.4
UK	3.48	1.88	**6.31**	+81	+235



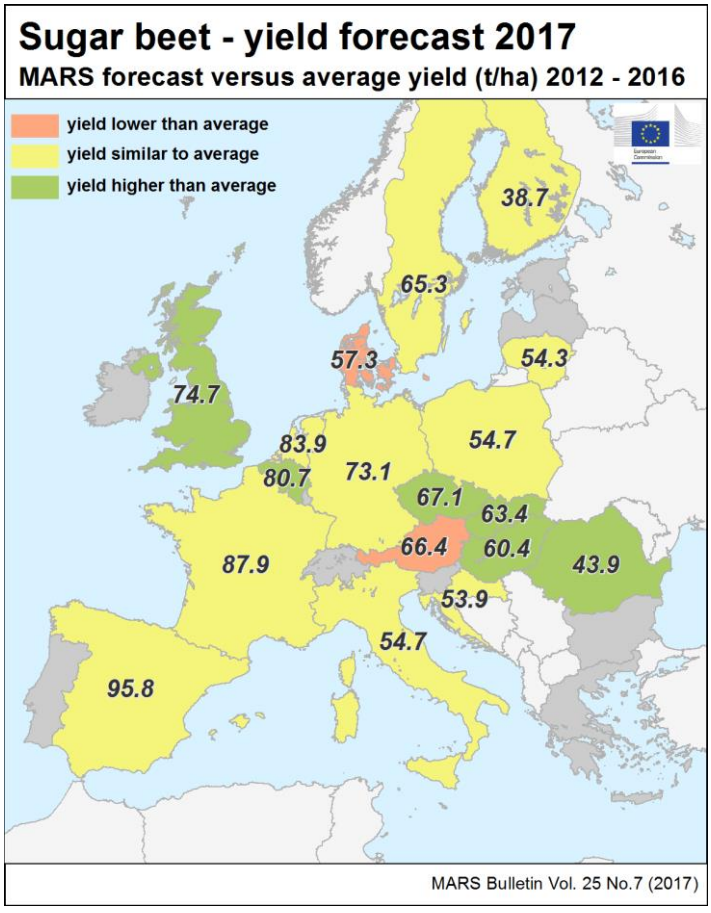
Country	TRITICALE (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	4.20	3.98	**4.18**	-0.6	+4.9
AT	5.44	5.88	**4.99**	-8.3	-15
BE	-	-	-	-	-
BG	2.95	3.06	**3.50**	+18	+14
CY	-	-	-	-	-
CZ	4.70	4.88	**4.69**	-0.3	-3.9
DE	6.49	6.08	**6.30**	-3.1	+3.5
DK	-	-	-	-	-
EE	-	-	-	-	-
ES	2.25	2.41	**2.31**	+2.9	-4.3
FI	-	-	-	-	-
FR	5.17	4.33	**4.96**	-4.2	+14
GR	1.75	1.75	**2.04**	+17	+16
HR	4.01	4.10	**4.38**	+9.1	+6.9
HU	3.86	4.14	**3.93**	+1.6	-5.1
IE	-	-	-	-	-
IT	-	-	-	-	-
LT	3.43	3.28	**3.42**	-0.4	+4.2
LU	-	-	-	-	-
LV	-	-	-	-	-
MT	-	-	-	-	-
NL	-	-	-	-	-
PL	3.63	3.60	**3.71**	+2.2	+2.9
PT	1.53	1.95	**1.75**	+14	-10
RO	3.24	2.90	**3.56**	+10	+23
SE	5.61	5.23	**5.47**	-2.5	+4.5
SI	-	-	-	-	-
SK	-	-	-	-	-
UK	4.08	3.91	**4.16**	+1.8	+6.3



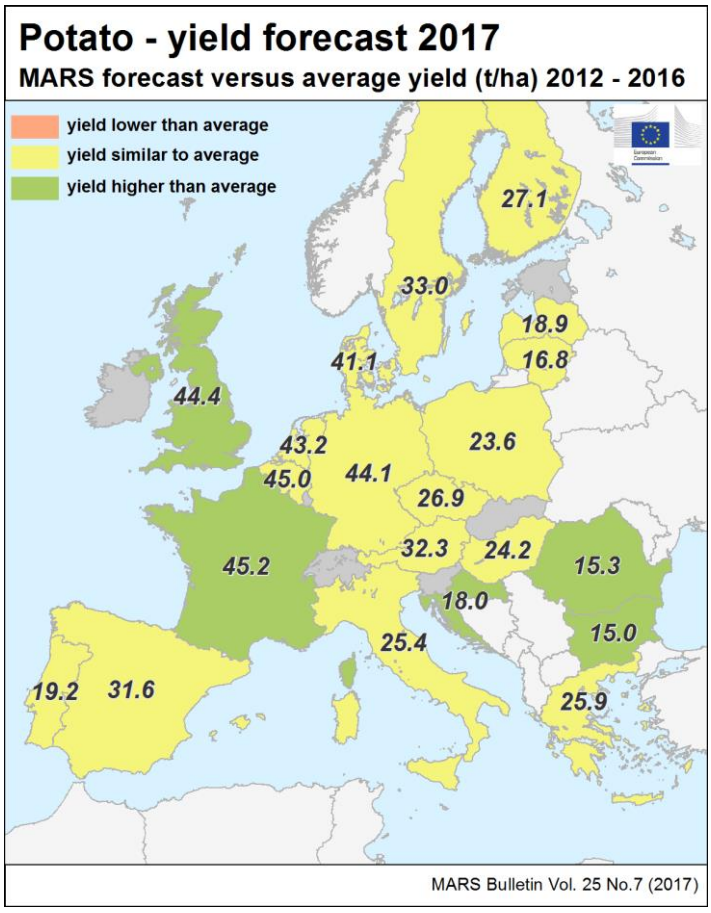
Country	RAPE AND TURNIP RAPE (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	3.24	3.01	**3.21**	-1.1	+6.7
AT	3.26	3.58	**3.22**	-1.4	-10
BE	4.15	3.43	**4.31**	+3.9	+26
BG	2.58	2.95	**2.87**	+11	-2.9
CY	-	-	-	-	-
CZ	3.41	3.46	**3.17**	-6.9	-8.3
DE	3.90	3.46	**3.70**	-5.3	+6.8
DK	3.88	3.10	**4.07**	+4.9	+31
EE	2.02	1.46	**1.95**	-3.6	+33
ES	2.36	2.58	**2.34**	-0.7	-9.1
FI	1.49	1.54	**1.51**	+1.5	-2.0
FR	3.29	2.77	**3.21**	-2.6	+16
GR	-	-	-	-	-
HR	2.88	3.11	**3.08**	+6.9	-0.9
HU	2.95	3.44	**3.09**	+4.9	-10
IE	-	-	-	-	-
IT	2.37	2.57	**2.57**	+8.4	+0.0
LT	2.39	2.60	**2.52**	+5.3	-3.1
LU	-	-	-	-	-
LV	2.61	2.83	**2.85**	+9.1	+0.6
MT	-	-	-	-	-
NL	-	-	-	-	-
PL	2.88	2.69	**3.16**	+9.7	+18
PT	-	-	-	-	-
RO	2.54	2.84	**2.69**	+5.6	-5.4
SE	3.10	2.89	**3.03**	-2.3	+4.7
SI	-	-	-	-	-
SK	2.88	3.46	**3.35**	+16	-3.2
UK	3.40	3.07	**3.45**	+1.5	+13



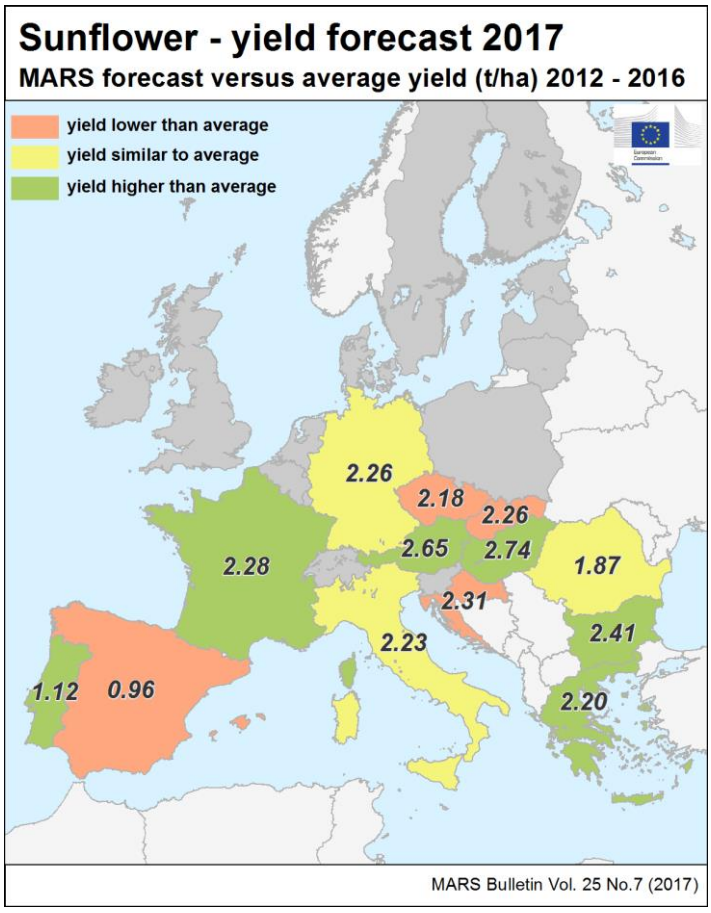
Country	SUGAR BEETS (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	72.0	74.4	**73.8**	+2.5	-0.8
AT	71.8	81.3	**66.4**	-7.6	-18
BE	77.2	72.5	**80.7**	+4.4	+11
BG	-	-	-	-	-
CY	-	-	-	-	-
CZ	64.2	67.8	**67.1**	+4.4	-1.1
DE	72.1	76.2	**73.1**	+1.4	-4.1
DK	60.9	51.3	**57.3**	-5.9	+12
EE	-	-	-	-	-
ES	92.5	95.7	**95.8**	+3.6	+0.1
FI	38.1	37.3	**38.7**	+1.4	+3.5
FR	87.4	83.9	**87.9**	+0.7	+4.8
GR	-	-	-	-	-
HR	52.1	NA	**53.9**	+3.5	NA
HU	57.2	67.5	**60.3**	+5.5	-11
IE	-	-	-	-	-
IT	55.6	NA	**54.7**	-1.5	NA
LT	54.1	61.3	**54.3**	+0.3	-11
LU	-	-	-	-	-
LV	-	-	-	-	-
MT	-	-	-	-	-
NL	80.6	77.8	**83.9**	+4.0	+7.8
PL	55.9	65.8	**54.7**	-2.2	-17
PT	-	-	-	-	-
RO	37.5	39.9	**43.9**	+17	+10
SE	63.9	65.0	**65.3**	+2.2	+0.4
SI	-	-	-	-	-
SK	56.8	70.2	**63.4**	+12	-9.7
UK	71.0	66.0	**74.7**	+5.1	+13



Country	POTATO (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	32.6	34.0	**33.5**	+2.9	-1.3
AT	31.4	36.2	**32.3**	+2.9	-11
BE	45.9	38.2	**45.0**	-2.0	+18
BG	13.3	13.6	**15.0**	+13	+10
CY	-	-	-	-	-
CZ	26.5	29.9	**26.9**	+1.4	-10
DE	44.1	44.4	**44.1**	+0.1	-0.7
DK	41.8	42.4	**41.1**	-1.7	-3.0
EE	-	-	-	-	-
ES	30.9	30.7	**31.5**	+2.2	+2.9
FI	26.6	27.1	**27.0**	+1.8	-0.3
FR	42.7	39.0	**45.2**	+5.7	+16
GR	25.0	27.5	**25.9**	+3.7	-5.5
HR	17.2	NA	**18.0**	+4.8	NA
HU	24.1	24.6	**24.2**	+0.5	-1.8
IE	-	-	-	-	-
IT	26.2	NA	**25.4**	-3.2	NA
LT	16.8	16.0	**16.8**	-0.3	+4.7
LU	-	-	-	-	-
LV	18.8	19.9	**18.9**	+0.3	-5.0
MT	-	-	-	-	-
NL	43.4	42.9	**43.2**	-0.5	+0.8
PL	23.8	28.5	**23.6**	-0.9	-17
PT	18.7	18.8	**19.2**	+3.0	+2.1
RO	14.3	14.2	**15.3**	+7.1	+7.7
SE	34.3	35.7	**33.0**	-3.6	-7.5
SI	-	-	-	-	-
SK	-	-	-	-	-
UK	42.1	45.0	**44.4**	+5.6	-1.3



Country	SUNFLOWER (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
EU	1.94	2.06	**2.04**	+5.2	-0.9
AT	2.53	3.29	**2.65**	+4.7	-20
BE	-	-	-	-	-
BG	2.15	2.20	**2.41**	+12	+10
CY	-	-	-	-	-
CZ	2.32	2.85	**2.18**	-6.4	-24
DE	2.19	2.17	**2.26**	+3.1	+4.0
DK	-	-	-	-	-
EE	-	-	-	-	-
ES	1.05	0.99	**0.96**	-8.5	-3.1
FI	-	-	-	-	-
FR	2.18	2.16	**2.28**	+4.5	+5.3
GR	1.95	2.11	**2.20**	+13	+4.3
HR	2.55	2.81	**2.31**	-9.7	-18
HU	2.55	2.95	**2.74**	+7.6	-7.1
IE	-	-	-	-	-
IT	2.26	2.42	**2.23**	-1.3	-8.0
LT	-	-	-	-	-
LU	-	-	-	-	-
LV	-	-	-	-	-
MT	-	-	-	-	-
NL	-	-	-	-	-
PL	-	-	-	-	-
PT	0.93	1.30	**1.12**	+20	-14
RO	1.83	1.92	**1.87**	+2.3	-2.5
SE	-	-	-	-	-
SI	-	-	-	-	-
SK	2.47	2.94	**2.26**	-8.4	-23
UK	-	-	-	-	-



Country	WHEAT (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
BY	3.66	3.71	**3.69**	+1.0	-0.4
TR	2.69	2.71	**2.74**	+2.0	+1.3
UA	3.69	4.21	**3.86**	+4.7	-8.2

Country	BARLEY (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
BY	3.44	3.50	**3.43**	-0.2	-2.0
TR	2.63	2.48	**2.69**	+2.3	+8.3
UA	2.73	3.30	**2.96**	+8.4	-10

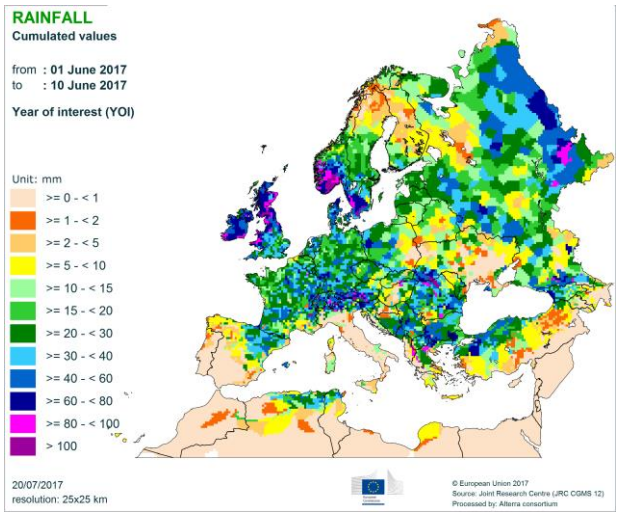
Country	GRAIN MAIZE (t/ha)				
	Avg 5yrs	2016	MARS 2017 forecasts	%17/5yrs	%17/16
BY	5.26	5.33	**5.43**	+3.3	+1.9
TR	8.83	9.42	**9.58**	+8.4	+1.7
UA	5.84	6.60	**6.00**	+2.7	-9.1

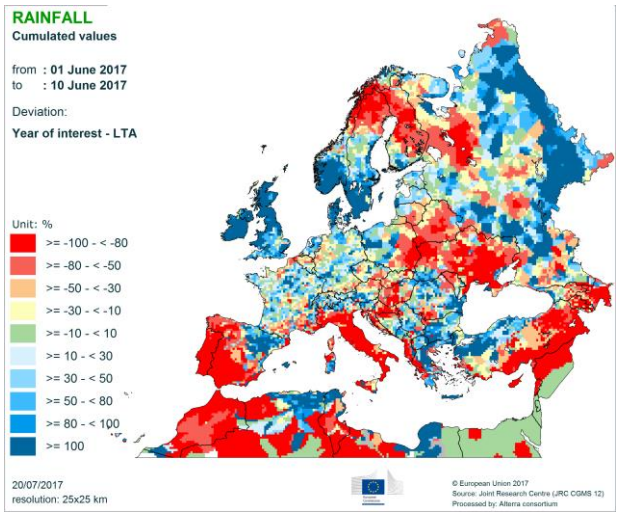
Note: Yields are forecast for crops with more than 10000 ha per country

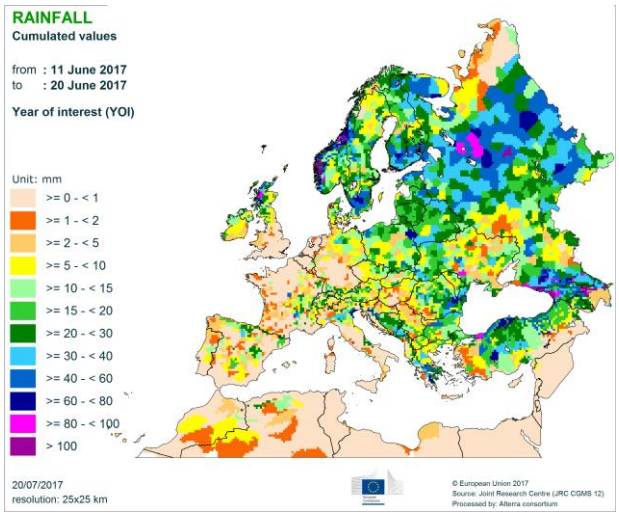
Sources: 2017 yields come from MARS CROP YIELD FORECASTING SYSTEM (output up to 20/07/2017). For EU countries the reported humidity levels are generally between 65 and 70%.
* The EU figures do not include green maize forecasts for Belgium, Portugal, Sweden and the United Kingdom since recent data on yields was not available.
EU. 2012-2017 data come from DG AGRICULTURE short term Outlook data (dated June 2017, received on 29/06/2017), EUROSTAT Eurobase (last update: 13/07/2017) and EES (last update: 14/06/2017)
Non-EU. 2012-2016 data come from USDA,Turkish Statistical Institute (TurkStat), EUROSTAT Eurobase (last update: 13/07/2017),State Statistics Service of Ukraine, FAO and PSD-online
NA = Data not available.

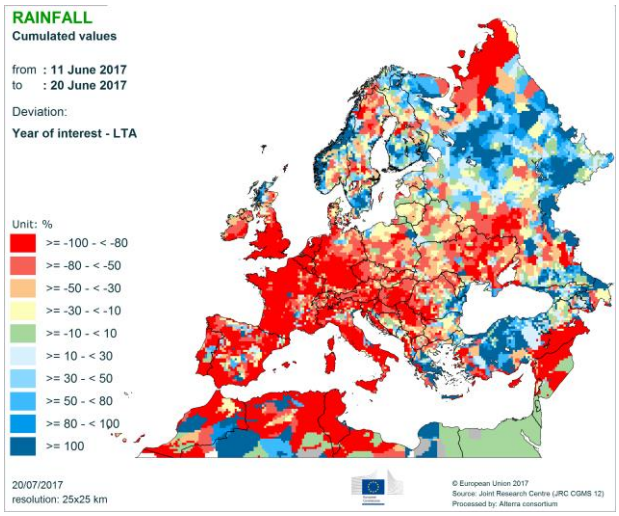
5. Atlas

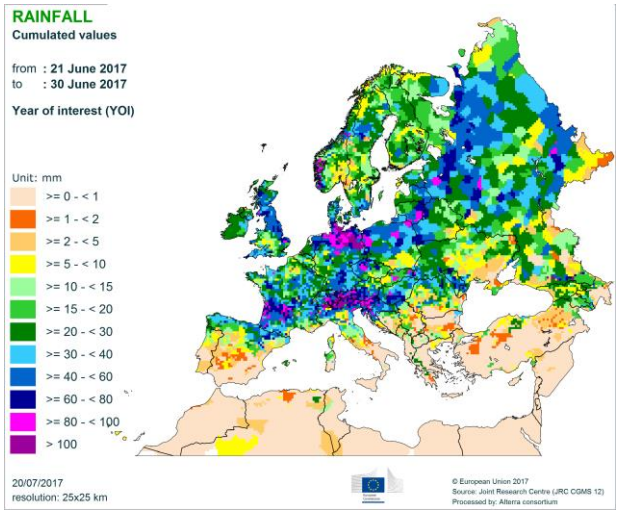
Precipitation

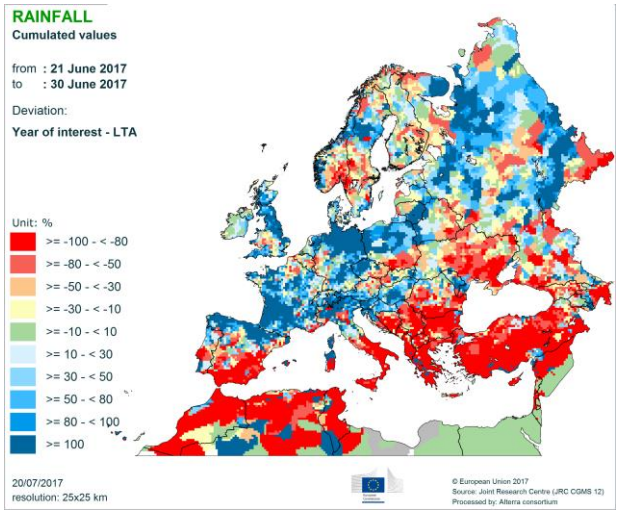


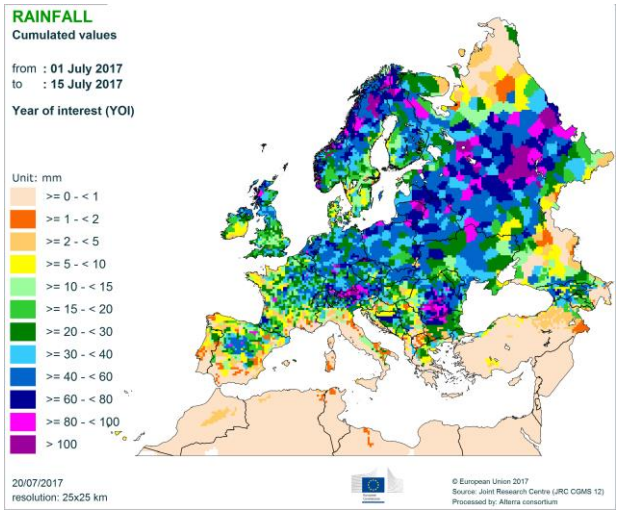


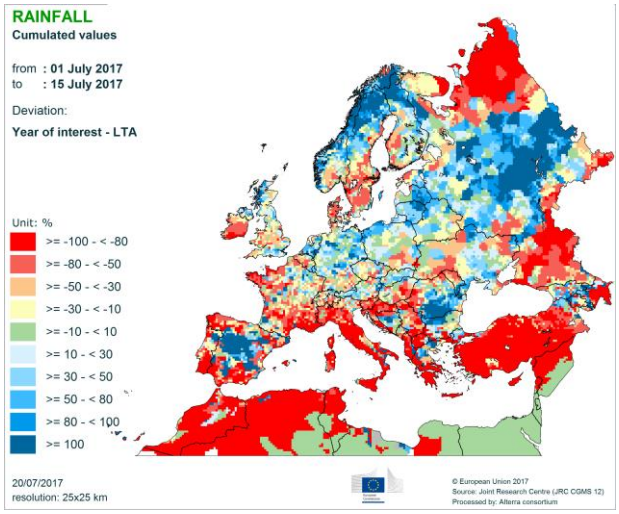




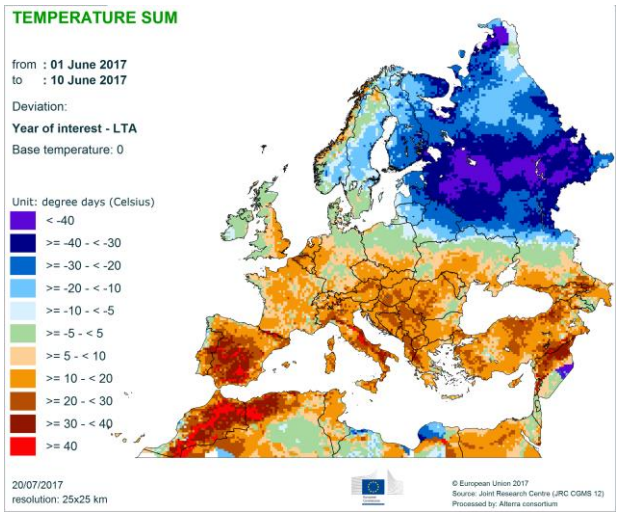


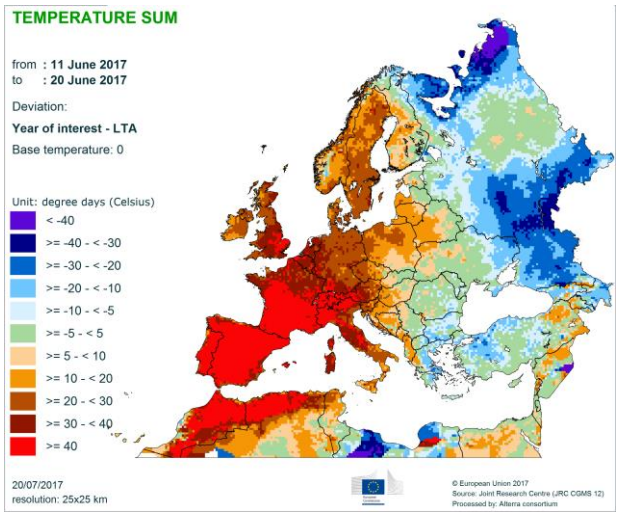


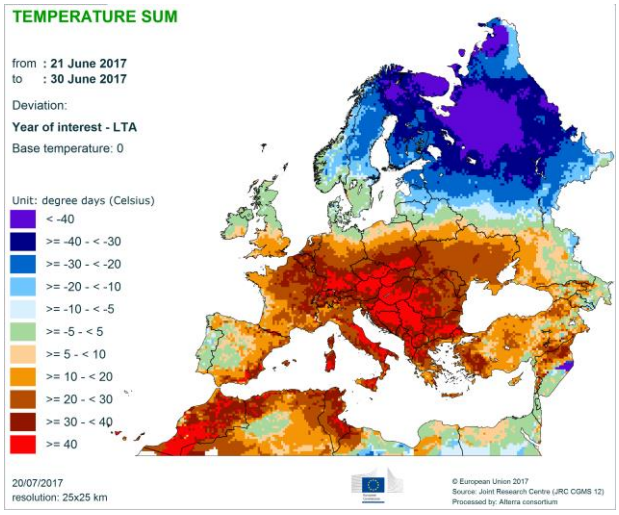


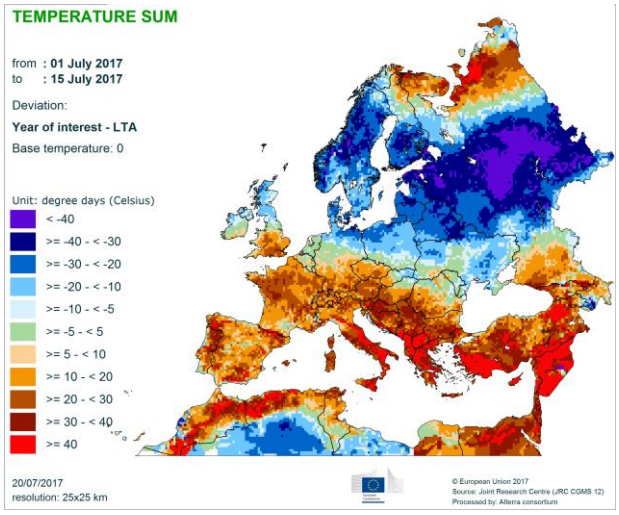


Temperature regime

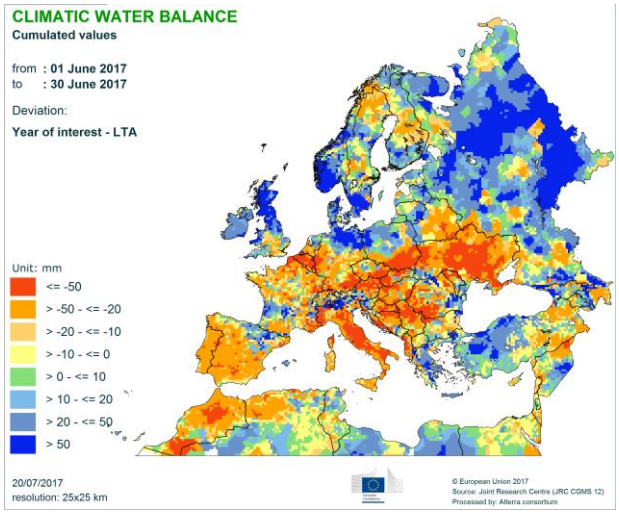


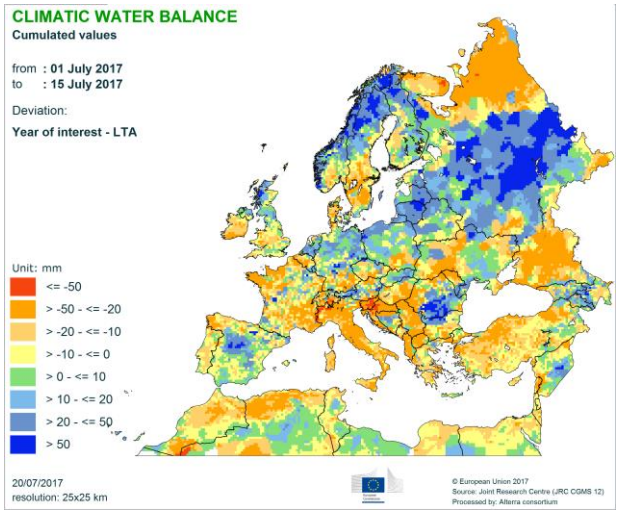




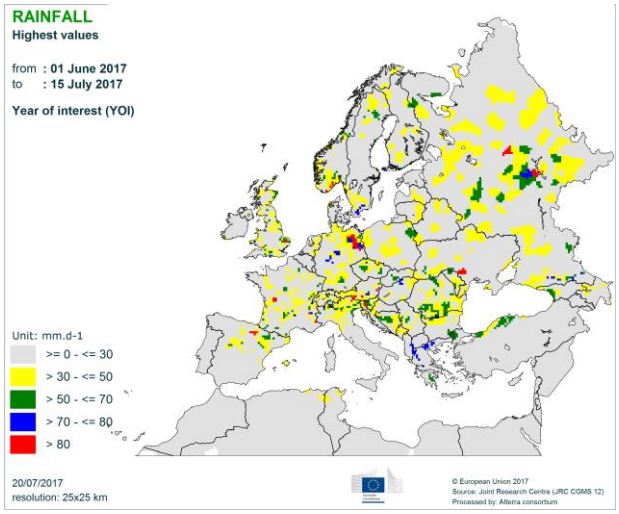


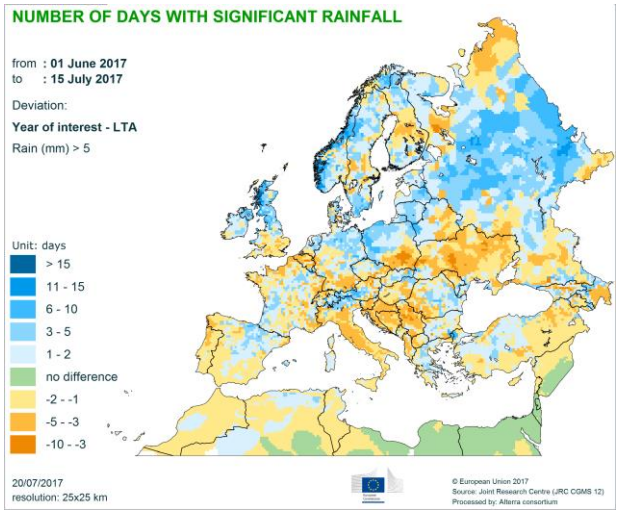
Climatic water balance

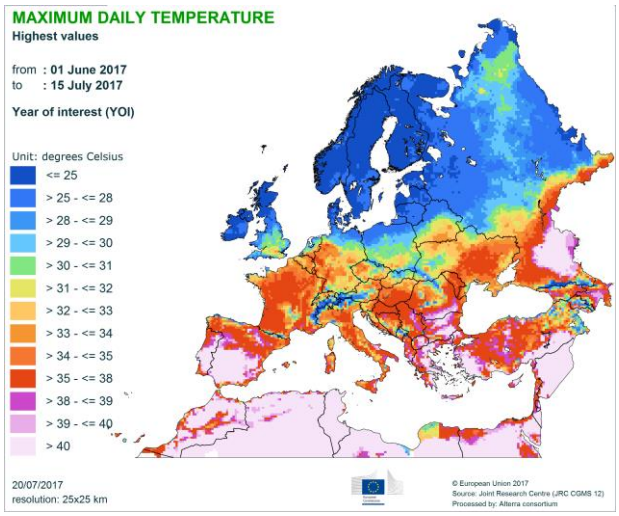


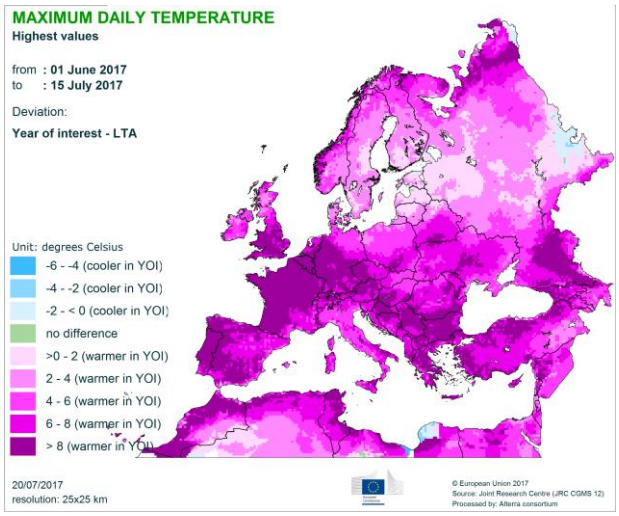


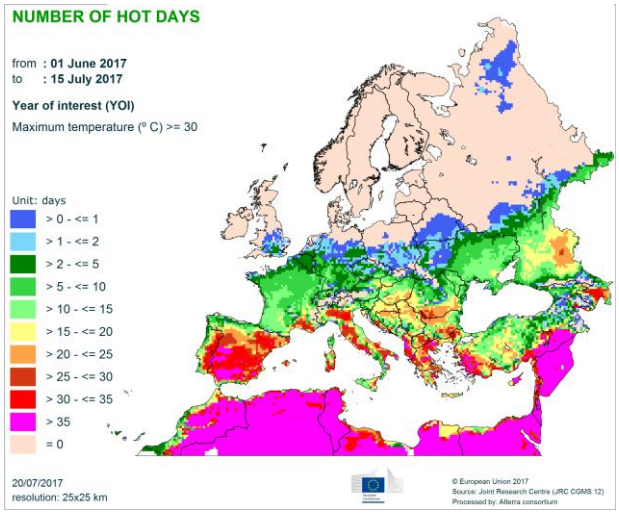
Weather events

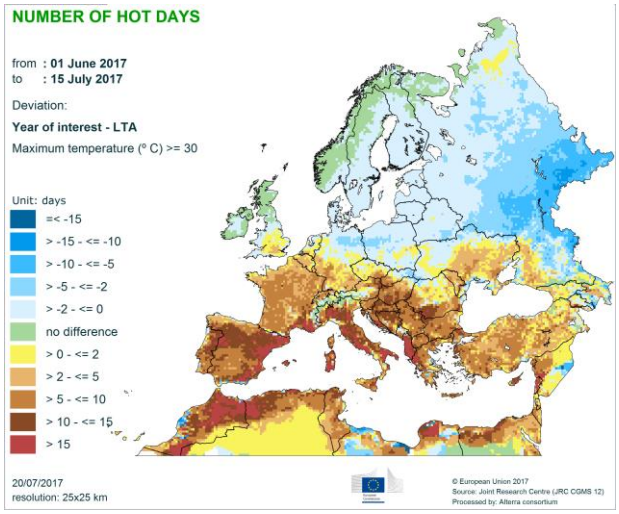




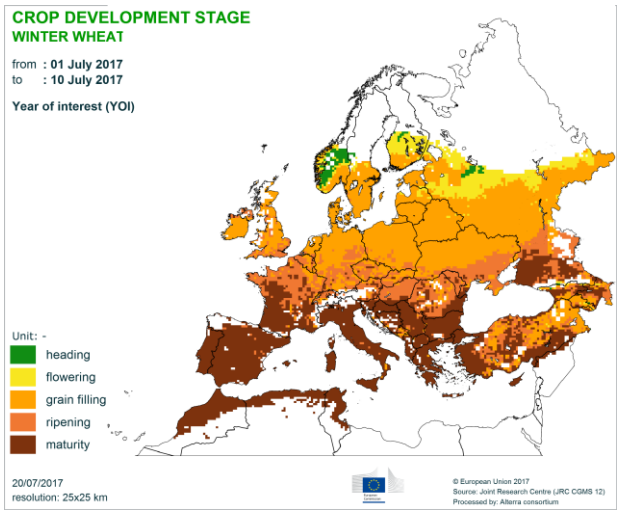


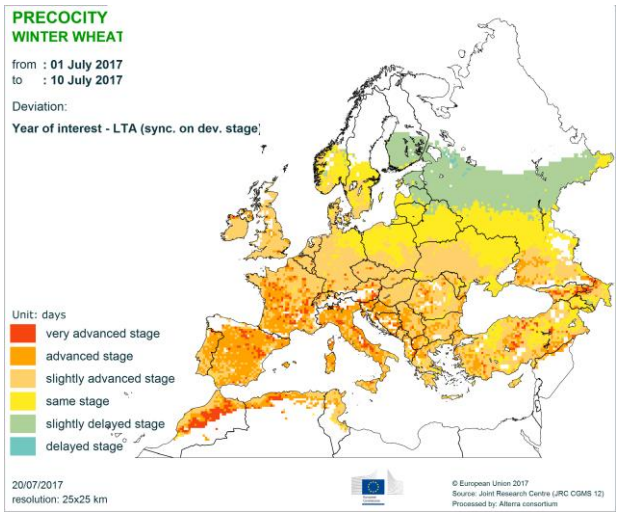


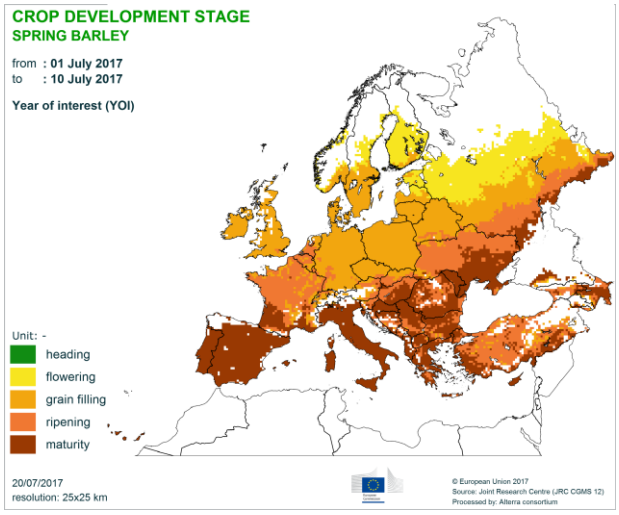


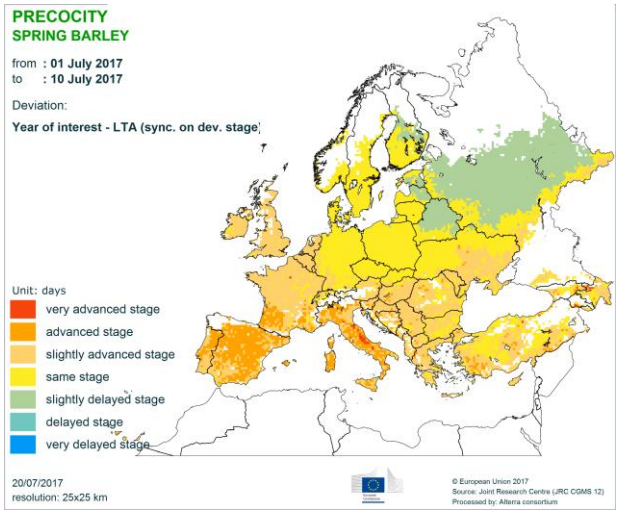


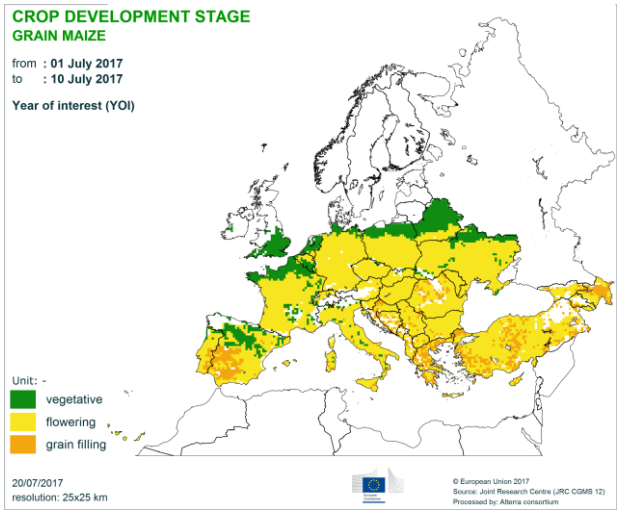
Crop development stages and precocity

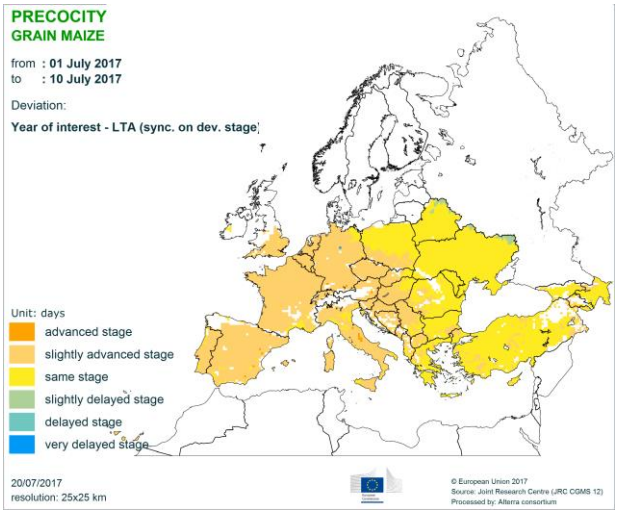


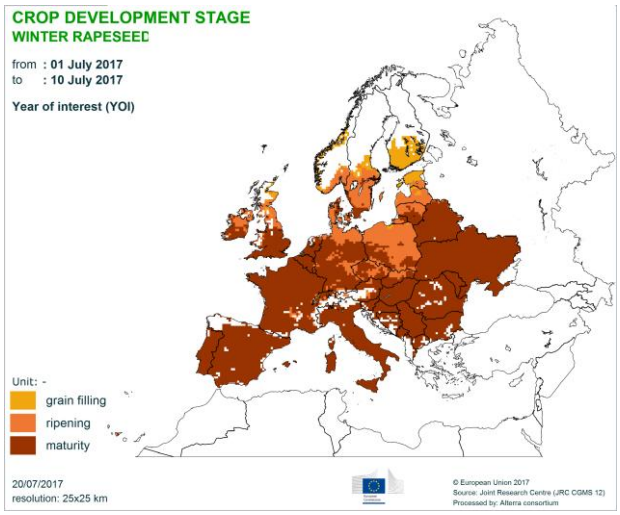


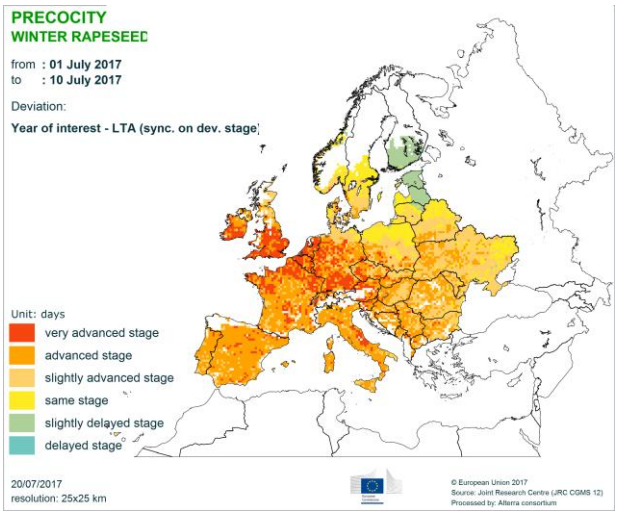


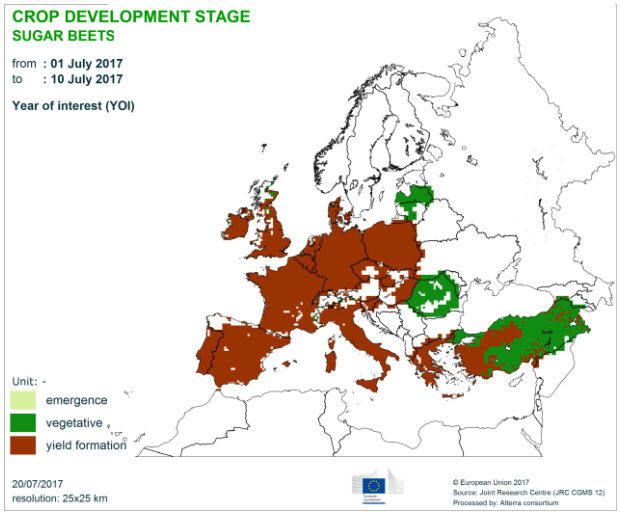


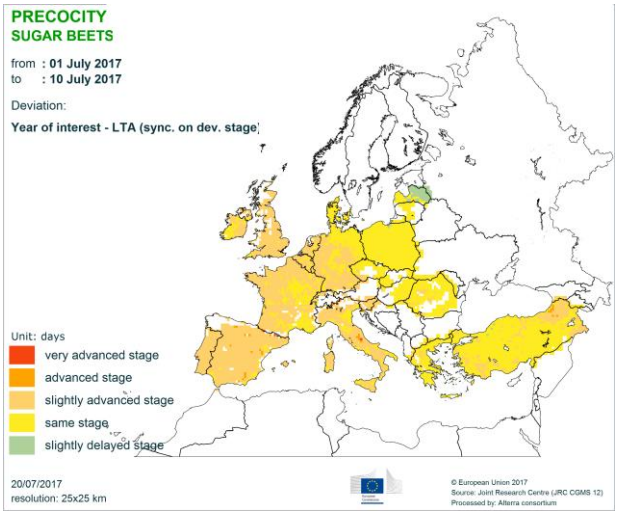

CROP DEVELOPMENT STAGE
GRAIN MAIZE
from : 01 July 2017
to : 10 July 2017
Year of interest (YOI)
Unit: -
vegetative
flowering
grain filling
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium


PRECOCITY
GRAIN MAIZE
from : 01 July 2017
to : 10 July 2017
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
advanced stage
slightly advanced stage
same stage
slightly delayed stage
delayed stage
very delayed stage
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

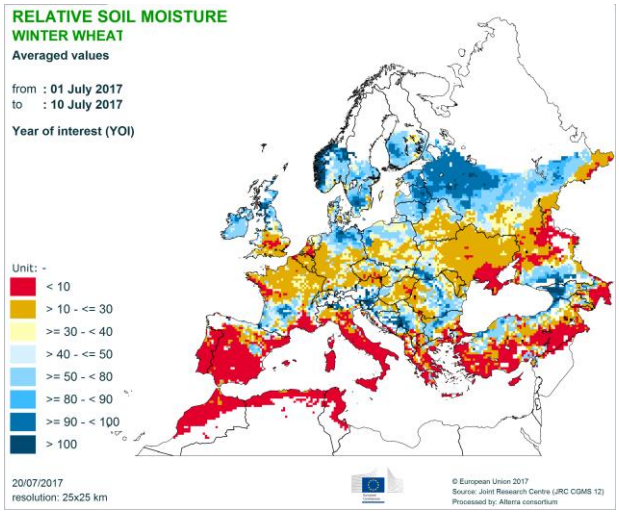

CROP DEVELOPMENT STAGE
WINTER RAPESEED
from : 01 July 2017
to : 10 July 2017
Year of interest (YOI)
Unit: -
grain filling
ripening
maturity
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

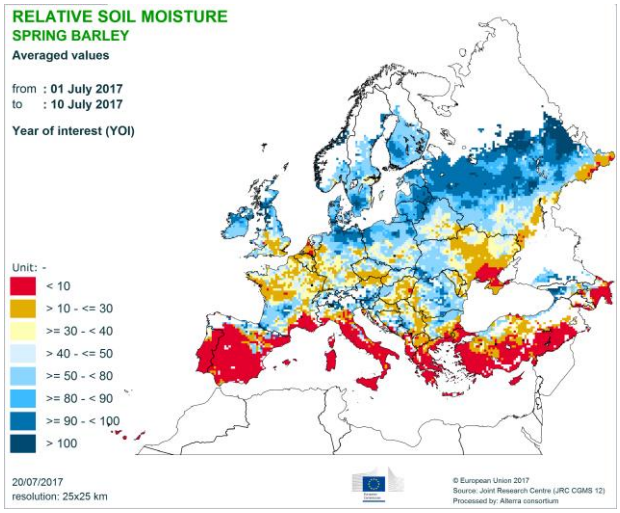

PRECOCITY
WINTER RAPESEED
from : 01 July 2017
to : 10 July 2017
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
very advanced stage
advanced stage
slightly advanced stage
same stage
slightly delayed stage
delayed stage
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

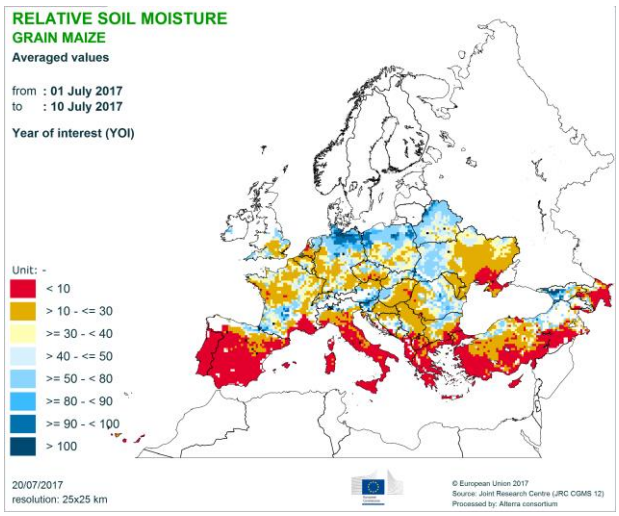

CROP DEVELOPMENT STAGE
SUGAR BEETS
from : 01 July 2017
to : 10 July 2017
Year of interest (YOI)
Unit: -
emergence
vegetative
yield formation
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

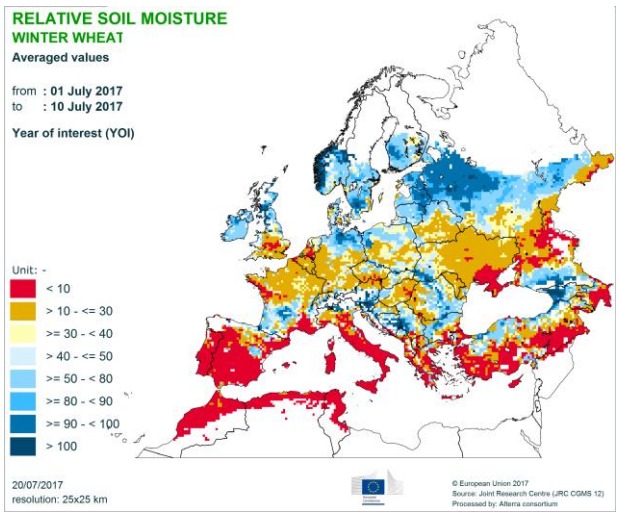

PRECOCITY
SUGAR BEETS
from : 01 July 2017
to : 10 July 2017
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
very advanced stage
advanced stage
slightly advanced stage
same stage
slightly delayed stage
20/07/2017
resolution: 25x25 km
© European Union 2017
Source: Joint Research Centre (JRC CGMS 12)
Processed by: Alterra consortium

Relative soil moisture

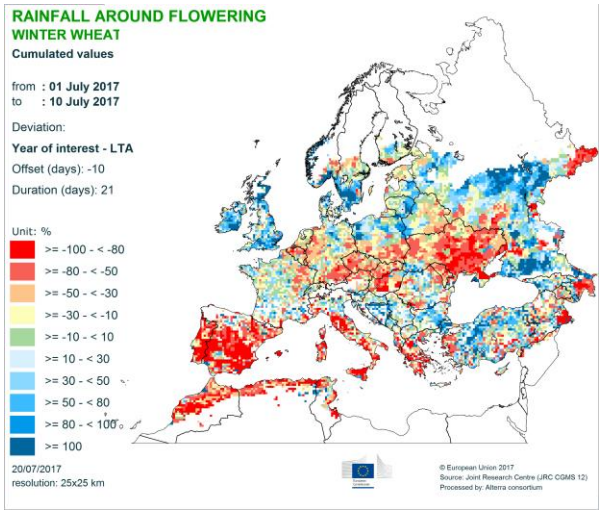


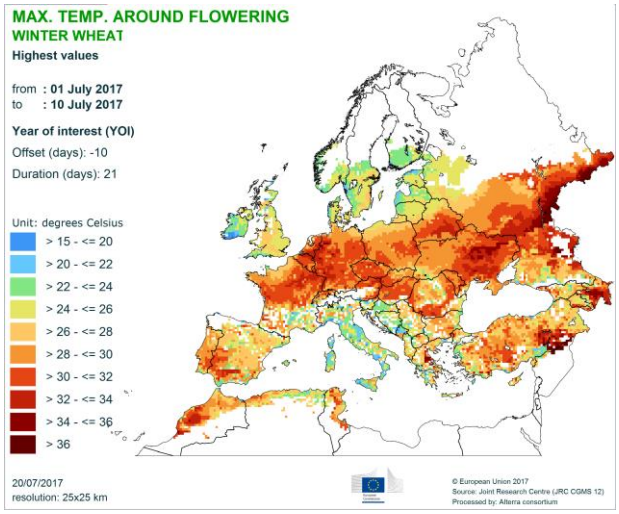


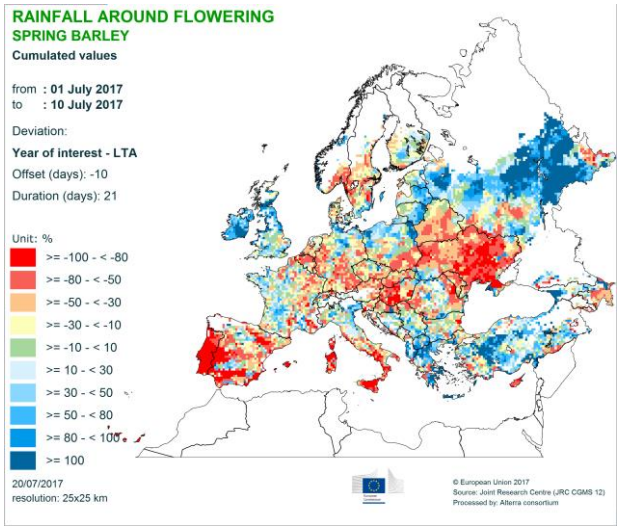


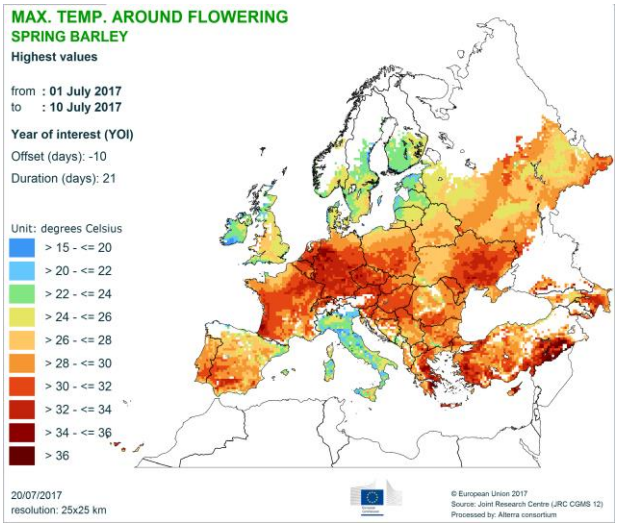


Precipitation and temperatures around flowering

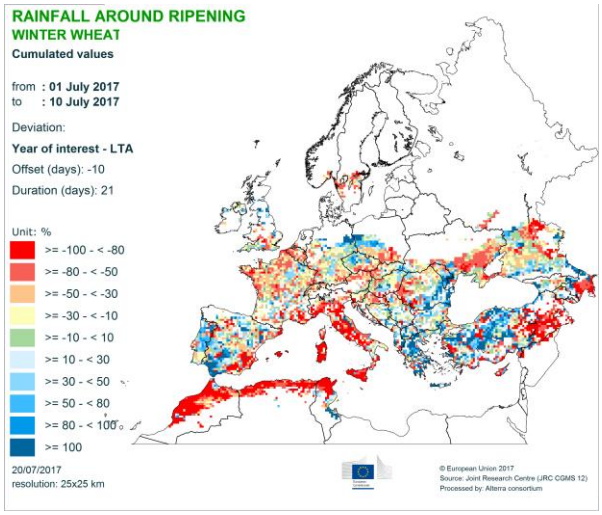


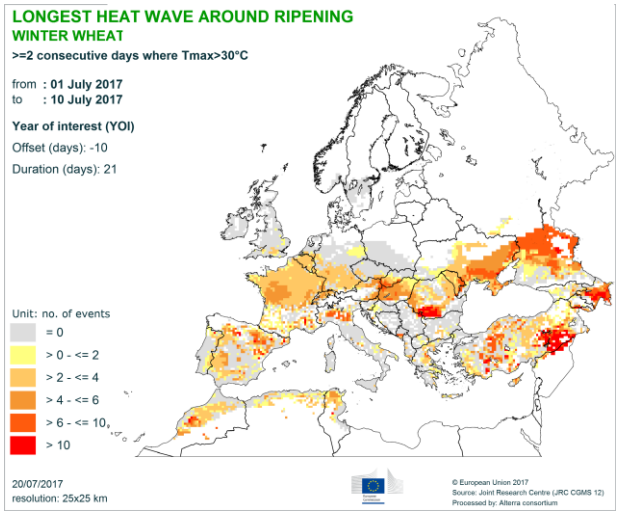


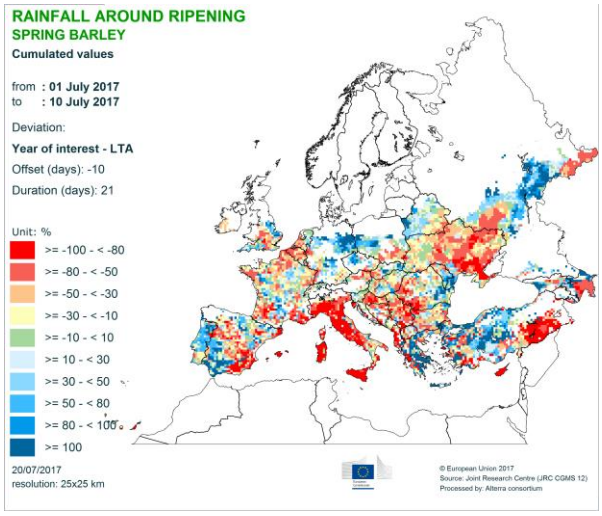


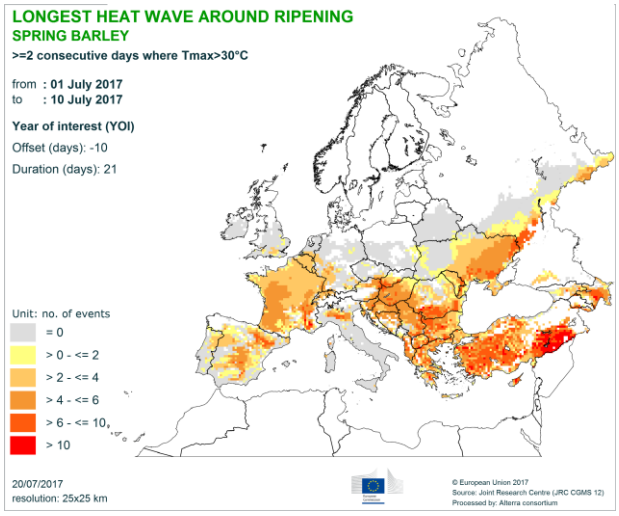


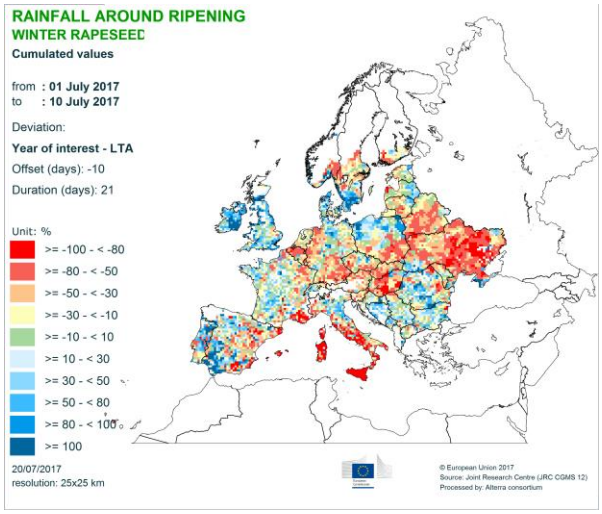
Precipitation and longest heat wave around ripening

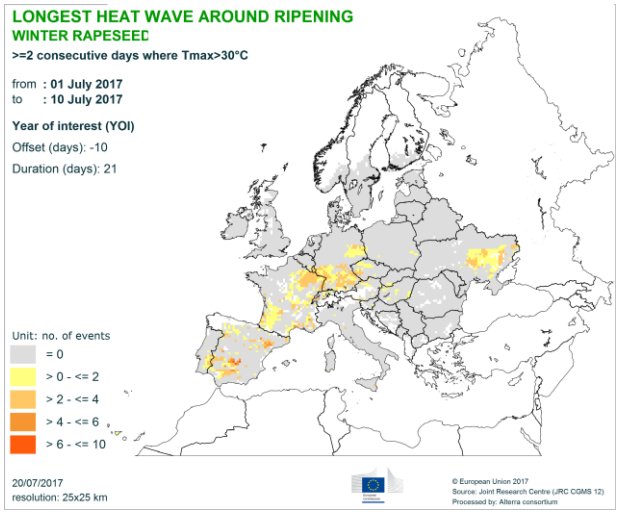




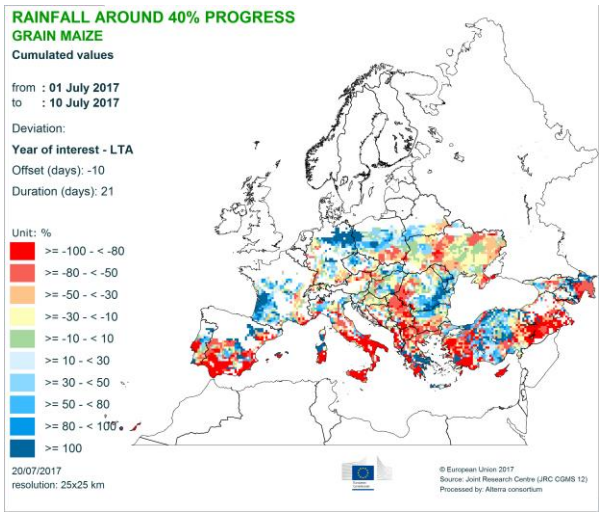


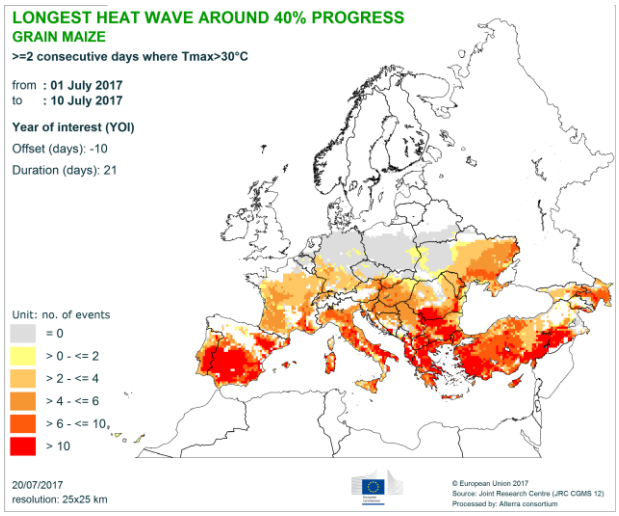


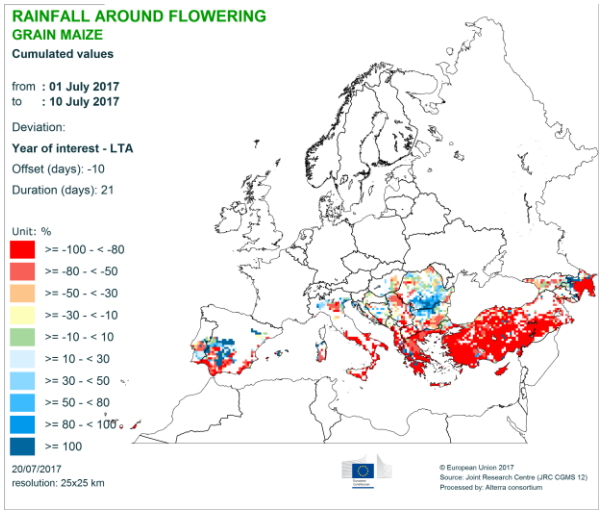


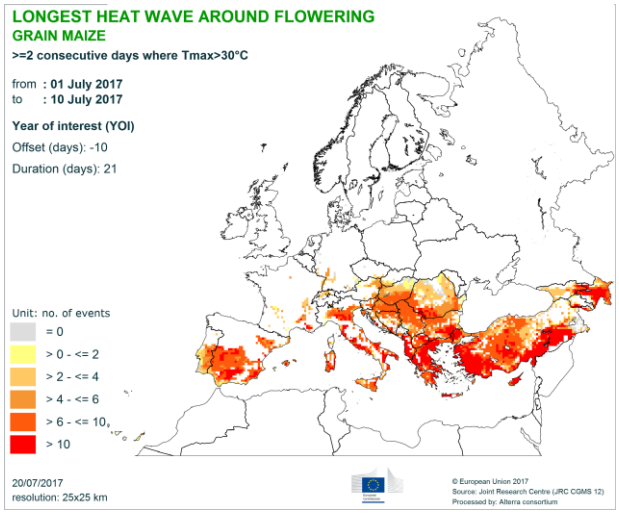


Maize: precipitation and temperatures around crop development









JRC MARS Bulletins 2017

Date	Publication	Reference
23 Jan	Agromet. analysis	Vol. 25 No. 1
20 Feb	Agromet analysis	Vol. 25 No. 2
27 Mar	Agromet analysis, yield forecast	Vol. 25 No. 3
24 Apr	Agromet analysis, remote sensing, yield forecast, sowing conditions	Vol. 25 No. 4
22 May	Agromet analysis, remote sensing, yield forecast, pasture analysis,	Vol. 25 No. 5
26 Jun	Agromet analysis, remote sensing, yield forecast, pasture update, rice analysis	Vol. 25 No. 6
24 Jul	Agromet analysis, remote sensing, yield forecast, pasture update	Vol. 25 No. 7
21 Aug	Agromet analysis, remote sensing, yield forecast, pasture update, rice analysis	Vol. 25 No. 8
25 Sep	Agromet analysis, remote sensing, yield forecast	Vol. 25 No 9
23 Oct	Agromet analysis, remote sensing, yield forecast,	Vol. 25 No. 10
27 Nov	Agromet analysis and yield forecast, sowing conditions	Vol. 25 No. 11
18 Dec	Agromet analysis	Vol. 25 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 1975-2016.