European Commission

Period covered: 1 May - 10 June
Issued: 17 June 2013

Crop Monitoring in Europe

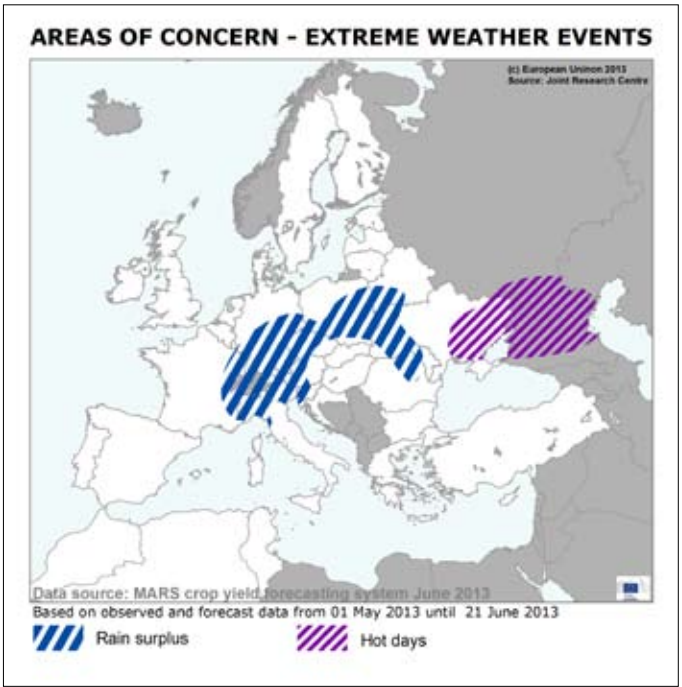
MARS BULLETIN Vol.21 No. 6 (2013)

Total cereals yield higher than last year

The period under review was characterised by sharp contrasts across the EU. An over-wet and cold May has constrained crop development in large parts of central Europe. Good conditions prevailed in Romania, Hungary, and, especially, Spain where an excellent season boosts spring barley forecast yields at EU-27 level.

The most prominent weather feature during the period of review was the many high rainfall events in central Europe, which led to vast flooding in the vicinity of the rivers affected and increased the soil moisture content to critical levels, increasing the risk of pests and constraining plant development.

On balance, at the EU-27 level, the forecast for soft wheat remained practically unaltered and close to the five-year average, as the substantial upward revision for Spain, Romania and Hungary compensated for the less pronounced downward revision of forecasted yields in Germany, Slovakia and the Czech Republic. Durum wheat yields expectations are now clearly above-average at the EU27 level, despite a slight downward revision for Italy. The forecast for barley at EU-27 level was also revised upwards. Rapeseed yield estimates were revised slightly downwards for the EU-27, and are currently forecast to be below last year's level. The forecast for grain maize was revised upwards and is now clearly above last year's yield at EU-27 level. Potatoes, and to a minor degree sugar beets, suffered a downward yield forecast revision.



Crop	Yield t/ha				
	2012	MARS 2013 forecasts	Avg 5yrs	%13/12	%13/5yrs
TOTAL CEREALS	4.89	**5.19**	5.05	+6.1	+2.6
Total Wheat	5.18	**5.32**	5.38	+2.7	-1.0
soft wheat	5.42	**5.55**	5.63	+2.3	-1.5
durum wheat	3.13	**3.34**	3.21	+6.7	+4.3
Total Barley	4.38	**4.68**	4.39	+6.9	+6.7
spring barley	3.91	**4.26**	3.83	+8.9	+11.3
winter barley	5.22	**5.36**	5.26	+2.7	+2.0
Grain maize	6.13	**7.13**	7.01	+16.3	+1.8
Rye	3.72	**3.56**	3.33	-4.2	+6.8
Triticale	4.18	**4.06**	4.07	-2.7	+0,0
Other cereals	3.16	**3.33**	3.00	+5.5	+11.1
Rape and turnip rape	3.10	**3.02**	3.04	-2.8	-0.8
Potato	30.70	**31.00**	30.69	+1.0	+1.0
Sugar beet	70.28	**70.43**	70.00	+0.2	+0.6
Sunflower	1.67	**1.90**	1.83	+13.5	+3.8

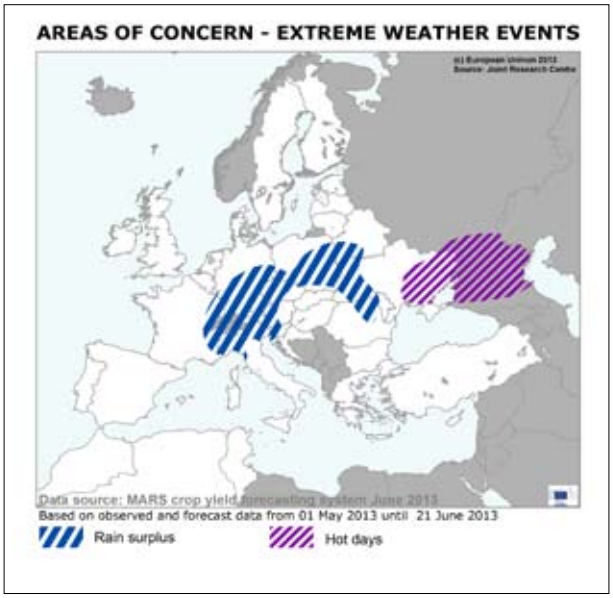
released 14 June 2013

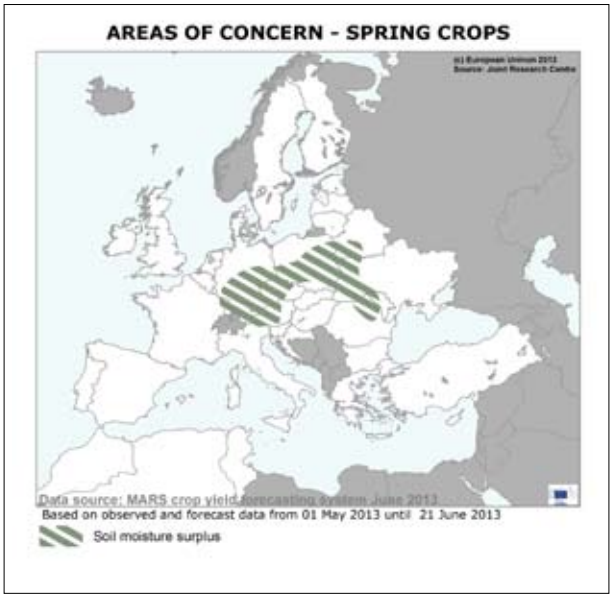
Joint Research Centre

1. Agro-meteorological overview

The most prominent weather feature during the period of review was the many high rainfall events in central Europe, which led to vast flooding in the vicinity of the rivers affected and increased the soil moisture content to critical levels. Soils are fully saturated in the areas mapped, increasing the risk of nutrient deficiency, pest damage and constrained plant development due to a lack of oxygen at the root system on heavy soils.

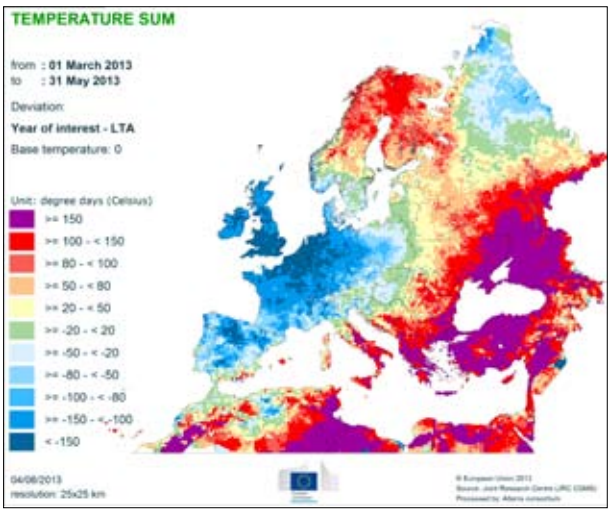
A long hot period is forecast for south-eastern Ukraine, south Russia, Hungary, Serbia, Romania, southern Italy and the southern part of the Iberian Peninsula. However, in Russia the persistent warm conditions, combined with scarce and infrequent precipitation during most of the period under review, have already adversely affected the yield formation of winter cereals, and the forthcoming heat wave will further aggravate crop conditions.

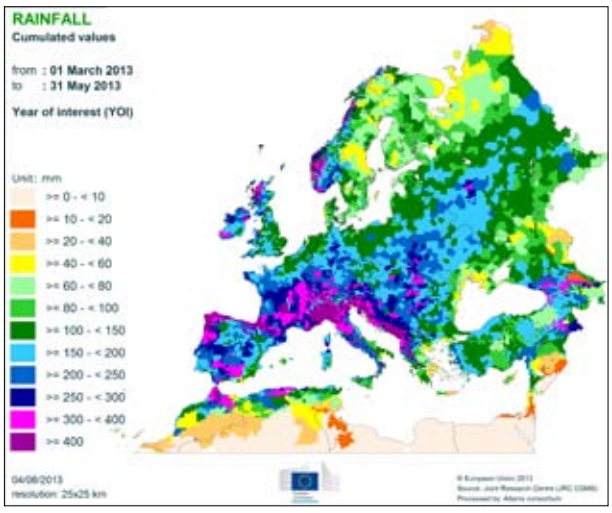




1.1 Spring 2013 (March, April, May)

Spring has been characterised by temperatures below the long-term average in western and central Europe. Furthermore, March was one of the coldest months in our climatological records in most regions of central and northern Europe. As a consequence, a delay in winter crop development and spring sowing was observed mainly in France, Germany, the British Isles, the Benelux countries, the Czech Republic, western Poland and northern Italy. From April to May, generally milder-than-seasonal conditions prevailed in eastern Europe. At the end of May, the cumulated active temperatures were well above the long-term average (>100 growing degree days - GDD) in eastern Europe and the eastern Mediterranean region. Positive average thermal anomalies in the range of 2°C, which were recorded in Greece, southern Italy, Turkey and the surrounding areas of the Black Sea, contributed to an increased temperature sum (Tbase=0°C), which regionally exceeded the long-term average by more than 150 GDD. Above-average precipitation was recorded in most of Europe. It was the rainiest spring of our climatological records in northern Italy, southern France and Spain. Heavy rainfall (>400 mm) occurred in northern Italy, Slovenia and the western part of the Balkan Peninsula. Abundant precipitation (>300 mm) was also recorded in southern and eastern France, southern Spain, central Italy, southern Germany and in Alpine regions. The wet conditions recorded in central Europe, during the period of review, have affected the sowing of spring crops. On the contrary, lower-than-usual precipitation occurred in northern France, the Benelux countries, western Germany, the Scandinavian Peninsula, southern Italy, Greece and areas surrounding the Baltic Sea, mainly in Ukraine and Rostovskaya in Russia.



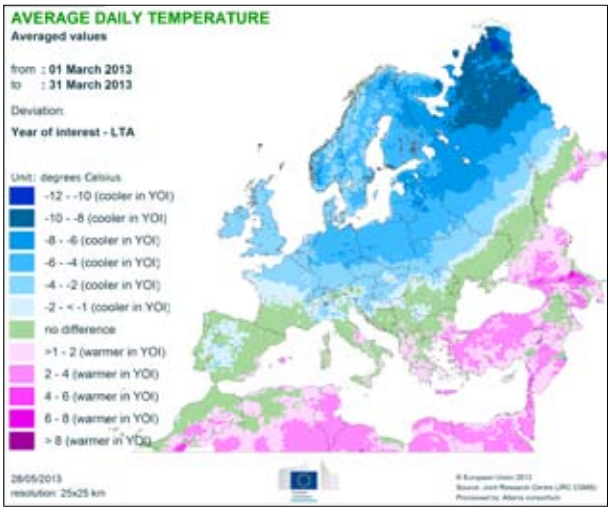


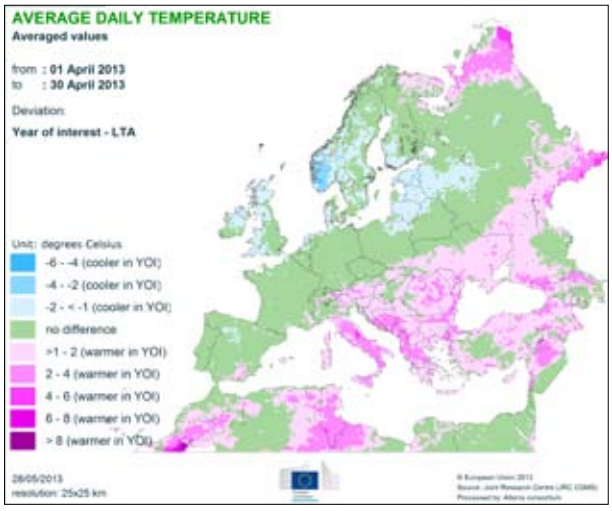
Observed temperatures

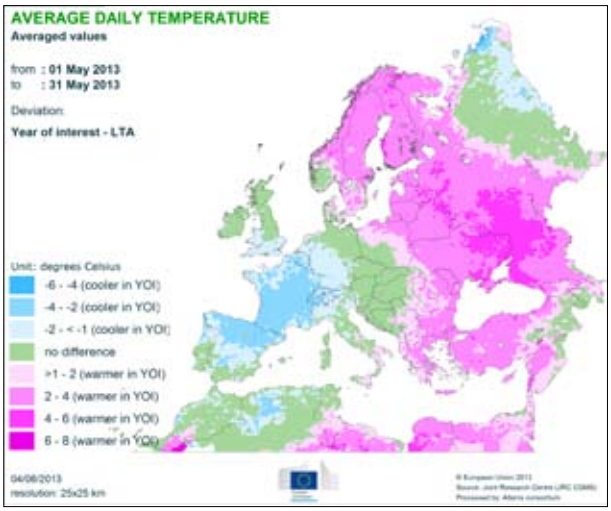
Spring started in **March** with colder-than-normal temperatures, and temperature accumulation was well below the average in northern and central Europe. Negative average temperature anomalies in the range of -4 to -6°C were recorded in Germany, Poland, and north-eastern Europe, and in the range of -4°C in northern France, the Benelux countries, Denmark, the UK, northern Italy, the Czech Republic, Slovakia, Slovenia, Hungary and Ukraine. In some areas of these regions, March was one of the coldest in our climatological records. For almost an entire month, minimum temperatures did not reach positive values in Germany, Poland, Denmark, the Czech Republic, northern Ukraine, Belarus and Russia. The coldest period was recorded between 12 and 14 March with minimum temperatures of -14°C in some areas of these regions, while crops where protected by snow. On the contrary, temperatures were close to and above average (+2 to +4°C) over the Mediterranean regions and around the Black Sea respectively.

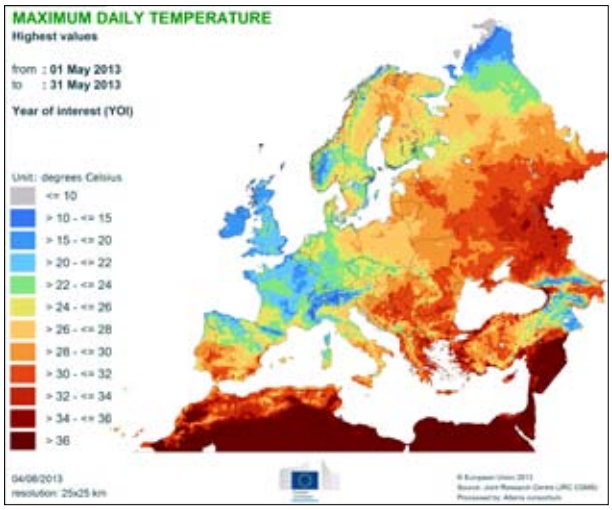
During the first dekad of **April**, colder-than-normal temperatures were recorded in northern and central Europe. The minimum temperatures during this period did not reach positive values in Germany, Poland, Denmark, the Czech Republic, northern Ukraine, Belarus and Russia. After this period, the temperature increased to above average all over Europe. In particular, the last dekad of April was warmer than the long-term average by 4°C to 6°C in central and southern Italy, the Balkan Peninsula, Romania, Slovakia, southern Poland, Bulgaria, Hungary and Ukraine. In some areas of these regions temperatures reached 30°C in the last days of April. On the contrary, negative average temperature anomalies in the range of 2°C were recorded in Spain, France, the Benelux countries, western UK, Denmark, Latvia and western Russia. During the first dekad of **May**, higher-than-usual temperatures were recorded in southern and eastern Europe, with average temperatures 2°C to 4°C above the long-term average. During the last two weeks of May the weather conditions were warmer than usual in Ukraine, Belarus, the Baltic countries, the Scandinavian Peninsula, western Russia and surrounding areas of the Black sea, and maximum temperatures reached 32°C in some of these regions. In contrast, negative average temperature anomalies in the range of -2 to -4°C were recorded mainly in Spain, Portugal, France, the Benelux countries, western Germany, the UK and northern and central Italy.

The strong positive thermal anomalies recorded during the





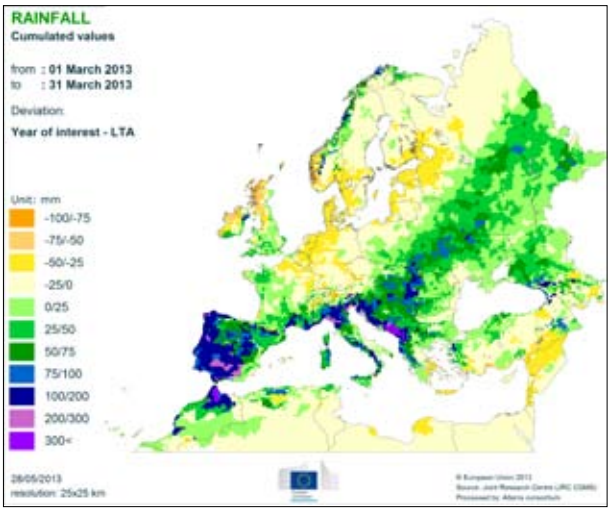


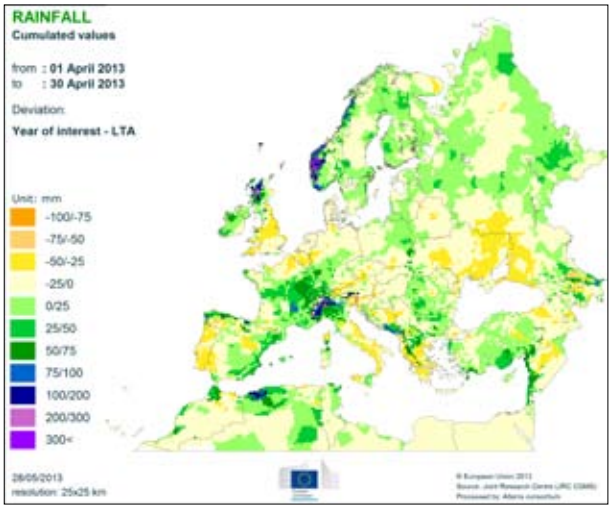


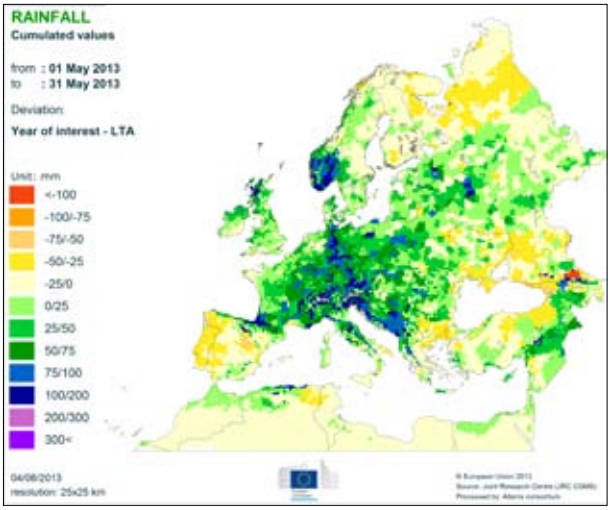
period of review in southern and eastern Europe contributed to an increased temperature sum (Tbase=0°C), which regionally exceeded the long-term average by more than 150 growing degree days (GDD). By contrast, in western and central Europe the cumulated active temperatures (Tbase=0°C) since the beginning of March remained below the long-term average by 100 to 150 GDD, resulting in a delayed winter and spring crop development mainly in northern Germany, northern France, the Benelux countries, the British Isles, northern Italy and northern Spain.

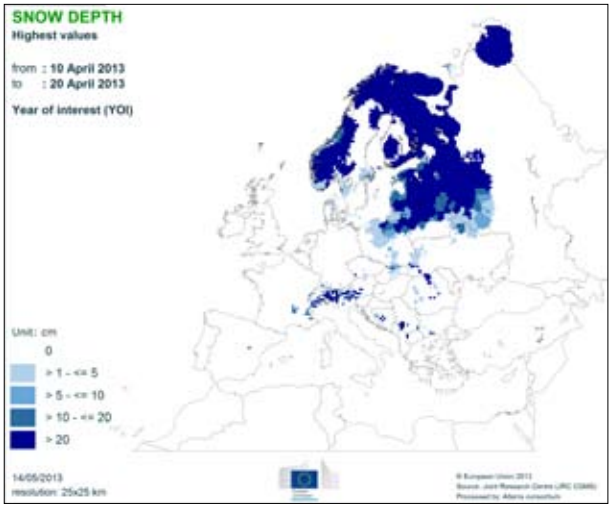
Observed rainfall and snow cover

In **March**, precipitation exceeded the long-term average by more than 100 mm in the southern Spain, Portugal, northern Italy, southern France and the western part of Balkan Peninsula. Lower-than-usual precipitation occurred in Germany, the Benelux countries, Denmark, northern Poland, southern Scandinavia and the northwestern part of the British Isles. In most of Denmark and southern Scandinavia the total rainfall in March did not exceed 10 mm. In **April**, precipitation exceeded the long-term average by more than 50 mm in Ireland, Scotland, northern Italy, eastern France and the eastern coast of Spain. Lower-than-usual precipitation occurred in England, Wales, northern France, the Benelux countries, northern Germany, Denmark, central and southern Italy, Portugal and Ukraine. In **May**, rainfall was plentiful in central and eastern Europe, with precipitation levels more than 50 mm above the long-term average in most of these countries. The cumulated rainfall recorded in May exceeded 150 mm in southern and western France, Germany, northern Scotland, northern Italy, the eastern Adriatic coastline, Slovenia, Austria, Slovakia and some areas of the Czech Republic and western Poland. By contrast, below-average rainfall was still observed mainly in Ukraine, *Rostovskaya* in Russia, Portugal, southern Italy and western Turkey. The wet conditions recorded in central Europe, during the period of analysis, have affected the sowing of spring crops and led to high soil moisture values. The persistent snow in April determined a strong delay in spring sowing in the Baltic countries.









1.2 Agro-meteorological overview (1 – 10 June)

Average temperatures remained below or close to the average in western Europe. The higher-than-usual temperatures recorded in eastern and northern Europe contributed to a further increased temperature sum. Significant precipitation was observed in south-eastern Germany, Austria, the Czech Republic, Poland and Belarus.

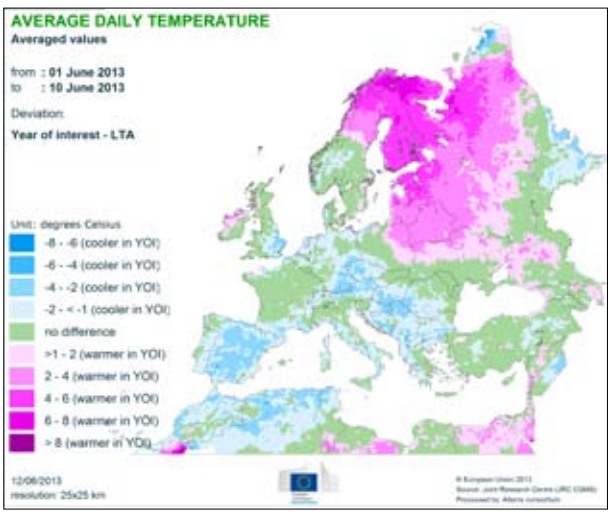
Observed temperatures

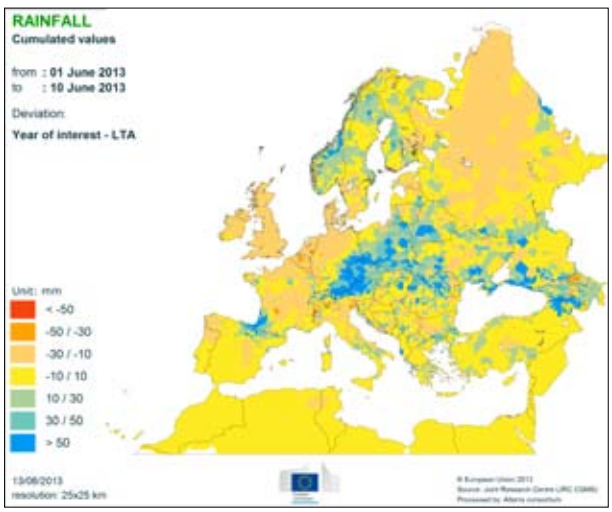
During the first dekad of June, negative average temperature anomalies in the range of -2 to -4°C were recorded in Spain, western Mediterranean regions, southern Germany, the east of England, the Czech Republic, Austria, Hungary, and the western and northern parts of the Balkan Peninsula. By contrast, higher-than-usual temperatures were recorded in eastern and northern Europe, with average temperatures 2-4°C above the long-term average in Russia, Belarus, Baltic countries and northern Ukraine. Daily air temperatures exceeded the average by 4-6 °C in Finland and northern Scandinavia. Furthermore, maximum temperatures exceeded 30°C in south-western Russia, eastern Ukraine, the southern Iberian Peninsula, Greece, western Turkey, southern Mediterranean regions and at the border between Romania and Bulgaria. Since the beginning of March, the cumulated active temperatures (Tbase=0°C) remain below the long-term average in Germany, France, the Benelux countries, Denmark, the UK , Spain, the Czech Republic, northern Italy and western Poland. The positive thermal anomalies in the northern Black Sea regions (especially in Russia and eastern Ukraine), Belarus, Turkey, the Baltic countries and Finland contributed to an increased temperature sum (Tbase=0°C), which regionally exceeded the long-term average by more than 150 degree days. A delay in the development of winter cereals and spring crops is still observed in France, Germany, the Benelux countries, the UK, northern Spain and in northern Italy.

Observed rainfall

From 1 to 10 June, lower-than-usual precipitation occurred in northern and central France, the British Isles, the Benelux countries, northern Germany, Denmark, western Italy and Russia. A particular lack of rainfall was recorded in northern Germany, the Benelux countries, the south-eastern part of the UK, Denmark, southern Spain and southern Italy. In contrast, precipitation locally exceeded the long-term average by more than 50 mm in the south-eastern part of Germany, Austria, the Czech Republic, Poland and Belarus.

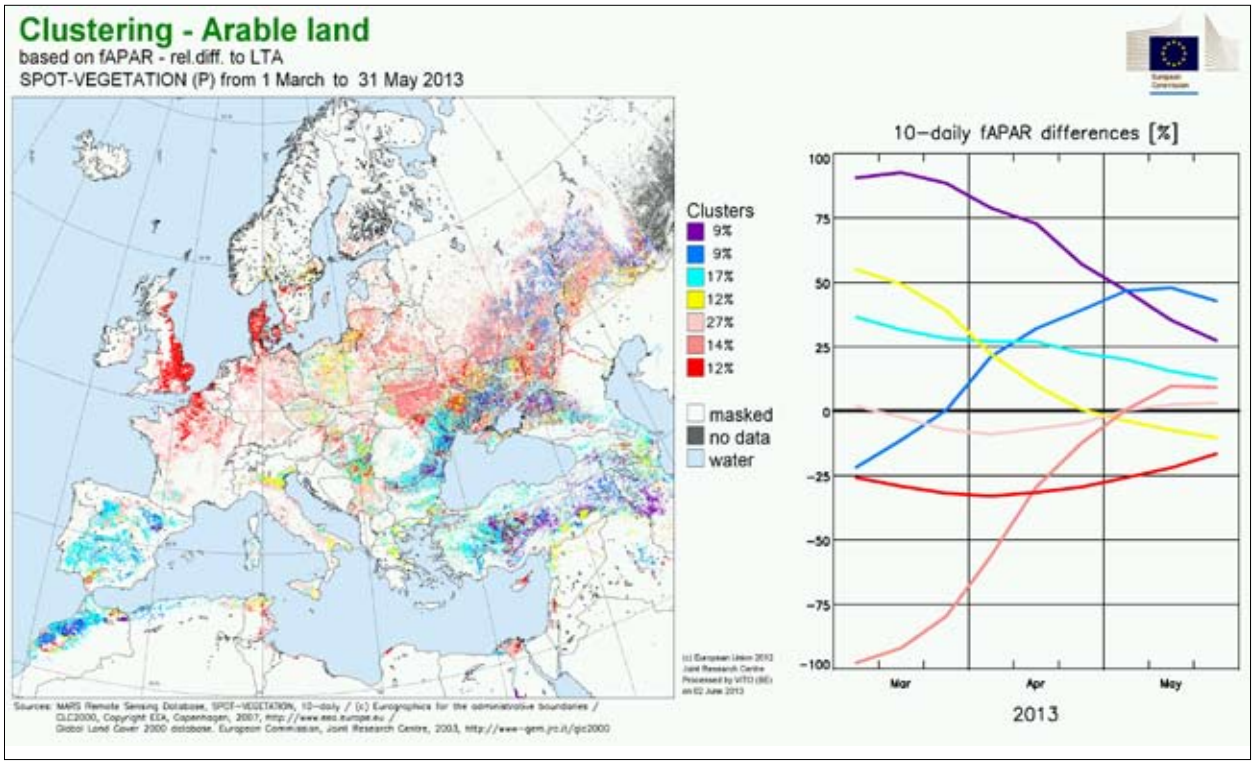
During the period from 15 May to 10 June, precipitation exceeded the long-term average by more than 100 mm in eastern Germany, Austria, the Czech Republic and Poland, with values of cumulated rainfall higher than 150 mm, causing vast floods in some areas. In most areas of central Europe the soil moisture content levels rose to critical levels, which could create problems for plant development and nutrient uptake in particular on heavy soils, and also increase the risk of disease and nutrient deficiency.



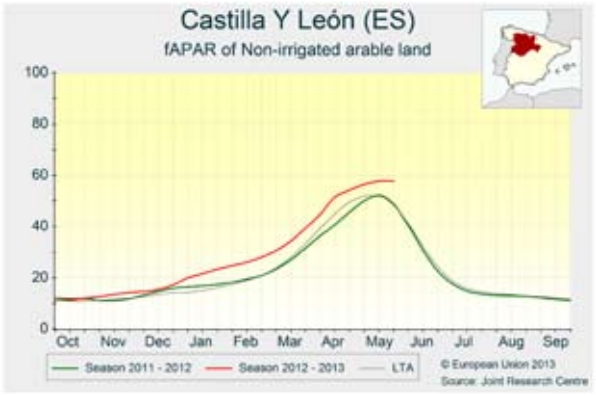


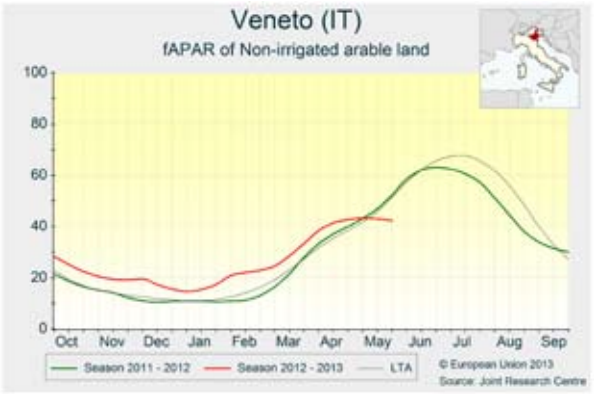
2. Remote Sensing analysis – observed canopy conditions

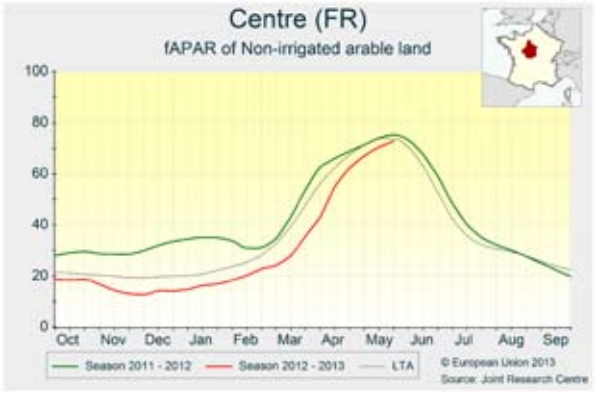
Crop development delays were not recovered in northern France and the United Kingdom. Good expectation for crop yields in the Iberian Peninsula. Very negative canopy conditions in northern Italy.

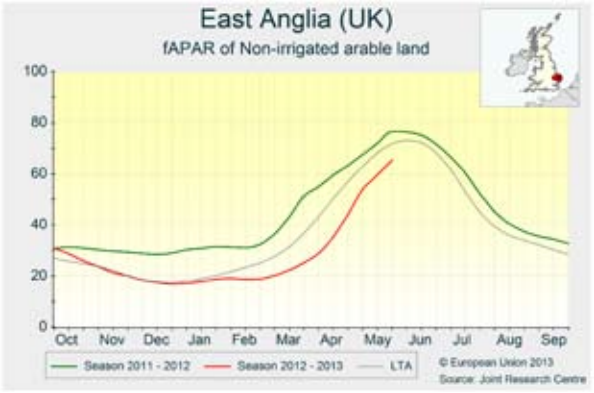


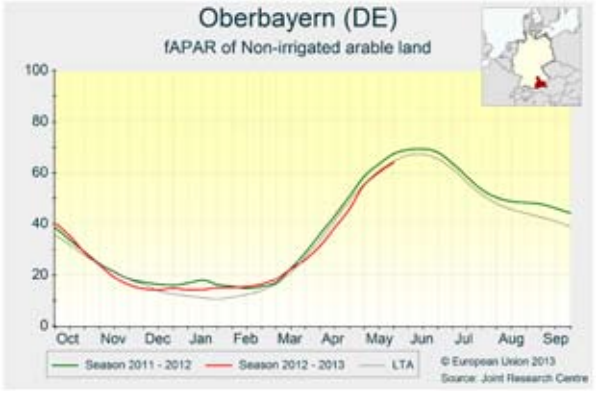
The cluster map displays the fAPAR (fraction of Absorbed Photosynthetically Active Radiation) behaviour from the beginning of the current season, 1 March, to the 31 May, as compared to the long-term average (LTA / 1998 – 2012) values. The regions highlighted in **violet** had an early start to the season with biomass development higher than the LTA values in March and April. In May, with temperatures around average and the winter crops at flowering stages, the overall green biomass accumulation slowed down but is still above the average. The fAPAR profile of non-irrigated arable land in the *Sud Est* region (Romania) is given as an example. In the case of Turkey (e.g. *Kirikkale*) the crop cycles are more advanced and senescence has already started. The **light blue** curve indicates, in eastern Europe, similar canopy conditions to the ones previously described but with a less positive development during early spring. In Spain (e.g. *Castilla y Leon*) and Portugal the **light blue** and **blue** trends depict extremely positive crop conditions: the abundant rainfall and low temperatures led to delayed but optimal development of both spring and winter crops. The yellow profile shows a worsening of canopy conditions through mid- and late spring. This behaviour is mainly visible in northern Italy (e.g *Veneto*). Even though the main crops had a positive start to the growth season, the persistent rain affected the development of winter crops and led to a strong delay in the sowing and emergence of summer crops. fAPAR values shifted from being significantly above the LTA to being below the LTA. The arable lands marked in **light pink**, mainly in western France and southern Germany (e.g. *Oberbayern*), as showing average biomass development. The **red** profile depicts the late development of the main crops in the United Kingdom, France (e.g. *Centre*) and northern Germany. In May, the below-average deficit of cumulated temperature slowed the development of spring and winter crops once again. fAPAR values of the current season, displayed for *East Anglia* (UK) arable lands, describe the actual trend. The winter crops in the regions highlighted in **dark pink**, mainly in Ukraine (e.g. L'vivs'ka) and Belarus, benefitted from the high temperatures in May that allowed the transition from delayed to advanced development stages. The increased crop water demand was satisfied by sufficient precipitation. The **blue** areas represent mainly Russian agricultural regions which experienced a sharp boost in vegetation development during May, due to the high temperatures of the month.

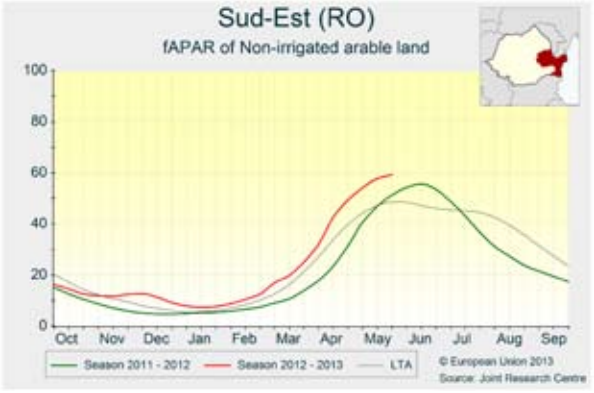

Castilla Y León (ES)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

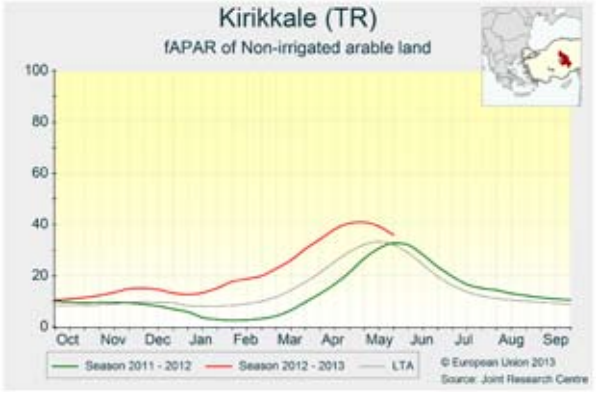

Veneto (IT)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

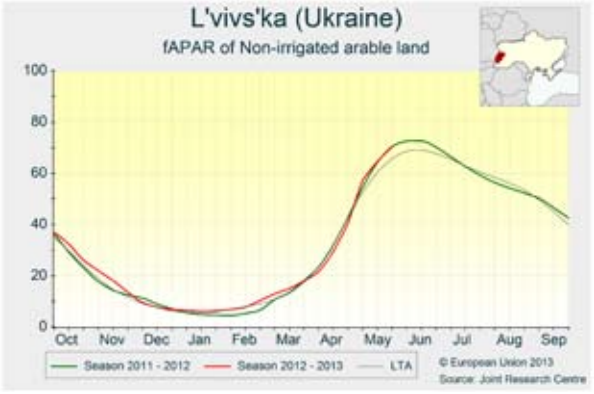

Centre (FR)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


East Anglia (UK)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Oberbayern (DE)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Sud-Est (RO)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Kirikkale (TR)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


L'vivs'ka (Ukraine)
fAPAR of Non-irrigated arable land
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

3. Country analysis

3.1 European Union

Compared to our last bulletin, the forecast for soft wheat remained practically unaltered at the EU-27 level and close to the five-year average, as the substantial upward revision for Spain, Romania and Hungary compensated for the less pronounced downward revision of forecasted yields in Germany, Slovakia and the Czech Republic.

Durum wheat yields expectations were slightly lowered for Italy but raised for some smaller producers among which Spain stands out with an exceptional high yield forecast, giving rise to expectations for a season that will be above average at the EU-27 level.

The forecast for winter barley at EU-27 level was revised upwards, thanks to the continued good performance of this crop across the Iberian Peninsula and improved conditions in Romania, which together more than compensated the slight downward revision for Germany and small producers such as the Czech Republic and Austria.

The forecast for spring barley at the EU-27 level was revised further upwards, by another 4%, again mainly thanks to the good crop conditions in Spain which is the largest producer of spring barley in the EU-27. Spring barley yields were also revised substantially upwards for Hungary and Estonia, but (somewhat) downwards for several other small- and medium-sized producers, such as Poland, the Czech Republic and Slovakia.

Forecasted rapeseed yields were revised slightly downwards for the EU-27, and are currently forecast to be below last year's yield level, mainly due to a more negative outlook for the EU's three largest producers of this crop: Germany, France and Poland. For France this would be the fourth consecutive year of mediocre yields. More substantial downward revisions (by more than 5%) for this crop were made for some smaller producers, including Bulgaria, Slovakia and the Czech Republic.

The forecast for grain maize was revised upwards and is now clearly above last year's yield at EU-27 level, mainly thanks to the substantially improved outlook for Romania and Hungary. Potatoes, and to a minor degree sugar beets, suffered a downward yield forecast revision, mainly due to a more negative outlook for the large producers - Germany and Poland - which was not compensated at EU-27 level by the improved forecast for some smaller producers such as Romania and Hungary.

France

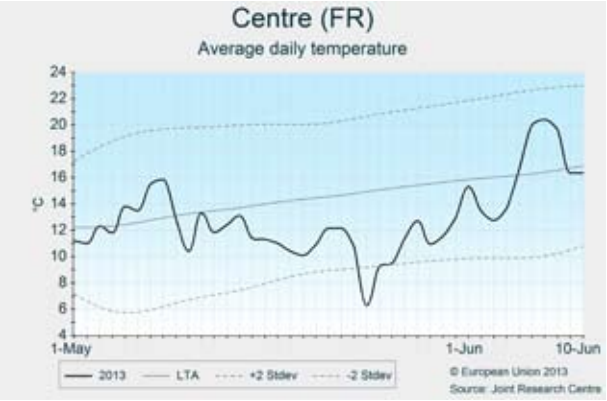
Cold and wet conditions have delayed crop growth

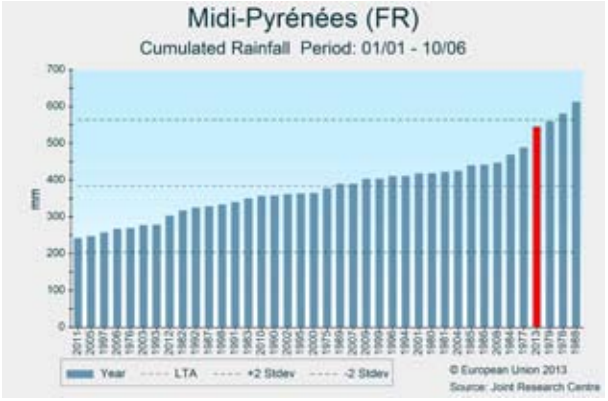
Temperatures remained lower than usual during the second half of May, which also experienced substantial rainfall. Persistent delays are observed for winter and spring crops and yields are expected to decrease slightly.

Meteorological conditions in May were exceptional with unusually cold temperatures and substantial rainfall. Average temperatures during the second half of May were 3°C below normal in the north, (*Bretagne*) and up to 5°C below normal in the south (Midi-Pyrénées). Abundant rainfall was observed during the past month in practically all regions, reaching 140 mm in *Midi-Pyrénées, Provence-Alpes-Côte d'Azur, Bourgogne* and *Aquitaine*.

Winter cereals present a significant delay in their development of about 10 to 15 days. This originated in early spring and continued in the last month as a result of chilly temperatures.

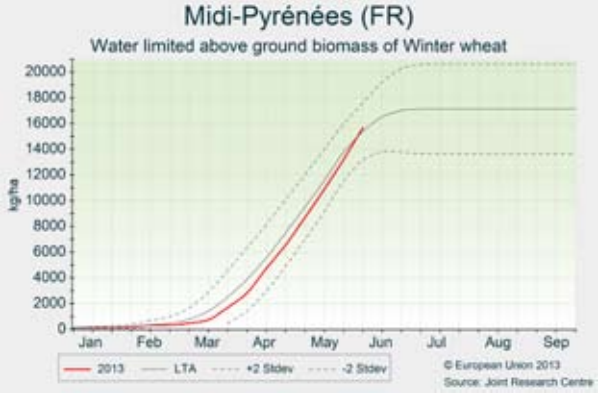
The total biomass produced by winter cereals, according to our crop models, is therefore low for this stage of the season, although rainfall will ensure a good supply of water during the flowering and grain-filling stage. Yields of winter cereals are, in summary, expected to decrease slightly compared to last years.

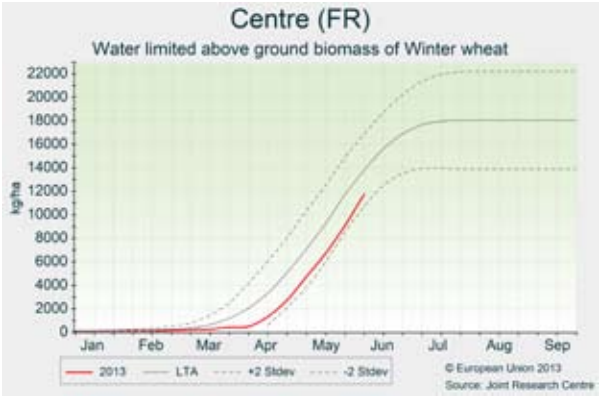




By contrast, above-average yields are expected for durum wheat, which was not greatly affected by cold temperatures in the southern half during April, and benefited of the substantial rainfalls.

Spring crops sowing and emergence were affected by the wet conditions and low temperatures, particularly maize and sunflower. It is still early to evaluate the impact of overly wet conditions and low temperatures. Weather conditions in the second half of June and July will be critical to determine yield potentials.





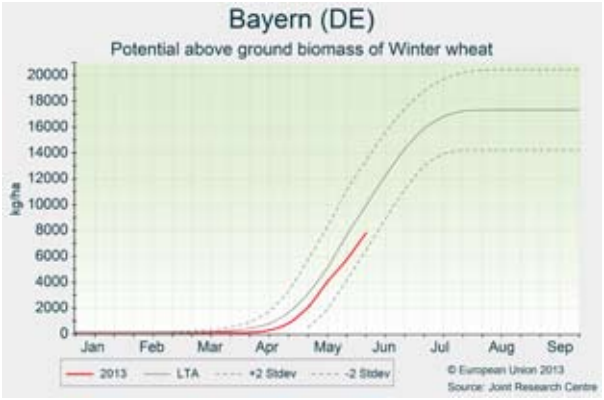
Germany

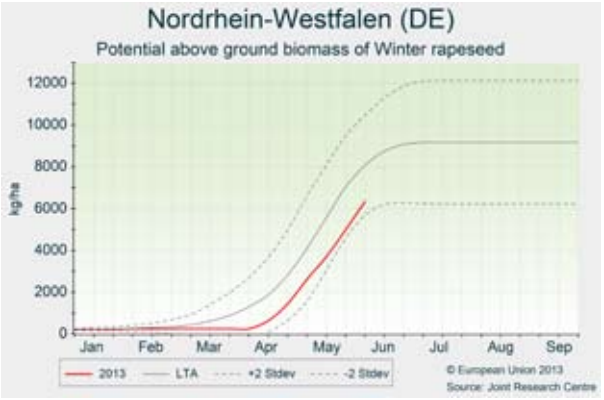
Too much rain in May constraining development of summer crops

Wet conditions in the south and east of the country are constraining plant development on heavy soils, while conditions are more favourable in the north-west. Yields are now close to or below the 5-years average for all crops.

After a positive start into the month, temperatures dropped again from the middle of May onwards. Temperature accumulation during May was lower than average with the exception of *Schleswig-Holstein, Mecklenburg-Vorpommern* and *Brandenburg* where normal temperature conditions were recorded. The most prominent weather feature during the period of review was the high amount of rainfall distributed over many days that led to vast flooding and increased the soil moisture content to critical levels. This is especially evident in Baden-Wuerttemberg, Bayern, Thüringen and Sachsen where soils are fully saturated, increasing the risk of nutrient deficiency, pest damage and constrained plant development due to a lack of oxygen at the root system on heavy soils. On the other hand, former concerns of a deficit in precipitation in the north-west of the country are now obsolete and the good soil moisture contents will be positive during the grain filling stage of winter cereals. Due to the wet weather conditions, incoming radiation was rather low. This could potentially hamper the stem elongation of cereals and thus the accumulated plant biomass at the flowering stage. As a consequence, these conditions have led to a general reduction of our crop yield forecasts as the model simulations continue to show below-average biomass accumulation for winter cereals. Rapeseed is now in the grain-filling stage and the model simulates a moderate accumulation of storage organ content. The cold and rainy May also gave rise to a suboptimal start for the maize-growing season, and the maize yield forecast has been revised downwards. These conditions

were also a limiting factor for sugar beet, the leaf area expansion of which is slightly below average. In general it is important to note that it is still too early to definitely evaluate the impact of overly wet conditions and low temperatures. Weather conditions in the second half of June and July will be critical to determine final yield potentials.





Poland

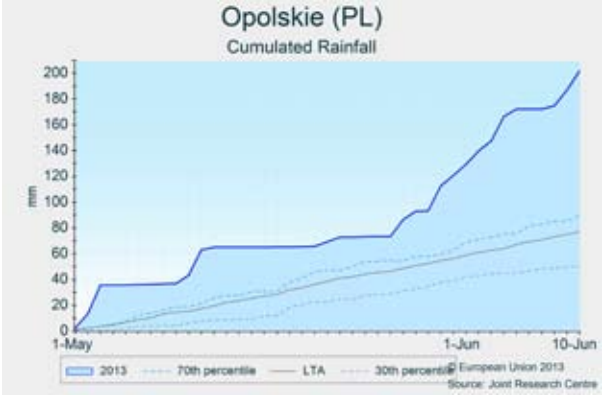
Abundant rainfall and average temperatures

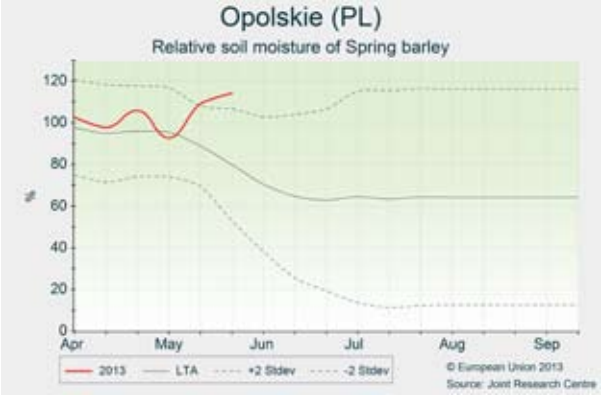
Abundant rainfall during the last week of May and beginning of June caused excessive soil wetness and water logging in low-lying areas. Temperatures are about average and winter wheat phenological development and biomass accumulation are still below average.

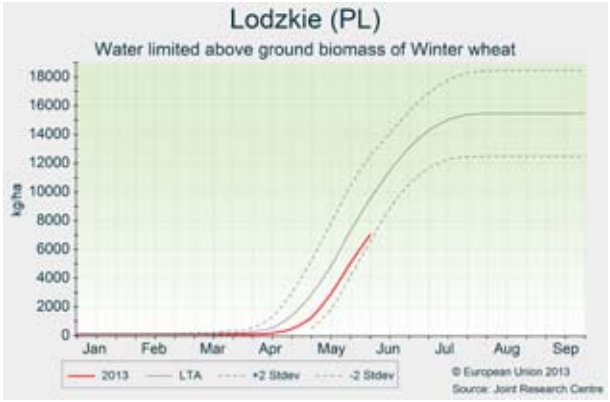
Rainfall accumulation across the country was higher than average, with heavy rainfall in the southern part of the country. Abundant rainfall rapidly increased soil water content above field capacity and reduced air content, particularly on clayey soils. Overly wet conditions can create various adverse effects such as nutrient loss, imbalanced nutrient uptake, reduced root growth, increased risk of fungal diseases, reduced access to the fields, etc. This is particularly the case on low-lying areas with heavy soils and low drainage capacity. Well-drained soils, on the other hand, will dry in a few days and farmers can easily access their fields and continue with their field work. Moreover, crops can benefit from the increased reserve of soil water later in the season, thus increasing yield potential.

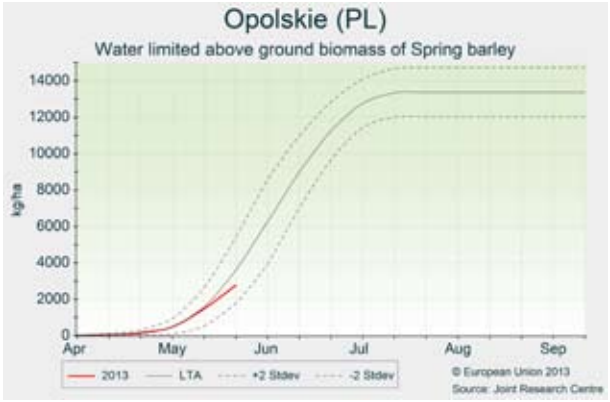
In the case of Poland, it appears that both positive and negative aspects play a role but, on balance, yield perspectives are good. Remote sensing indicators support such projections. Phenological development and biomass accumulation of winter cereals are still lagging behind, however, due to the cold weather in April. Warmer weather is required to increase crop development and growth. Winter wheat is close to the flowering stage and the occurrence of overly wet conditions during this period would increase the risk of fungal diseases. Winter rapeseed is well advanced in the season and the increased soil moisture in the grain-filling stage can be beneficial for crops on light-to-medium soils. Spring cereals and potato crops in southern regions (*Lodzkie*, *Opolskie*) experienced the highest amount of rainfall, which led to a reduction in biomass accumulation.

Our yield forecast for all crops is based on crop simulations. The yield predictions are close to those of our latest forecast.







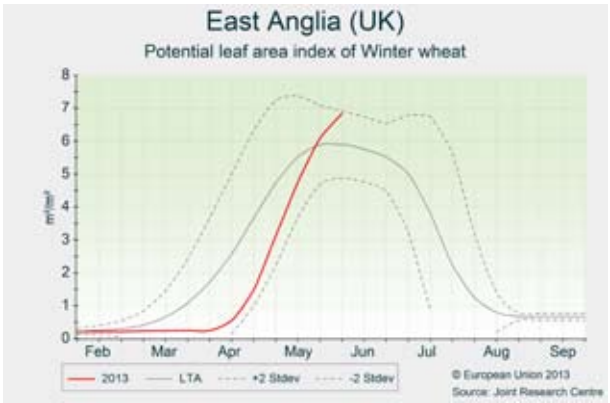


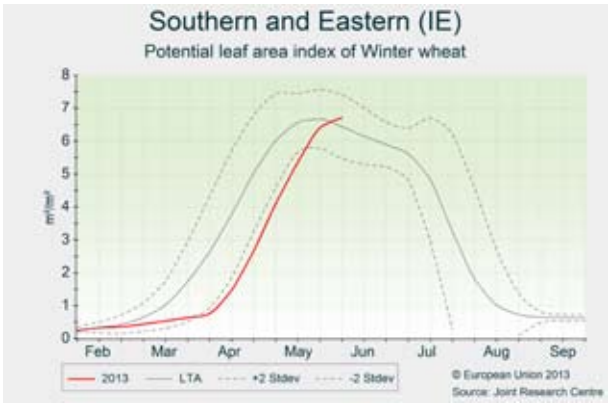
United Kingdom and Ireland

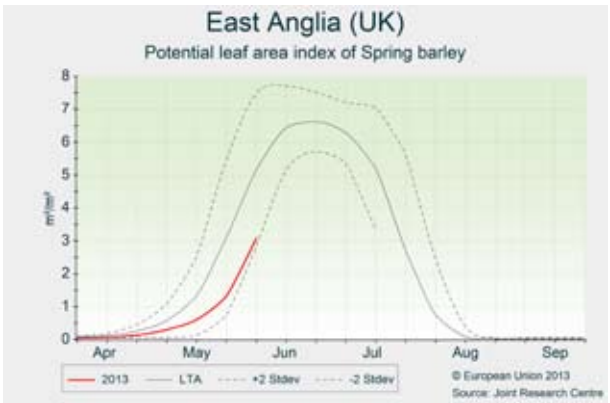
Crop yield potential at risk due to persisting delays

A period of favourable weather conditions has sustained steady crop growth. However, both winter and spring crops still show a strong developmental delay. They retain a fair yield potential, but the shift in time exposes them to higher risks.

Temperatures remained slightly below average over the UK and Ireland in May and early June. Recorded rainfall in May was average for most of the region except in Ireland and Scotland, where precipitation was above average. Conditions in early June were mostly dry throughout the region. Great Britain benefited from abundant solar radiation while Ireland had below-average sunlight. Overall, these weather patterns appear to have been beneficial for all crops. Growth of winter crops has progressed at a good rate and spring crops have had a positive start after the delay in sowing. However, all crops are still delayed with respect to normal years by about 1-3 weeks (depending on the crop, the region and the sowing dates). This translates into higher forecasting uncertainty due to the increased vulnerability of crops as the season progresses. Winter crops now face two main risks: (1) an accelerated crop development caused by high temperatures resulting in a shortening of the grain-filling period and thus lower yield potential; or (2) at milder temperatures, the length







of the grain-filling period would be normal, which could lead to high yield potentials, but the harvest would need to wait until the end of summer when it can more easily be impacted by bad weather. Yield forecasts have been slightly revised according to the new data, but overall they remain similar to those of the latest bulletin, *i.e.* somewhat below average for winter crops and in line with trend values for spring crops.

Spain and Portugal

Very high yield potential for winter and spring crops

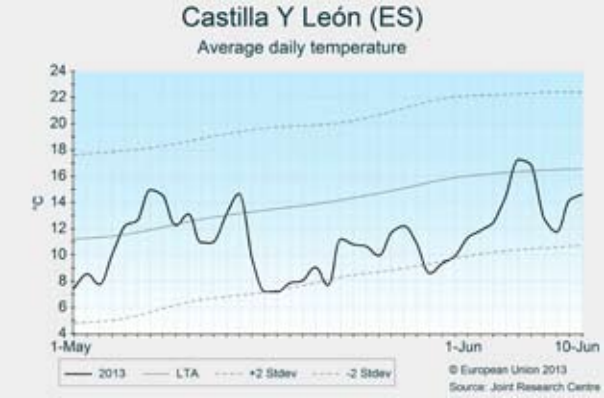
Below-average temperatures are favouring the ripening of winter crops in southern regions. Spring cereals are currently starting the grain-filling stage under favourable weather conditions. Yield potentials both for winter and spring cereals are among the highest ever.

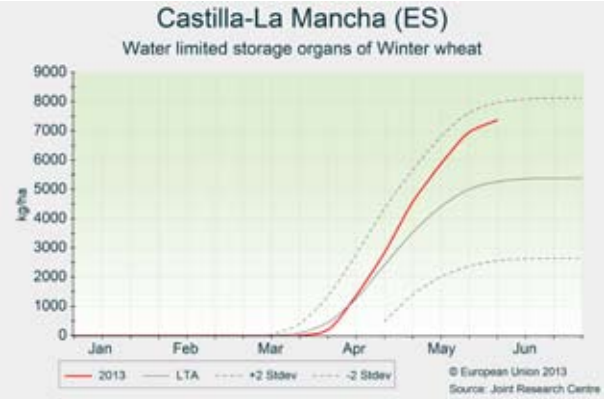
After the first two weeks of May, when temperatures were slightly milder than usual, chilly weather conditions prevailed, especially in the northern regions (*Castilla y León*, *Aragón*), with daily averages of up to 4°C below normal. This has permitted the maintenance of sufficient soil moisture, despite the cumulated precipitation during the past month having been lower than the long-term average for most regions.

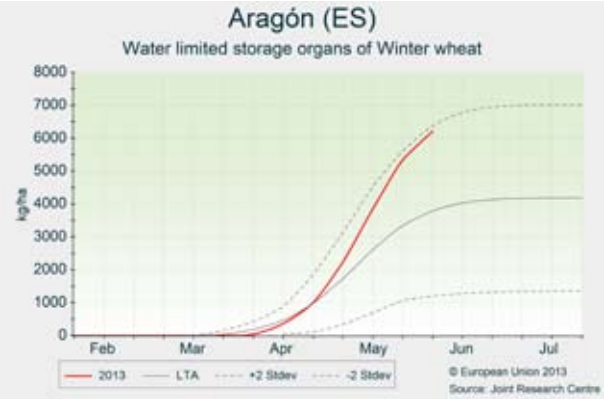
These weather conditions have been quite favourable for the ripening of winter cereals in the southern half of the Iberian Peninsula. The harvesting season is starting in *Alentejo*, *Extremadura* and *Andalucia*, and it will move progressively towards the central regions in the second half of June. The crop indicators analysed reveal that, thanks to the abundant precipitation registered during spring, the yield potentials of soft wheat and winter barley are among the highest ever.

Weather conditions during the harvest - in the absence of heavy rainfalls– will be critical to confirm these expectations. Similarly, biomass accumulation and leaf area expansion of spring barley is largely above average, indicating a very positive scenario for grain filling.

Sunflower crops have started flowering in the southern half of the Iberian Peninsula, whereas in *Castilla y Leon* its development is slightly delayed due to below-average temperatures. Grain maize has entered the leaf-area-expansion stage, with a delay of about one week compared to an average year. The outlook for both crops is, however, positive at this time.





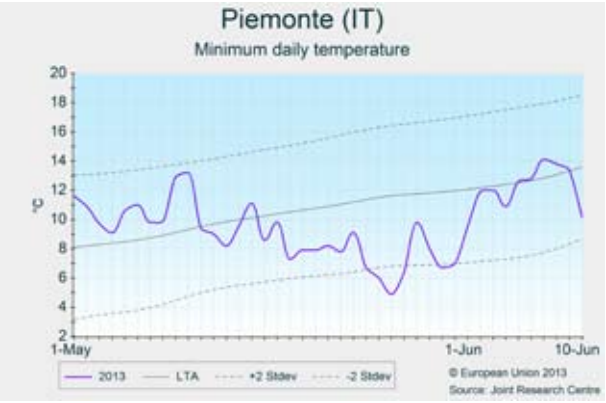


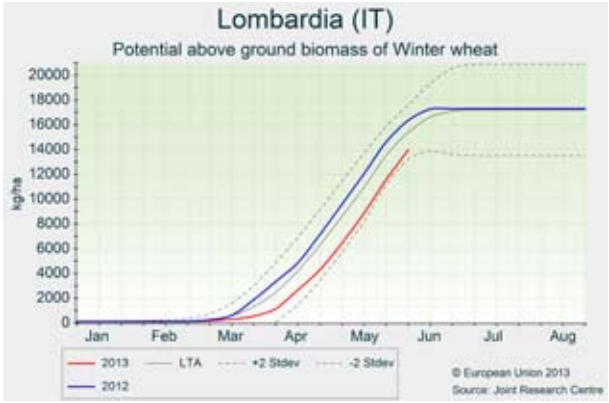
Italy and Slovenia

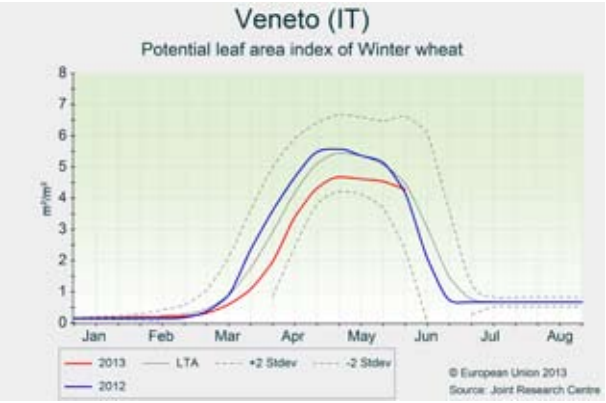
Too wet and cold in the north

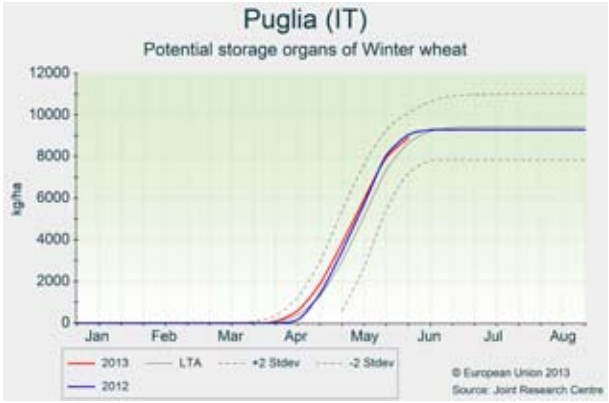
For winter crops, growth slowed down in northern regions, while normal conditions prevailed in central and southern Italy. Weather conditions were also unfavourable for spring crops in northern Italy but it is too early to forecast any negative impact on final yields.

After the first dekad of May, colder-than-usual conditions prevailed in northern Italy and Slovenia, resulting in below-average cumulated active temperatures (Tbase=0°C). In *Piemonte* and western *Lombardia* a delay in crop development is still observed, while in *Veneto*, the eastern part of *Emilia Romagna* and Slovenia the earlier delay has been compensated. In central and southern Italy, normal thermal conditions prevailed with maximum daily temperatures of 30°C. During the period from 1 May to 10 June, above-average rainfall was still observed in Slovenia, northern and central Italy, except for southern and eastern parts of *Emilia Romagna*, where recorded rainfall was slightly below average. Cumulated rainfall exceeded 150 mm in most areas of northern Italy and Slovenia during this period, and very high soil moisture values have been maintained. Abundant rainfall hampered field operations and could increase the risk of disease. In contrast, rainfall remained below average in southern Italy. Wheat and barley are at the grain-filling stage in northern and central regions, and, as confirmed by remote sensing analysis, the simulated winter crop leaf area index and cumulated potential biomass remain below average, particularly in *Piemonte*, *Lombardia* and *Veneto*. In southern regions, the harvesting of durum wheat has already started and our models confirm the expectation of average yields. Rapeseed is at the ripening stage in north-eastern and central Italy, while in *Piemonte* and *Lombardia* grain filling has started with a slight delay. Furthermore, high rainfall occurring during the flowering stage could affect the final yield in these regions. Grain maize is at the vegetative stage. In northern Italy, after a strong delay to the sowing of maize, the low temperatures in conjunction with wet conditions provided a poor start to the season. However the weather conditions during the next month will be crucial to determine the final yields.









Hungary

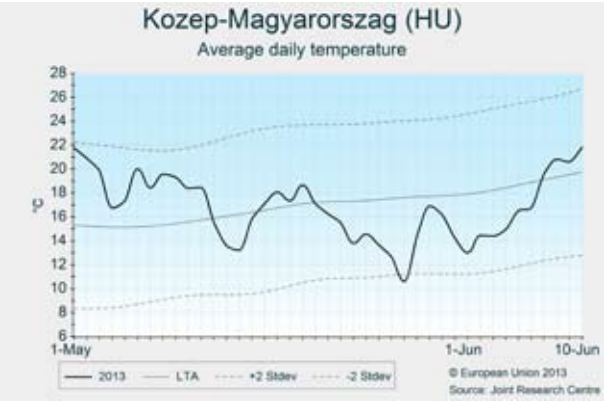
Substantial rainfall stimulated crop growth and development

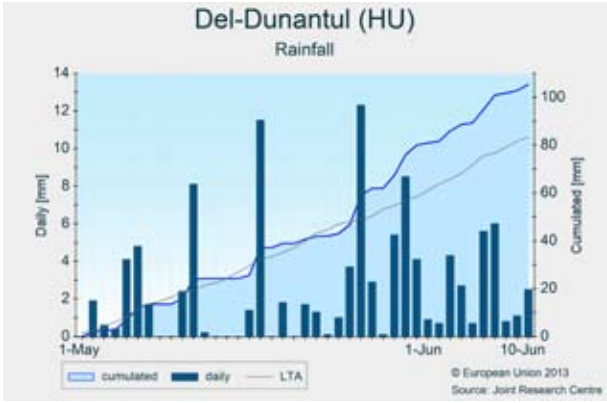
Hungary experienced frequent and abundant rainfall in May, keeping the soil moisture content at optimal level. Considering the whole period of review since the 1st of May, temperature sums were close to the average, but this was the result of subsequent warm and cold spells. The current status and biomass accumulation of winter crops is promising. The development of spring and summer crops is delayed due to late sowing and relatively cool weather.

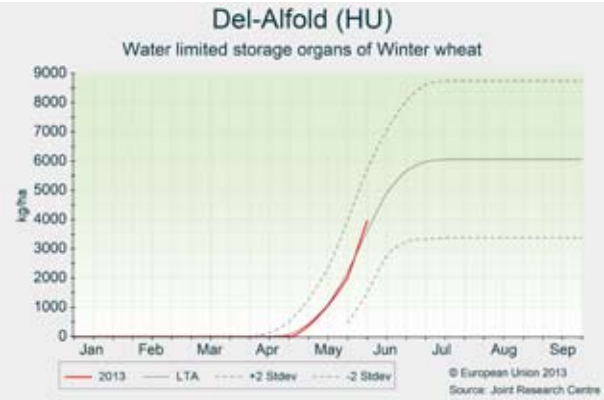
In the first two dekads of May, daily temperatures were mostly higher than the long-term average, but after 20 May weather conditions became colder than usual. The active temperature sum (Tbase=0°C) indicates a slight deficit (20-50 GDD) in western Hungary while near seasonal values were experienced in the eastern regions.

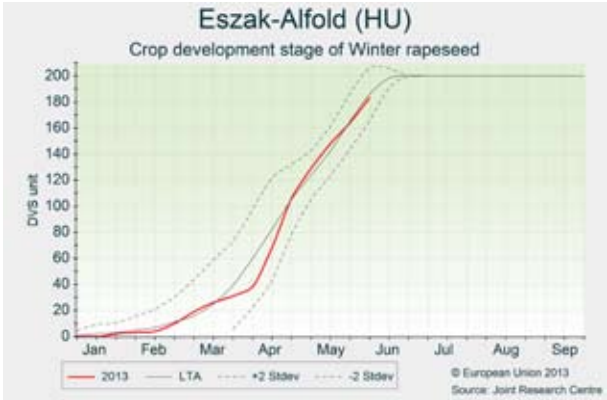
Rainfall was plentiful and evenly distributed during the whole period. Precipitation had considerable spatial variability, but cumulated rainfall reached or exceeded the average across the region. The continuously moist weather created favourable conditions for plant pests and disease.

During the first 20 days of May, weather conditions were positive to completing the belated sowing of sunflower and maize, and to the quick emergence and early growth of spring crops. The development of winter crops was also accelerated and these reached the normal phenological stage for mid-May. Later on, the moderately high temperature combined with adequate soil moisture also provided good conditions for the grain filling of winter cereals which started by the end of May in the southern regions. The crop model simulations depict slightly higher-than-seasonal biomass accumulation for winter cereals and rapeseed. Simulated water limited storage conditions, mainly in the eastern part of Hungary, suggest an even more positive outlook. Yield expectations are therefore above average, but further rainfall (and temperatures that are not excessive) are needed during June in order to maintain this positive forecast.









Romania

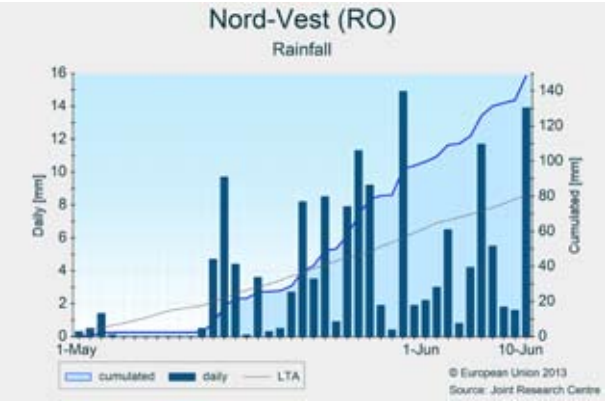
Above-average yield expectations for winter crops

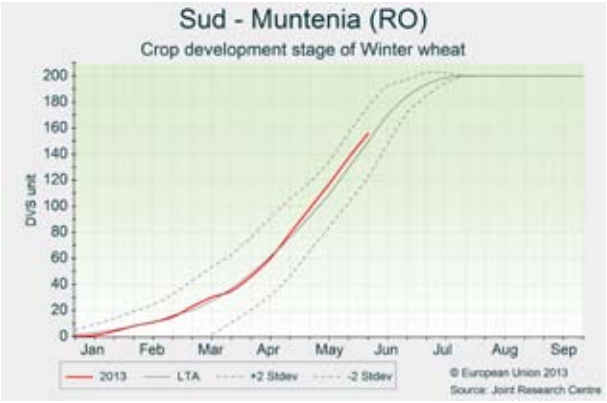
Daily temperatures notably decreased after the first dekad of May and remained in the normal thermal range. The cumulated precipitation of the period under review reached 100 mm (+50% above average) with a significant surplus in the western, northern and central regions. The general conditions and biomass accumulation of winter crops continue to be good; our yield forecast was therefore revised upwards.

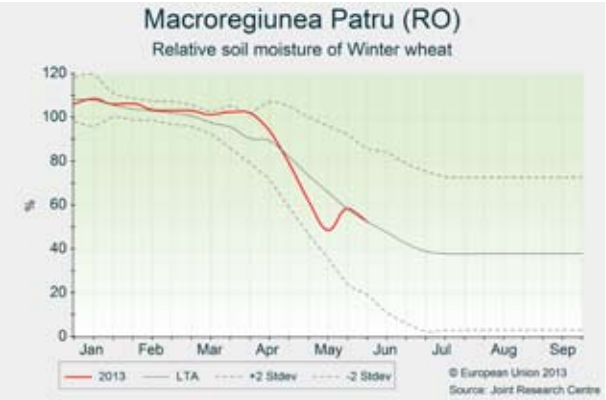
May 2013 began with exceptionally warm and very dry weather in Romania, and was characterised by a considerable water deficit. The thermal anomaly reached +5 to 6°C during this hot spell and hardly any rainfall was recorded. Temperatures gradually fell to average values towards the middle of the month. Considering the whole period of review, the thermal sum (Tbase=0°C) amounted to a surplus of 50-100 GDD in eastern regions, while elsewhere only a moderate surplus was registered. Precipitation was more frequent from the second dekad of May onwards and, especially in the last days of May, ample rainfall occurred. The soil moisture reached optimal or normal levels under winter crops with the only exceptions being eastern areas of Sud-Est and eastern part of the *Macroregiunea Patru* regions.

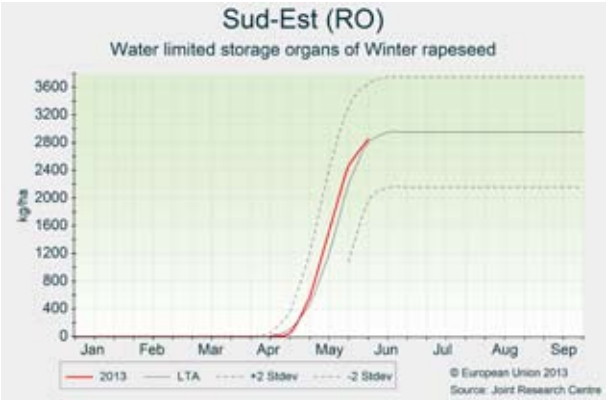
Irradiation conditions were favourable along the Bulgarian border and closer to the shore of the Black Sea, reaching 10-30% above average.

The development of winter cereals is ahead by 5-10 days and rapeseed is even more advanced in smaller regions. Photosynthetic activity, water-limited biomass and storage organ weights are simulated as being close to or above average for winter wheat, winter barley and rapeseed, suggesting a high yield potential. The analysis of the latest remote sensing images confirms the positive yield expectations of winter crops. The development and growth of summer crops are adequate for the season, but as it is still early in the crop season the yield forecast can change significantly depending on the water supply during summer.









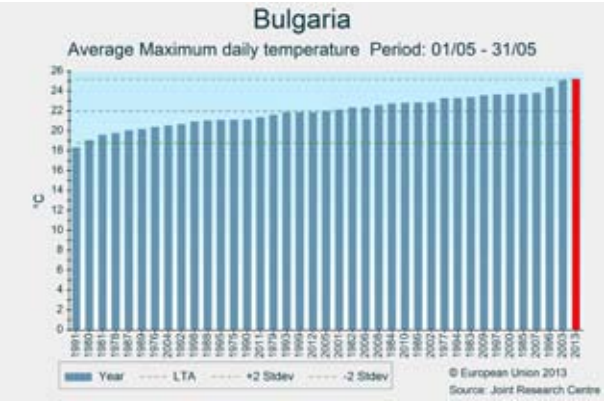
Bulgaria

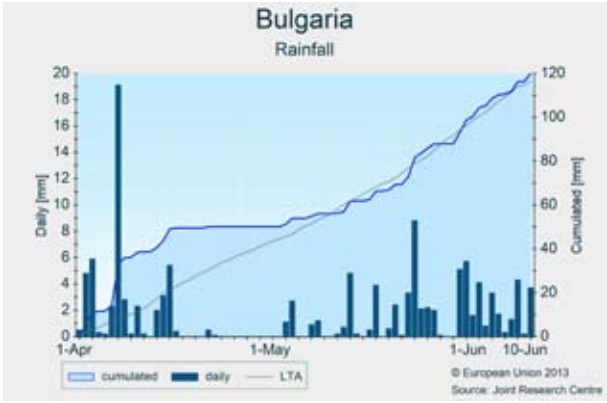
Warm, rainy conditions helped to keep the yield potential above average

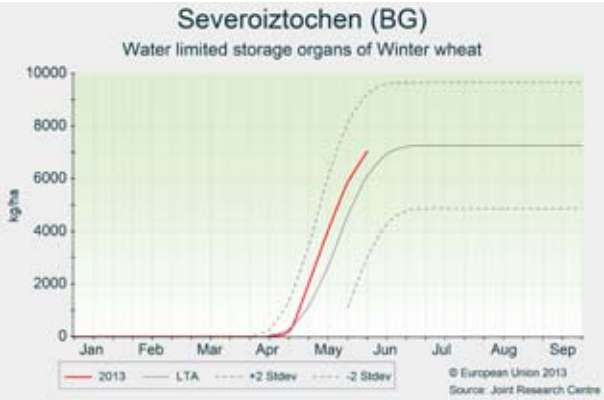
The persistently high temperatures of May helped to bring the phenological development of winter crops forward. Most of Bulgaria experienced abundant rainfall during the past 30 days. The crops are generally in good shape. The outlook for winter crops remains positive and therefore the previous optimistic yield forecast was maintained.

Daily temperatures in May exceeded the long-term average, except for a short period in the last dekad. Maximum temperatures fluctuated mostly in the 24-30°C range and the thermal anomaly reached +2-3°C on average. Considering the maximum temperatures, this May was the hottest in our 37-year archive, proving the extremity of this month. In the first dekad of June, temperatures fell slightly below the average. Precipitation had been scarce since mid-April, but frequent and abundant rains returned in the second dekad of May and continued until the end of the review period, benefiting crops. It is expected that the previous dry and hot period had an only slightly negative effect on the final yield expectations of winter crops.

The warm weather further accelerated the development of winter crops which are now in a very advanced stage, reaching 10-20 days of precocity. An early harvest is foreseen for this year, as winter wheat has reached maturity in the southern regions, and is in the ripening stage elsewhere. The above-average thermal and water supply conditions also facilitated the early growth of summer crops, although further ample rainfall will be needed to secure the current high-yield expectations. The crop simulation results indicate high levels of biomass accumulation for winter cereals. Remote sensing indicators also reveal a good leaf area expansion and considerable biomass accumulation compared to an average year, indicating that conditions are favourable to crop growth.







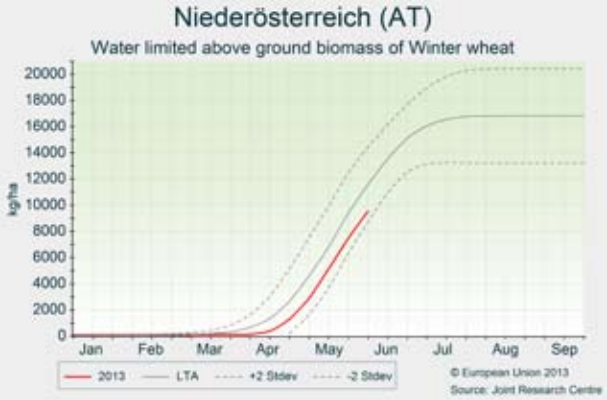
Austria, the Czech Republic and Slovakia

Winter crop yield forecast below average

Winter crop yields are revised downwards due to the high rainfall registered since the start of the year and yet another cold spell experienced in May and June.

Average temperatures were around the long-term average during the first three weeks of May. During the last week of May and the first week of June, temperatures dropped below the long-term average again. These conditions caused a slight delay in the phenological development of winter and summer crops, which had already been delayed due to the cold spell in March. As already pointed out in the previous bulletin, rainfall levels since the start of the year have been well above the long-term average. Furthermore, during the first week of June high levels of rainfall were registered in Austria and particularly in the Czech Republic, causing floods in some areas. High soil moisture levels under these conditions can create problems for plant development and nutrient uptake.

Our models indicate a reduction in biomass accumulation and leaf area index for winter cereals and spring crops. Furthermore, the high levels of rainfall around the wheat-flowering stage may have created favorable conditions for fungal diseases spread and development. Predicted yield reduction for winter rapeseed is less marked. The winter-crop-yield forecast reported in the last bulletin was below the long-term average. Considering the generally unfavourable weather conditions since then, these yield forecasts were revised further downward. Regarding summer crops, it's too early in the season to forecast negative impacts on yield, so trend values were maintained.

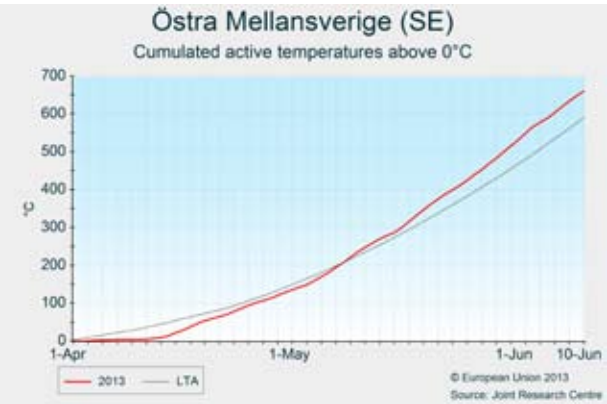


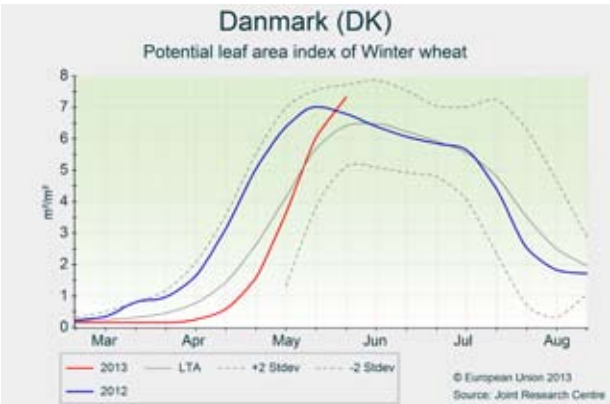
Denmark and Sweden

Mild weather conditions

After the delayed sowing, growth conditions returned to normal for spring crops. Rising average temperatures and rainfall in May improved the biomass accumulation of winter crops.

During the period from 1 May to 10 June, normal thermal conditions prevailed in Denmark, while in Sweden above-average temperatures were recorded, mainly in eastern and northern Sweden (+2 to +4°C). The warmer conditions in Sweden pushed cumulated active temperatures (Tbase=0°C) above average (with a surplus of 100 to 150 GDD in northern Sweden), but in Denmark these remained around the long-term average. Across the region, rainfall was generally sufficient to avoid water stress, but additional





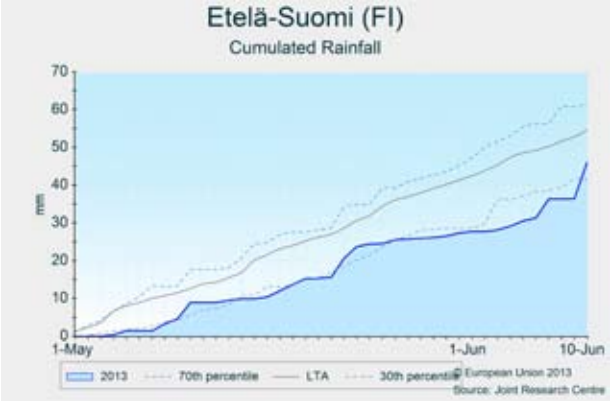
rains in the coming weeks will be essential to maintain the yield potential, especially for spring crops. Winter crops have started flowering in Denmark and southern Sweden (*Sodra Sverige*). A slight delay in development is still observed, but, as confirmed by remote-sensing analysis, the simulated leaf area index and total biomass accumulation are now close to the average. The forecasts for winter wheat and winter barley are around or slightly below average based on a scenario analysis. According to our model, the forecast for spring barley, which is at the beginning of the heading stage, with growth conditions around the average of recent years, is slightly above the average.

Finland and the Baltic countries

Mild weather stimulates crop growth and development

For the whole region, temperature accumulation during the period analysed was the highest in our historical records. The mild temperatures, combined with increased solar radiation and sufficient moisture, accelerated crop growth and development.

Average temperatures, as well as temperature accumulation, across the whole region were the highest in our historical records. Global radiation was also higher than normal across the region, in spite of periods of increased rainfall and cloudiness in the Baltic countries. In Finland, rainfall levels remained persistently below average. Current weather conditions are very favourable for crop growth and development. Crops accelerated phenological development, fully bridging the delay caused by low temperatures and snow in April. The yield forecast is based on crop simulation modelling, which shows that the favourable weather conditions led to accelerated leaf area development and biomass accumulation, and increased yield levels compared to the previous bulletin, particularly for spring crops. However, realisation of the forecasted yields still depends very much on the weather conditions over the coming months. In Finland, for example, particularly in *Etelä*, rainfall accumulation since the beginning of the year has been insufficient to keep pace with the high evapotranspiration levels caused by high temperatures. If dry and hot weather continues, soil water levels will drop below critical values and lead to a reduced crop yield.



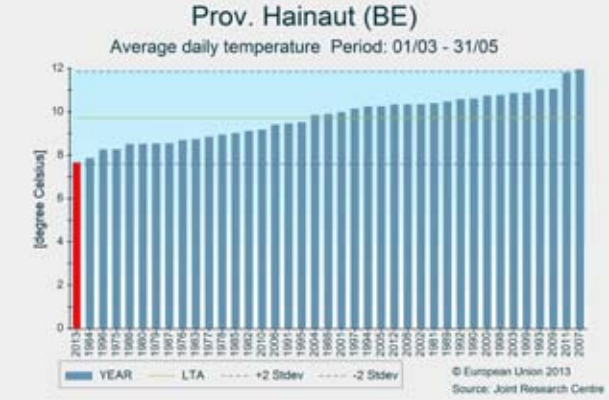
Belgium, the Netherlands and Luxembourg

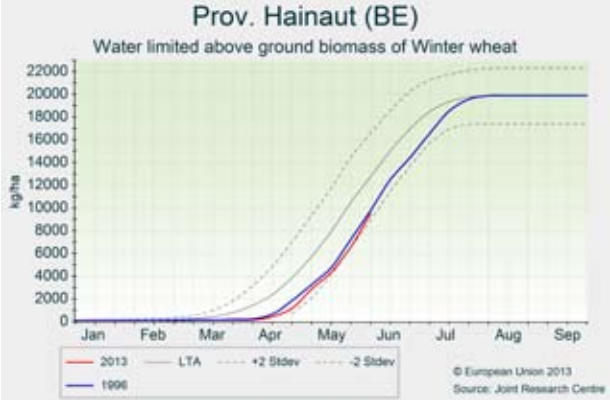
Crop growth and development continue to lag behind

Wet weather and below-average temperatures during most of the review period (1 May – 10 June) have further restrained the growth and development of winter and spring crops which were already delayed due to unfavourable late winter and early spring conditions. These conditions are deemed to limit potential yields to near average levels or below.

After a relatively warm and dry first week of May, cold and rainy conditions prevailed until the end of the month. The first dekad of June was characterised by sunny and dry weather that showed a trend of increasing temperatures, which reached around average levels by the end of the review period (10 June).

The cool conditions during most of the review period further contributed to the persistent delays in phenological development and biomass accumulation reported in previous bulletins. This applies to winter as well as to spring crops, which already got off to a late start due to the delayed sowing. How this translates to final yield levels still depends very much on weather conditions during the coming period. For winter crops, above-average yields can still be achieved if weather conditions are good (sunny but not very warm) during the grain-filling stage. However, slightly below-average yields seem to be more likely. This is reflected in the forecast of this bulletin which is based on scenario analysis. For spring and summer crops, it is still early in the season but top yields appear to be very unlikely.





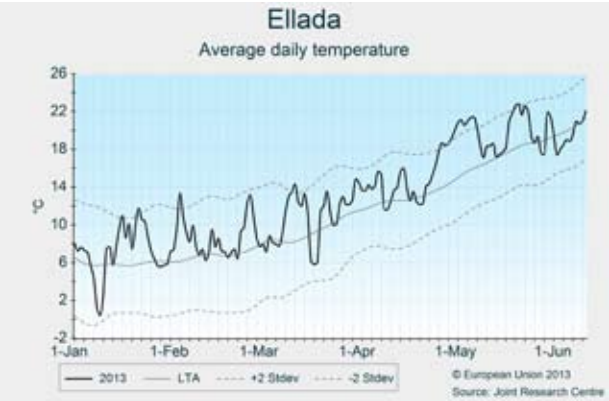
Greece and Cyprus

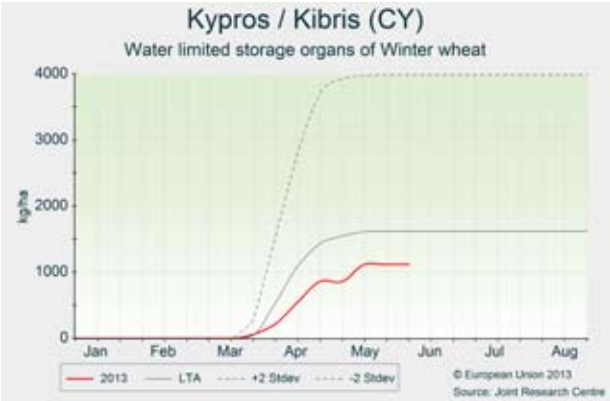
Harvesting of winter cereals already started

The long period of above-average temperatures in Greece seems to have come to an end. In Cyprus, the lack of precipitation and the warm conditions have had a negative impact on crop yields. Winter cereals are already being harvested in both Greece and Cyprus.

Since the start of the year, temperatures have mainly been above average in Greece, leading to the highest values in our database for average daily temperatures and temperature sums (base 0°C and 10°C). As observed in the previous bulletin, these conditions have resulted in accelerated development and growth, but have also led to water limitations of rainfed crops, including most of the winter cereals in most of the country. While Rainfall in mid-May was not abundant, it arrived at a crucial time during the grain-filling stage, helping to secure fairly good yields. More favourable conditions are recorded for the area of *East Macedonia* and *Thrace*. As a result, our forecast confirms the values of the previous bulletin.

In Cyprus, high temperatures led to an even more pronounced advance of the development season for winter cereals. Cyprus also received some precipitation in mid-May but, with the season coming to an end, this had a very limited effect on the yields of winter cereals. As a consequence, simulated aboveground biomass and grain yields remained below or far below the long-term average, resulting in a low yield forecast.





Croatia

Persistent period of abundant rainfall

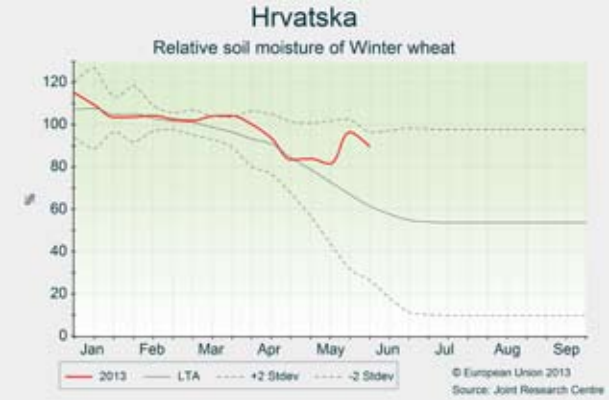
During the period analysed, Croatia again experienced abundant rainfall. Rainfall replenished soil water content to field capacity, creating a reserve that will be important during the typically hot and dry summer months; and creating good yield perspectives.

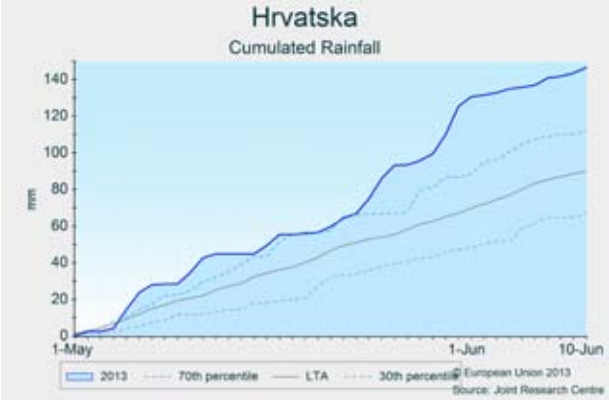
Again the rainfall accumulation across the country was higher than average - this time by about 50% - but not excessive. Soil water content was replenished to field capacity. This high reserve of soil water will have a beneficial role during the coming summer period of high temperatures and radiation. Temperature accumulation during the period under review was about average.

Most crops present a slight delay in phenological development but remote sensing indicators show that the winter crops are

in good condition, suggesting good yield perspectives, and that the spring crops are developing very well after the delayed sowing due to the heavy rain that occurred during the sowing period.

Our yield forecast for all crops is based on model-based scenario analyses. Our yield predictions fluctuated slightly around our latest forecast but are still close to average values.





3.2 Black Sea Area

Ukraine

Dry conditions in the southeast have affected crop growth

Most parts of the country show good thermal conditions and sufficient rainfall for the season, but the south-eastern regions faced unusually dry conditions that have affected crop growth and development since mid-April. Significant rainfall recorded at the beginning of June helped to limit losses in growth.

Temperatures since the beginning of May are considerably above average: 4°C in the eastern half and 2.5°C in the western half of Ukraine. These exceptional thermal conditions have accelerated crop development, which is approximately 15 days ahead of a normal year. Cumulated rainfall since 1 January is slightly above average in most parts of the country and particularly in the western half (+120 mm in *Ternopil's'ka*). However, the south-eastern part of Ukraine faces dry conditions. Only 14 mm of cumulated rainfall was recorded during May in the *Khersons'Ka* region, which also experienced above-average temperatures. According to our model simulation, yields of winter wheat are expected to decrease in *Khersons'Ka* and *Krym* as a result of dry soil conditions during the flowering stage. Fortunately, these two regions received more than 40 mm of rainfall since the beginning of June when crops reached the grain filling stage, thus diminishing yield losses. The winter crop conditions elsewhere in the region are better; consequently the yield outlook for winter wheat is still average. Spring barley and grain maize development is mostly 10 days ahead compared to a normal year due to beneficial thermal conditions. The latest rainfall will furnish sufficient water for the vegetative growth of grain maize and for the grain filling of spring barley.

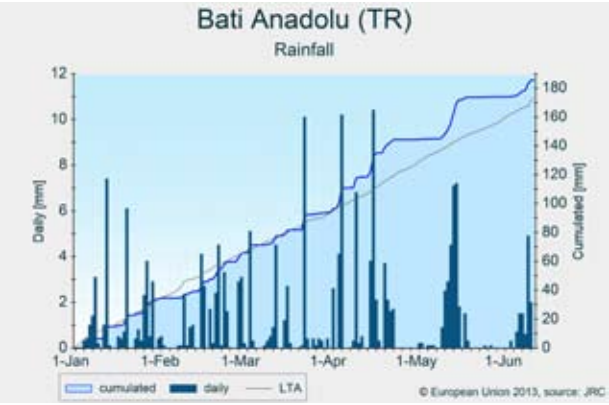
The current forecasts for grain maize are based on crop model simulations. However, it is still early in the season, and grain maize will remain sensitive to rainfall occurring in June and July. Any prolonged dry period will tend to decrease the yields.

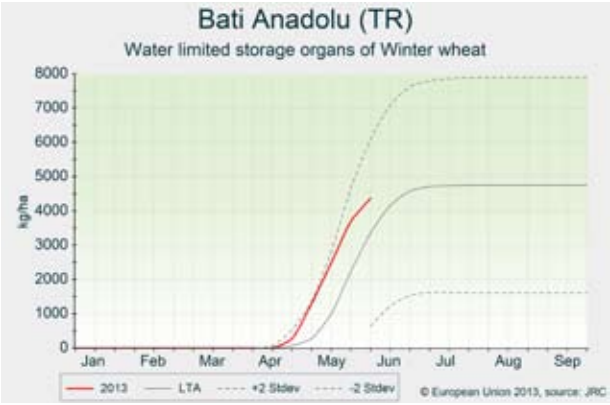
Turkey

Weather conditions in favour of good crop yields

Favourable temperatures and well distributed rainfall have resulted in accelerated crop development and increased likelihood of good yields.

The time window considered in the present analysis registers continued favourable temperatures, a positive water balance, and above-average cumulated global radiation in the barley - and wheat - producing areas of the country (i.e. central Anatolian regions comprising of Konya, Ankara and Kirikkale). Barley has now completed its growth cycle in these areas with a final yield forecast that is above the 5-year-average. Wheat is still in its grain-filling stage. In view of current weather conditions the forecast for wheat yield is also above the 5-year-average. Green biomass accumulation inferred from satellite images also supports yield forecasts above the 5-year-average values for both crops. The prevailing weather conditions are also favourable for maize development. However, the final yield is still subject to uncertainties as the crop is at the vegetative growth stage. Therefore, the forecast for maize was maintained at the 5-year-average value.





3.3 European Russia and Belarus

European Russia

Yield potential affected by dry and hot conditions

Persistent warm conditions, combined with scarce and infrequent precipitation during most of the period under review adversely affected the yield formation of winter cereals in the most important production zones of European Russia.

Temperatures persistently exceeded the average in large parts of Russia between the border of Finland and the Caucasus Mountains, by 2-5°C for the period analysed. This represents one of the warmest hot spells in our meteorological archive. The temperature sum (Tbase=0°C) also indicated a surplus of more than 100 GDD in these areas, and in smaller

regions the surplus even reached more than 150 GDD. From 1 April until 10 May, very little rainfall was recorded in several important agricultural regions of southern Russia (like *Krasnodarskiy Kray* and *Belgorodskaya*, *Voronezhskaya*, *Rostovskaya*, *Volgogradskaya*, *Tambovskaya*, *Saratovskaya Oblasts*). Precipitation became more frequent from the second dekad of May and partly eased the unfavourable water supply conditions. However, due to the spatial variability of precipitation, there are considerable local differences.

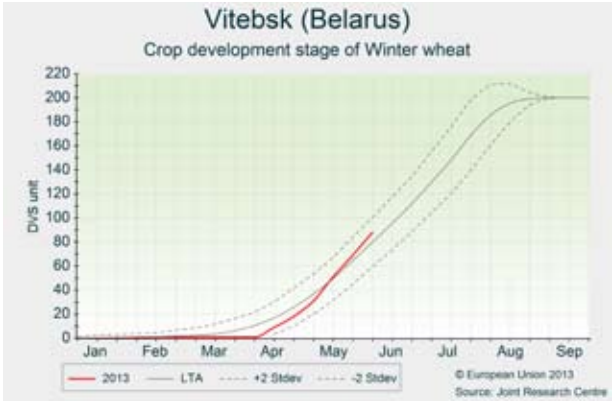
The warm weather caused very early crop development. The development of winter wheat is earlier than normal by 10-20 days in the Southern and Near Volga Federal Districts. In the regions with scarce precipitation, a sharp decrease of soil moisture levels was recorded. The high daytime temperatures increased the potential evapotranspiration (evaporative demand of the air), further worsening the water supply conditions during the flowering and grain-filling stages. The crop model simulations indicate reduced biomass assimilation and a decreased leaf area index due to the premature senescence of leaves. This backsliding is also apparent in the remote sensing observations. As a result of these unfavourable developments, the high yield expectations of winter cereals were revised downwards for southern Russia.

Belarus

Unusually high temperatures led to accelerated crop growth during May

High temperatures and above-average rainfall have created good conditions for crop growth. Consequently, crop yield forecasts are revised upwards for winter wheat and spring barley.

Temperatures during May were unusually high for the season. In most parts of the country, recorded temperatures were +3.5°C above the average, reaching even +4°C in Vitebsk province. Since the second dekad of May, minimum recorded temperatures have not fallen below 5°C, thus providing suitable conditions for spring crops emergence and juvenile growth. Spring barley and grain maize development is ahead of the norm by one dekad. Winter wheat has completely recovered the delay caused by the prolonged winter and persistent snow cover. Since the end of May, thermal conditions are closer to normal and cumulated rainfall is slightly above average in the southern and central parts of the country (+40mm in the Minsk region). Yields for winter wheat and spring barley have been revised upwards due to the favourable thermal



conditions and absence of water limitations. As it is in the early stage of the crop cycle, the grain maize forecast is still close to the average, but the conditions are good for the start of the season and regular precipitation and favourable temperatures may improve these expectations.

3.4 Maghreb

Morocco, Tunisia and Algeria

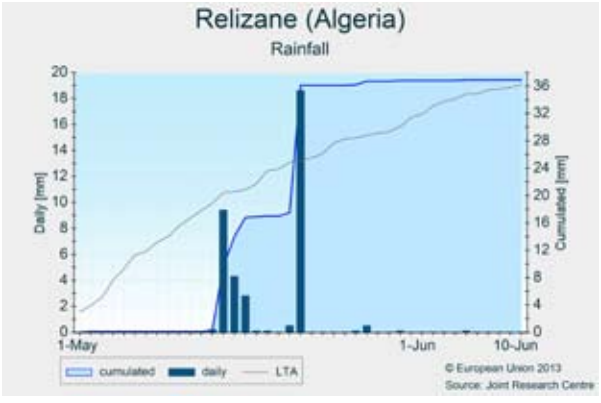
Good conditions continue in large parts of Morocco and Algeria

Morocco, western Algeria and northern Tunisia have experienced a good season for crop development and growth, whilst eastern Algeria and central Tunisia have experienced a less positive season. This pattern has continued over the last month.

Wheat and barley have matured across most of Morocco. Where crops are still ripening in *Centre*, *Centre Nord* and *Centre Sud* regions, they are still ahead of the long term average, and there should be no delays in harvesting. There have been no extreme precipitation events that might otherwise affect harvesting. Remotely sensed indicators suggest well above average biomass accumulation in many parts of Centre and Nord Ouest regions, and predicted yields for wheat and barley (based on both CGMS and remote sensing) are very positive.

Wheat and barley have matured across most of Algeria. Where crops are still in grain filling and ripening stages, they are generally ahead of the long term average. Only in small parts of Saida and Tiaret wilayas is crop development slightly behind the long term average. Remotely sensed indicators suggest above average biomass accumulation across much of the western and central cereal growing regions of Algeria. It has been an unusually wet season in many parts of Algeria, and whilst some areas have continued to receive above average rainfall in the last couple of weeks, this shouldn't cause any problems with harvesting. Predicted yields for wheat and barley are still significantly above those expected on trend alone.

Wheat and barley have matured across most of Tunisia, and are ready for harvest. A few small areas in the north are still ripening, but are still ahead of the long term average. Rainfall remains well below the long term average, especially in central Tunisia. Predicted yields for wheat and barley therefore remain significantly lower than trend alone.



4. Crop yield forecasts and yield maps

Country	TOTAL WHEAT (t/ha)					SOFT WHEAT (t/ha)					DURUM WHEAT (t/ha)				
	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs
EU27	5.18	**5.32**	5.38	+2.7	-1,0	5.42	**5.55**	5.63	+2.3	-1.5	3.13	**3.34**	3.21	+6.7	+4.3
AT	4.14	**4.86**	5.13	+17.4	-5.2	4.19	**4.90**	5.17	+16.8	-5.3	3.07	**4.07**	4.34	+32.7	-6.3
BE	8.27	**8.70**	8.74	+5.2	-0.5	8.27	**8.70**	8.74	+5.2	-0.5	-	**-**	-	-	-
BG	3.76	**3.94**	3.71	+4.7	+6.3	3.78	**3.94**	3.70	+4.4	+6.5	2.68	**3.74**	3.85	+39.2	-3.0
CY	2.24	**2.06**	2.01	-8.3	+2.5	-	**-**	-	-	-	2.24	**2.06**	2.01	-8.3	+2.5
CZ	4.32	**4.83**	5.22	+11.9	-7.4	4.32	**4.83**	5.22	+11.9	-7.4	-	**-**	-	-	-
DE	7.33	**7.35**	7.49	+0.2	-1.9	7.34	**7.36**	7.50	+0.2	-1.9	4.91	**5.08**	5.34	+3.5	-4.9
DK	7.37	**7.01**	7.27	-4.9	-3.6	7.37	**7.01**	7.27	-4.9	-3.6	-	**-**	-	-	-
EE	3.90	**3.29**	3.13	-15.7	+5,0	3.9	**3.29**	3.13	-15.7	+5.0	-	**-**	-	-	-
ES	2.35	**3.51**	2.94	+49.4	+19.5	2.64	**3.69**	3.19	+39.7	+15.8	1.08	**2.67**	2.08	+147.6	+28.6
FI	3.93	**3.92**	3.77	-0.3	+3.9	3.93	**3.92**	3.77	-0.3	+3.9	-	**-**	-	-	-
FR	7.15	**6.87**	7.02	-3.9	-2.1	7.3	**7.00**	7.19	-4.1	-2.6	5.45	**5.22**	5.06	-4.2	+3.0
GR	2.42	**2.69**	2.74	+11,0	-2.0	2.83	**2.79**	2.99	-1.3	-6.7	2.31	**2.66**	2.66	+15.2	-0.1
HU	3.73	**4.33**	4.10	+15.8	+5.6	3.73	**4.32**	4.10	+15.8	+5.5	3.7	**4.41**	3.80	+18.9	+15.9
IE	8.53	**8.49**	8.83	-0.4	-3.9	8.53	**8.49**	8.83	-0.4	-3.9	-	**-**	-	-	-
IT	4.13	**3.95**	3.83	-4.4	+3.1	5.89	**5.56**	5.39	-5.6	+3.2	3.32	**3.21**	3.14	-3.4	+2.0
LT	4.78	**3.79**	3.99	-20.8	-5.0	4.78	**3.79**	3.99	-20.8	-5.0	-	**-**	-	-	-
LU	5.87	**6.07**	6.12	+3.5	-0.9	5.87	**6.07**	6.12	+3.5	-0.9	-	**-**	-	-	-
LV	4.37	**3.71**	3.64	-15.0	+2.0	4.37	**3.71**	3.64	-15.0	+2.0	-	**-**	-	-	-
MT	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	-	-	-
NL	8.52	**8.72**	8.65	+2.3	+0.8	8.52	**8.72**	8.65	+2.3	+0.8	-	**-**	-	-	-
PL	4.14	**4.17**	4.18	+0.6	-0.3	4.14	**4.17**	4.18	+0.6	-0.3	-	**-**	-	-	-
PT	1.19	**2.07**	1.55	+73.8	+33.5	1.19	**2.07**	1.55	+73.8	+33.5	-	**-**	-	-	-
RO	2.61	**3.21**	2.96	+23.1	+8.6	2.61	**3.21**	2.96	+23.1	+8.6	-	**-**	-	-	-
SE	6.26	**5.79**	5.84	-7.6	-1.0	6.26	**5.79**	5.84	-7.6	-1.0	-	**-**	-	-	-
SI	5.43	**4.63**	4.78	-14.9	-3.2	5.43	**4.63**	4.78	-14.9	-3.2	-	**-**	-	-	-
SK	3.29	**3.66**	4.03	+11.5	-9.2	3.30	**3.66**	4.03	+11.0	-9.1	-	**-**	-	-	-
UK	6.66	**7.63**	7.66	+14.6	-0.4	6.66	**7.63**	7.66	+14.6	-0.4	-	**-**	-	-	-
HR	*5.35*	***4.58***	*4.86*	*-14.3*	-5.7	*5.35*	***4.58***	*4.86*	*-14.3*	-5.7	-	**-**	-	-	-

Country	TOTAL BARLEY(t/ha)					SPRING BARLEY (t/ha)					WINTER BARLEY (t/ha)				
	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs
EU27	4.38	**4.68**	4.39	+6.9	+6.7	3.91	**4.26**	3.83	+8.9	+11.3	5.22	**5.36**	5.26	+2.7	+2,0
AT	4.40	**4.61**	4.86	+4.8	-5.1	3.44	**4.03**	4.13	+17.2	-2.3	5.29	**5.06**	5.61	-4.3	-9.7
BE	7.95	**8.40**	8.43	+5.5	-0.4	-	**-**	-	-	-	7.95	**8.40**	8.43	+5.5	-0.4
BG	3.47	**3.77**	3.66	+8.6	+3.1	-	**-**	-	-	-	3.47	**3.77**	3.66	+8.6	+3.1
CY	1.71	**1.41**	1.44	-17.5	-2.2	-	**-**	-	-	-	1.71	**1.41**	1.44	-17.5	-2.2
CZ	4.23	**4.04**	4.39	-4.6	-8,0	4.31	**4.08**	4.33	-5.4	-5.8	3.98	**3.89**	4.54	-2.4	-14.3
DE	6.21	**6.14**	6.11	-1.2	+0.4	5.64	**5.03**	5.09	-10.7	-1.1	6.49	**6.44**	6.48	-0.8	-0.5
DK	5.61	**5.40**	5.32	-3.8	+1.4	5.49	**5.3**	5.17	-3.5	+2.5	6.37	**5.76**	5.95	-9.6	-3.1
EE	3.13	**2.88**	2.65	-7.8	+8.8	3.13	**2.88**	2.65	-7.8	+8.8	-	**-**	-	-	-
ES	2.23	**3.92**	2.74	+75.4	+43.2	2.27	**3.94**	2.80	+73.2	+40.7	2.00	**3.80**	2.40	+89.9	+58.3
FI	3.48	**3.59**	3.41	+3.1	+5.4	3.48	**3.59**	3.41	+3.1	+5.4	-	**-**	-	-	-
FR	6.74	**6.45**	6.48	-4.3	-0.4	6.64	**6.15**	6.23	-7.3	-1.2	6.81	**6.58**	6.59	-3.3	-0.2
GR	2.48	**2.50**	2.45	+0.6	+1.9	-	**-**	-	-	-	2.48	**2.50**	2.45	+0.6	+1.9
HU	3.61	**3.94**	3.71	+9.3	+6.1	3.21	**3.32**	3.31	+3.4	+0.5	3.83	**4.25**	3.96	+10.8	+7.3
IE	6.62	**6.93**	6.94	+4.7	-0.1	6.22	**6.67**	6.64	+7.2	+0.4	8,00	**8.45**	8.52	+5.6	-0.9
IT	3.79	**3.60**	3.59	-4.9	+0.4	-	**-**	-	-	-	3.79	**3.60**	3.59	-4.9	+0.4
LT	3.38	**3.03**	2.98	-10.5	+1.7	3.38	**3.03**	2.98	-10.5	+1.7	-	**-**	-	-	-
LU	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	-	-	-
LV	2.83	**2.74**	2.56	-3.1	+7.3	2.83	**2.74**	2.56	-3.1	+7.3	-	**-**	-	-	-
MT	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	-	-	-
NL	5.70	**5.99**	6.02	+5.1	-0.4	5.70	**5.99**	6.02	+5.1	-0.4	-	**-**	-	-	-
PL	3.60	**3.43**	3.30	-4.8	+3.9	3.56	**3.33**	3.15	-6.6	+5.7	3.85	**3.82**	3.98	-0.7	-4.1
PT	1.27	**2.37**	1.63	+87.1	+45.4	-	**-**	-	-	-	1.27	**2.37**	1.63	+87.1	+45.4
RO	2.36	**2.91**	2.72	+23.5	+7.0	1.84	**2.06**	2.01	+11.7	+2.2	2.64	**3.36**	3.13	+27.6	+7.6
SE	4.60	**4.53**	4.36	-1.4	+4.1	4.55	**4.52**	4.32	-0.8	+4.6	6.63	**5.13**	5.41	-22.6	-5.1
SI	4.72	**4.25**	4.21	-9.9	+1.0	-	**-**	-	-	-	4.72	**4.25**	4.21	-9.9	+1,0
SK	3.18	**3.21**	3.49	+0.9	-8.1	3.19	**3.24**	3.48	+1.8	-6.7	3.12	**2.92**	3.59	-6.5	-18.7
UK	5.52	**5.54**	5.73	+0.5	-3.2	4.97	**5.25**	5.31	+5.6	-1.1	6.38	**6.39**	6.40	+0.2	-0.2
HR	*4.14*	***3.74***	*3.96*	*-9.6*	*-5.4*	-	-	-	-	-	*4.14*	***3.74***	*3.96*	*-9.6*	*-5.4*

Country	GRAIN MAIZE (t/ha)					RYE (t/ha)					TRITICALE (t/ha)				
	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs
EU27	6.13	**7.13**	7.01	+16.3	+1.8	3.72	**3.56**	3.33	-4.2	+6.8	4.18	**4.06**	4.07	-2.7	+0.0
AT	10.70	**10.67**	10.68	-0.3	+0.0	4.22	**3.64**	4.02	-13.7	-9.4	5.04	**4.64**	5.06	-7.9	-8.4
BE	10.24	**11.77**	11.63	+14.9	+1.2	-	-	-	-	-	-	-	-	-	-
BG	3.68	**4.65**	4.77	+26.3	-2.7	-	-	-	-	-	2.45	**3.09**	3.11	+26.1	-0.5
CY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CZ	7.78	**7.77**	7.82	-0.1	-0.5	4.78	**3.98**	4.50	-16.6	-11.5	4.31	**3.60**	4.26	-16.3	-15.3
DE	10.48	**9.38**	9.94	-10.5	-5.7	5.47	**5.24**	4.99	-4.3	+4.9	6.18	**5.78**	5.82	-6.4	-0.6
DK	5.82	-	5.28	-	-	5.95	**5.40**	5.30	-9.2	+2.0	5.21	**5.21**	5.13	+0.0	+1.4
EE	-	-	-	-	-	3.39	**2.76**	2.65	-18.4	+4.4	-	-	-	-	-
ES	10.94	**10.69**	10.58	-2.3	+1.0	1.60	**2.21**	1.98	+37.7	+11.6	1.76	**2.56**	2.26	+45.4	+13.7
FI	-	-	-	-	-	3.18	**2.85**	2.76	-10.4	+3.1	-	-	-	-	-
FR	9.08	**9.27**	9.22	+2.0	+0.5	5.08	**4.93**	4.93	-2.9	+0.1	5.53	**5.24**	5.40	-5.4	-3.0
GR	10.61	**10.79**	10.79	+1.7	+0.0	2.11	**2.42**	2.08	+14.5	+16.0	-	-	-	-	-
HU	3.98	**7.14**	6.17	+79.3	+15.8	2.23	**2.53**	2.19	+13.5	+15.5	3.11	**3.73**	3.27	+20.0	+14.2
IE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IT	8.36	**9.16**	9.15	+9.6	+0.2	-	-	-	-	-	-	-	-	-	-
LT	6.11	**8.00**	5.77	+30.9	+38.7	2.80	**2.23**	2.40	-20.3	-6.9	3.65	**2.77**	2.97	-24.2	-6.7
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	3.42	**3.23**	3.03	-5.6	+6.4	3.70	**2.62**	2.68	-29.0	-2.0
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	11.67	**12.19**	12.00	+4.5	+1.6	-	-	-	-	-	-	-	-	-	-
PL	7.35	**6.60**	6.51	-10.1	+1.4	2.77	**2.55**	2.53	-8.0	+0.8	3.38	**3.44**	3.41	+1.9	+0.8
PT	8.32	**7.83**	7.27	-5.9	+7.6	0.93	**0.99**	0.93	+6.2	+7.0	1.15	**1.69**	1.38	+47.3	+22.6
RO	2.16	**3.87**	3.53	+78.6	+9.4	-	-	-	-	-	2.93	**3.16**	3.02	+7.9	+4.5
SE	-	-	-	-	-	6.35	**5.47**	5.82	-14.0	-6.1	5.92	**4.63**	5.03	-21.7	-8.0
SI	7.01	**7.54**	7.88	+7.6	-4.3	-	-	-	-	-	-	-	-	-	-
SK	5.51	**6.16**	6.70	+11.7	-8.0	3.15	**2.61**	2.90	-17.0	-9.8	-	-	-	-	-
UK	-	-	-	-	-	-	-	-	-	-	3.50	**4.06**	4.02	+16.0	+1.1
HR	*4.34*	***6.89***	*6.46*	*+58.8*	*+6.6*	-	-	-	-	-	*4.18*	*3.47*	*3.74*	*-17.1*	*-7.3*

Country	RAPE AND TURNIP RAPE (t/ha)					POTATO (t/ha)				
	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs
EU27	3.10	**3.02**	3.04	-2.7	-0.8	30.70	**31.00**	30.69	+1.0	+1.0
AT	2.67	**2.70**	3.06	+1.3	-11.7	30.55	**32.43**	32.51	+6.2	-0.2
BE	3.93	**4.02**	4.09	+2.4	-1.7	45.42	**46.26**	45.73	+1.9	+1.2
BG	2.02	**2.48**	2.33	+22.6	+6.3	10.15	**14.54**	15.10	+43.3	-3.7
CY	-	-	-	-	-	-	-	-	-	-
CZ	2.76	**2.65**	2.90	-4.1	-8.8	27.98	**27.20**	27.01	-2.8	+0.7
DE	3.69	**3.70**	3.71	+0.3	-0.2	44.76	**40.06**	43.69	-10.5	-8.3
DK	3.75	**3.55**	3.64	-5.4	-2.4	42.13	**39.85**	39.98	-5.4	-0.3
EE	1.89	**1.83**	1.59	-3.2	+15.4	-	-	-	-	-
ES	1.80	**2.11**	1.81	+17.2	+16.7	30.06	**31.22**	29.71	+3.8	+5.1
FI	1.28	**1.31**	1.36	+2.4	-3.5	23.65	**27.83**	26.37	+17.7	+5.5
FR	3.41	**3.25**	3.45	-4.6	-5.6	40.87	**43.77**	43.43	+7.1	+0.8
GR	-	-	-	-	-	25.47	**26.23**	25.60	+3.0	+2.4
HU	2.46	**2.61**	2.33	+6.2	+12.3	23.13	**28.34**	25.46	+22.5	+11.3
IE	-	-	-	-	-	-	-	-	-	-
IT	2.58	**2.40**	2.33	-6.8	+3.0	25.43	**25.23**	24.90	-0.8	+1.3
LT	2.43	**2.01**	2.05	-17.2	-1.6	17.11	**15.75**	14.95	-8.0	+5.4
LU	-	-	-	-	-	-	-	-	-	-
LV	2.65	**2.43**	2.25	-8.4	+8.1	19.57	**18.89**	17.61	-3.5	+7.3
MT	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	45.18	**44.93**	45.43	-0.6	-1.1
PL	2.59	**2.91**	2.60	+12.5	+12.0	24.24	**20.46**	21.36	-15.6	-4.2
PT	-	-	-	-	-	14.71	**16.27**	15.33	+10.6	+6.2
RO	1.60	**1.78**	1.70	+11.0	+4.6	10.76	**14.91**	14.09	+38.6	+5.8
SE	2.57	**2.69**	2.73	+4.5	-1.5	32.55	**31.70**	31.58	-2.6	+0.4
SI	-	-	-	-	-	-	-	-	-	-
SK	1.99	**1.72**	2.24	-13.7	-23.3	-	-	-	-	-
UK	3.40	**3.32**	3.47	-2.2	-4.3	35.00	**40.50**	41.45	+15.7	-2.3
HR	*2.67*	***2.68***	*2.62*	*+0.2*	*+1.9*	*14.73*	***18.05***	*16.56*	*+22.5*	*+9.0*

Country	SUGAR BEETS (t/ha)					SUNFLOWER (t/ha)				
	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs
EU27	70.27	**70.43**	69.96	+0.2	+0.7	1.67	**1.90**	1.83	+13.4	+3.8
AT	63.22	**70.19**	69.88	+11.0	+0.4	2.27	**2.58**	2.69	+13.5	-4.1
BE	73.68	**77.23**	78.39	+4.8	-1.5	-	**-**	-	-	-
BG	-	**-**	-	-	-	1.78	**1.92**	1.91	+7.9	+0.7
CY	-	**-**	-	-	-	-	**-**	-	-	-
CZ	63.26	**61.89**	59.91	-2.2	+3.3	2.31	**2.33**	2.35	+0.9	-1,0
DE	69.36	**65.85**	67.57	-5.1	-2.6	2.33	**2.09**	2.12	-10.5	-1.4
DK	64.92	**61.79**	60.52	-4.8	+2.1	-	**-**	-	-	-
EE	-	**-**	-	-	-	-	**-**	-	-	-
ES	88.71	**93.41**	85.6	+5.3	+9.1	0.81	**1.23**	1.10	+52.2	+11.7
FI	34.67	**40.9**	38.38	+18.0	+6.6	-	**-**	-	-	-
FR	87.52	**92.32**	89.16	+5.5	+3.5	2.32	**2.39**	2.42	+3.1	-1.3
GR	58.98	**60.29**	64.73	+2.2	-6.8	2.59	**2.51**	1.91	-3.2	+31.2
HU	43.86	**54.30**	54.52	+23.8	-0.4	2.15	**2.62**	2.29	+21.6	+14.0
IE	-	**-**	**-**	-	-	-	**-**	-	-	-
IT	54.92	**57.74**	56.14	+5.1	+2.8	1.66	**2.22**	2.13	+33.5	+4.1
LT	52.24	**52.59**	46.49	+0.7	+13.1	-	**-**	-	-	-
LU	-	**-**	**-**	-	-	-	**-**	-	-	-
LV	-	**-**	**-**	-	-	-	**-**	-	-	-
MT	-	**-**	-	-	-	-	**-**	-	-	-
NL	78.86	**79.24**	76.95	+0.5	+3.0	-	**-**	-	-	-
PL	58.25	**53.56**	52.94	-8.0	+1.2	**-**	**-**	**-**	-	-
PT	**-**	**-**	**-**	-	-	0.56	**0.62**	0.57	+11.1	+8.4
RO	26.93	**37.67**	34.76	+39.9	+8.4	1.37	**1.53**	1.53	+11.7	+0.0
SE	55.78	**56.63**	56.99	+1.5	-0.6	-	**-**	-	-	-
SI	-	**-**	-	-	-	-	**-**	**-**	-	-
SK	45.41	**56.21**	56.35	+23.8	-0.2	2.19	**2.04**	2.21	-6.8	-7.8
UK	70.00	**67.46**	67.72	-3.6	-0.4	-	**-**	-	-	-
HR	*39.11*	***50.06***	*51.14*	*+28.0*	*-2.1*	*2.68*	***3.01***	*2.70*	*+12.4*	*+11.3*

Notes: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg
Sources: 2008-2013 data come from DG AGRICULTURE short term Outlook (dated May 2013, received on 29/05/2013), EUROSTAT Eurobase (last update: 13/05/2013) and EES (last update: 21/05/2013)
2013 yields come from MARS CROP YIELD FORECASTING SYSTEM (CGMS output up to 10/06/2013)

Country	WHEAT (t/ha)					BARLEY (t/ha)					GRAIN MAIZE (t/ha)				
	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs	2012	2013	Avg 5yrs	%13/12	%13/5yrs
BY	3.5	**3.98**	3.44	+13.6	+15.6	3.23	**3.41**	3.24	+5.6	+5.4	5.26	6.36	**5.17**	+21.00	+23.1
DZ	1.76	**1.72**	1.50	-2.5	+15.0	1.54	**1.65**	1.36	+7.0	+21.7	-	-	**-**	-	-
MA	1.24	**2.10**	1.67	+69.7	+25.2	0.63	**1.24**	1.13	+96.7	+9.5	-	-	-	-	-
TN	1.93	**1.55**	1.86	-19.5	-16.3	1.16	**0.94**	1.26	-18.6	-25.0	-	-	**-**	-	-
TR	2.67	**2.55**	2.52	-4.5	+1.3	2.58	**2.53**	2.42	-1.9	+4.8	7.38	7.23	**7.23**	-2.00	+0.0
UA	2.80	**2.92**	3.12	+4.2	-6.5	2.11	**2.22**	2.39	+5.0	-7.3	4.79	5.17	**5.09**	+7.9	+1.5

Sources: 2008-2013 data come from FAO, PSD-online, INRA Maroc, MiniAGRI Tunisia and DSASI Algeria
2013 yields come from MARS CROP YIELD FORECASTING SYSTEM (CGMS output up to 10/06/2013)

Yield maps

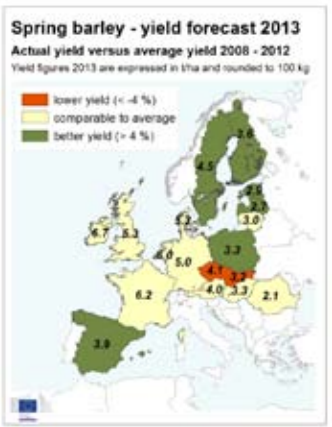

Total wheat - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Soft wheat - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Durum wheat - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Total barley - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Winter barley - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Spring barley - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

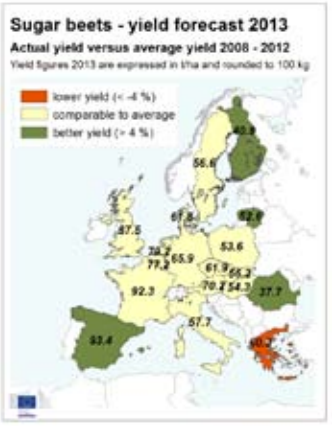

Grain maize - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Rye - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Triticale - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)


Rape and turnip - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

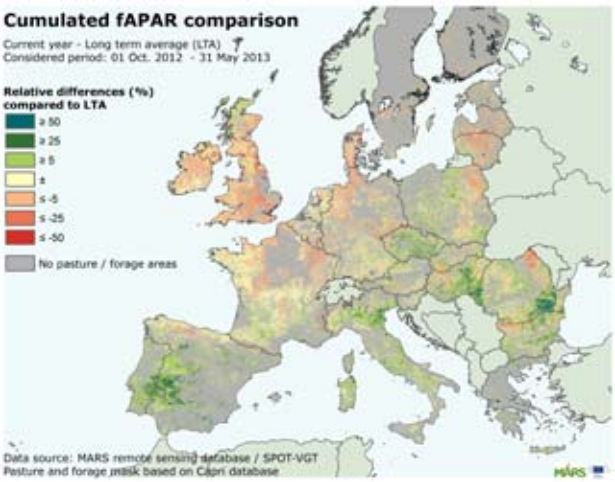

Potato - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

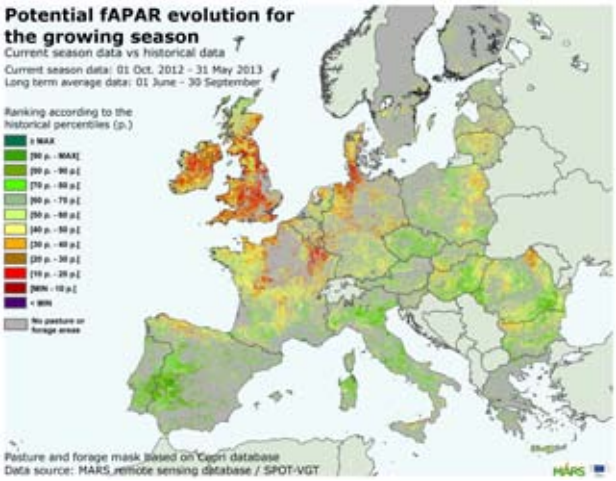

Sugar beets - yield forecast 2013
Actual yield versus average yield 2008 - 2012
Yield figures 2013 are expressed in t/ha and rounded to 100 kg
lower yield (< -4 %)
comparable to average
better yield (> 4 %)

5. Pastures in Europe - update remote sensing monitoring

Substantial biomass deficit in the British Isles and Germany, favourable season in Mediterranean and Black Sea areas

Increasing temperatures during the past month favoured the progressive growth of pastures in the UK, Ireland and Germany. The biomass production levels from the start of the season are, however, still low due to unfavourable weather at the beginning of spring. Mild temperatures and average precipitation during the past weeks have led to one of the best seasons of the past decade in the Mediterranean.



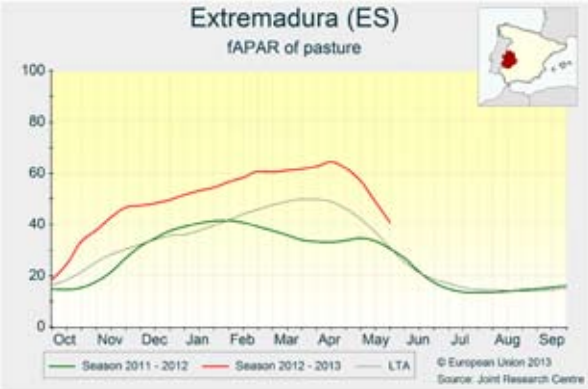


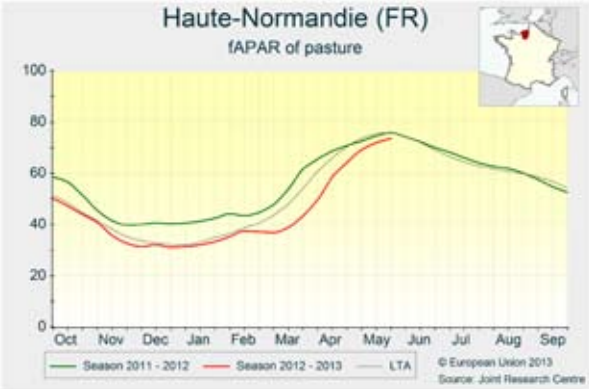
The expectations are very positive for **Spain** and **Portugal**, where the biomass accumulation this season is the highest of the past decade in the *Dehesa* regions. Grasslands in *Asturias* and *Galicia* still present average conditions, but the outlook is favourable as soil moisture guarantees sufficient water supply for the second half of June. In **Italy**, the evolution of grasslands in central and southern regions is expected to be very positive in the forthcoming weeks, with temperatures increasing considerably and soils replenished thanks to the rainfall received during May. By contrast, the excessive rain in the past month has hampered the sowing and emergence of fodder maize in *Lombardia*, *Veneto* and *Piemonte*, which currently show a significant delay compared to an average year.

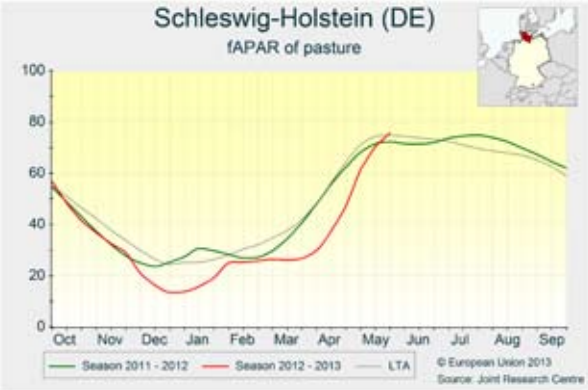
In **France**, the conditions remain favourable for pastures in *Midi-Pyrenees* and average in the North West. By contrast, northern and eastern regions of *Normandie*, *Lorraine* and *Champagne-Ardenne* are still suffering the negative impact of excessive rain and chilly temperatures of the past two months. Production levels are expected to increase significantly in June, permitting a partial recovery of the delay accumulated. In the **UK**, **Ireland** and northern **Germany**, pasture growth has been dramatically jeopardised by one of the coldest springs of the past years. Although satellite images indicate that biomass has increased gradually over the past two weeks, the current status of pastures is still below the long-term average.

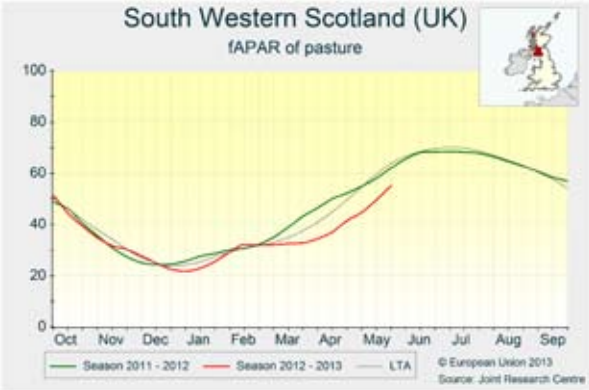
Warmer-than-usual temperatures registered from mid-April onwards led to the rapid growth of pastures in **Austria**, the **Czech Republic** and **Slovakia**, where current biomass levels are significantly above an average season. Nevertheless, an analysis of biomass production in the coming weeks will be crucial to evaluate how the rainstorms registered in some regions of Germany, Austria and Czech-Republic in the first days of June (about 150 mm in four days) could have affected pasture growth. Warmer-than-usual temperatures have been the norm in **Romania** and eastern **Hungary**, which show above-average biomass production levels. The precipitation registered from the second half of May guarantees the continued growth of pastures during the forthcoming weeks.

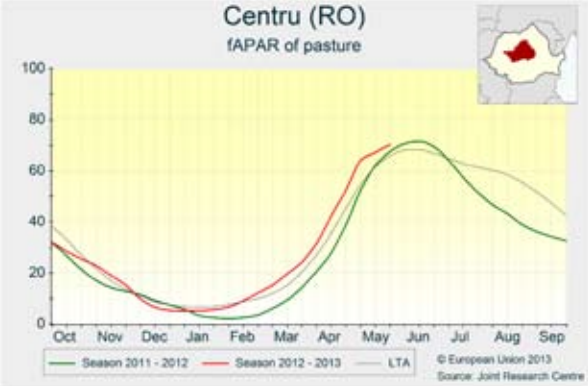
In **Poland**, the delay in pasture development experienced during the beginning of the spring was gradually recovered. The rainfall registered in the past week and temperatures above the long-term average will favour biomass production up to the end of June, especially in **Latvia** and **Estonia**.

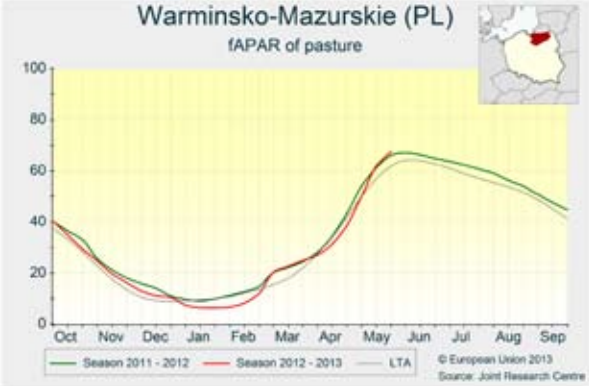

Extremadura (ES)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Haute-Normandie (FR)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre


Schleswig-Holstein (DE)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

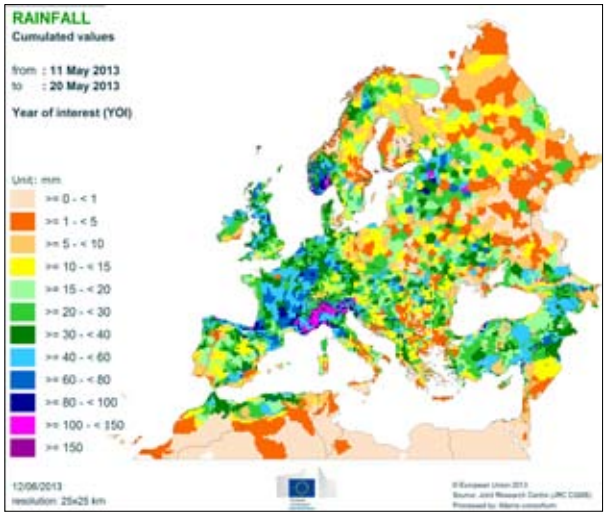

South Western Scotland (UK)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

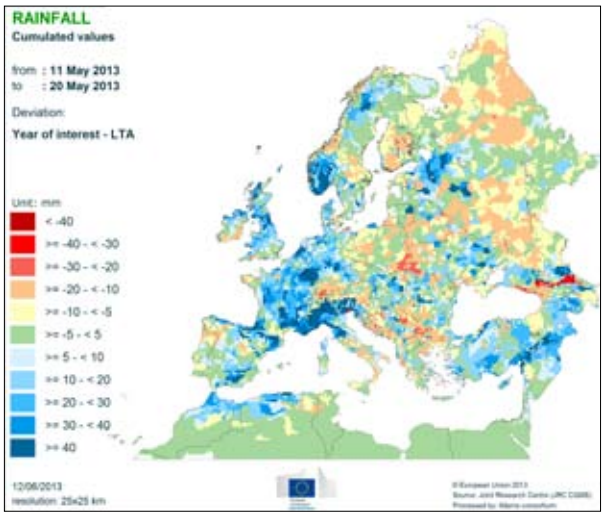

Centru (RO)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

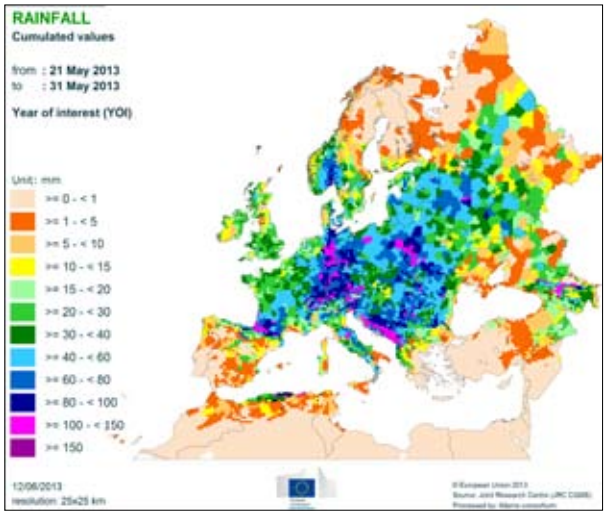

Warminsko-Mazurskie (PL)
fAPAR of pasture
100
80
60
40
20
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2011 - 2012
Season 2012 - 2013
LTA
© European Union 2013
Source: Joint Research Centre

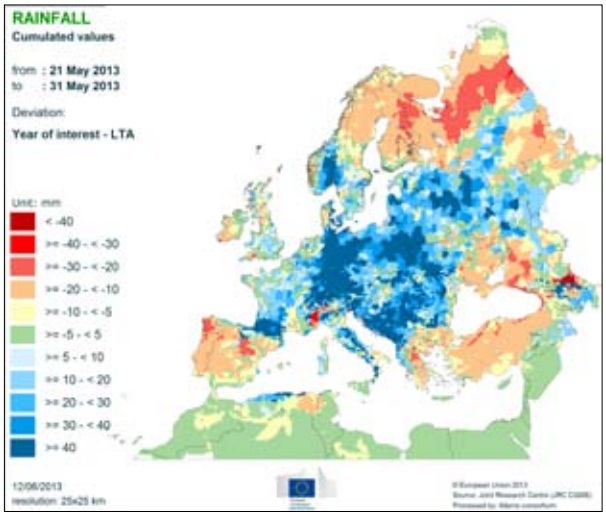
6. Atlas maps

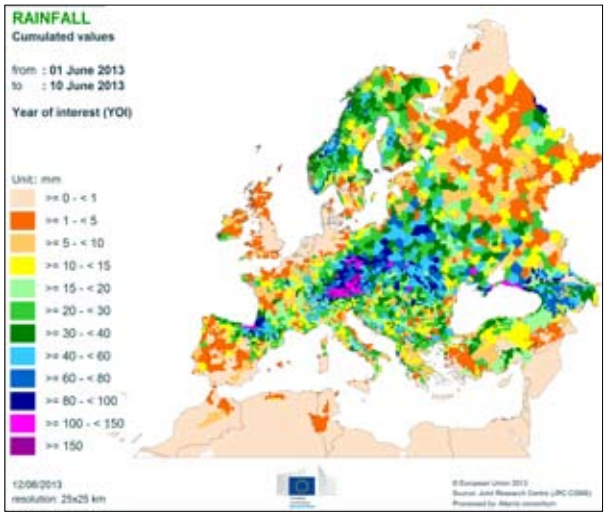
Precipitation

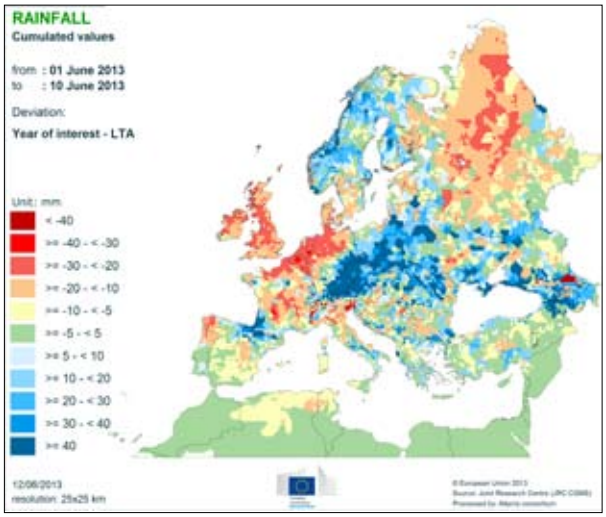




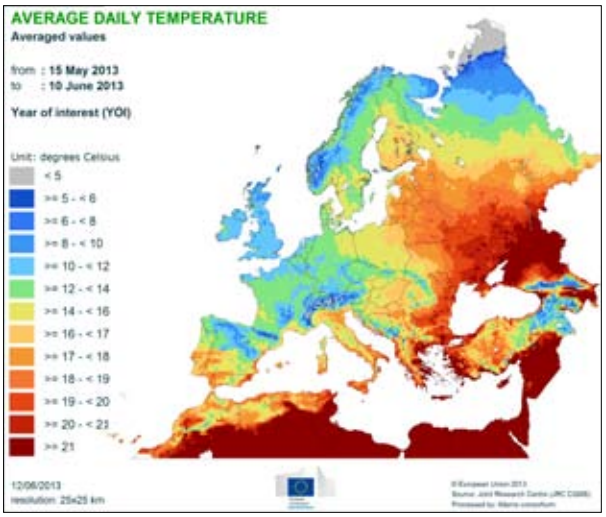


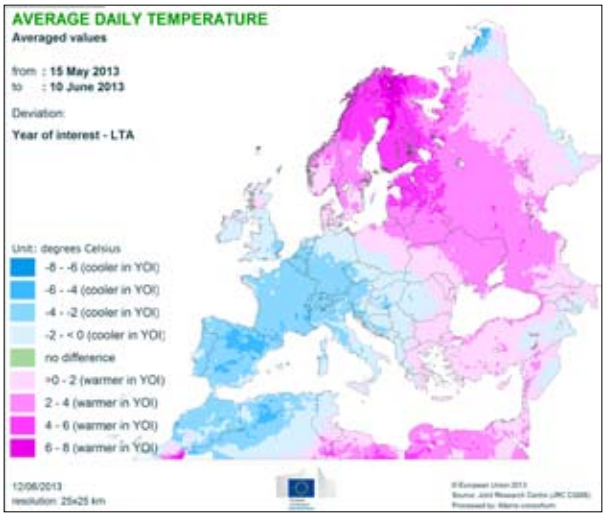


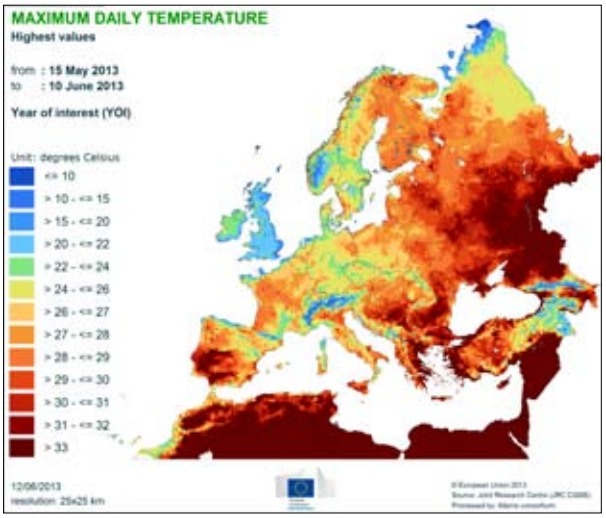


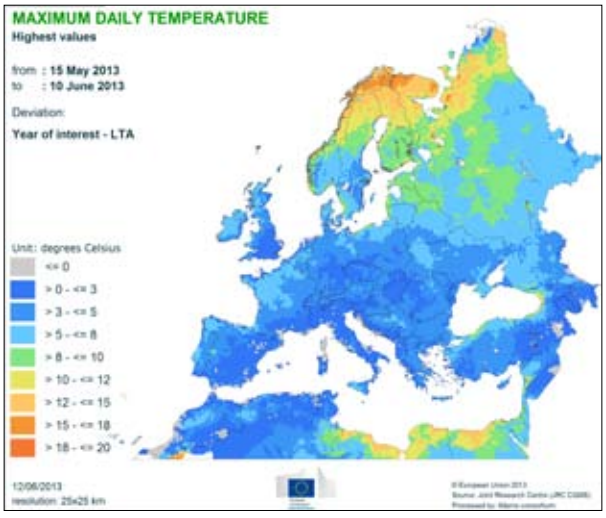


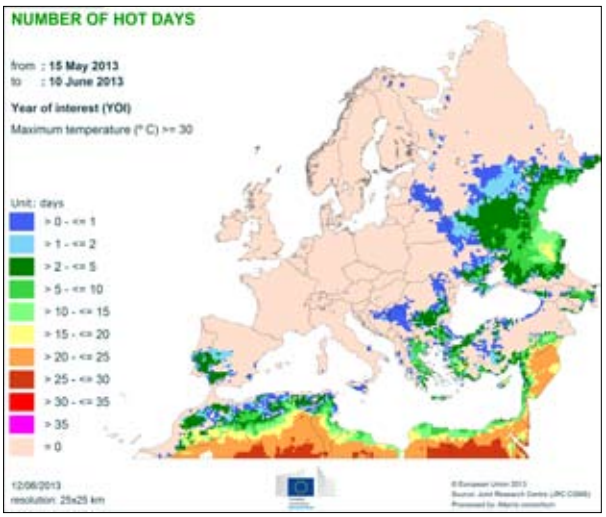
Temperature regime

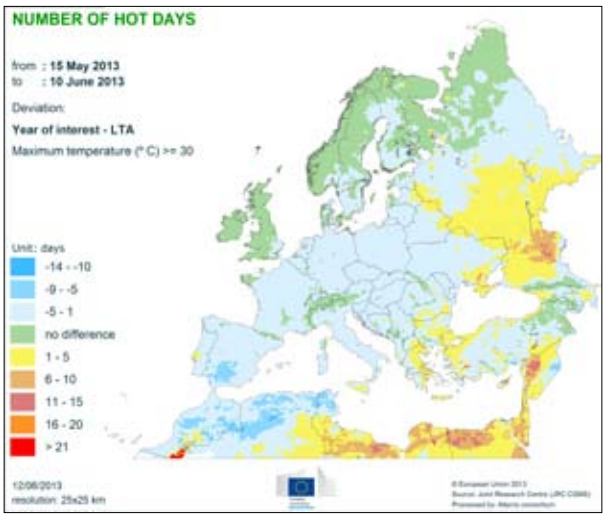




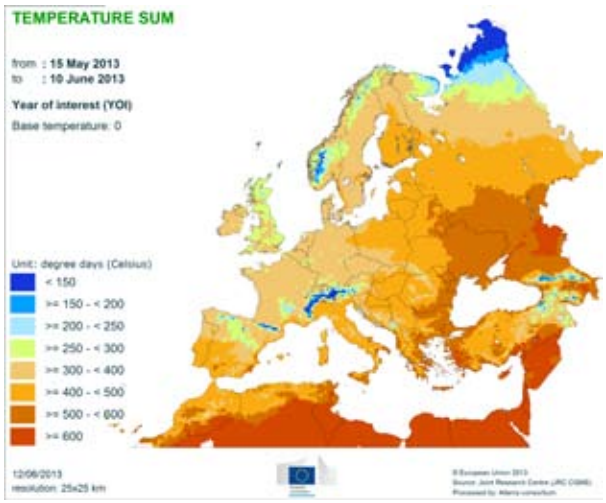


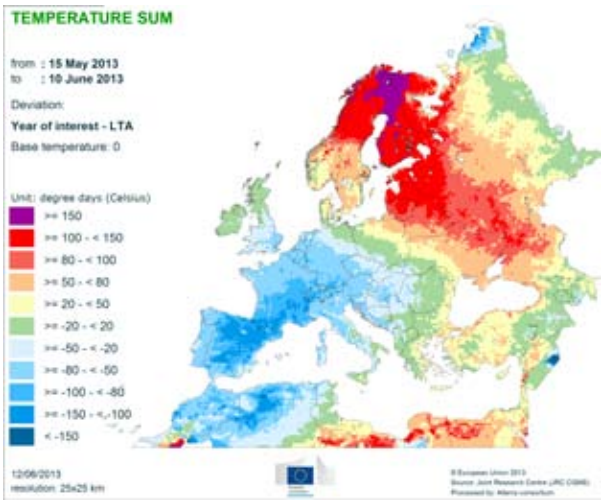




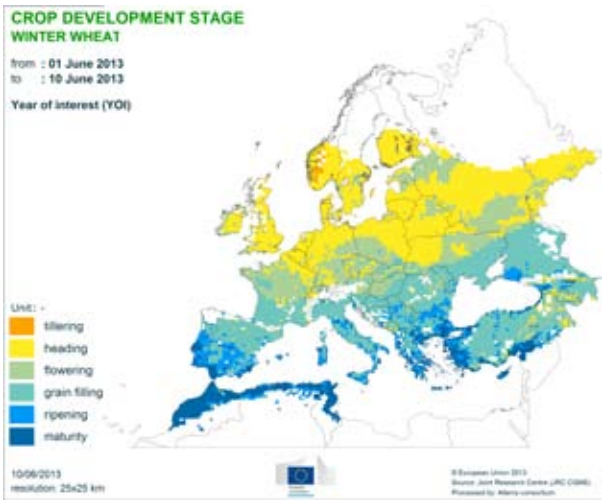


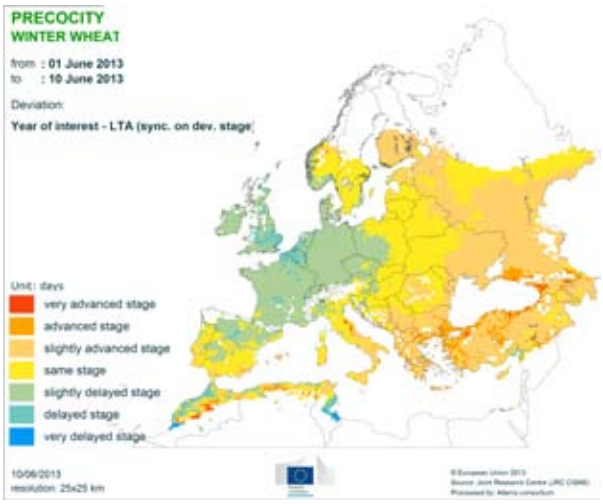
Temperature sum

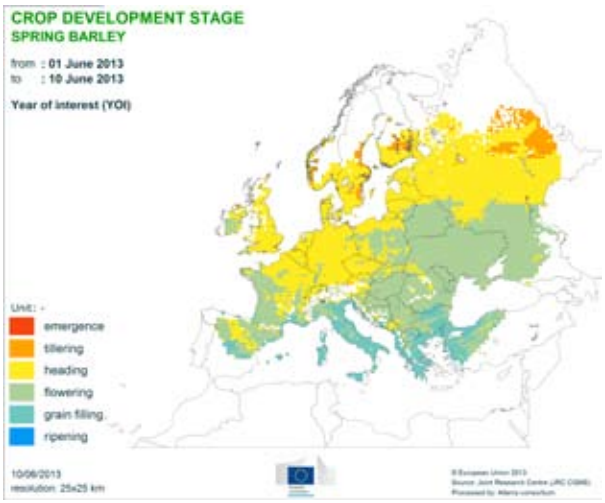


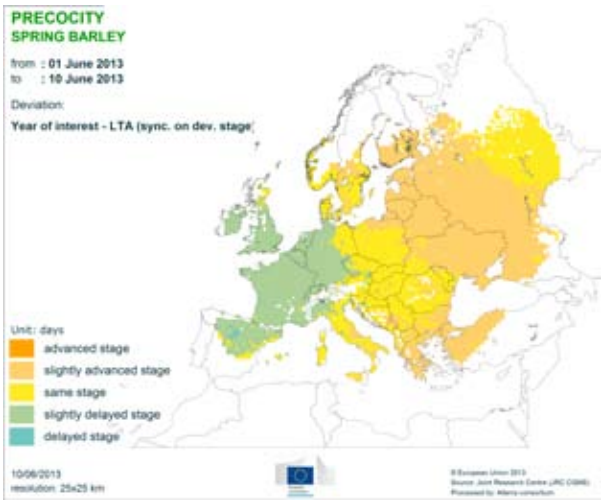


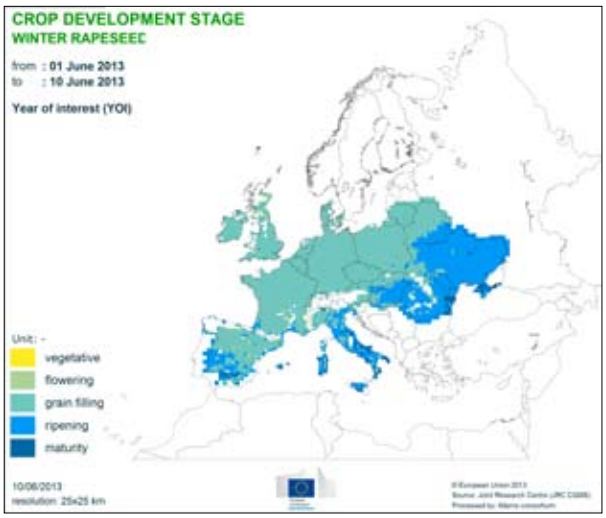
Crop development stages and precocity

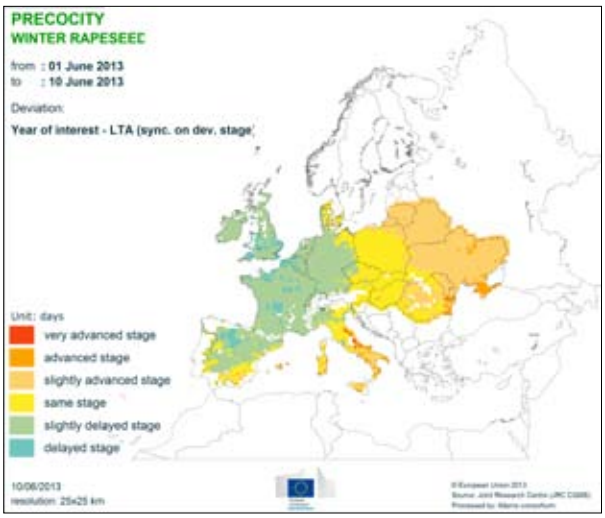


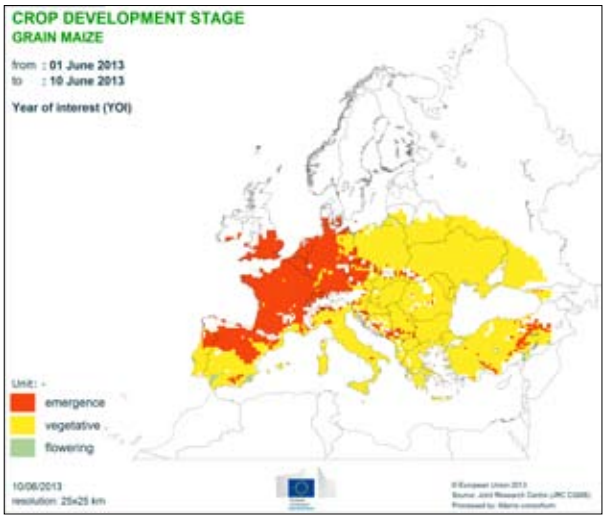


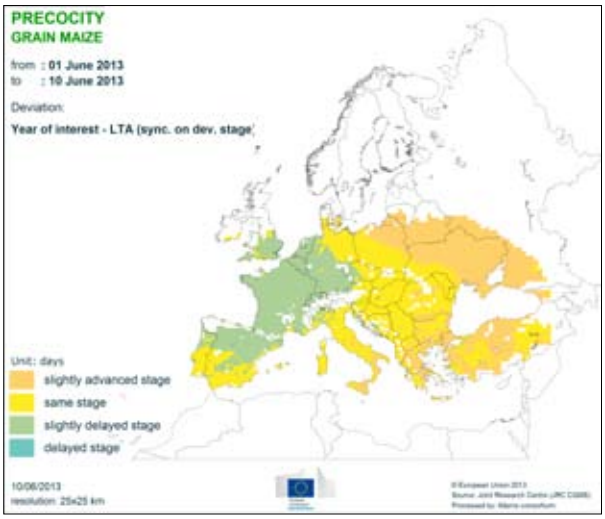


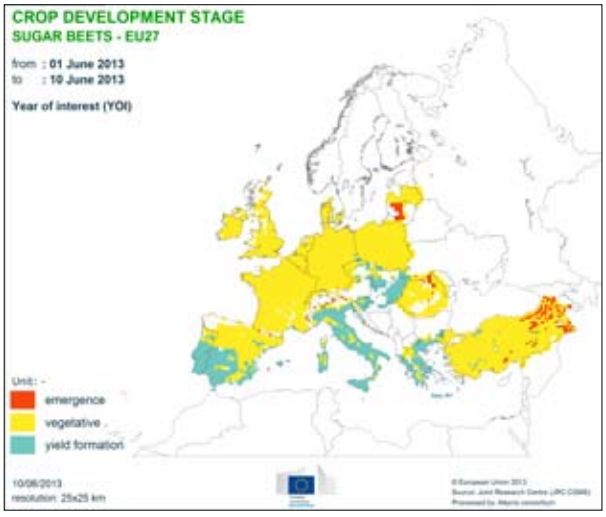


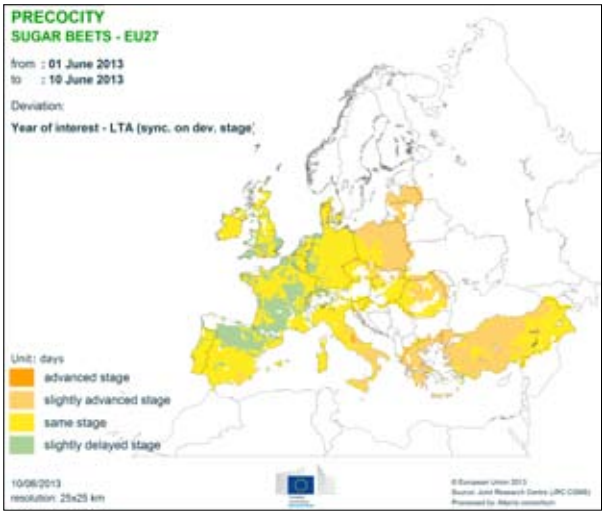

CROP DEVELOPMENT STAGE
WINTER RAPESEEC
from : 01 June 2013
to : 10 June 2013
Year of interest (YOI)
Unit: -
vegetative
flowering
grain filling
ripening
maturity
10/06/2013
resolution: 25x25 km


PRECOCITY
WINTER RAPESEEC
from : 01 June 2013
to : 10 June 2013
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
10/06/2013
resolution: 25x25 km

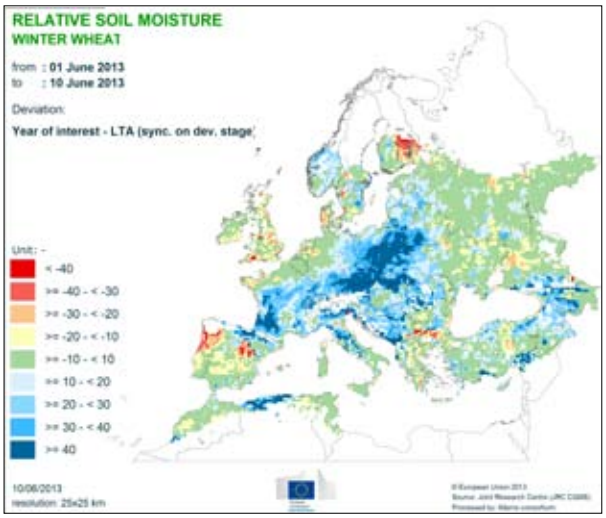

CROP DEVELOPMENT STAGE
GRAIN MAIZE
from : 01 June 2013
to : 10 June 2013
Year of interest (YOI)
Unit: -
emergence
vegetative
flowering
10/06/2013
resolution: 25x25 km

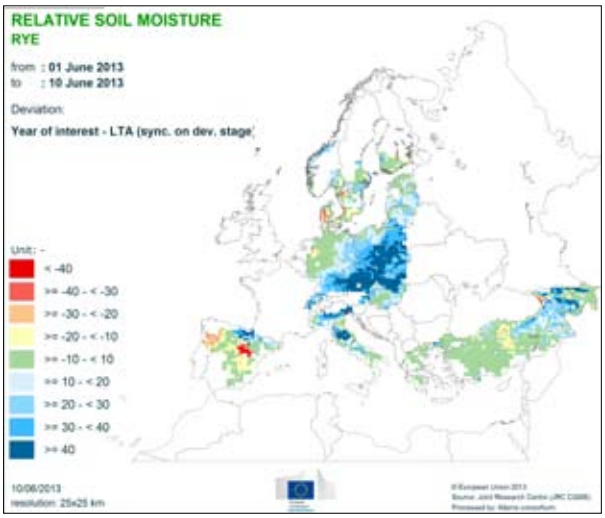

PRECOCITY
GRAIN MAIZE
from : 01 June 2013
to : 10 June 2013
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
slightly advanced stage
same stage
slightly delayed stage
delayed stage
10/06/2013
resolution: 25x25 km

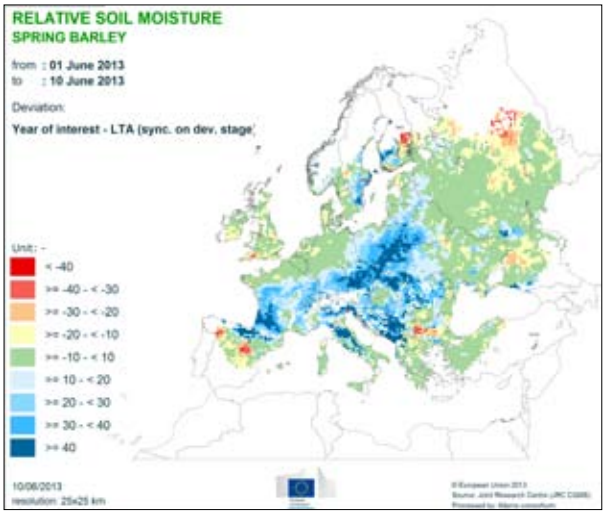

CROP DEVELOPMENT STAGE
SUGAR BEETS - EU27
from : 01 June 2013
to : 10 June 2013
Year of interest (YOI)
Unit: -
emergence
vegetative
yield formation
10/06/2013
resolution: 25x25 km

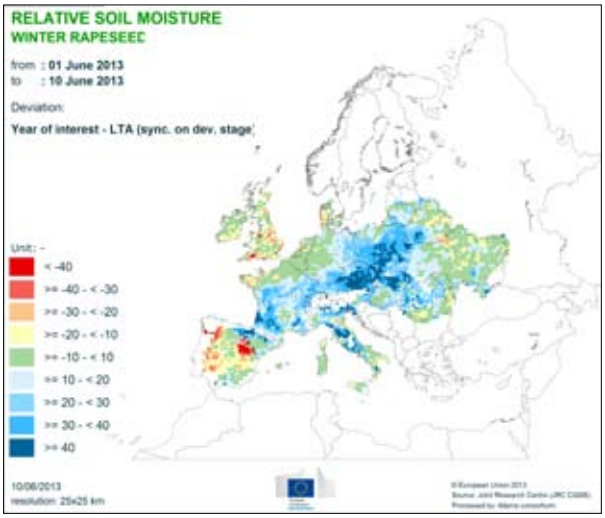

PRECOCITY
SUGAR BEETS - EU27
from : 01 June 2013
to : 10 June 2013
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
advanced stage
slightly advanced stage
same stage
slightly delayed stage
10/06/2013
resolution: 25x25 km

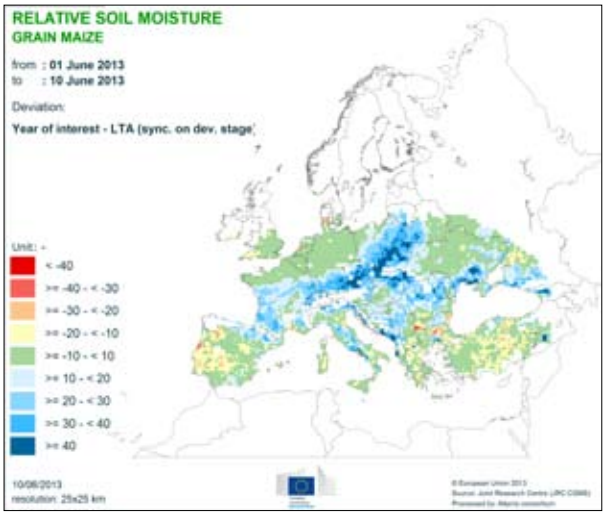
Relative soil moisture

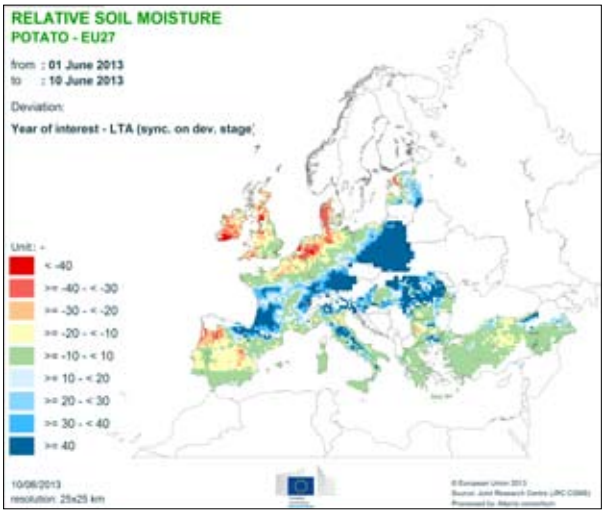












LB-AM-13-006-EN-N

2013 MARS Bulletins

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

The current MARS* Bulletin is an EC publication from AGRI4CAST (JRC/IES MARS Unit)

All *MARS Bulletins* are available under:
http://mars.jrc.ec.europa.eu/mars/Bulletins-Publications
MARS agro-meteorological data is available at
http://www.marsop.info

Analysis and reports
B. Baruth, I. Biavetti, A. Bussay, A. Ceglar, O. Chukaliev, G. Duveiller, G. Fontana, S. Garcia Condado, J. Hooker, S. Karetsos, R. Lecerf, O. Leo, R. Lopez, A. Maiorano, M. v.d. Berg, L. Seguini, A. Srivastava.

Reporting support
G. Mulhern

Edition
B. Baruth, M. van den Berg

Data production
MARS unit AGRI4CAST/JRC, ALTERRA (NL), Meteoconsult (NL) and VITO (BE)

Contact
JRC–IES-MARS / AGRI4CAST Action
info-agri4cast@jrc.ec.europa.eu

JRC 78471
EUR 24736 EN
ISSN 2314-9736

***MARS** stands for Monitoring Agricultural Resources

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle. Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new standards, methods and tools, and sharing and transferring its know-how to the Member States and international community.

The mission of the JRC-IES is to provide scientific-technical support to the European Union's policies for the protection and sustainable development of the European and global

Legal Notice
Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

Disclaimer
The geographic borders are purely a graphical representation and are only intended to be indicative. The boundaries do not necessarily reflect the official EC position.

Technical note:
The long term average (LTA) used within this Bulletin as a reference is based on an archive of data covering 1975-2012.

Publications Office