EUROPEAN COMMISSION
DIRECTORATE GENERAL JRC
JOINT RESEARCH CENTRE
Institute for the Protection and Security of the Citizen
AGRIFISH Unit

M A R S
BULLETIN

Vol. 14 – N° 5
1 July – 10 September 2006

Mail version
Campaign analysis

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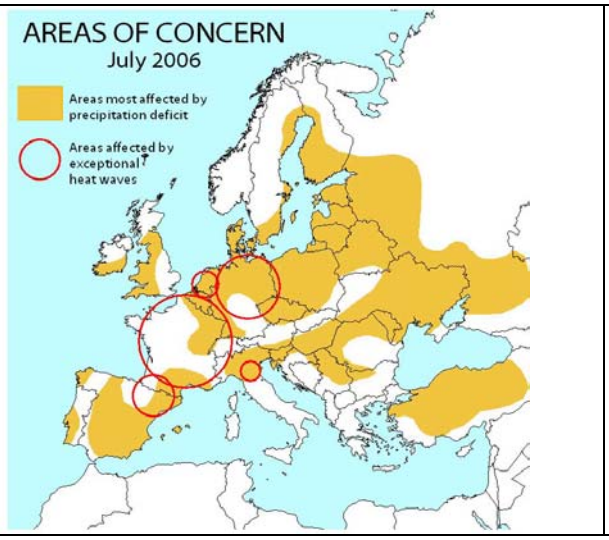
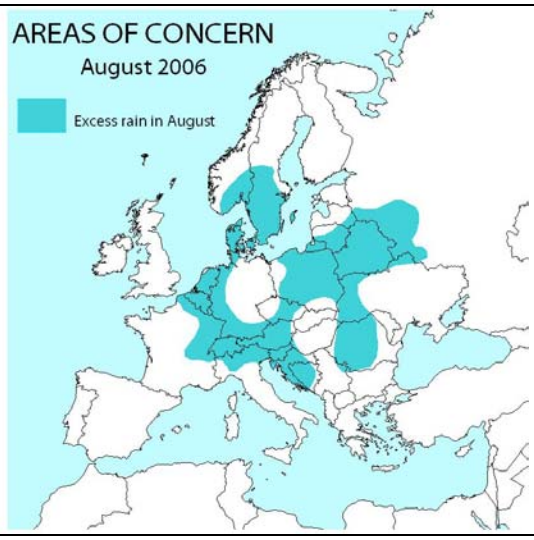
Significant crop yield reduction as compared to 2005





Contents

1. Crop yield forecasts at EU25 levels

CROPS	2005	2006	Avg. 5 years	% 06/05	% 06/Avg.
TOTAL CEREALS	5.0	**4.7**	*5.0*	-4.6	*-4.8*
Soft wheat	6.0	**5.6**	*5.9*	-6.9	*-5.3*
Durum wheat	2.5	**2.6**	*2.5*	3.9	*0.9*
Total wheat	5.4	**5.1**	*5.3*	-5.7	*-4.0*
Total barley	4.1	**4.0**	*4.3*	-0.9	*-5.8*
Grain maize	8.4	**8.1**	*8.0*	-4.0	*1.4*
Other cereals (1)	2.9	**2.8**	*3.2*	-3.2	*-4.6*
Rape seed	3.3	**3.0**	*3.0*	-8.4	*-0.4*
Sunflower	1.9	**1.9**	*1.8*	-0.2	*4.4*
Potato	29.3	**27.7**	*28.1*	-5.5	*-1.4*
Sugar beet	60.2	**59.3**	*56.8*	-1.5	*4.5*

Legend:

(1) Sorghum, rye, maslin, oats, triticale, mixed grain other than maslin, millet, buckwheat.

Yield figures are rounded to 100 kg

Sources:

2005 yields come from EUROSTAT CRONOS
2006 yields come from MARS CROP YIELD FORECASTING SYSTEM

2. Agrometeorological overview (1 July to 10 September 2006)

An unseasonably hot and dry July, mainly in the central and northern EU, particularly affected the winter/spring crops. A very wet and fresh August disturbed harvesting and field activities in northern latitudes.

2.1. Air temperatures

In July, a typical summer synoptic circulation — established earlier in mid-June — persisted. Temperatures remained above the seasonal average over most of the continent. In particular, the maximum daily values were, on average, more than 5 °C above the seasonal means and in some cases (along the English Channel coastline, Benelux, northern Germany and central UK) even more than 10 °C above the average. For example, on 19 July, in Belgium, 38.4 °C was recorded, and 35.3 °C in southern UK; on 21 July, in the south and west of France, 38.9 °C was recorded; and on 20 July, in north-east Germany, 38.4 °C was recorded. The hot temperatures hit both the winter and spring cereals in the last part of the crop cycle (grain-filling-maturity), creating stressing conditions and boosting the senescence.

In August, the synoptic circulation changed and colder conditions occurred. Temperatures dropped towards more seasonal conditions. In the middle of the month, in the central and western EU (northern Italy, central and southern Germany, Austria, the Czech Republic, western Hungary, France, central and northern Spain), lower-than-seasonal average temperatures occurred. The maximum daily temperatures dropped by 10 °C as compared to mid-July: the maximum temperatures were, on average, 22–23 °C in France, 17–18 °C in the UK and 16–17 °C in Belgium. But the biggest difference from the seasonal average was recorded in northern Spain, Bulgaria and Romania where the maximum daily values were also 10–12 °C below the seasonal values. A significant deficit in GDD accumulation was recorded: 80–100 °GDD.

Opposite conditions occurred in the Scandinavian peninsula (where warmer-than-seasonal temperatures persisted throughout the month), in Portugal, Turkey and the Black Sea areas.

In September, a new warmer period began in the whole EU, mainly in Spain, France, Germany and northern Italy where, again, the maximum and minimum daily values climbed above the normal range of variation. However, as a whole, at the end of the period under consideration, the cumulated active temperatures presented general seasonal values, and

only in the Baltic Sea areas, northern Germany and Denmark was a significant surplus recorded (estimated at around 120–130 °GDD, + 10/20 % as compared to the LTA).

2.2. Rain, evapotranspiration and climatic water balance

In the period under consideration, one other notable agrometeorological phenomenon was the anomalous distribution of rain. This affected the crop yield more than the total amounts of rain cumulated at the end of the period. In effect, the map of the cumulated rain over the whole period shows substantial and generalised normal amounts or surplus of rain over most of Europe (except Spain, central Italy, southern France, western UK, Estonia, Finland and Turkey). But, in fact, the rains were practically absent in July and persistent and very abundant in August. This unusual rain distribution, in conjunction with the abovementioned thermal conditions, impacted mainly on cereals production, especially at northern latitudes where, in July, the cereals were still in the grain-filling stage (reduction of grains weight) and then, in August, during the harvesting (quality depletion).

The rain deficit in July (estimable, on average, at 30–40 mm, compared to 60–70 mm expected) mainly affected the central and eastern EU countries (eastern France, Luxembourg, Germany, the Czech Republic, Slovakia, Poland and the Baltic countries) and severely depressed the soil moisture. Only in southern Italy, Greece and southern Spain was surplus rain recorded, positively increasing the soil water moisture.

On the other hand, the areas affected by drought in July experienced a very wet period in August, with persistent and abundant rain. In fact, only in the Mediterranean areas was there a more seasonal rain distribution. The cumulated rain amounts were, on average, above 100–120 % as compared to the seasonal average and distributed in a larger number of rainy days (8–10 more than the LTA). The worst conditions occurred in Poland, Austria, the Netherlands, eastern France, western Germany and southern Sweden.

The potential evapotranspiration was influenced both by the high temperatures and by the high solar radiation which occurred in concomitance with the heatwaves. In July, and again in September, mainly Finland, Poland, the Baltic countries, Germany, Benelux, the UK, Ireland and north-eastern France were the areas with the highest anomalies compared to the LTA: on average, the accumulated higher-than-seasonal water demand was estimable at 30–40 mm, but with peaks above 50–60 mm.

3. Highlights by region of interest

EU-25

France: crops affected by heat spell in July and over-wet conditions in August

Soft wheat suffered from the exceptional heatwave that shortened the maturity stage without optimal soil moisture, particularly in the light soil. The late harvest in the north-eastern part of the country was also hindered by significant precipitations. The yield potential was lowered to 6.8 t/ha (– 5 % compared to 2005). The durum wheat yield was slightly increased to 4.7 t/ha (– 6.9 % compared to 2005) due to a larger area in the centre than initially expected, with a higher potential than in the southern area.

The rapeseed yield is forecasted at 3.3 t/ha (– 10.2 % compared to last year).

Grain maize is expected to reach 8.5 t/ha (+ 1.2 % compared to 2005) considering that the suboptimal July was partially compensated by the wet month of August.

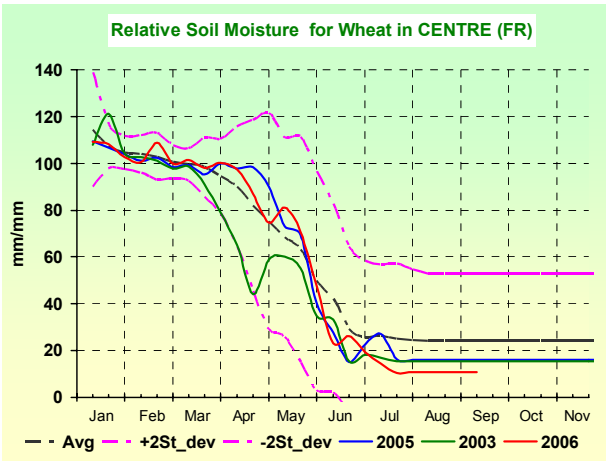
Potato did not receive optimal precipitations during the main part of the storage organ elaboration in July. The abundant precipitations in the north-east partially compensated for this, but also facilitated root germination and hindered the early harvest. The yield potential is still comparable to last year with 42.1 t/ha (+ 0.2 % compared to 2005).

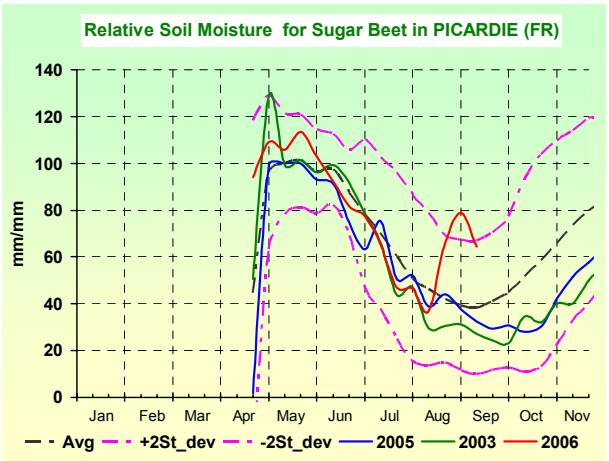
Sugar beet benefited from good rainfall in August and maintained its good yield potential despite a risk of reduction of sugar content. The yield is expected at 80.4 t/ha (+ 7.3 % of the LTA).

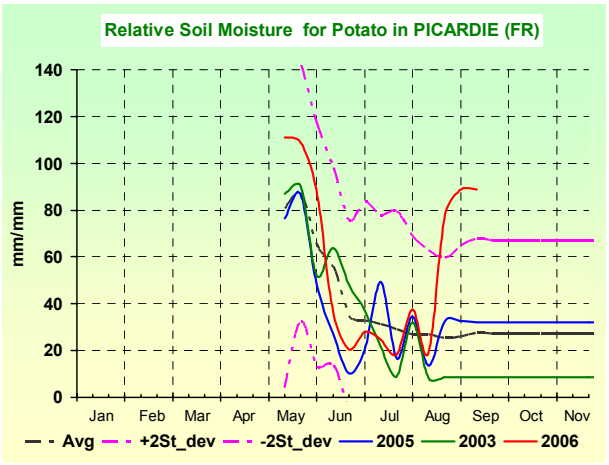
France experienced one of the hottest months of July for the last 32 years with the highest minima and maxima temperatures. The south-western, Bourgogne, Rhone valley and Mediterranean zones faced the longest heat spell with up to 20 days over 30 °C. Only the Manche coast, Bretagne and Auvergne had the shortest heat spell (less than five days). These extreme temperatures advanced the senecescence stage and shortened the maturity period reducing the yield potential for the winter crops. It may have a negative impact for summer crops in full growth such as maize and potato, particularly for areas with low soil moisture and with limited irrigation.

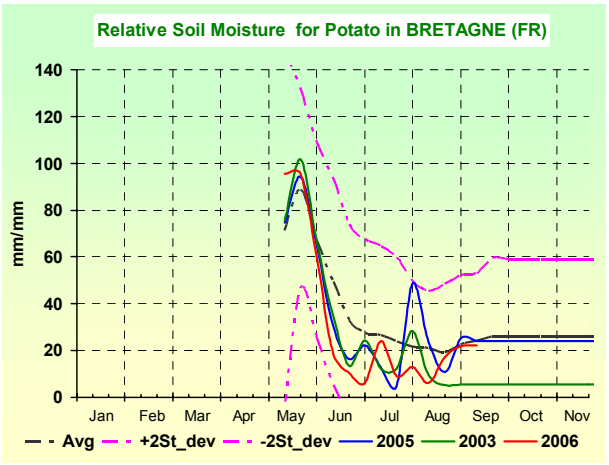
Alsace, Lorraine, Franche-Comté, Bourgogne and Languedoc-Roussillon experienced one of the driest Julys of the last 32 years. Bretagne, Pays-de-la-Loire and the centre received lower precipitations than normal. In these areas, the soil moisture, already lower than average in June, did not replenish in July and the crops did not get optimal water supply.

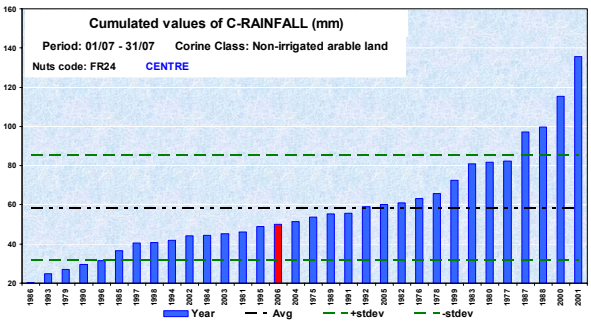
On the other hand, August was over-wet particularly in Nord-Pas-de-Calais, Picardie, Champagne-Ardenne, Alsace, Lorraine and Franche-Comté where it was the wettest for the last 32 years. Only Provence-Alpes-Cote d'Azur had a lower value than the seasonal one. On the one hand, it replenished the low soil moisture favourable for summer crops, but, on the other hand, it hampered the late cereals harvest in the northern areas, favoured potato tuber germination and diminished the sugar content of the sugar beets. The temperature was below average from the second dekad of August and slowed down the summer crop development.

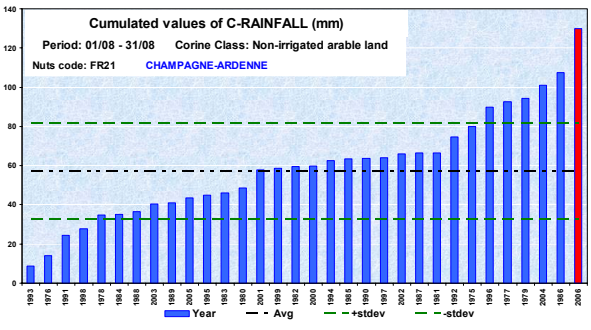


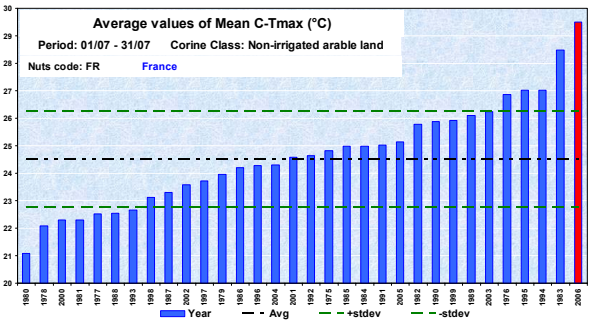


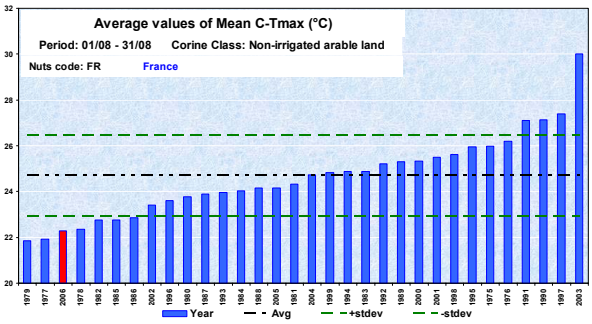


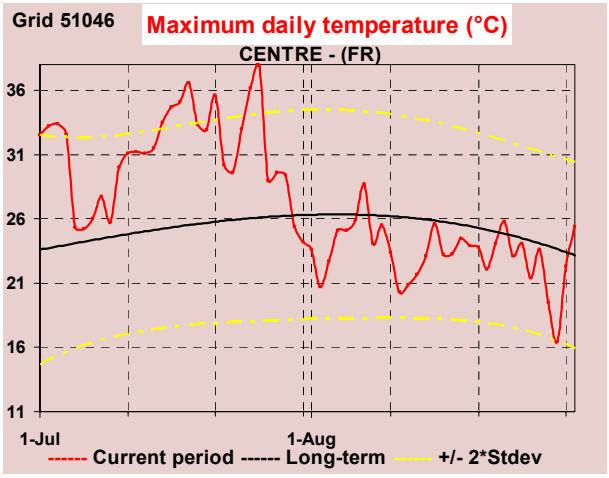


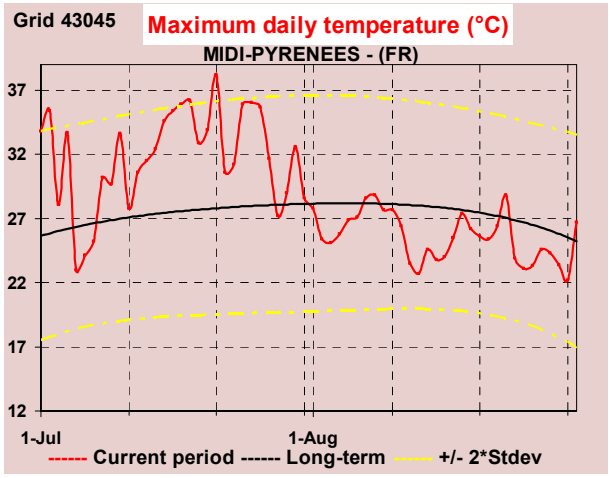












Germany: dry with an exceptional heat spell in July, followed by an exceptional over-wet August

Winter wheat is forecasted to have a significant drop at 6.6 t/ha (– 11.4 % compared to 2005) due to the conjunction of the suboptimal soil moisture and the exceptional heat. For winter barley, the drop is around – 7.5 % referring to 2005 with 6.0 t/ha.

For rape seed the yield is forecasted at 3.4 t/ha (– 4.4 % of the five-year average).

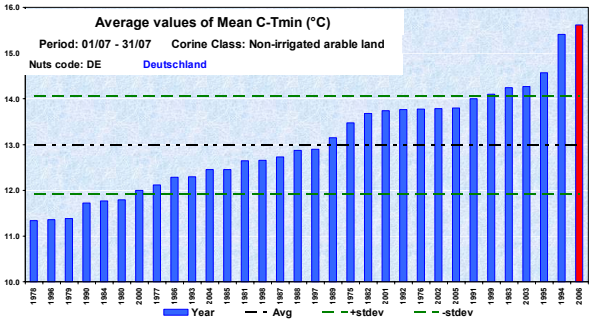
Grain maize still has the normal potential with 8.8 t/ha. Potato probably suffered from the suboptimal conditions in July and shows a potential of 37.3 t/ha (– 6.1 % of the average). Sugar beet benefited from the wet August and reached 59 t/ha (+ 2.2 % of the average).

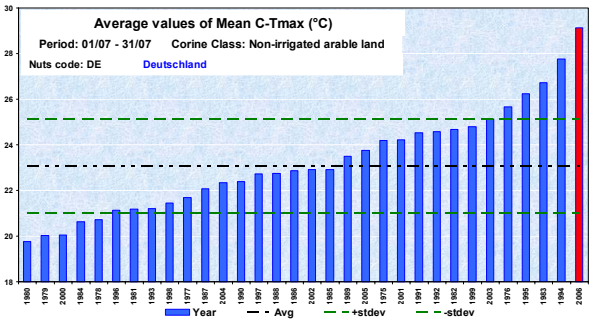
The country experienced the hottest month of July for the last 32 years with the highest minima and maxima. More than 10 days over 30 °C was recorded in the western borders and whole eastern area, around five days in the remaining territory. This heat spell occurred during the sensitive period of cereals and, by shortening the grain elaboration, probably reduced the yield potential, particularly in light soil areas (mainly northern). The soil moisture availability in July was 30 % lower than the average for the largest part of the territory.

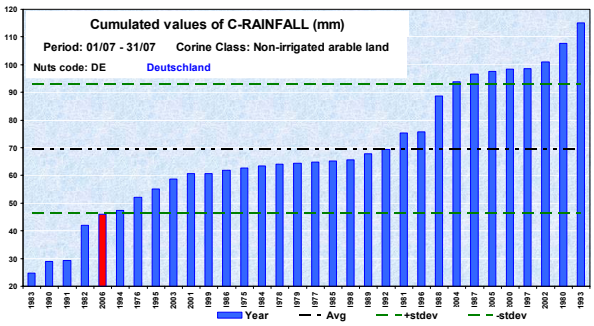
On the other hand, throughout August, lower temperatures were recorded in the southern half of the country and probably slowed down the crops' activity.

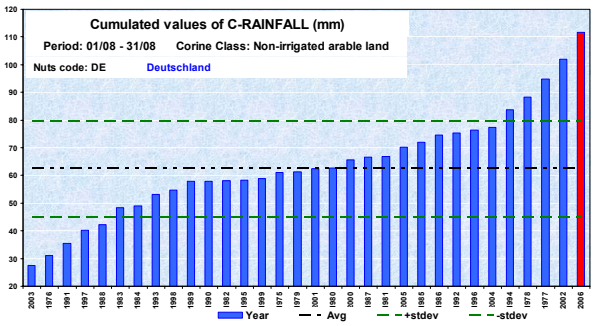
Rainfall in July was 30 % lower than average, except in Hessen where the precipitations were unusually abundant. The available soil moisture for demanding winter crops in the ripening and maturity phase was also 30 % lower than normal, except in Hessen and — to a lesser extent — part of Baden Wuerttemberg. The yield elaboration for cereals should have been significantly reduced due to the suboptimal water supply in conjunction with extreme temperature.

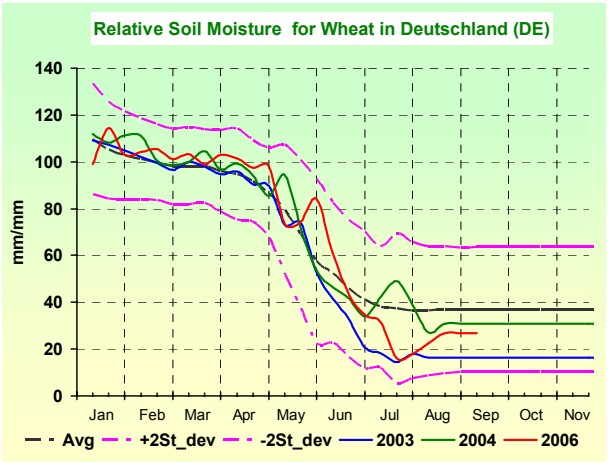
On the other hand, it was the wettest August since 1975. This partially replenished soil moisture, which helped the late potato tuber elaboration, sugar beet and summer crops. Late harvest of winter crops should have suffered from these precipitations as well as early potato that should have germinated.

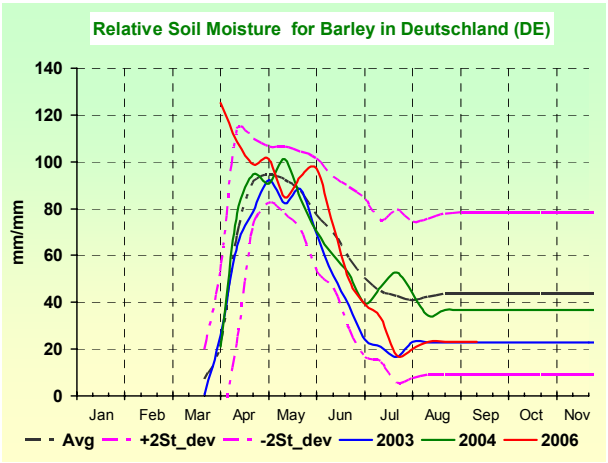


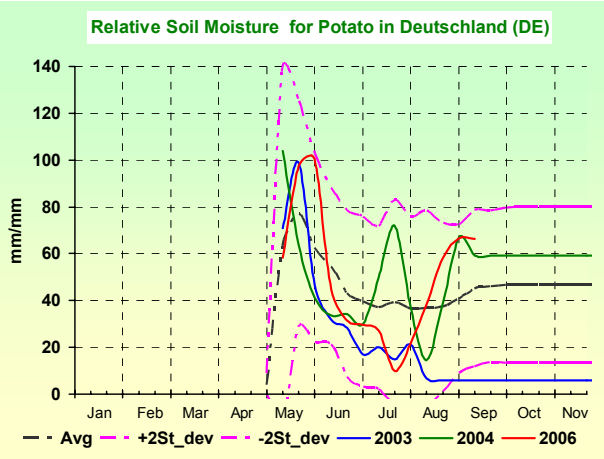


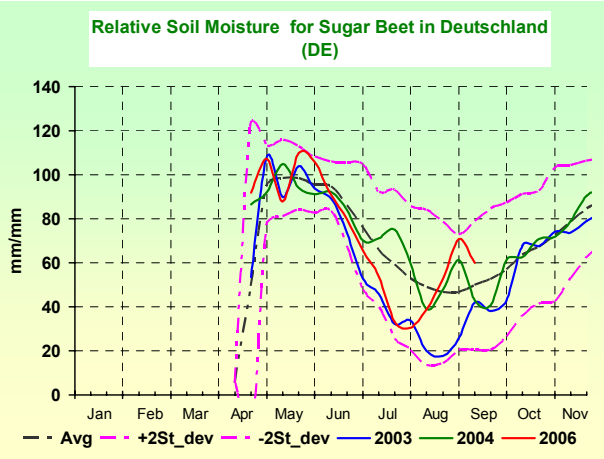












Austria: warm and dry July

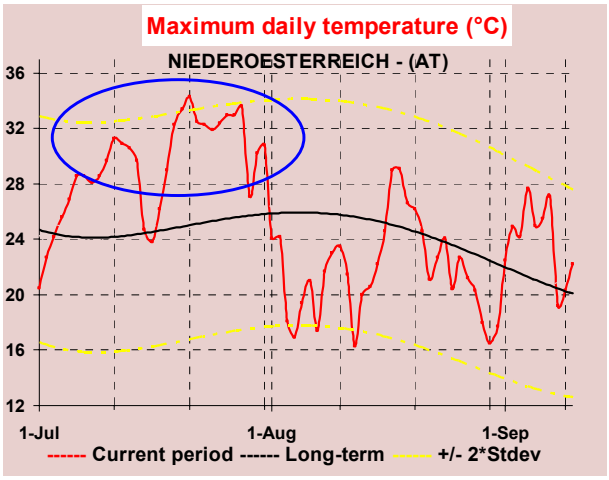
Crop yields are forecasted above the five-year average for all winter crops: 5.27 t/ha for soft wheat (+ 2.1 %), 4.36 t/ha for durum wheat (+ 5.5 %), 5.41 t/ha for winter barley (+ 4.7 %) and 3.26 t/ha for rapeseed (+ 24.7 %). Among spring and summer crops, only spring barley (4.12 t/ha) and potato (29.26 t/ha) are expected to yield less than the average (respectively – 2.2 % and – 4.3 %). Forecasted yields for sugar beet, sunflower and maize are higher than average: respectively 68.96 t/ha (+ 6.7 %), 2.77 t/ha (+ 3.8) and 9.33 t/ha (+ 0.7 %).

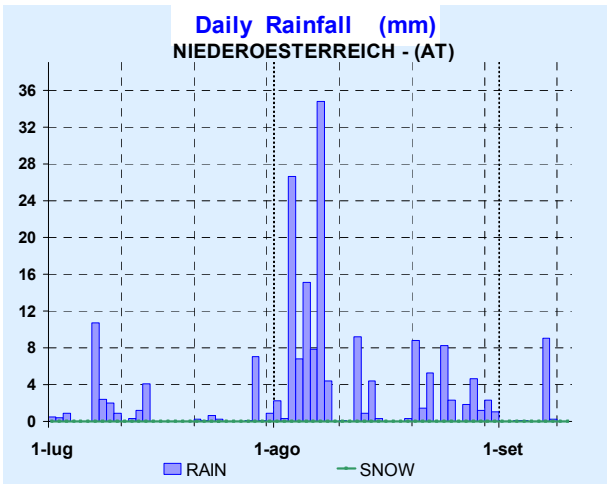
Satisfactory irradiance conditions and high temperatures characterised the month of July and, therefore, the ripening phase of wheat and barley. The harvesting procedure for the same crops might have been affected by the rainfall which occurred around maturity (first dekad of August). The dry July might have created some problems for summer crops.

The below-average soil moisture simulated for the second part of July probably did not create problems for soft wheat. However, the higher temperatures recorded in July lead to two unfavourable conditions for the crop: higher respiration requirements and, particularly, a shorter ripening phase (the delay accumulated in spring is now completely recovered). These factors have reduced the expectations of the first part of the season.

Rapeseed successfully reached the maturity stage in the third dekad of July under favourable conditions. The good potential already discussed in the last bulletin is confirmed. Winter barley (which completed its cycle at the end of August) is showing a better potential compared to spring barley (which was penalised by water excess in the sowing period).

Maize is currently in the second part of the ripening phase with about a one-week advance compared to the average. Some problems related to insufficient water availability at the end of July are simulated.





Belgium and the Netherlands: heat spell and dry conditions in July, over-wet in August

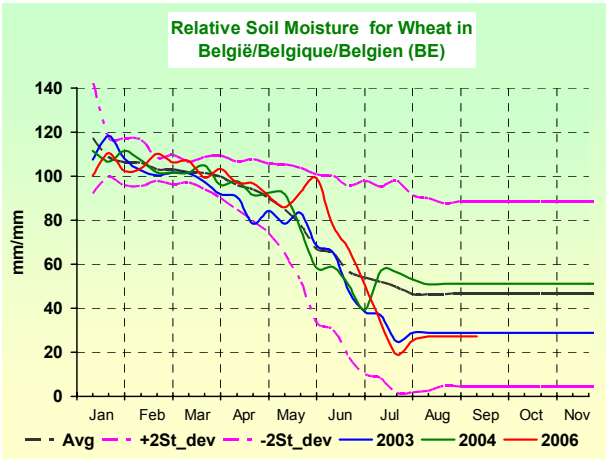
For Belgium, the winter wheat yield forecast went down slightly to 8.4 t/ha. For the Netherlands, the drop was more significant due to less favourable conditions with 8.4 t/ha (– 5.8 % compared to last year).

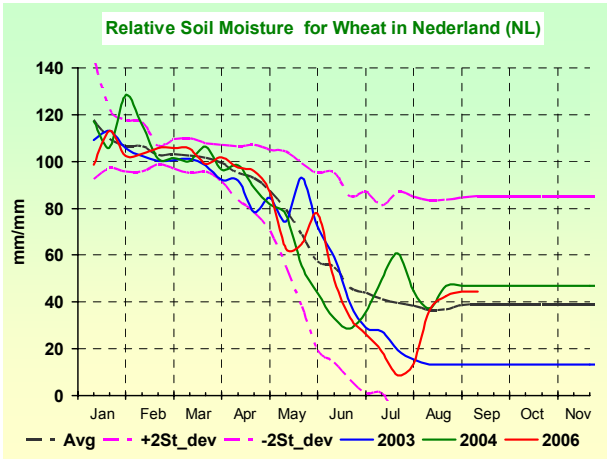
Maize yield still has a good potential in Belgium with 11.7 t/ha, and slightly lower compared to the average for the Netherlands with 11.7 t/ha (– 4.3 % of the average). Potato reached a potential of 41.8 t/ha (– 5.9 % of the average) in Belgium and 41.1 t/ha (– 5.3 % of the average) for the Netherlands.

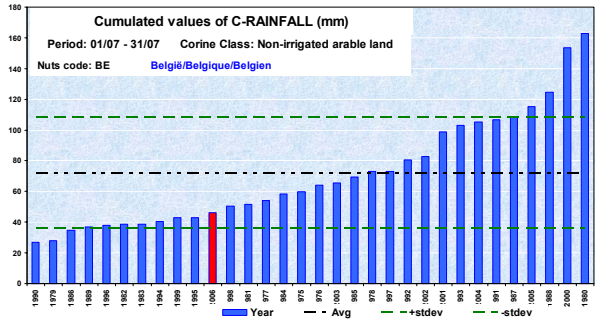
Sugar beet shows a good forecast in Belgium at 70.2 t/ha (+ 3.8 % of the average) and in the Netherlands at 61.7 t/ha (+ 2.2 % of the average).

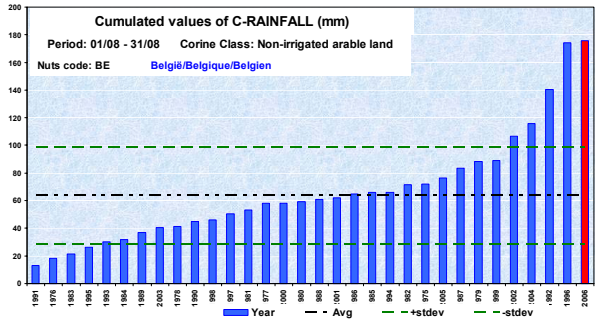
Benelux was also hit by a heat spell over 30 °C in July and recorded the highest minima and maxima for the last 32 years. The phase of storage organ elaboration for cereals and even potato should have been shortened, reducing the yield potential. Moreover, the precipitations were not optimum, particularly for the Netherlands which previously showed a low soil moisture.

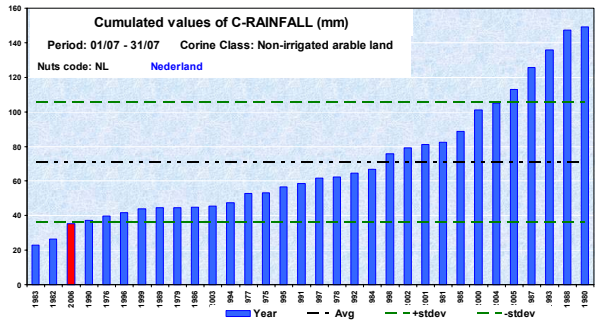
On the other hand, the three countries experienced an over-wet August which could have hampered the last cereals and early potato harvest. Local intensive precipitations could have damaged some crops. But it did also replenish the soil moisture, benefiting grain maize, sugar beet and late potato, and this could partially compensate the suboptimal conditions of July.

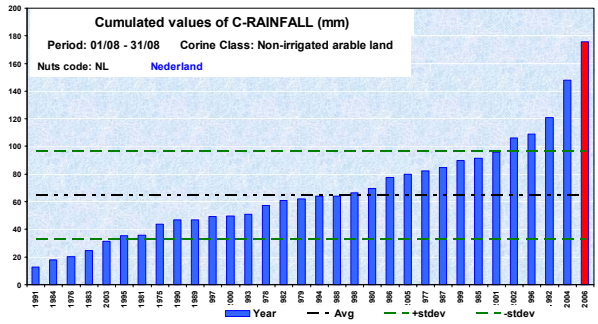


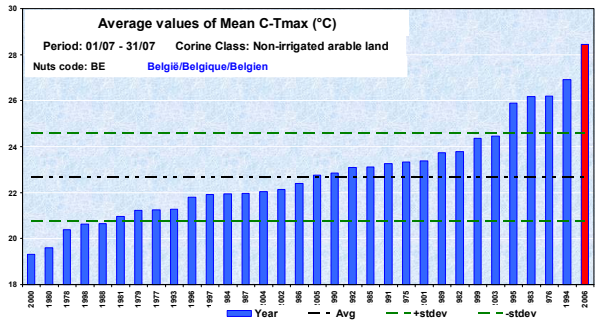


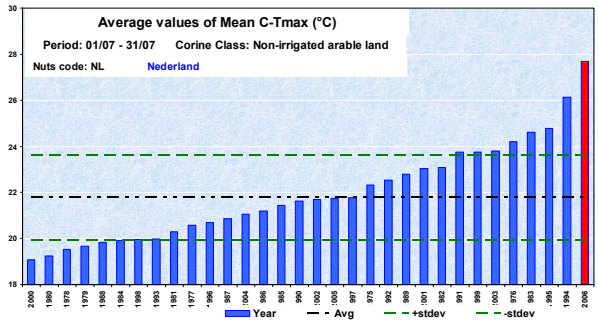












Denmark, Sweden: rather warmer than seasonal, very wet in August

In Denmark, the expected yields are: soft wheat at 6.9 t/ha (– 4.2 % compared to 2005), rapeseed at 3.0 t/ha (– 3.3 %) and barley at 5.2 t/ha (– 3.0 % compared to 2005). In Sweden, the expected yields are: soft wheat at 6.0 t/ha (– 5.5 % compared to 2005) and barley at 4.2 t/ha (– 1.1 %).

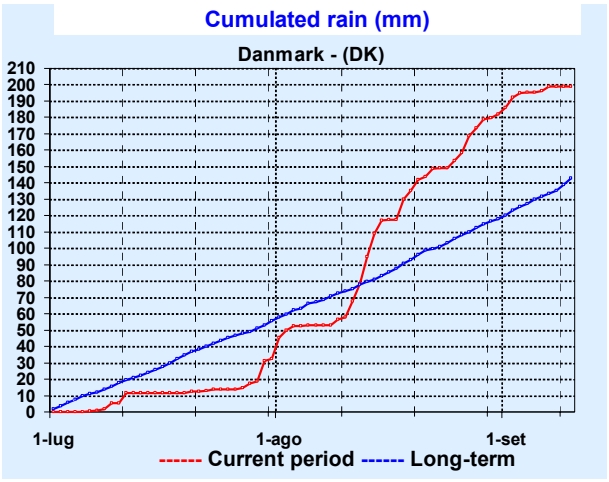
In all the northern latitude areas of Europe, July was characterised by consecutive and exceptional heatwaves (in mid-July, close to 30 °C maximum daily values were recorded, around 10 °C above the seasonal temperatures). Therefore, at the end of July, the accumulation of 'active temperatures' was the highest for the last 32 years: around 620° GDD as compared to 500° GDD of the LTA (+ 22 %). More seasonal temperatures occurred in August and September but were slightly above the average. Consequently, for all the crops, the development was accelerated with resultant reduction of their potentiality (shorter grain-filling, less total biomass, etc.).

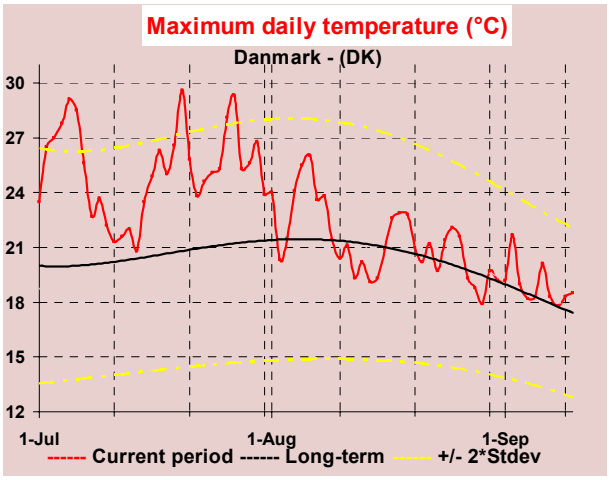
Rainfall was below average in July, and very persistent and abundant in August. The scarce rain in July (in particular during the first and second dekads) also followed an anomalous very dry June. Therefore,

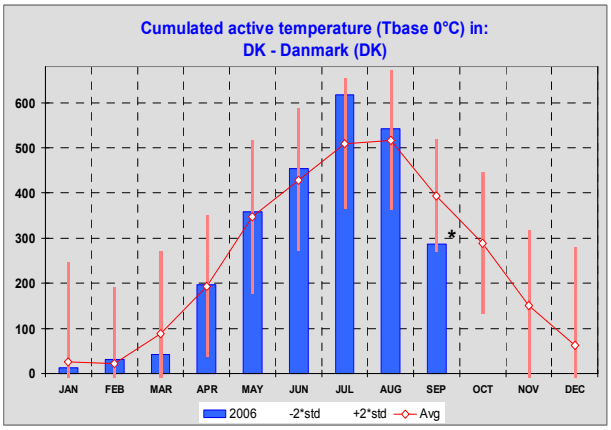
at the end of the second dekad of July, the soil moisture was significantly below the expected values and the rainfed crops suffered. In this period, the higher levels of solar energy were very positive for plant growth.

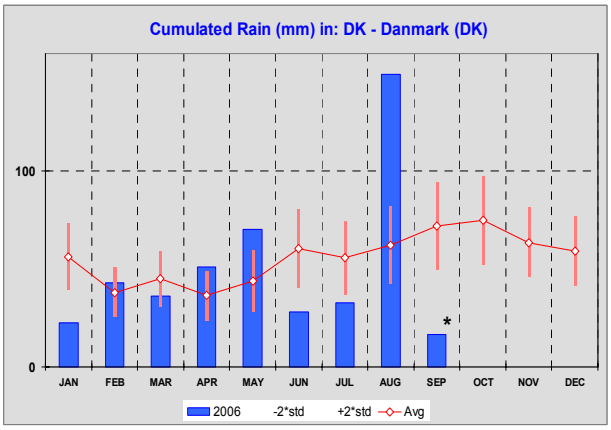
From the third dekad of July, the rain returned abundant and persistent: 18–22 rainy days between 27 July and 10 September, and around 150 mm of cumulated rain (as compared to 60–90 mm of the LTA).

The persistent rain delayed field operations (harvestings, fields preparation, etc.) and, coupled with mild temperatures, increased the risk of diseases, spike germination, nitrogen leaching, etc.









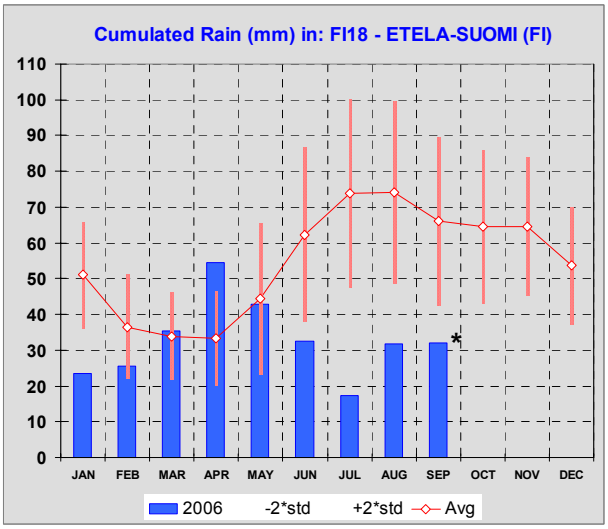
Finland: very anomalous conditions: persistent dry and warm

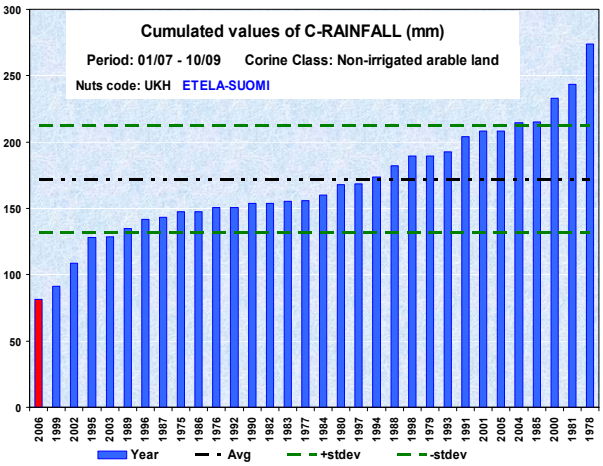
The yield forecasts for soft wheat are revised slightly downward at 2.2 t/ha (– 41.6 % compared to 2005, and – 36.9 % compared to the previous five-year average).

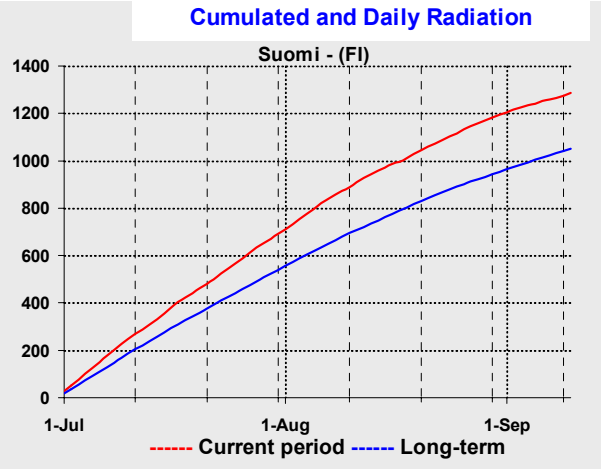
Contrary to the other northern EU countries, in Finland the whole period was characterised by persistent high temperatures (mainly the maximum daily values) above the seasonal averages. On 7 July, and again on 10 July, 12 July, and 6 and 7 August, more then 30 °C was recorded. Therefore, the accumulation of 'active temperatures' for the period was the third highest since 1975: around 1 200° GDD as compared to 1 000° GDD of the LTA.

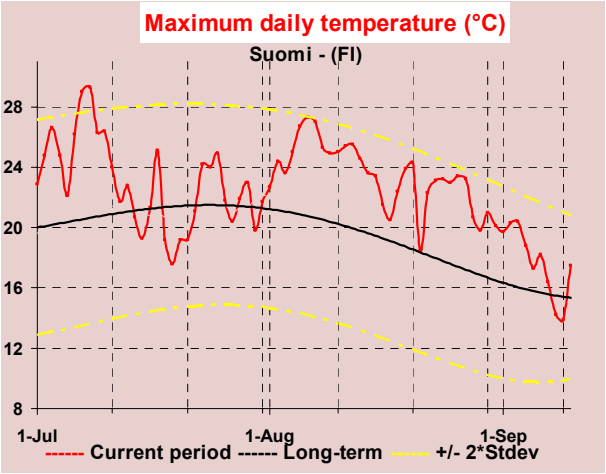
Similarly, rain was scarce not only in July but also in August and at the end of the first dekad of September the rain deficit was estimable at around 90–100 mm and this year represents the driest since 1975.

Those unfavourable and exceptional conditions severely stressed the crops and reduced their potentiality. The only positive meteorological element was the very high level of solar radiation which provided a very good energy supply.









* Note: Data up to the 16th of September 2006

UK and Republic of Ireland: in the UK a warmer and rather dry July, cereal harvestings hampered by a very wet August; in Ireland, suboptimal conditions

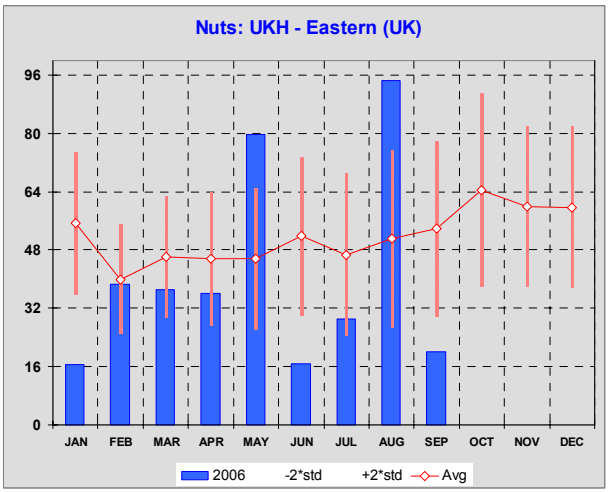
The generally unfavourable conditions recorded induced a revision of the forecasted yields both in the UK and Ireland. Soft wheat is, respectively, expected at 7.3 t/ha (– 9.0 % as compared to 2005) and 9.0 t/ha (+ 6.3 % compared to 2005 but + 1.0 % compared to the previous five-year average). Barley is expected in the UK at 5.6 t/ha (– 5.0 % compared to 2005 and – 2.3 % compared to the previous five-year average) and in Ireland at 6.3 t/ha (+ 6.5 % compared to 2005 but – 3.2 % compared to the previous five-year average). Rapeseed yield is expected at 2.8 t/ha (– 13.5 %) and sugar beet at 58.8 t/ha (+ 2.6 %) in the UK. Potato is expected at 41.0 t/ha (– 3.1 %) in the UK and 37.4 t/ha (– 5.7 % compared to 2005).

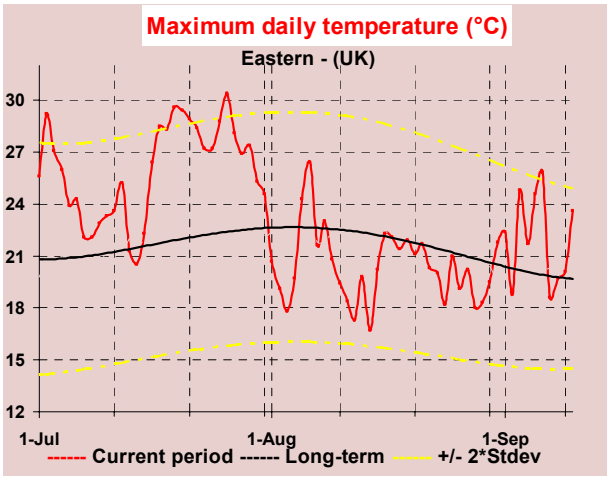
In the UK, the unusually warm and very dry month of June was followed by an again anomalous warm and dry July. In fact, from mid-June, for five consecutive dekads, the cumulated active temperatures presented values above the average and the cumulated rain was below the normal range of variation (below or close to average —2 σ): all the southern and eastern UK experienced the warmest July since 1975.

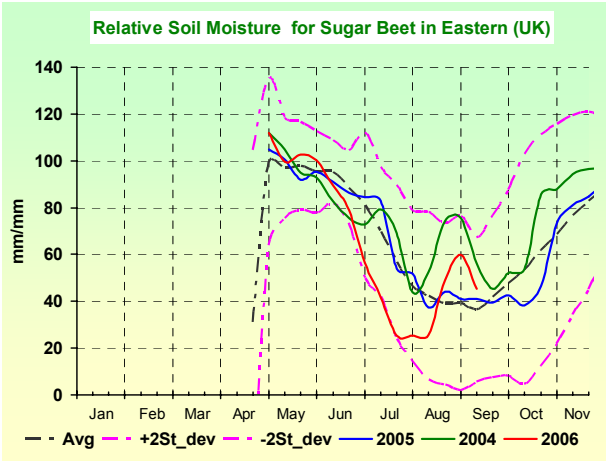
Those conditions negatively impacted both on winter crops (insufficient water supply to the crop requirement during the very sensitive grain-filling stage and accelerating the senescence) and the spring crops (insufficient soil moisture and boosting the vegetative stages of development: reduced biomass). Obviously, the rain-fed crops suffered much more than those irrigated.

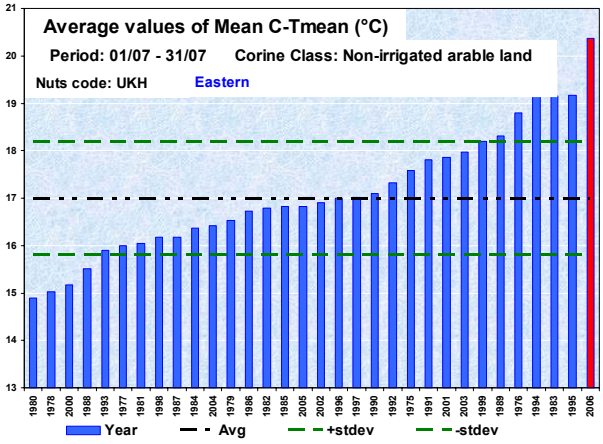
In August, persistent and abundant rainfalls hindered all field operations: delaying harvesting, cereals lodging and preparation for new sowings, and creating favourable conditions for fungal infections and spike sprouting (quality depletion). At the beginning of September, a new warmer and dry period occurred, determining better conditions for the new sowing, late harvesting and field preparation.

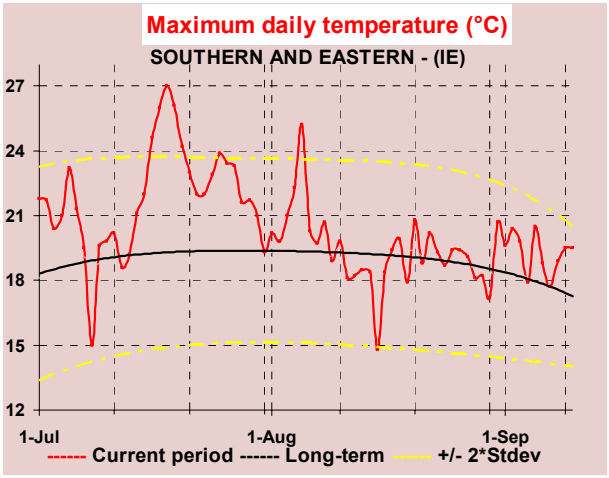
In Ireland, essentially similar conditions occurred, but closer to the seasonal averages.

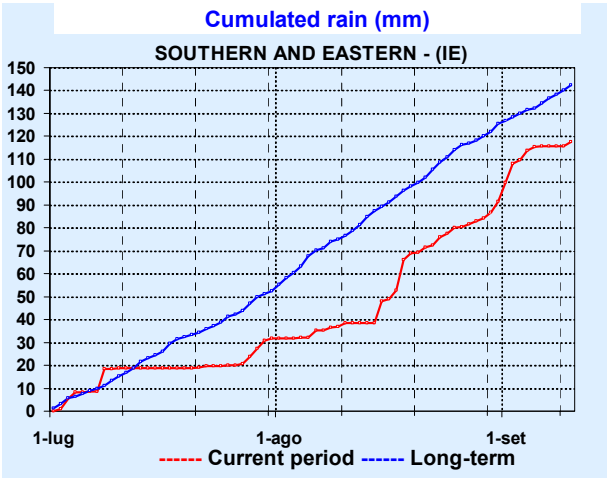












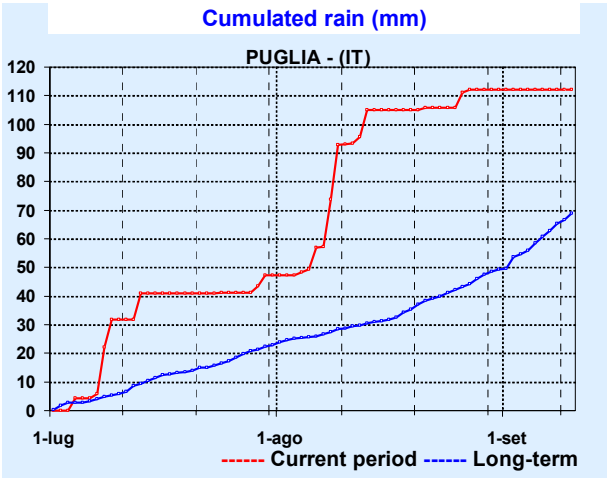
Italy: in northern and central areas a hot and dry July was followed by a fresh and wet August; in the southern areas, temperatures were in the seasonal range but the period was very wet

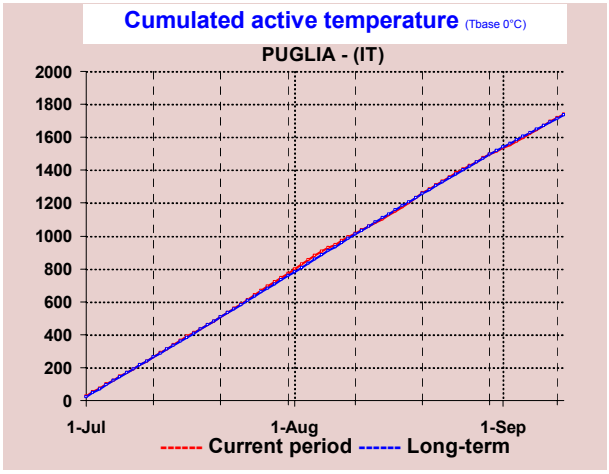
Compared to the last bulletin, the grain maize forecast is revised upward at 9.0 t/ha (– 3.9 % compared to 2005 and – 0.5 % compared to the last five-year average), sugar beet is decreased at 47.1 t/ha (– 15.8 % compared to 2005 and + 1.8 % compared to the last five-year average). The sunflower yield forecast is also decreased at 2.02 t/ha (– 9.2 % compared to 2005).

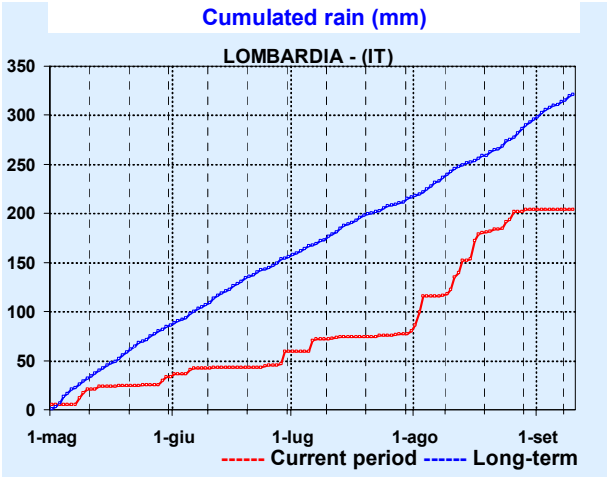
During the whole summer, the country was very much split into two parts: the northern and central areas (Po valley, Tuscany, Umbria and Marche) suffering in July because of the high temperatures (on 21 July, 38.4 °C was recorded and almost 38 °C between 21 and 26 July) and the prolonged drought, yet affected by the previous months (from May, more than 150–200 mm of rain deficit) and facing in August fresher and wetter conditions; and the southern areas (Apulia, Basilicata, Campania and Sicily), which experienced a summer with seasonal temperatures (except two to three days in August) but exceptionally wet (30–50 mm of surplus in July, 30–100 mm surplus in August).

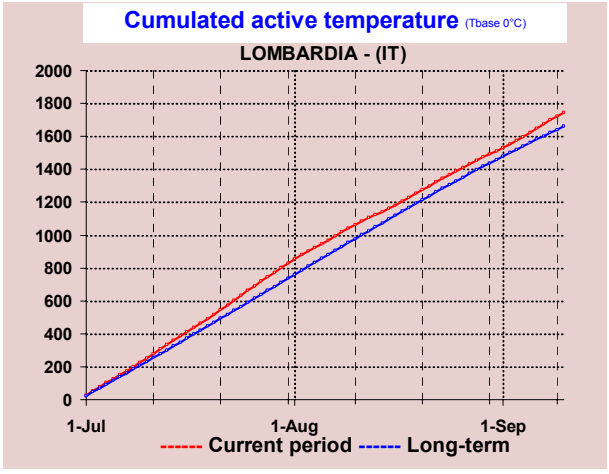
In July, in the northern and central areas, the rainfed spring crops (mainly maize and sunflower) were significantly affected by reduced soil moisture, which reached values similar only to 2003. Irrigated crops (maize, sugar beet, rice, etc.) also suffered from possible irrigation restrictions. Plant development too was accelerated, similar to 2001 and 2002. Fortunately, in the first half of August and then September, abundant rain arrived and this re-established the appropriate soil moisture. However, those rains negatively impacted on sugar beet, depressing the roots' sugar rate.

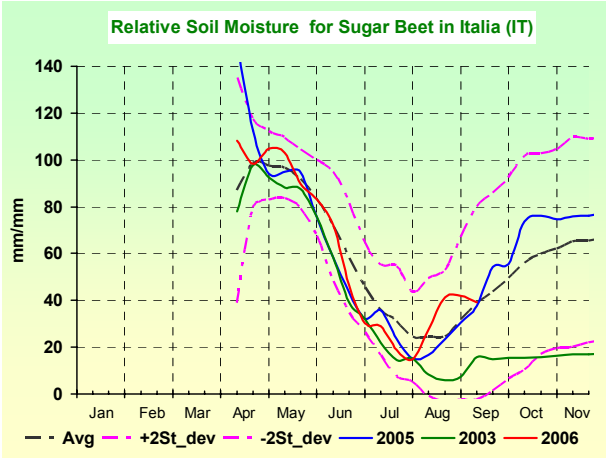
On the other hand, in the southern areas, the abundant rain recorded both in July and August boosted the soil water reservoirs, useful for the next sowings, and reduced the irrigation requirements for the active crops.

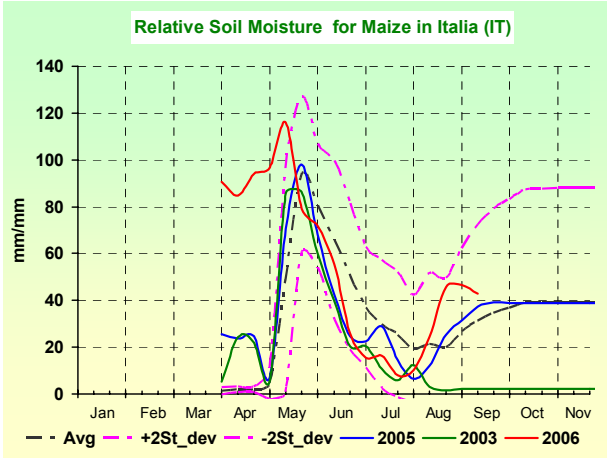










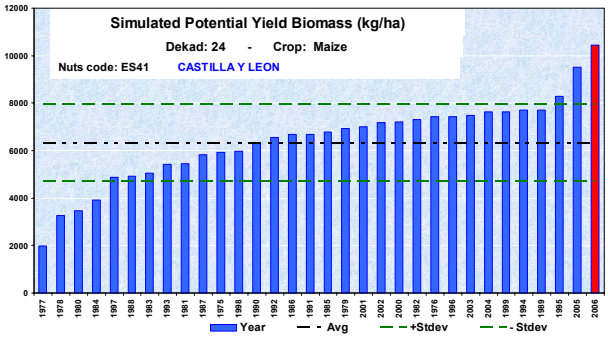


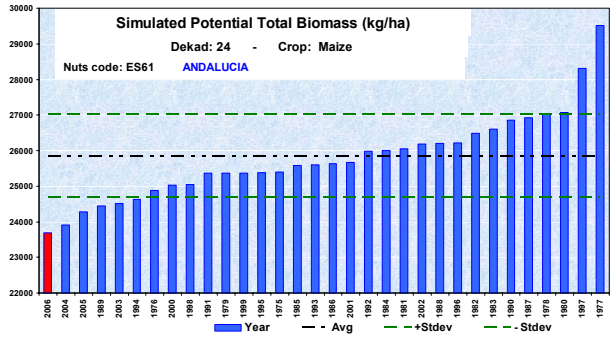
Spain and Portugal: a dry July but mild temperatures and precipitation in August were conducive to a positive outcome for summer crops

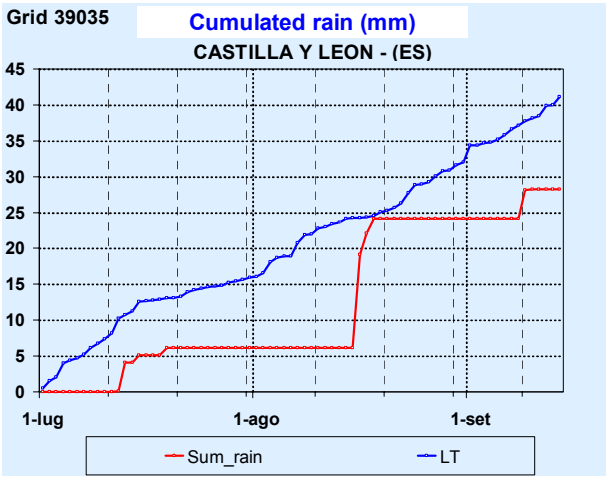
Following a wet June, July was dry but the rainfall deficit was partly recovered from mid-August onwards. The rain helped summer crops in the most susceptible phases of development. The

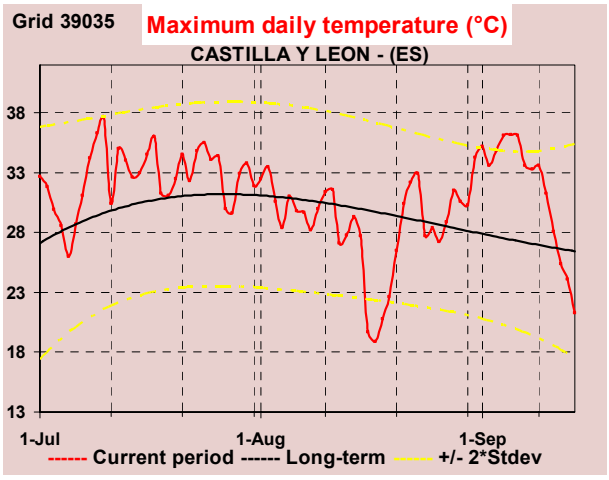
forecast for grain maize stands at 10.3 t/ha, recovering on the 2005 levels. A same trend can be forecasted for Portugal.

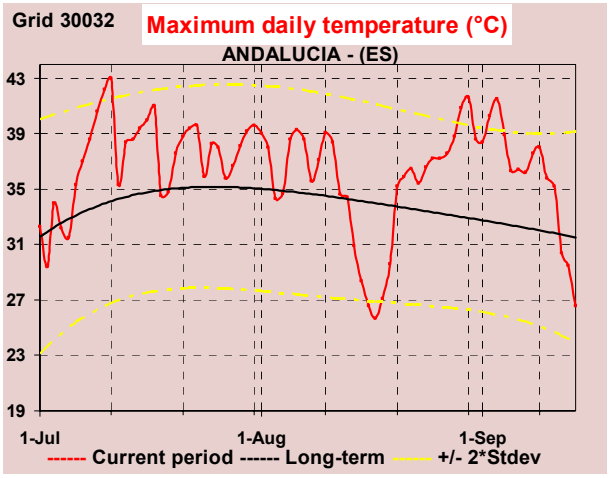
The summer season was varied across Spain with different climatic trends characterising the north-central regions and the south. In the north-eastern and central areas, after a rather wet June, precipitations turned to average levels during July but were scarce in August. There was some significant precipitation in the second half of August and early September allowing some recovery in the most susceptible phases. In the southern regions, particularly the agricultural areas of Andalucía, wet conditions characterised the climate during July and August. Temperatures over most of the country were quite mild during July and even lower than average in the north, positively affecting radiation levels. However, climatic conditions were better than in 2005 and this was reflected in the forecasted yield for most summer crops. Grain maize has reached dough maturation in most of Castilla y Leon and is even more advanced in the irrigated areas of Andalucía. Harvest is expected to take place at the end of September and yield is estimated at 10.3 t/ha, increasing both on the 2005 level and slightly on the long-term average (affected however by the level of 2005). The same trend can be forecasted for sunflower (0.87 t/ha, + 26 % on 2005), sugar beet and potato. In Portugal, dry conditions characterised the climate over the whole season even though, as in Andalucía, there was a certain easing in August and at the start of September. Grain maize yield is forecasted at 5.66 t/ha, increasing on 2005 and even slightly (+ 1 %) on the long-term average.

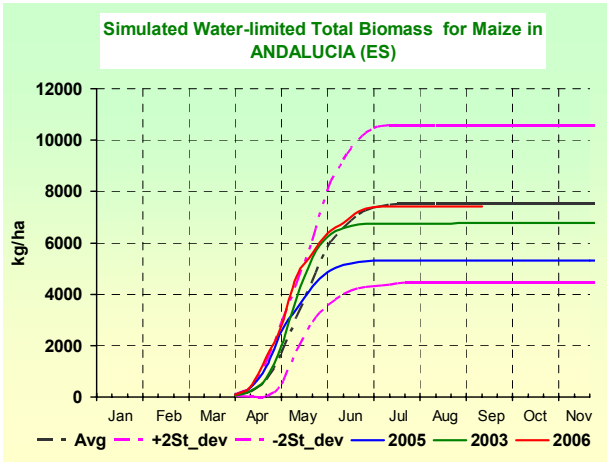










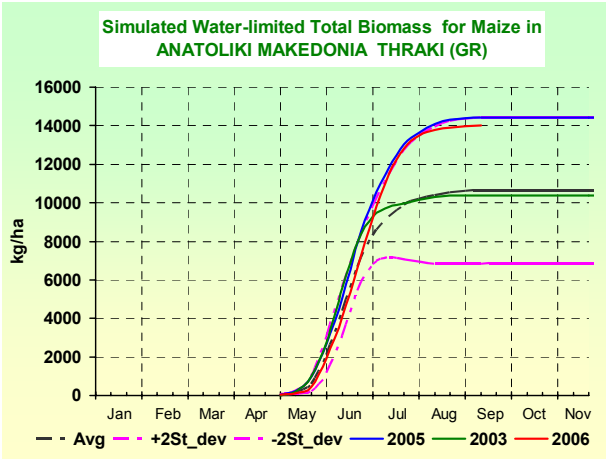


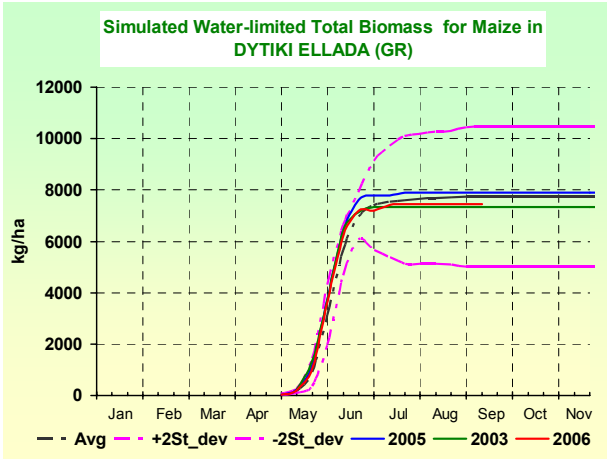
Greece: a dry July was followed by August rains, favouring production levels

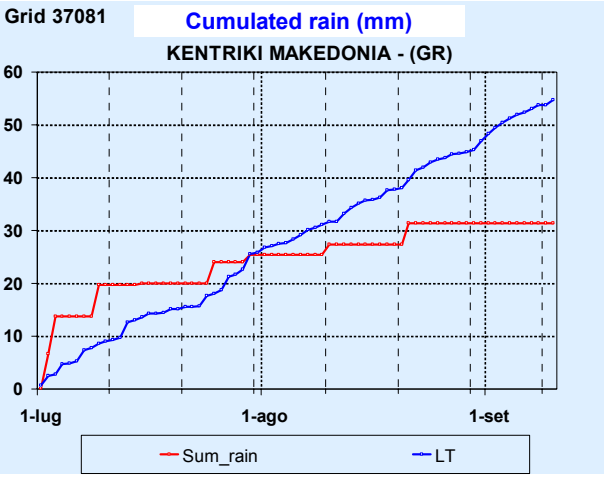
Relatively dry conditions in the north-east of Greece were eased by some rain in August, while in the other regions of the country the climate remained dry until early September. Grain maize production took advantage of the August rains with an expected average yield of over 9.5 t/ha, slightly increased on 2005.

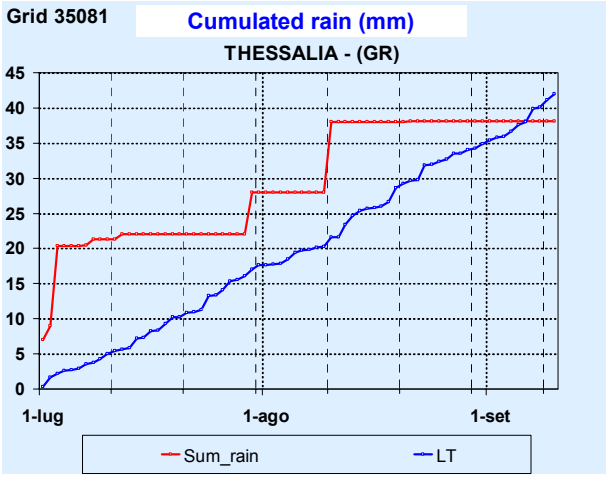
Summer 2006 in Greece was characterised by a relatively wet July. Precipitation was over 50 % above the long-term average coupled with rather mild temperatures which reduced radiation, maintaining a tolerable climatic water balance. In the most important grain maize production areas of the north-east which have irrigation (Anatoliki Makedonia and Kentriki Makedonia Thraki) some precipitation at the beginning of August partly made up for the previous deficit. In most of the country, grain maize reached dough maturity around the end of August, taking advantage of the climatic conditions in the most delicate phases of its production cycle. The forecasted yield for grain maize stands around 9.5 t/ha with a slight increase over both the previous year and the long-term average.

In the other agricultural regions of Thessalia and Dytiki Ellada, even though there were some precipitations around mid-August, these were not significant and conditions remained warm and dry until the end of the month, even though the impact of these conditions was alleviated by the availability of irrigation. Production levels of other summer crops reported a similar trend standing maintaining average levels.









Estonia, Latvia and Lithuania: low yields at the end of an extremely dry season

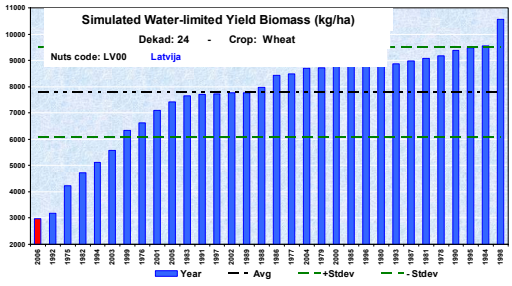
The forecasted yields for Estonia are: 2.0 t/ha (– 19.5 % difference as compared with the average of the last five years) for wheat (total) and 1.5 t/ha (– 28.4 % from the last five-year average) for barley (total). The forecasted figures for Latvia are: 2.8 t/ha (– 8.6 % from the last five-year average) for wheat (total) and 1.4 t/ha (– 31.7 % from the last five-year average) for barley (total). For Lithuania, the expected values are: 2.9 t/ha (– 18.7 % from the last five-year average) for wheat (total) and 1.6 t/ha (– 40.1 % from the last five-year average) for barley (total).

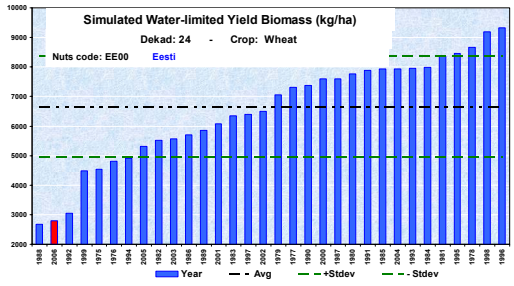
In Estonia, the precipitation received during July/August was lower than the long-term average (<– 25 % of the LTA). In Latvia, it was a mixed situation but, on average, the cumulated rainfalls were lower than the LTA (<– 20 %). In Lithuania meanwhile, it was drier than usual in the west and wetter in the central and eastern areas. For the first 10 days of September, the weather for all of the Baltic countries was wetter than usual (>+ 30 %), but the influence of these rainy days on cumulated precipitation for the whole period increased southwards (<– 20 % of the LTA in Estonia, close to normal in Latvia and higher than normal in Lithuania).

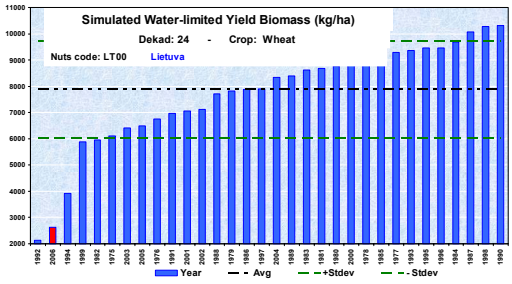
The sum of temperature for the whole period under consideration was about 12 % lower than the normal level for Latvia and Lithuania. In Estonia meanwhile, thermal conditions were close to normal. The minimum temperature did not drop below + 4 °C in Estonia and below + 8 °C for the other two Baltic countries.

Due mainly to the exceptional drier weather during the whole vegetation period, the simulated yields for cereals and summer crops were lower than normal (for example, for winter wheat it was the lowest yield simulated for Latvia, and for the other two Baltic countries the second lowest simulated yield in 32 years (since 1975). In addition to this unfavourable situation, particularly in Lithuania, some late summer rain may have hampered the timely harvest of wheat (in southern areas) and the quality of sugar beet (in northern areas where more than 100 mm of rain cumulated were recorded in the next 10 days after simulated maturity).

The sowing condition of winter cereals for the 2006–07 campaign was performed under relatively dry conditions in Latvia and Lithuania.





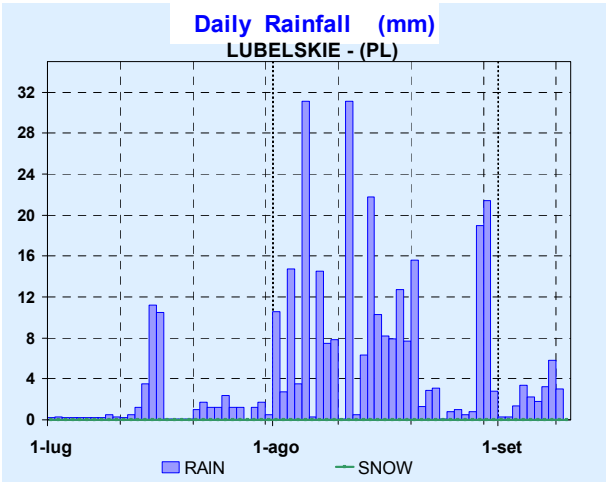


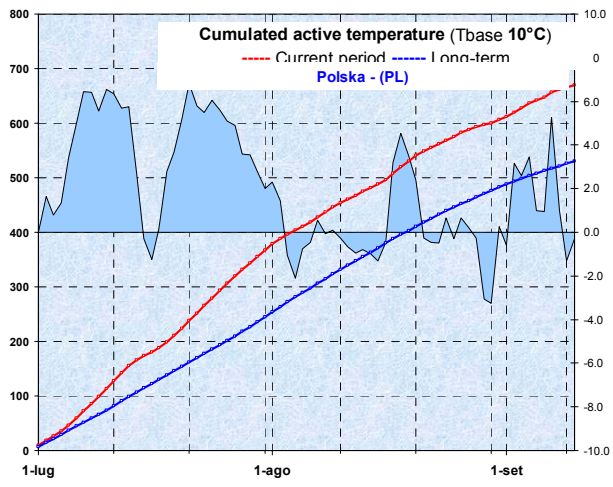
Poland: problems for wheat and barley harvests in the normal period, especially in the north-east

Only rapeseed is showing a good potential (2.71 t/ha, + 12.2 % compared to the average). For all other crops, a discouraging situation is depicted: 2.86 t/ha for spring barley (– 8.4 % compared to 2005), 5.37 t/ha for maize (– 6.4 %), 40.22 t/ha for sugar beet (– 3.4 %) and 16.89 t/ha for potato (– 4.2 %). The situation is even worse for winter crops: 3.42 t/ha for soft wheat (– 13.4 % compared to 2005) and 3.19 t/ha for winter barley (– 16.5 %).

High temperatures were recorded during the whole period under examination. In particular, daily thermal minima have always been above the long-term average, except for a very few days. After a dry July, frequent and intense rainfalls characterised the whole of August, especially in the north-eastern regions. This has strongly threatened harvesting for wheat and barley.

Soft wheat and barley suffered from the combined effect of high irradiance and insufficient water availability during July. Temperatures higher than the norm shortened the ripening stage. Moreover, the very wet August could have favoured fungal diseases and postponed harvests. Late-sown maize could have suffered from the abundant precipitations occurring in August (flowering). Summer crops in general experienced the July drought.



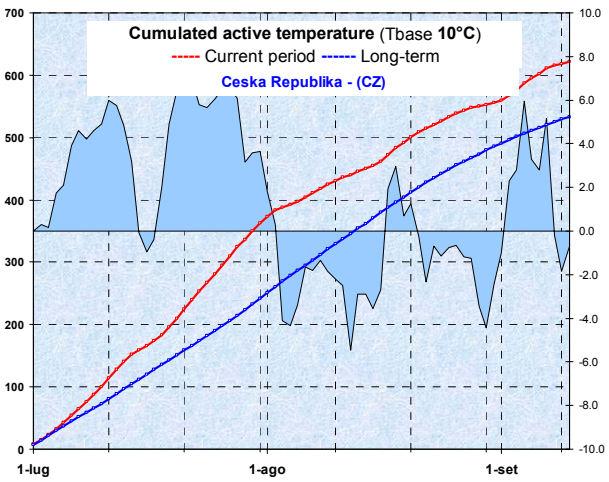


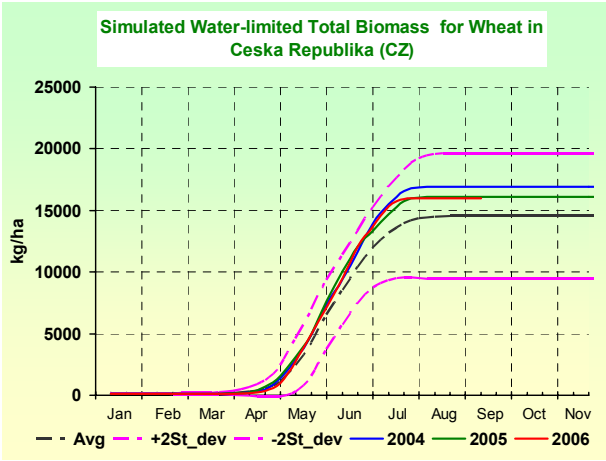
Czech Republic: a low yield for spring barley and potato

Except for winter barley (4.60 t/ha, + 4.6 % compared to 2005) and rapeseed (2.92 t/ha, + 1.2 %), forecasted yields are lower than those recorded for 2005: 5.04 t/ha for soft wheat (– 0.3 %), 3.59 t/ha for spring barley (– 13.5 %), 6.96 t/ha for grain maize (– 3.0 %), 2.36 t/ha for sunflower (– 1.3 %), 52.48 t/ha for sugar beet (– 1.5 %) and 22.10 t/ha for potato (– 21.5 %).

After a dry July, the rainy August could have created some problems to wheat and barley harvests: daily (although light, except for the first dekad) events verified for the main part of the month. High temperatures were recorded for the whole of July.

For soft wheat, the July heatwave already induced the crop to complete the cycle with a more than one-dekad advance, penalising the ripening phase. A good potential is shown by rapeseed which reached maturity at the beginning of July: only the shorter final part of the cycle (compared to the average) avoided a record year. Simulations show that only maize (currently in the second part of the ripening stage) suffered from the dry second part of July: the other crops have not been affected by lack of water.



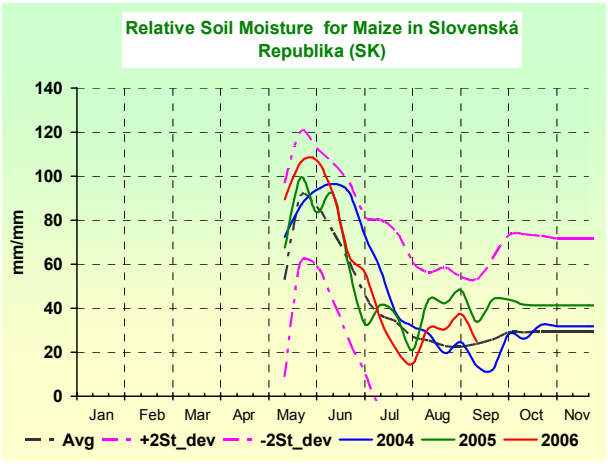


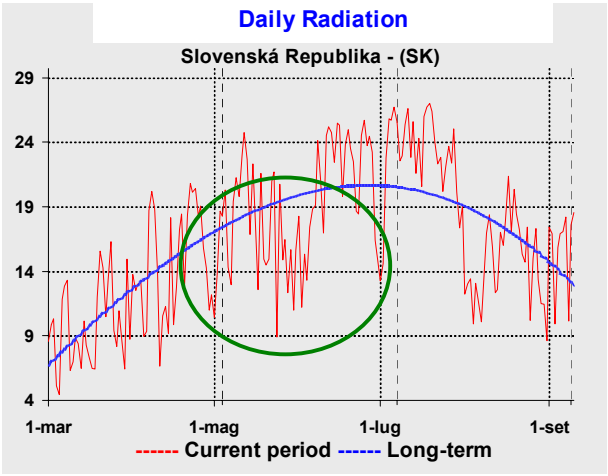
Slovak Republic: yields are lower than 2005 for most crops

Forecasts show a year undoubtedly worse than the previous one. Except for winter barley (3.61 t/ha, +1.1 % compared to 2005) and potato (16.42 t/ha, + 5.9 %), forecasted yields are lower than those recorded for 2005: 4.05 t/ha for soft wheat (– 5.3 %), 3.36 t/ha for spring barley (– 6.3 %), 2.09 t/ha for rapeseed (– 4.6 %), 5.66 t/ha for grain maize (– 19.6 %), 1.99 t/ha for sunflower (– 6.6 %) and 43.88 t/ha for sugar beet (– 16.3 %).

Warm temperatures during July were recorded only during the day compared to countries bordering on the west; lower temperatures characterised the nights. During August, frequent, but not intense, rainfalls were observed.

The rainy May could partially explain the not completely satisfactory soft wheat forecasted yields. The crop was in stem elongation/heading stages and could have been penalised by suboptimal radiation levels. Harvest problems for wheat and barley probably verified in the eastern part of the country because of the August rainfalls. Despite the current favourable conditions, maize yields are threatened by the low soil moisture simulated in July. Barley is penalised by the water excesses during the spring sowings.

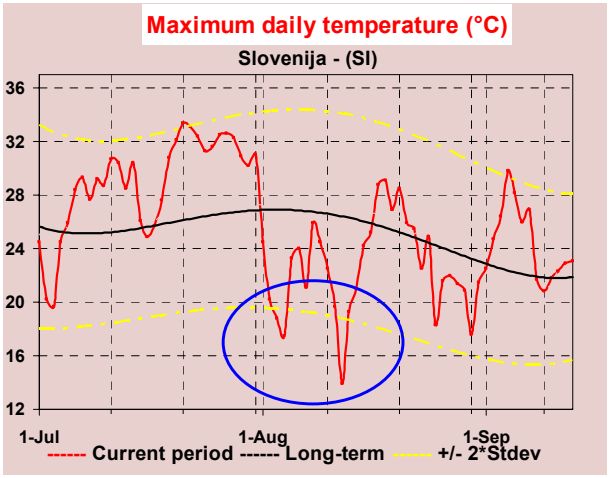


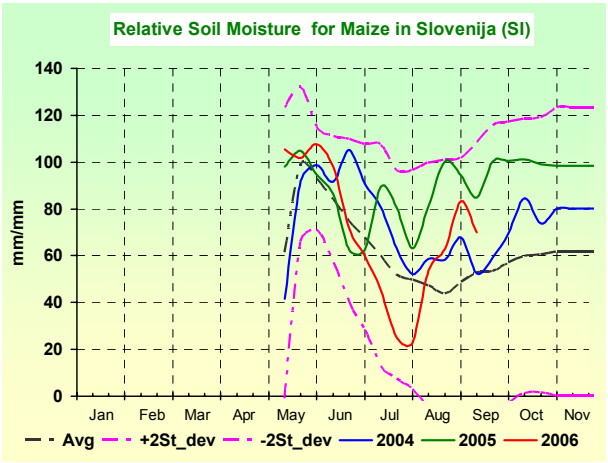


Slovenia: an unfavourable August

Maize forecasts (6.91 t/ha) are considerably lower than the 2005 ones (– 16.7 %). The same decreasing trend is forecasted for soft wheat (4.44 t/ha, – 5.5 %) and barley (3.73 t/ha, – 5.9 %).

Apart from the cold air irruption already discussed in the previous bulletin, some other similar events affected the country during the first two dekads of August, strictly associated with two significant stormy events. The irradiance level during the first part of August reached values which, on some days, were probably limiting for maize growth. These considerations partially explain the not-high yield forecasted for this crop. The other cereals reached maturity before this period. If the rainfalls recorded in the first part of August did not create problems concerning harvests and diseases, a standard year can be expected for wheat and barley.

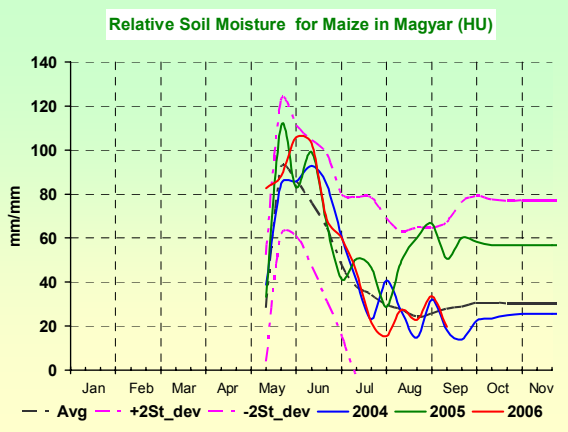


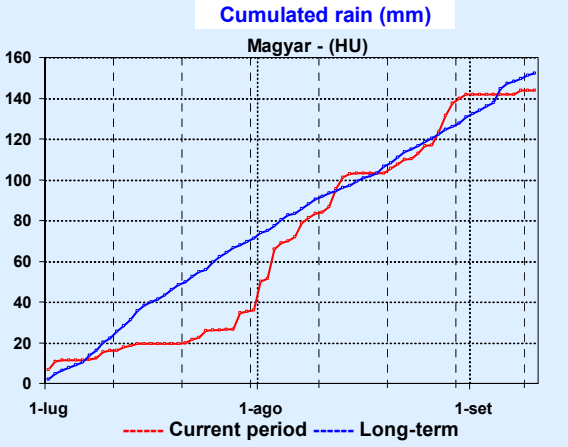


Hungary: a good year is expected

A good potential is shown by winter barley (4.15 t/ha), spring barley (3.69 t/ha), rapeseed (2.51 t/ha) and sunflower (2.19 t/ha): for these crops, 2006 forecasts are higher both than the average (respectively + 15.4 %, + 20.4 %, + 24.0 % and + 5.2 %) and than 2005. Soft wheat (4.43 t/ha), grain maize (6.68 t/ha), sugar beet (51.24 t/ha) and potato (23.92 t/ha) are expected to yield less than 2005 (respectively – 1.4 %, – 11.5 %, – 10.2 % and – 7.6 %), although more than the average.

The excessive rain occurring in the period after wheat and barley maturity, which affected harvests in the countries bordering on the north-east, was less severe in Hungary. Summer crops did not suffer from the relatively dry July as the soil moisture did not reach values so as to reduce crops activities. Although the 2004 records are usually not reached, it looks like a good year.



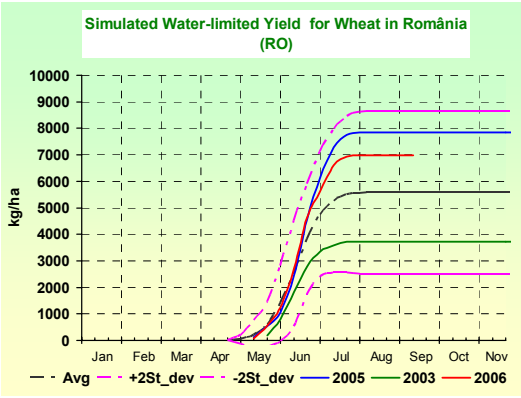


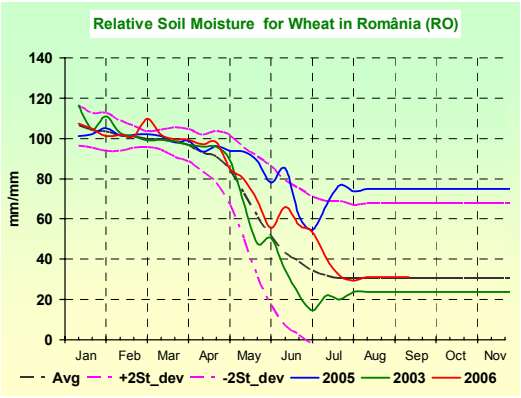
Romania: the wetter than normal period continued

The forecasted yields (excluding the sown surfaces totally eliminated by frost) are: 3.5 t/ha (+ 35.1 % as compared to the average of the previous five years) for wheat, 2.3 t/ha (– 9.5 %) for barley, 1.3 t/ha (12.9 %) for oilseed rape and 3.6 t/ha (+ 2.7 %) for grain maize.

For July/August, the weather was wetter than normal (>+ 25 % of the LTA) and, after that, the beginning of September was drier than usual. Thermal conditions and the cumulated global solar radiation were close to normal.

For all simulated winter crops, the above-average level of relative soil humidity achieved in June was maintained until the end of July when they reached the long-term average level. The simulated yields were above the long-term average but below the level of 2005. A large amount of precipitation (> 70 mm) was cumulated in the next 10 days after the flowering of winter wheat in the north-western areas and barley (especially in the south-western areas). The weather during the expected harvesting period was generally dry for the main agricultural areas. Expected yields for summer crops are above the long-term average.





Bulgaria: soil moisture for summer crops at normal level

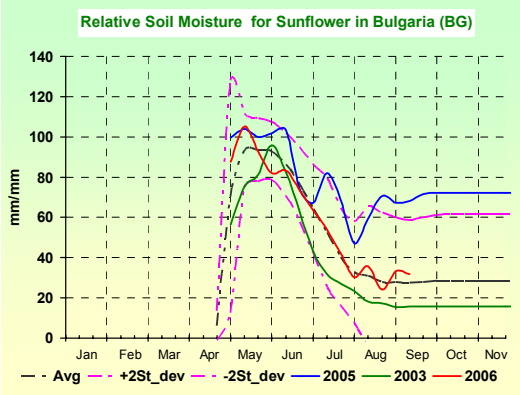
The forecasted yields are 3.4 t/ha (+ 11.1 % as compared to the average of the last five years) for wheat, 2.9 t/ha (+ 0.8 %) for barley, 1.5 t/ha (+ 8.3 % for sunflower) and 4.2 t/ha (+ 2.1) for grain maize.

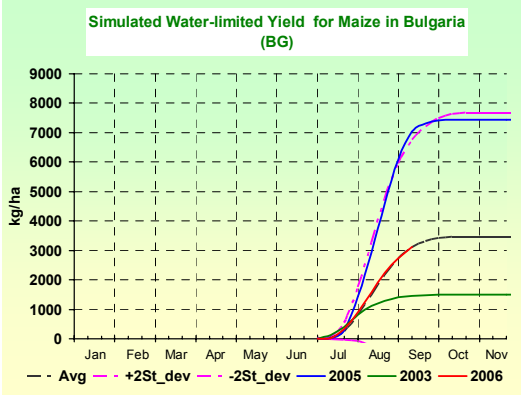
During July/August the weather was wetter (>+ 25 % of the LTA), except for north-eastern Bulgaria which was close to the LTA. The first 10 days of September were drier than usual.

Thermal conditions were close to normal. The cumulated global solar radiation for the period under consideration was the highest for the last 32 years.

Maturity of winter crops was achieved at the expected time and the simulated yield of barley was very close to the long-term level whilst the simulations for wheat and rapeseed suggested a higher-than-average yield.

The relative soil moisture for maize and sunflower oscillated slightly around the long-term average level and at the end of the considered period it was above this level. The simulated maize yield was at the normal level and the sunflower yield was slightly above the long-term average.

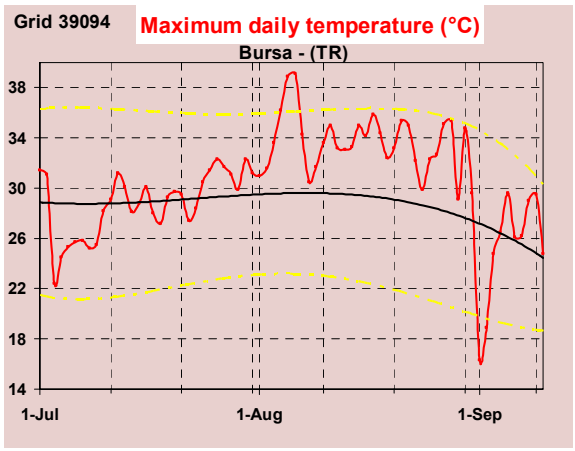


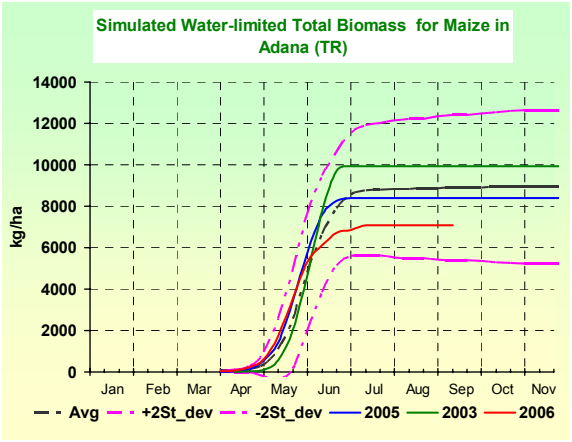


Turkey: dry conditions during July and August in the main maize production areas resulted in reduced yields

The 2006 summer season was characterised by a drought in the Black Sea regions which are the main maize cultivation areas. Even if conditions were relatively better in the south of the country, the overall climatic trend results in an expected yield of 5.03 t/ha for grain maize (– 16 % on 2005).

The 2006 summer season in Turkey was characterised by dry and warm temperatures throughout July and August. The worst affected areas were in the north-west and centre of the country. Conditions were not as severe in the south, on the Mediterranean and Aegean coasts, or in the eastern regions. Dry conditions were coupled with high temperatures during most of August, further increasing radiation levels. Climatic conditions slightly eased at the beginning of September when some limited precipitation was reported in the north and there was a general lowering of temperatures, these conditions were, however, not sufficient to make up for the overall deficit affecting summer crops. The areas around the Sea of Marmara (Bursa) and the Black Sea regions (Trabzon) account for over 70 % of the maize-planted surface and, since cultivation is mostly rain-fed, the consequences of the dry season directly affected production. The productive cycle of maize is expected to close at the beginning of September and the estimated yield in 2006 is 5.03 t/ha, with a reduction of over 16 % on the 2005 season. The outcome would have been worse if it had not been for the contribution of the south Mediterranean and Aegean regions which account for 30 % of the maize-cultivated surface, but which are, for the most part, irrigated.





Eastern Countries and Russia

Belarus: possible yield reduction of winter crops due to a droughty July

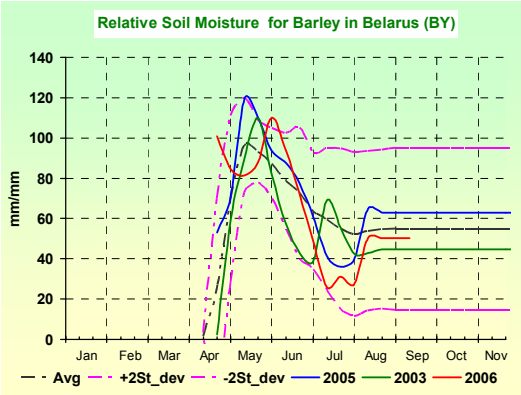
For most of Belarus, July was drier and August was wetter than normal (>+ 25 % from the LTA) and the beginning of September was also wetter than usual except the close-to-normal southern areas.

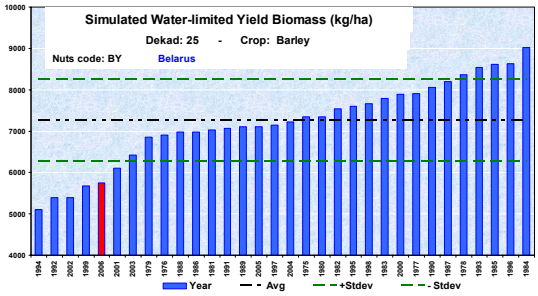
Thermal conditions were close to normal, except a slighter cooler (<– 10 % of the LTA) stripe along the western border of Belarus.

The potential yield (based on solar radiation and thermal resources) for barley was comparable with the situation from 2003 (a year with a close-to-average yield), but the water-limited simulated yield for 2006 of this crop indicates the fifth position in the lowest yield. A similar situation was found for wheat. The main explanation for these low yields may be related to a sharp decrease in the relative soil moisture for barley and wheat crops during July (the abundant precipitation from August 2006 arrived too late for these crops). On the other hand, these decreases should be considered with caution due to the possible positive influence of the superficial water table, especially in the southern areas (not taken into account by the present simulations). The negative impact of frost problems during the winter 2005–06 should also be considered for estimation of the yield of winter crops, but the lack of data about spring replacements of the damaged fields make this estimation difficult. Summing up these contradictory considerations, a yield reduction for winter crops is expected but its extent is unclear.

The yields of summer crops seem much better than average but possibly slightly lower than in the previous year.

Sowing of winter wheat was hindered by wet conditions in the north of the country. In southern Belarus, more than 70 mm of cumulated precipitation occurred during the usual sowing period of rapeseed.





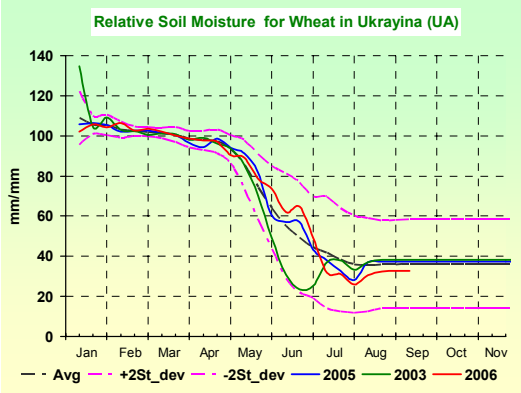
Ukraine: yields of winter crops slightly below the long-term average and large yield reductions expected for summer crops

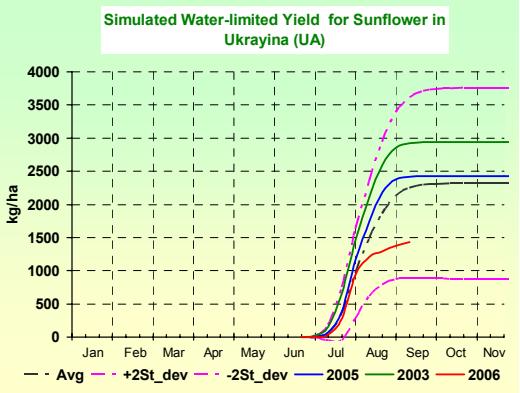
The forecasted yields (excluding the sown surfaces totally eliminated by frost) are: 2.6 t/ha (– 2.9 % as compared to the average yield of the last five years) for wheat; 2.3 t/ha (+ 1.9 %) for barley, 1.4 t/ha (+ 15.6 % from the average yield of the last five years) for oilseed rape and 3.4 t/ha (– 4.3 %) for grain maize.

During July and August, the cumulated rain was lower (<– 25 % of the LTA) than in the main agricultural areas from southern and eastern Ukraine, whilst it was wetter than usual in the western part. In September, it was wetter in the northern and central areas, and drier than usual in the rest of Ukraine. Regarding the agricultural campaign 2006–07, some delays in the sowing of rapeseed were possible but limited to isolated small areas, (for winter cereals no special problem yet).

Thermal conditions and the cumulated global radiation were close to normal.

The good level of soil moisture achieved in June allowed winter wheat crops to pass the droughty days from July with a decrease of relative soil moisture, slightly worse than 2005. The simulated yield of winter crops grown under non-irrigated conditions is slightly below the long-term average. During the flowering of wheat and barley, the areas from northern and central Ukraine were subject to intense rain. From July to mid-August, the relative soil moisture for the summer decreased continuously (up to <– 60 % from the normal value for mid-August). Large reductions are expected for summer crop yields (especially for sunflower). During maize pollination, a possible negative interference of intense rain (> 70 mm in the 10 days following the start of flowering) was noticed for north-western Ukraine but the possible impact was limited to a local level.





Russia: surplus of rain in north-western regions and deficit of moisture in the northern Caucasus

The period under analysis is the time for spring crop harvesting, and the last stages of summer crop development in all regions of European Russia.

The air temperature in July was lower than in the previous year by 2–4 degrees everywhere except the Kaliningrad region where it was slightly higher. In August, the temperature was close to the previous year values in the northern half of European Russia. In the southern part, however, it was higher by 2–4 degrees. The number of consecutive hot days in August in the northern Caucasus region was more than 11.

The amount of precipitation was higher than in the previous year in central and north-western regions, where practically all days of the first half of August were rainy. The amount of rain was lower than in the previous year in the northern Caucasus. In this region, the first and second dekad of August were practically without precipitation.

Analysis of remote sensing data and results of crop growth simulation demonstrate that the situation is better than in the previous year only for the northern Caucasus. The situation in other regions is worse or close to the previous year.

Dry weather with high air temperatures in August in the northern Caucasus region is favourable for spring crop harvesting, but it creates problems for the last stages of summer crop development. The yield of sunflower and particularly maize should be affected by such weather conditions. Additionally, the sowing of winter crops should be shifted due to low soil moisture content in this region.

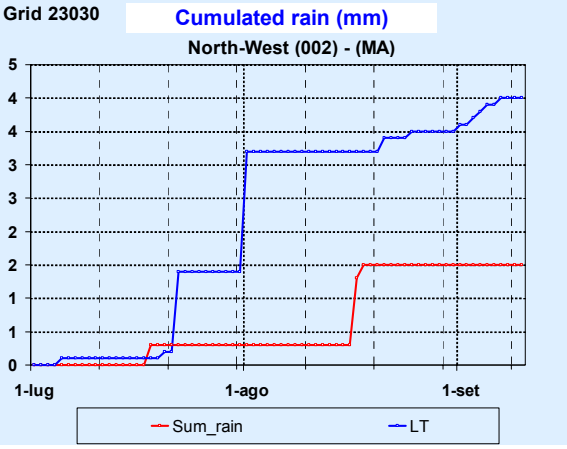
Conversely, wet August weather in central and north-western regions normally leads to a delay in crop harvesting, and thus to a decreasing of grain quality.

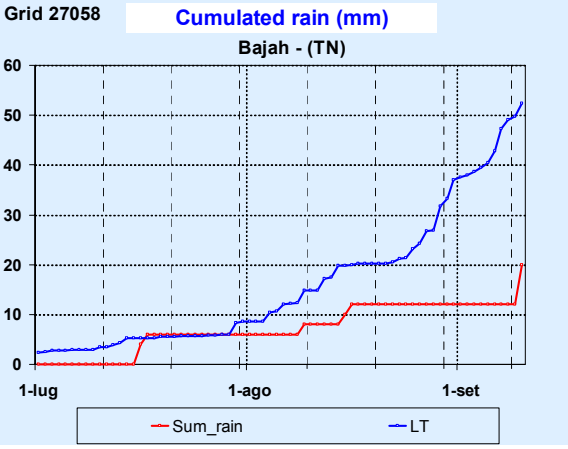
Taking into consideration the meteorological situation during the previous stages of crop development in the current vegetative season, it seems possible to conclude that the yield of wheat, barley and maize in European Russia is likely to be lower than in the previous year. The yield of potato, sunflower and sugar beet is likely to be close to the previous year. However, the production of summer crops depends on the favourability of weather conditions for yield harvesting in coming dekads.

Maghreb

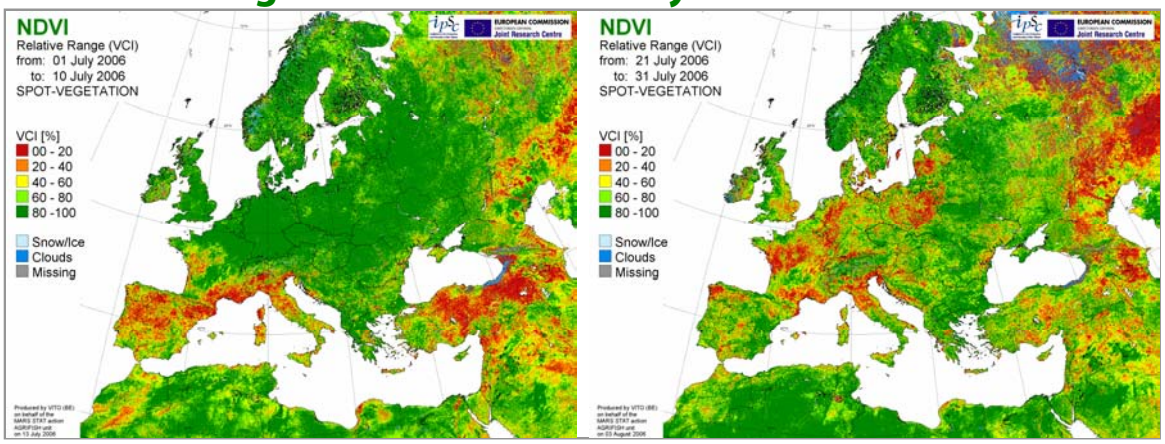
Morocco, Tunisia and Algeria: winter crops have been harvested maintaining the forecasted levels

Summer was fairly dry over most of the Maghreb region (Morocco, Algeria and Tunisia). There was, however, significant rain at the end of August, especially in the western part of the region, and this is a good sign for the approaching sowing season of the 2006–07 winter crops. Summer crops are still not associated as they are mostly cultivated under irrigation.





4. SPOT Vegetation satellite analysis

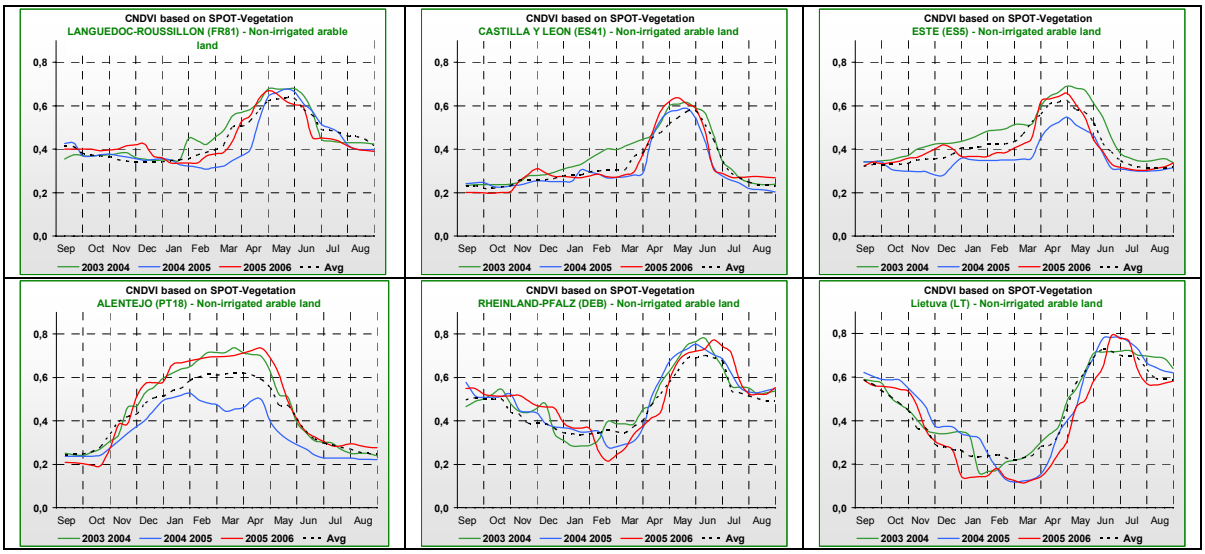


Map highlights: dry and hot conditions throughout July shortened the senescence phase in France and Spain and later on in Germany and Poland.

The NDVI maps show the relative range in which the NDVI values for the first and last dekad of July are occurring in relation to the whole spectrum of recorded NDVI values for this period. Regions are highlighted in France such as Pays-de-la-Loire and Languedoc-Roussillon that had an unusually low climatic water balance from the beginning of May until the end of July, negatively influencing the crop development. Castilla y Leon in Spain is also showing NDVI values within the lowest range for the beginning of July. Looking at the picture given at the end of the month, we see a broadening of red regions, indicating a low range of NDVI values for Germany and Poland. They coincide with regions which had a low climatic water balance during July, such as Rheinland Pfalz (Germany) or Wielkopolskie (Poland).

CNDVI — highlights

The profile for Languedoc-Roussillon (France) shows an advanced climax of biomass accumulation and a shortened senescence phase with values dropping clearly below the average very early in the season diminishing yield expectations. For Castilla y Leon (Spain), the overall vegetation cycle looks slightly better than in the previous year. Biomass accumulation was above the average whereas we see again an advanced and rapid senescence phase, but the overall potential is good. A similar problematic senescence phase for the crop development is reported within the profile for Este (Spain). Looking at the profile of Alentejo (Portugal), a normal crop cycle has concluded with biomass accumulation well above the average and an accelerated senescence phase only towards the end of the cycle but keeping the yield potential. The delayed crop development at the beginning of the cycle for Rheinland-Pfalz (Germany) recovered well during late spring and early summer with a biomass accumulation above the average, but only for a short time, compared to the average length of maximum biomass accumulation. Lithuania shows a vegetation profile clearly below the average for the boosting period until mid-June. This is followed by a late climax in biomass accumulation which passed into a sharp drop of values indicating a shortened senescence phase not optimal for good yield expectations.



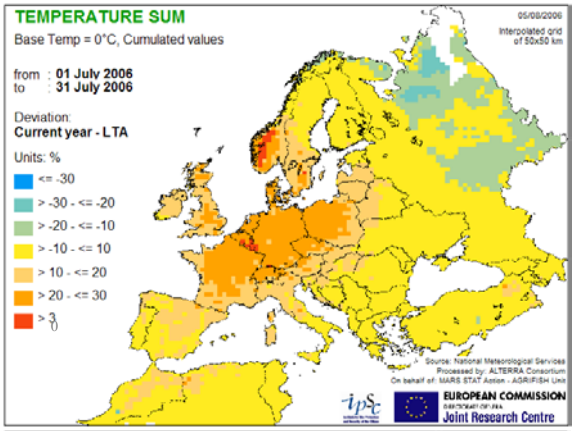
ANNEX1. MAPS

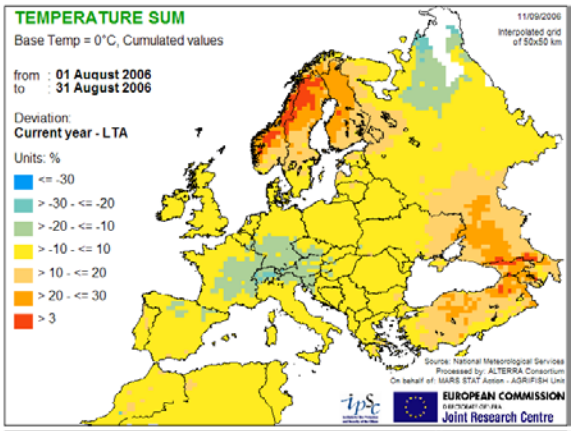
MAPS CONTENT:

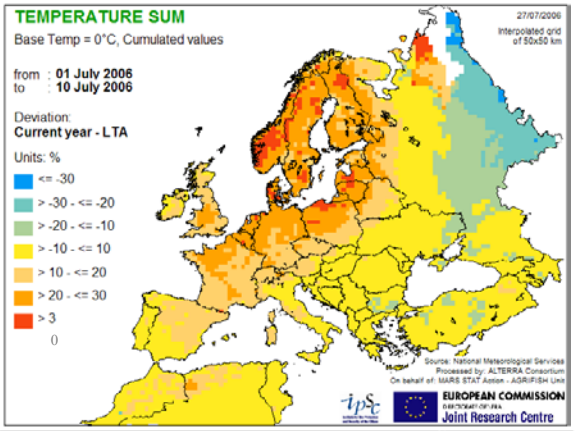
1. **Temperature**
2. **Heat waves**
3. **Heat waves during ripening and maturity**
5. **Rainfall**
5. **Rainfall at harvest**
6. **Crop development stage**
7. **Soil moisture available per crop**

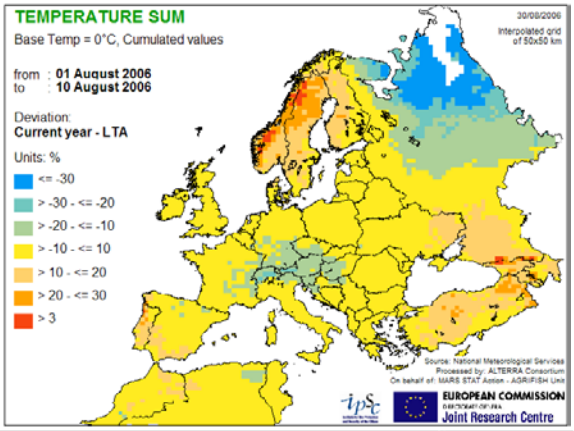
1- TEMPERATURE MAPS

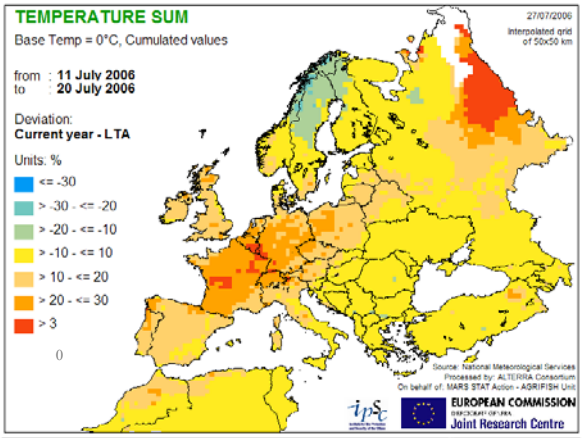
July 2006 | **August 2006**

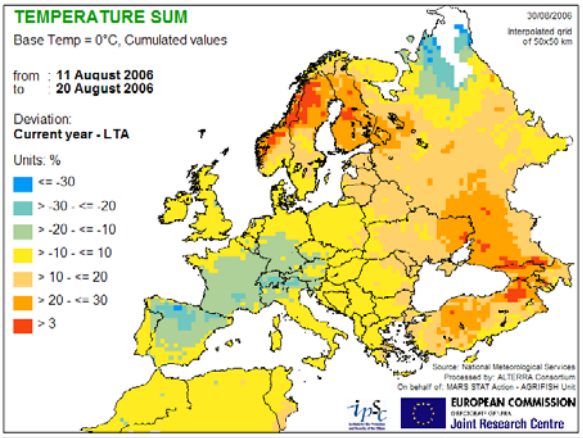


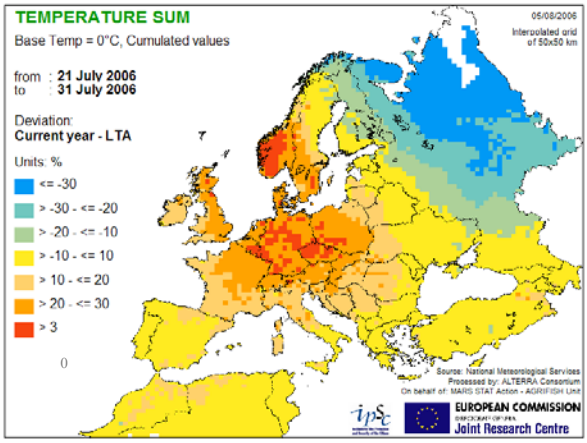


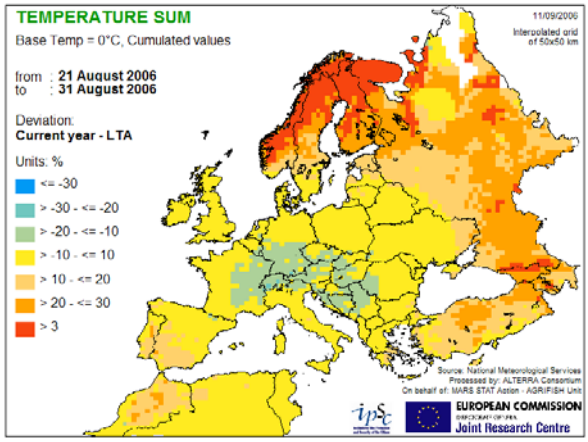




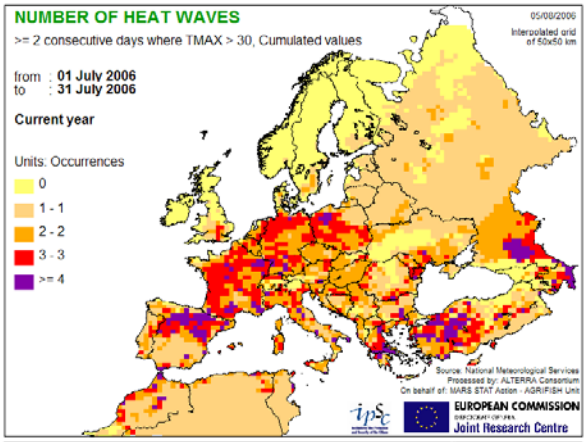


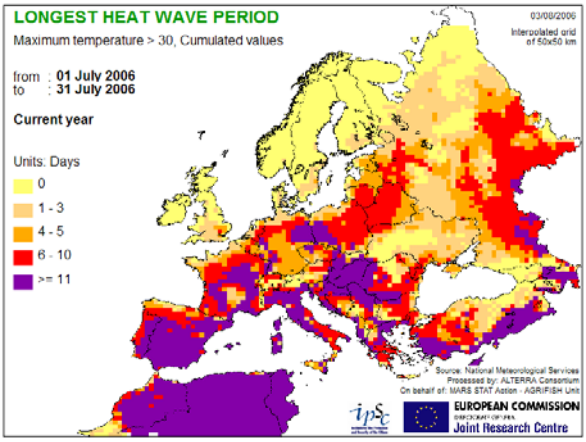


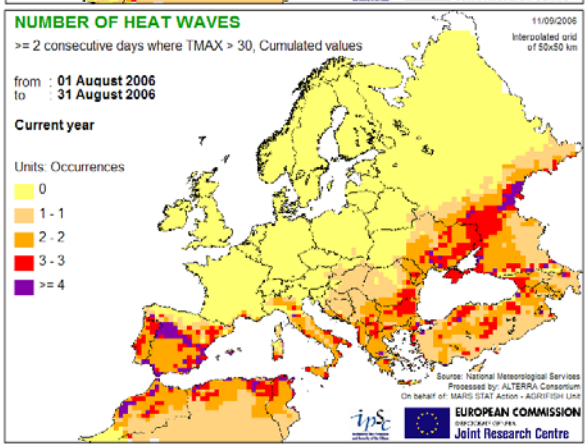


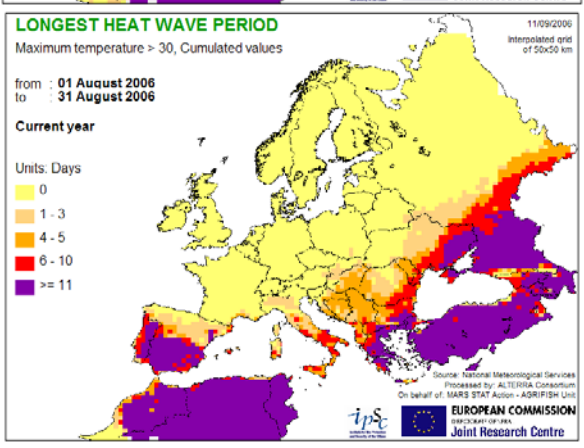


2-HEAT WAVES

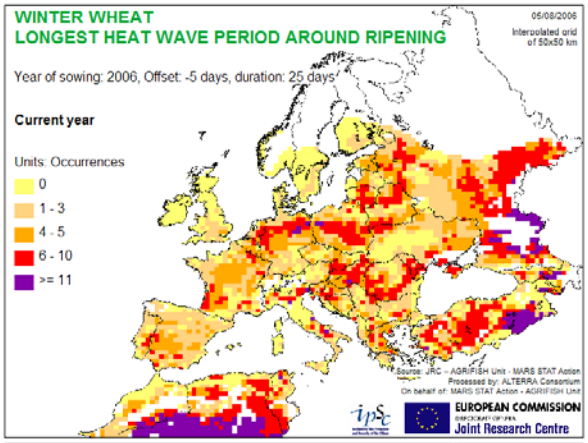

NUMBER OF HEAT WAVES
>= 2 consecutive days where TMAX > 30, Cumulated values
from : 01 July 2006
to : 31 July 2006
Current year
Units: Occurrences
0
1 - 1
2 - 2
3 - 3
>= 4
Interpolated grid of 50x50 km
EUROPEAN COMMISSION
Joint Research Centre

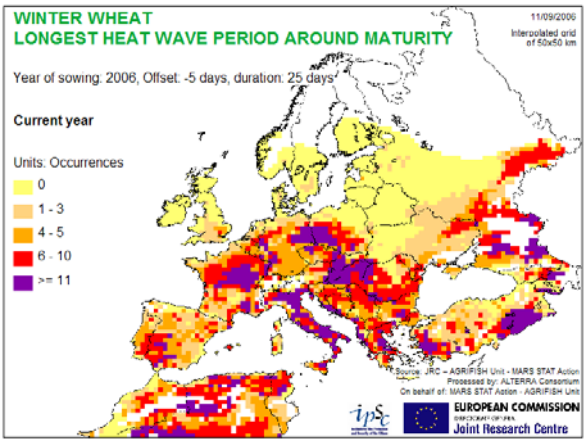

LONGEST HEAT WAVE PERIOD
Maximum temperature > 30, Cumulated values
from : 01 July 2006
to : 31 July 2006
Current year
Units: Days
0
1 - 3
4 - 5
6 - 10
>= 11
Interpolated grid of 50x50 km
EUROPEAN COMMISSION
Joint Research Centre

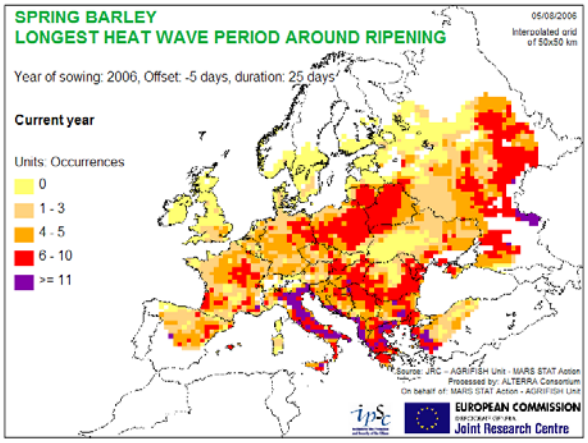

NUMBER OF HEAT WAVES
>= 2 consecutive days where TMAX > 30, Cumulated values
from : 01 August 2006
to : 31 August 2006
Current year
Units: Occurrences
0
1 - 1
2 - 2
3 - 3
>= 4
Interpolated grid of 50x50 km
EUROPEAN COMMISSION
Joint Research Centre

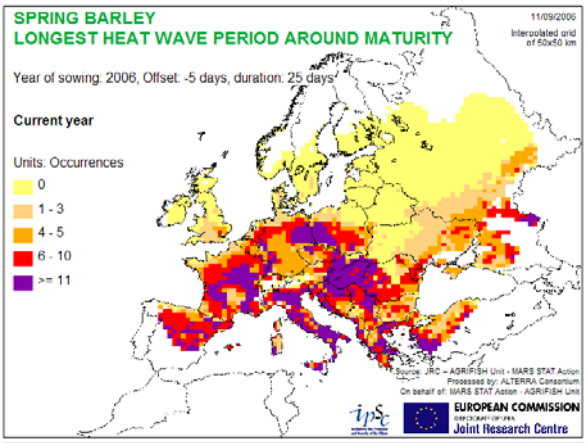

LONGEST HEAT WAVE PERIOD
Maximum temperature > 30, Cumulated values
from : 01 August 2006
to : 31 August 2006
Current year
Units: Days
0
1 - 3
4 - 5
6 - 10
>= 11
Interpolated grid of 50x50 km
EUROPEAN COMMISSION
Joint Research Centre

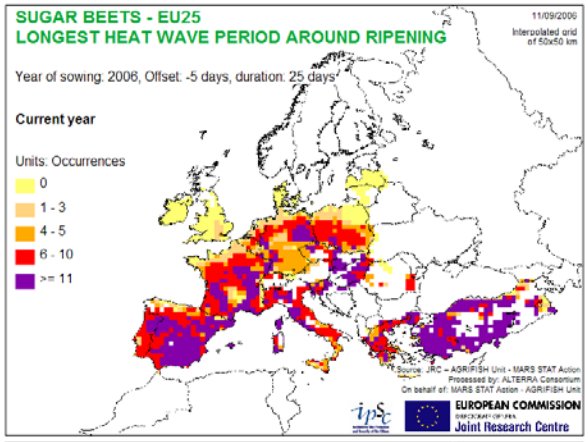
3-HEAT WAVES DURING CROP RIPENING AND MATURITY

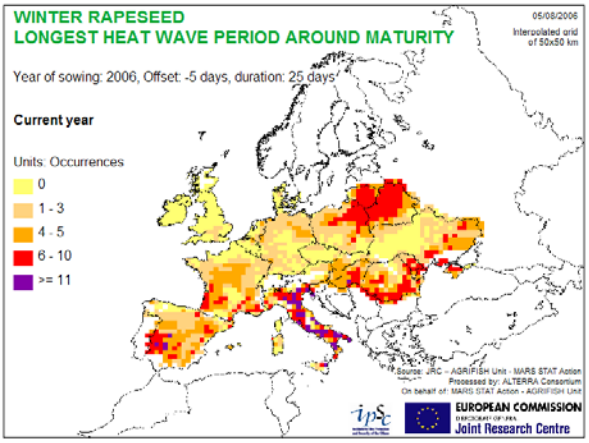


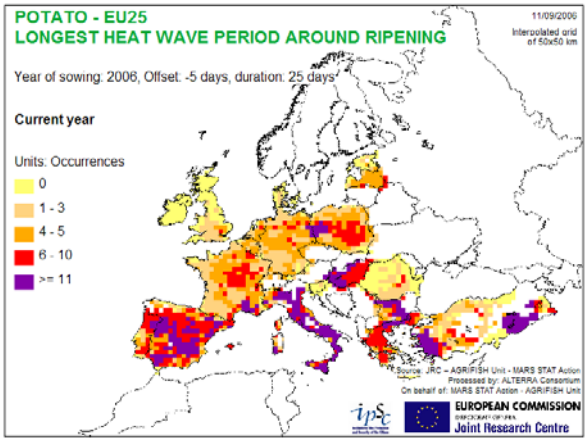


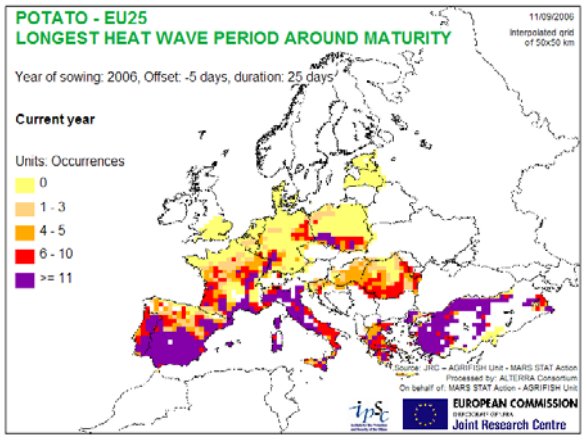






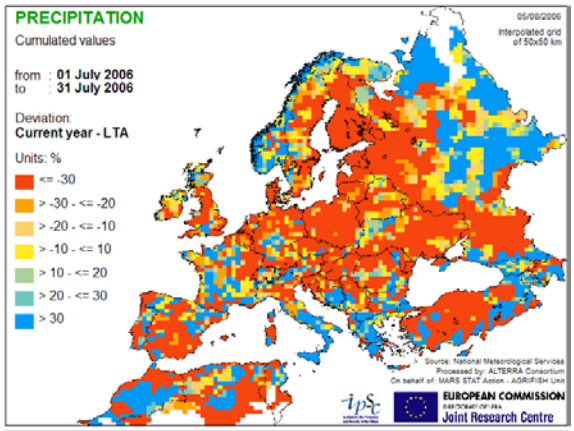


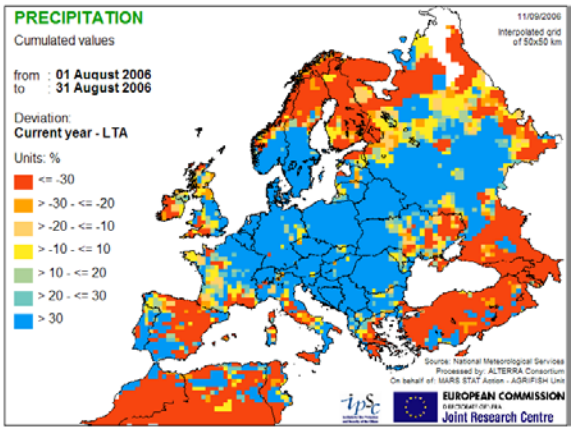


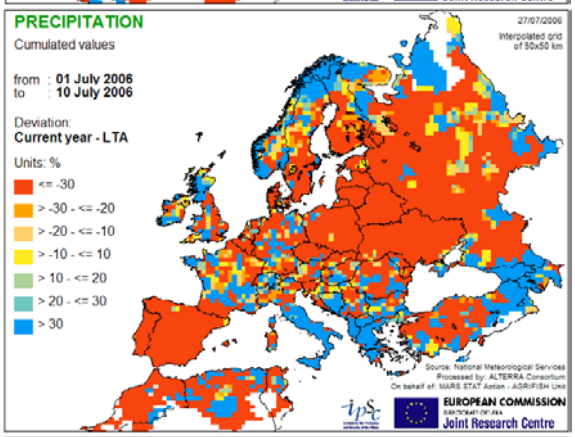


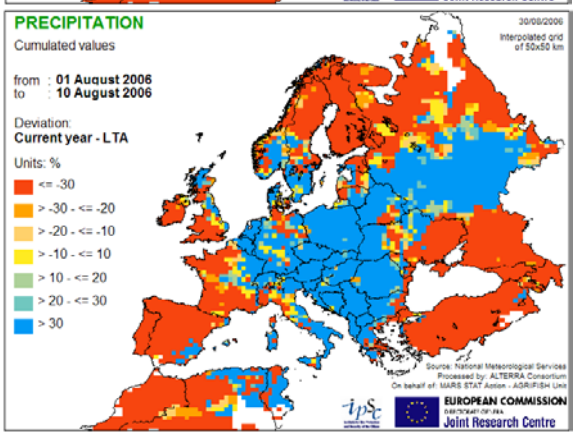
4.- RAINFALL MAPS

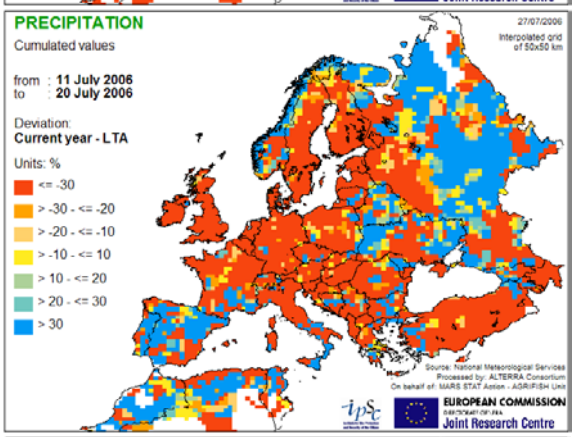
July 2006 | **August 2006**

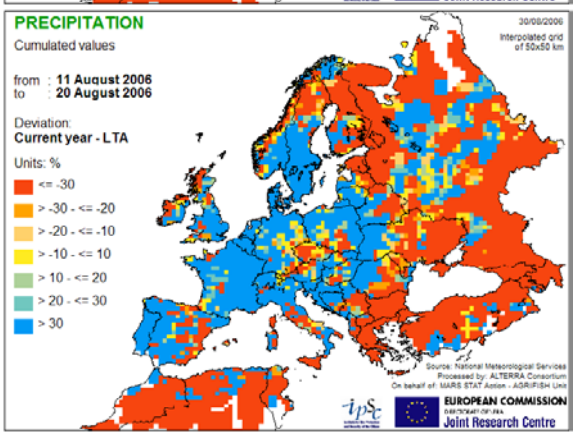


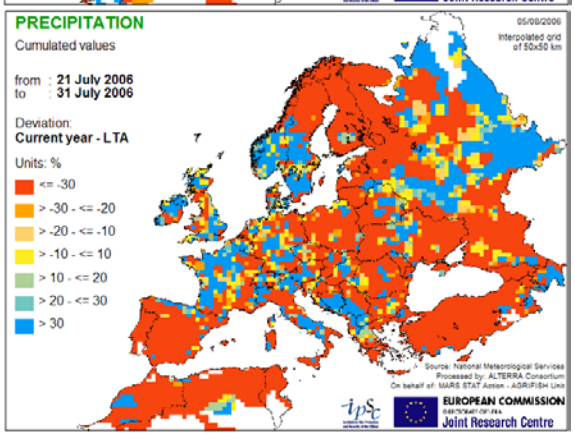


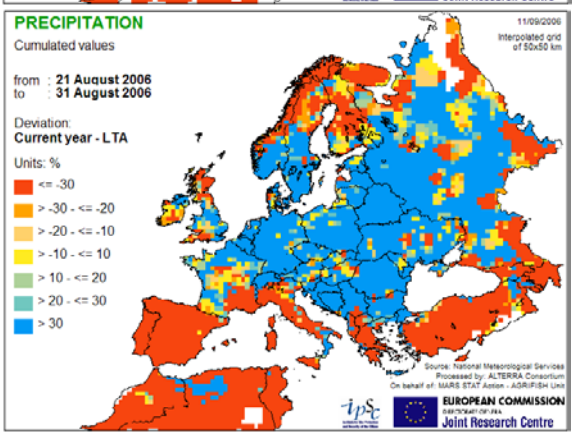




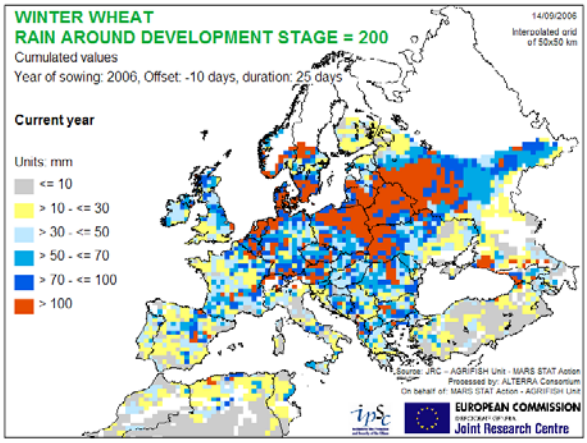


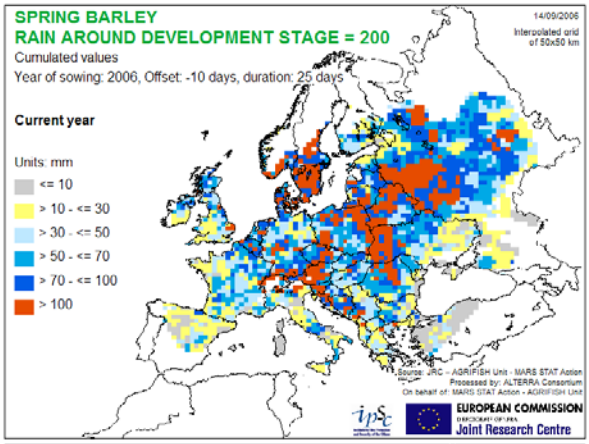


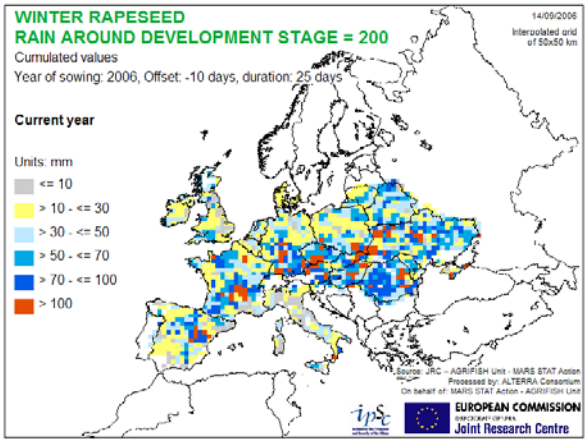


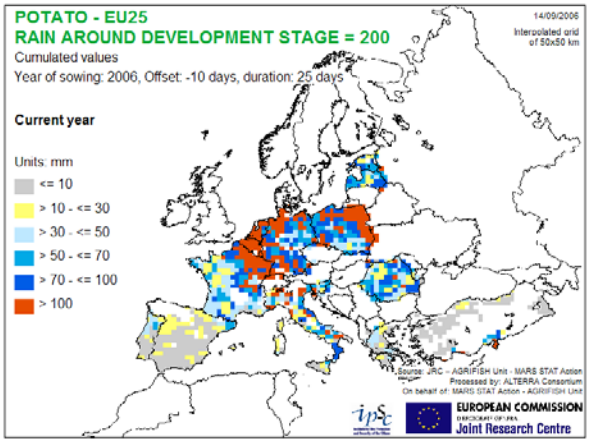


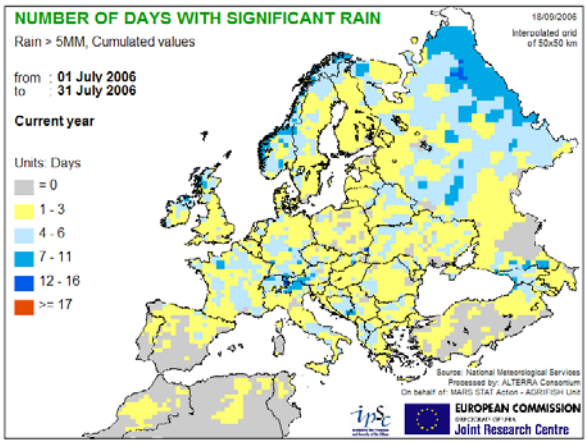
5- RAIN AT HARVEST

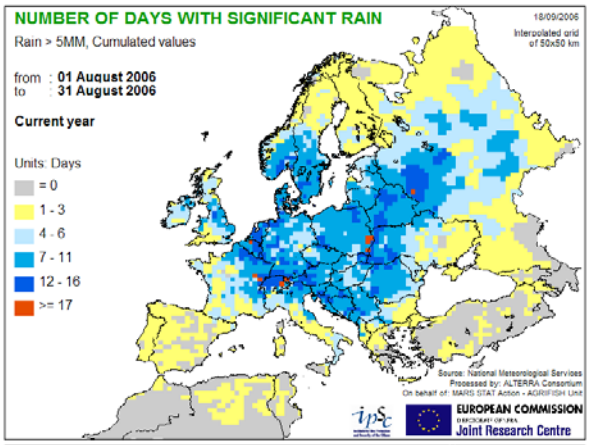


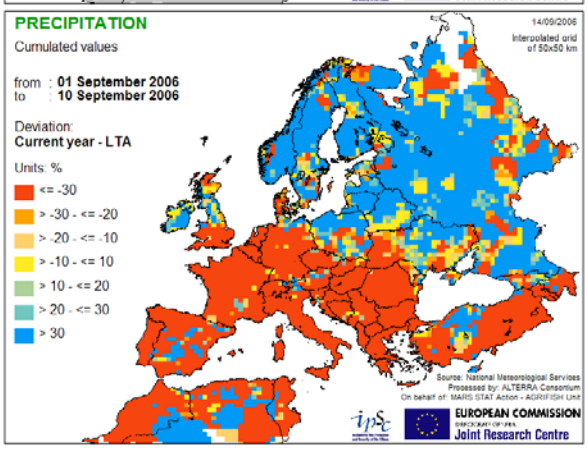


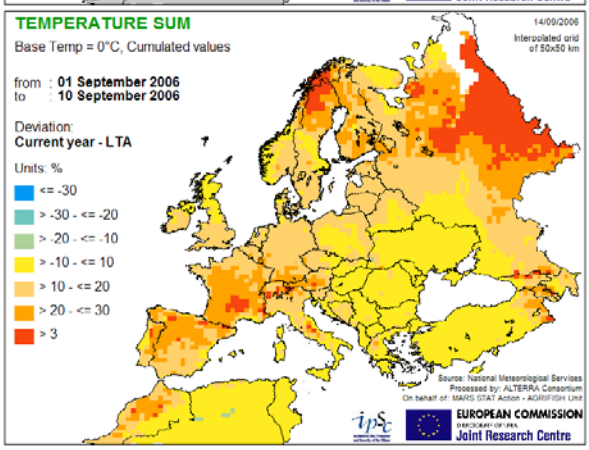




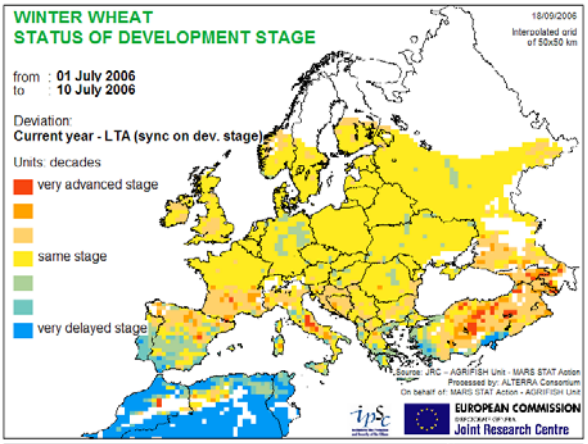


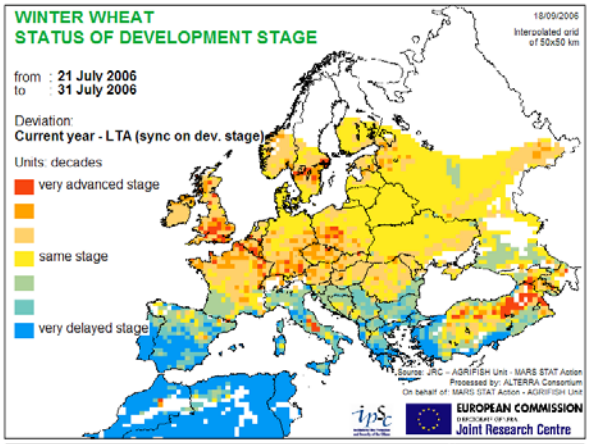


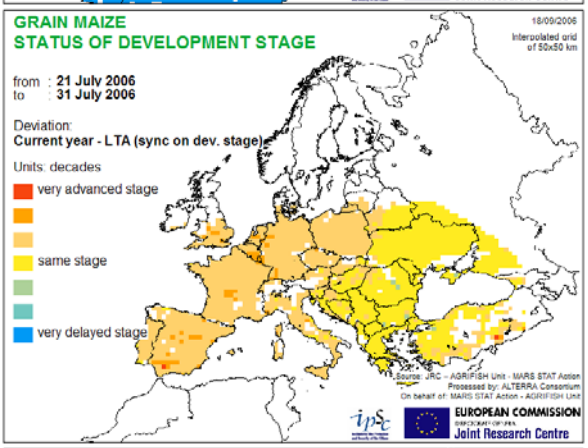


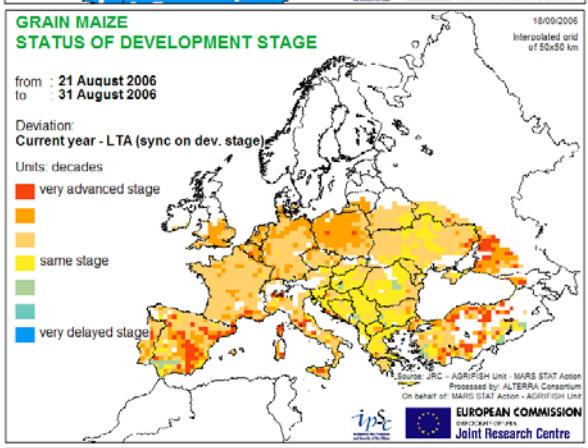


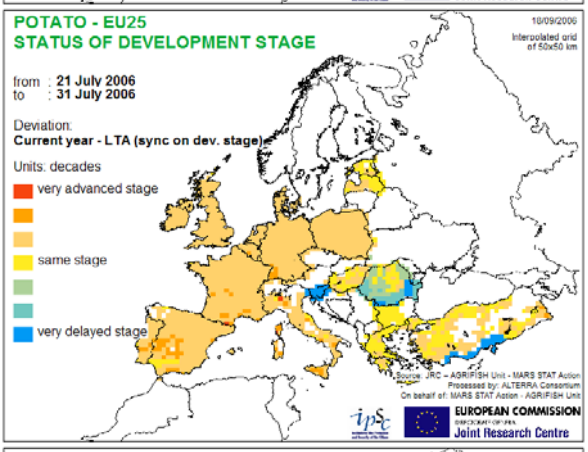
6- CROP DEVELOPMENT STAGE

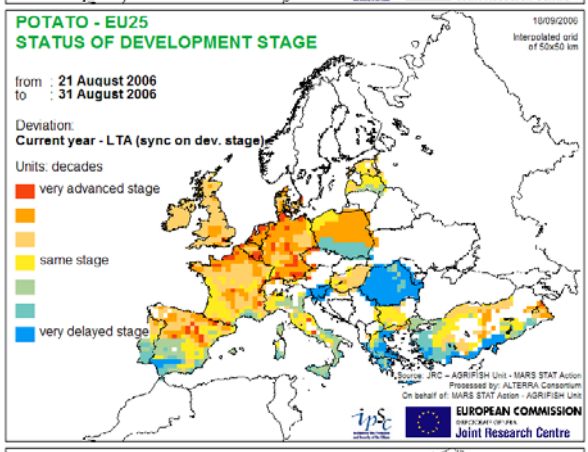


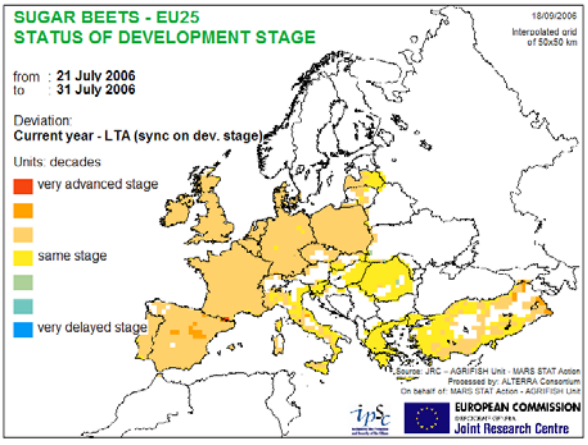


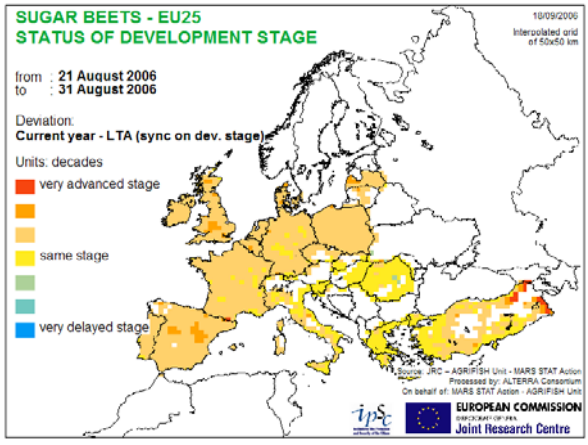




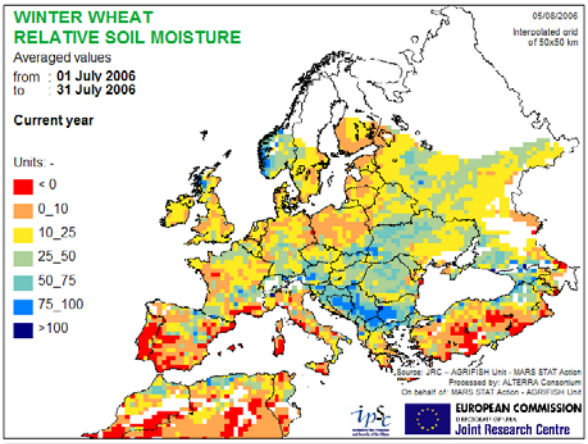


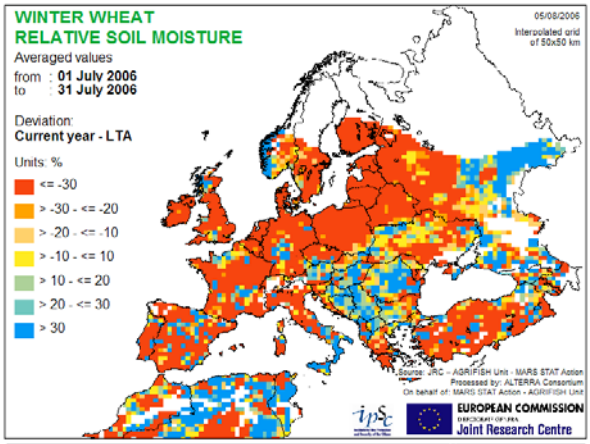


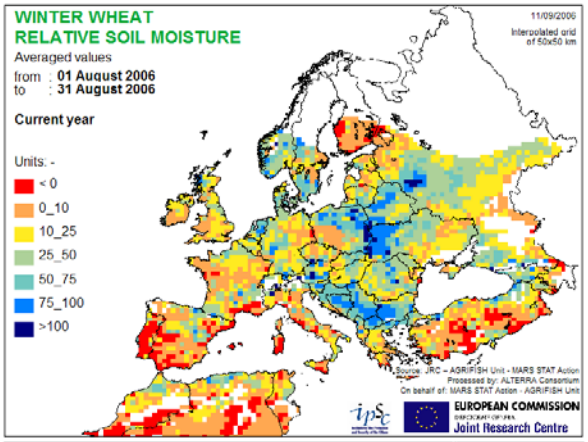


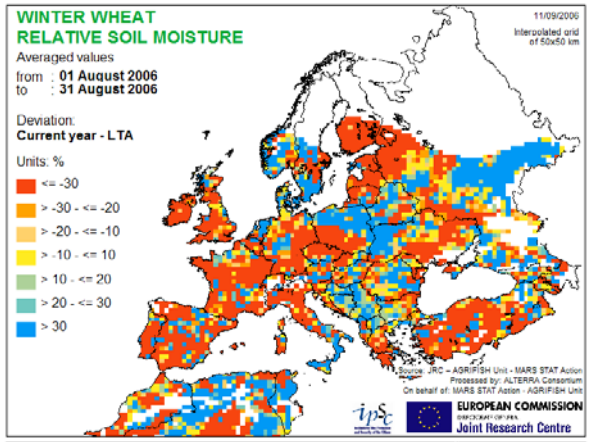


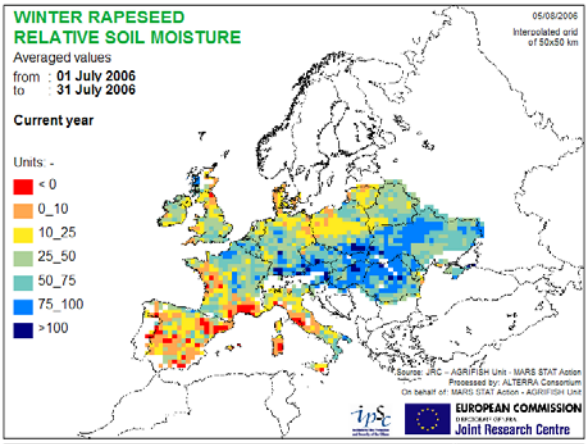
7.1- RELATIVE SOIL MOISTURE for WHEAT,RAPESEED,SPRING BARLEY

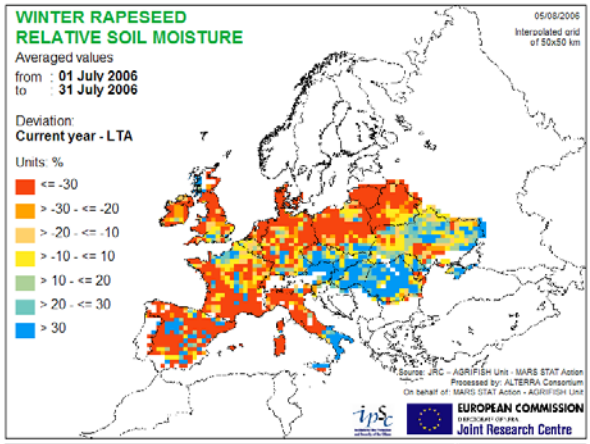


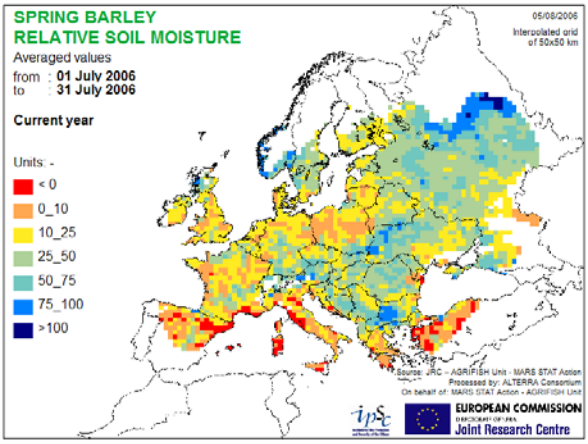


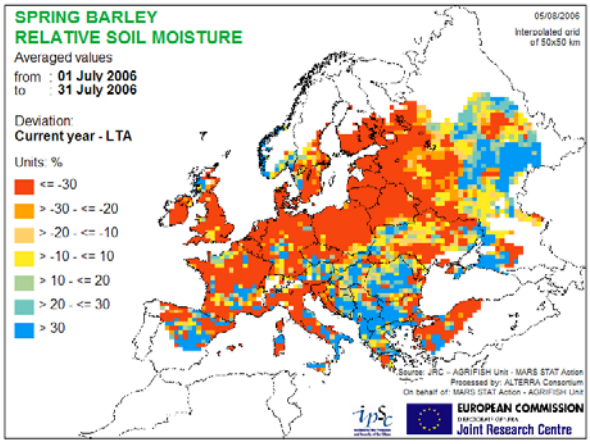




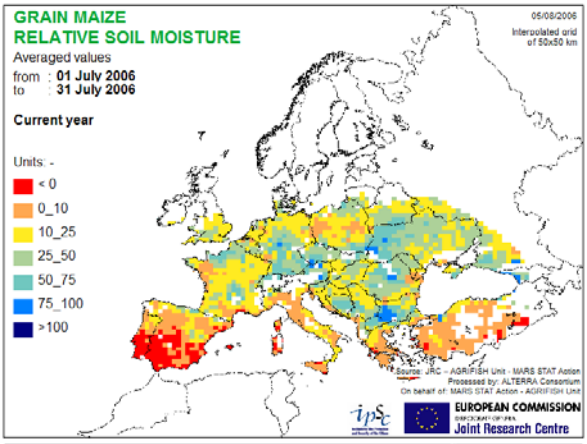


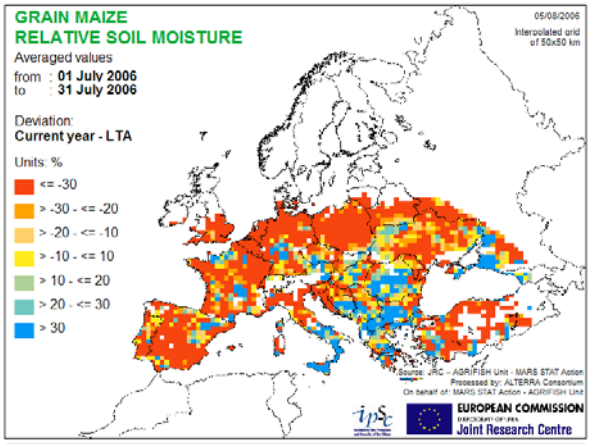


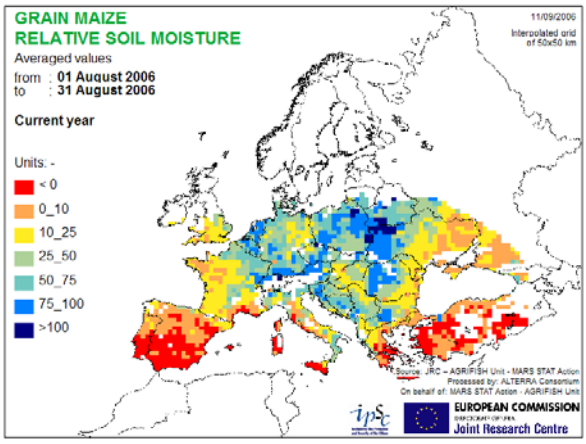


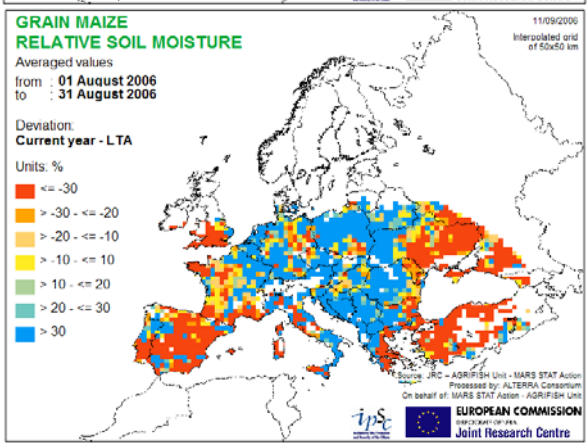


7.2- RELATIVE SOIL MOISTURE for GRAIN MAIZE









7.3- RELATIVE SOIL MOISTURE for POTATO-SUGAR BEETS