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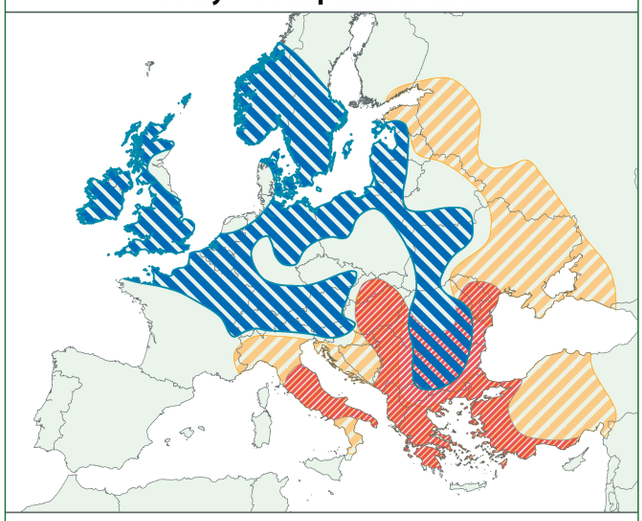
MARS AGROMETEOROLOGICAL Crop Monitoring in Europe

11st July to 18th September 2007

Vol. 15, No 5

Heat waves, droughts, excessive rains reduced the yield expectations

Areas of Concern
1 July - 18 September 2007



Dry conditions | Heat wave | Excess of precipitation

MARS STAT yield forecasts: 18 September 2007

CROPS	European Union 27 Yield (t/ha)				
	2006	2007	Average 5 years	% 2007/06	% 2007/ Average
TOTAL CEREALS	4.7	**4.6**	4.7	-1.0	-2.2
Soft wheat	5.4	**5.4**	5.4	-0.3	-1.6
Durum wheat	3.0	**2.9**	2.7	-2.5	+9.2
Total wheat	5.1	**5.1**	5.1	-0.2	+0.2
Total barley	4.1	**4.3**	4.2	+4.6	+2.6
Grain maize	6.5	**5.9**	6.5	-9.1	-8.0
Other cereals (1)	2.9	**2.9**	3.2	+1.0	-7.2
Rape seed	3.0	**2.9**	3.0	-4.3	-5.1
Sunflower	1.7	**1.5**	1.6	-13.1	-8.3
Potato	25.3	**27.3**	26.6	+7.8	+2.7
Sugar beet	58.5	**60.3**	57.8	+3.1	+4.3

Yield figures are rounded to 100 kg
(1) Sorghum, rye, maslin, oats, triticale, mixed grain other than maslin, millet, buckwheat
Sources: 2006 yields come from EUROSTAT CRONOS
2007 yields come from MARS CROP YIELD FORECASTING SYSTEM

1. Agrometeorological overview and harvest conditions

There were sharp differences in weather conditions between the east and the west; it was warmer and drier than average on the eastern side of the continent and cooler and wetter on the western side (affected by particularly unfavourable harvesting conditions). There was a hot spell around mid-July in southern Italy, the Balkans and the Black Sea area.

With few exceptions (Ireland, northern Italy, Slovenia and the UK), the situation improved immediately after the standard period for harvest.

Some problems related to excess rainfall during harvests could have verified in some areas in the central and northern part of France, in Germany, in the western regions of the UK, in southern Sweden, in the Netherlands, in the Adriatic regions of the Balkans and in northern Italy.

As a whole, winter wheat harvests have been carried out under favourable conditions for machinery accessibility in the fields.

The conditions experienced by farmers during the harvesting procedures are better for spring barley. Precipitations have never hindered farm machinery to access the fields, with few exceptions represented by the southern regions of the UK, the south-western part of Norway (Agder og Rogaland, Vestlandet), in northern Romania (Nord-Vest and Nord-Est) and some small areas in the French regions Rhône-Alpes and Franche-Comte.

Contents

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EC publication from JRC/IPSC/Agrifish/MARS_STAT: mars-stat@jrc.it
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MARS agrometeorological database: http://www.marsop.info

ipsc

MARS STAT yield forecasts at national level for EU27: 18 September 2007

Country	TOTAL WHEAT (t/ha)					SOFT WHEAT (t/ha)					DURUM WHEAT (t/ha)				
	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average
EU27	5.08	**5.07**	5.1	-0.2	+0.2	5.4	**5.4**	5.4	-0.3	-1.6	3.0	**2.9**	2.7	-2.5	+9.2
AT	4.91	**4.7**	5.0	-3.7	-6.2	4.9	**4.8**	5.1	-2.6	-5.9	4.8	**3.8**	4.3	-22.2	-13.4
BE	8.17	**9.0**	8.5	+9.9	+6.0	8.2	**8.6**	8.5	+5.3	+1.5					
BG	3.27	**2.7**	3.1	-16.2	-12.4	3.2	**2.7**	3.1	-16.0	-12.8	4.5	**3.9**	3.3	-14.8	+16.0
CZ	4.49	**4.4**	4.8	-1.8	-8.1	4.5	**4.4**	4.8	-1.8	-8.1					
DE	7.21	**7.2**	7.3	-0.4	-1.0	7.2	**7.2**	7.3	-0.4	-1.0					
DK	7.00	**7.1**	7.1	+1.1	-0.3	7.0	**7.1**	7.1	+1.1	-0.3					
EE	2.42	**2.4**	2.5	+0.4	-2.4	2.4	**2.4**	2.5	+0.4	-2.4					
ES	2.85	**3.3**	2.7	+15.2	+23.0	3.0	**3.6**	3.0	+18.7	+18.3	2.5	**2.6**	2.2	+4.4	+21.8
FI	3.56	**3.4**	3.5	-3.9	-1.7	3.6	**3.4**	3.5	-3.9	-1.7					
FR	6.74	**6.9**	7.0	+2.8	-1.0	6.9	**7.2**	7.2	+3.2	-0.4	4.6	**4.5**	4.7	-3.0	-4.1
GR	2.26	**2.1**	2.1	-6.9	+1.2	3.0	**2.6**	2.9	-13.6	-10.8	2.2	**2.0**	2.0	-6.5	+2.6
HU	4.06	**3.7**	4.0	-9.9	-7.8	4.1	**3.7**	4.0	-9.9	-7.8					
IE	9.15	**8.2**	8.9	-10.2	-7.4	9.2	**8.2**	8.9	-10.2	-7.4					
IT	3.68	**3.6**	3.4	-1.8	+7.2	5.5	**5.4**	5.1	-2.0	+5.7	2.9	**2.8**	2.7	-3.4	+2.9
LT	2.36	**3.2**	3.5	+34.7	-8.4	2.4	**3.2**	3.5	+34.7	-8.4					
LU	5.97	**6.2**	6.2	+3.0	-0.5	6.0	**6.2**	6.2	+3.0	-0.5					
LV	2.80	**3.0**	3.1	+6.4	-3.9	2.8	**3.0**	3.1	+6.4	-3.9					
NL	8.55	**8.6**	8.5	+1.1	+1.2	8.6	**8.6**	8.5	+1.1	+1.2					
PL	3.24	**3.5**	3.8	+8.6	-6.1	3.2	**3.5**	3.8	+8.6	-6.1					
PT	2.39	**1.8**	1.6	-26.8	+10.8	2.4	**1.8**	1.6	-26.8	+10.8					
RO	2.75	**2.0**	2.5	-27.6	-20.1	2.8	**2.0**	2.5	-27.6	-20.1					
SE	5.46	**6.3**	5.9	+15.0	+6.1	5.5	**6.3**	5.9	+15.0	+6.1					
SI	4.19	**4.8**	4.4	+13.6	+9.4	4.2	**4.8**	4.4	+13.6	+9.4					
SK	3.82	**3.6**	4.0	-6.8	-9.9	3.8	**3.6**	4.0	-6.8	-9.9					
UK	8.04	**7.8**	7.9	-3.4	-1.9	8.0	**7.8**	7.9	-3.4	-1.9					

Country	TOTAL BARLEY (t/ha)					GRAIN MAIZE (t/ha)					RAPE SEED (t/ha)				
	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average
EU27	4.1	**4.28**	4.2	+4.6	+2.6	6.5	**5.9**	6.5	-9.1	-8.0	3.0	**2.8**	3.0	-4.4	-5.3
AT	4.4	**4.4**	4.5	-1.1	-3.5	9.2	**10.2**	9.4	+9.8	+8.3	3.2	**2.2**	2.7	-30.4	-18.1
BE	7.5	**7.5**	7.4	-0.4	+0.9	10.2	**11.8**	11.2	+16.1	+6.0					
BG	2.9	**2.4**	2.8	-18.4	-14.6	4.5	**2.2**	4.5	-51.7	-51.1	1.8	**1.6**	1.6	-12.9	+0.0
CZ	3.6	**3.7**	4.0	+2.2	-9.2	6.8	**7.8**	6.9	+15.3	+13.2	3.0	**2.7**	2.7	-11.6	+0.1
DE	5.9	**5.6**	5.8	-4.9	-3.3	8.0	**9.3**	8.6	+15.2	+7.3	3.7	**3.6**	3.5	-3.2	+3.6
DK	4.8	**5.2**	5.1	+7.7	+1.2						3.1	**3.2**	3.2	+5.0	+1.3
EE	2.1	**1.9**	2.2	-13.1	-14.7						1.4	**1.3**	1.6	-2.4	-16.8
ES	2.6	**3.3**	2.6	+28.0	+28.0	9.8	**9.8**	9.7	-0.1	+1.0					
FI	3.5	**3.5**	3.3	+1.4	+6.6						1.4	**1.4**	1.3	-0.5	+5.8
FR	6.2	**6.4**	6.3	+2.7	+1.3	8.6	**8.8**	8.4	+2.7	+5.1	3.0	**3.2**	3.3	+7.8	-3.6
GR	2.5	**2.2**	2.3	-13.6	-4.4	9.0	**8.6**	8.9	-5.0	-3.9					
HU	3.7	**3.2**	3.4	-13.6	-5.9	6.9	**4.1**	6.1	-39.7	-32.0	2.2	**2.3**	2.1	+0.9	+8.3
IE	6.8	**6.5**	6.5	-5.0	+0.2										
IT	3.9	**3.6**	3.7	-7.2	-1.4	8.7	**8.7**	8.9	+0.0	-2.1					
LT	1.9	**2.6**	2.6	+35.6	+1.9						1.1	**1.7**	1.7	+46.4	-3.7
LV	2.0	**2.0**	2.1	-2.5	-6.2						1.6	**1.9**	1.7	+24.2	+11.3
NL	6.0	**6.2**	6.0	+3.5	+3.2	17.9	**14.2**	13.4	-20.5	+6.1					
PL	2.6	**3.1**	3.1	+18.5	+0.3	4.2	**6.0**	5.4	+43.3	+10.2	2.7	**2.4**	2.5	-7.8	-1.2
PT	2.4	**1.5**	1.5	-38.1	-3.9	5.0	**5.5**	5.3	+9.8	+2.8					
RO	2.3	**1.7**	2.3	-25.3	-24.7	3.6	**2.7**	3.6	-26.2	-26.2	1.6	**0.6**	1.2	-61.4	-50.6
SE	3.6	**4.2**	4.2	+17.8	+2.2						2.5	**2.6**	2.4	+6.7	+7.5
SI	3.6	**3.7**	3.7	+3.3	+2.5	6.9	**8.0**	7.3	+15.9	+10.8					
SK	3.5	**3.4**	3.6	-0.9	-3.1	5.5	**5.6**	5.6	+2.9	+1.1	2.1	**1.8**	2.0	-15.8	-13.3
UK	5.9	**5.9**	5.8	-0.3	+1.7						3.4	**3.3**	3.3	-1.7	+1.1

Publication issue

The fifth 2007 printed MARS analysis (Vol. 15, No 5) of the agricultural campaign covers the period 11 May 2007 to 10 July 2007.

It makes a synthesis of the major issues pertaining to:

— meteo and agrometeorological situation,

— first winter crop harvest and summer crops development.

Latest related analysis available:

— Rice bulletin, 28/08/2007 (Vol. 3, No1)

— Climatic updates, 30/07/2007 to 30/08/2007 (CU2007/09)

Next printed issue:

Vol. 15, No 6 : 11 September - 10 November 2007 analysis and forecasts.

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MARS STAT yield forecasts at national level for EU27: 18 September 2007

Country	SUNFLOWER (t/ha)					SUGAR BEETS (t/ha)					POTATO (t/ha)				
	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2 Aver
EU27	1.7	**1.51**	1.6	-13.1	-8.3	58.5	**60.3**	57.8	+3.1	+4.3	25.3	**27.3**	26.6	+7.8	+2
AT	2.4	**2.7**	2.7	+12.3	+3.1	63.3	**65.7**	64.9	+3.9	+1.3	29.9	**31.6**	30.6	+5.9	+3
BE						68.3	**71.1**	69.5	+4.0	+2.2	38.6	**46.5**	43.9	+20.7	+6
BG	1.6	**1.0**	1.5	-35.6	-31.1						15.8	**12.5**	15.5	-20.8	-19
CZ	2.1	**2.2**	2.3	+1.2	-4.0	51.5	**53.2**	50.0	+3.4	+6.5	23.1	**24.4**	23.5	+5.7	+3
DE	1.9	**2.5**	2.1	+30.2	+19.1	57.7	**62.2**	58.2	+7.7	+6.8	36.6	**41.7**	39.3	+13.9	+6
DK						55.9	**58.1**	57.8	+4.1	+0.6	35.3	**39.0**	38.8	+10.7	+0
ES	1.0	**1.0**	1.0	+2.3	+3.4	69.6	**69.7**	69.3	+0.2	+0.6	28.8	**28.8**	27.2	-0.1	+5
FI						39.8	**37.9**	35.6	-4.8	+6.5	20.5	**23.8**	23.0	+15.9	+3
FR	2.2	**2.4**	2.3	+6.6	+3.1	78.8	**78.1**	78.2	-0.9	-0.1	40.2	**42.5**	42.1	+5.8	+0
GR	1.2	**1.1**	1.3	-5.7	-11.0	59.3	**59.5**	61.2	+0.4	-2.8	33.8	**24.6**	26.0	-27.1	-5
HU	2.4	**1.9**	2.2	-21.1	-14.0	44.0	**40.2**	46.0	-8.7	-12.6	23.5	**18.5**	23.1	-21.4	-20
IE											33.4	**33.5**	35.5	+0.3	-5
IT	2.1	**1.9**	2.1	-9.6	-6.3	52.8	**51.5**	47.9	-2.4	+7.5	24.6	**25.1**	24.1	+1.8	+3
LT						38.8	**40.4**	38.0	+4.3	+6.5	8.0	**14.1**	12.8	+76.8	+1
LV						38.0	**38.9**	37.9	+2.5	+2.9	12.0	**13.8**	13.5	+14.9	+2
NL						62.2	**65.9**	61.9	+5.9	+6.5	39.9	**45.5**	42.9	+14.1	+6
PL						43.8	**44.1**	42.7	+0.7	+3.3	15.0	**17.7**	17.9	+17.4	-1
PT											14.8	**17.0**	15.0	+15.1	+1
RO	1.5	**1.3**	1.4	-13.2	-3.0	28.9	**22.1**	26.0	-23.8	-15.1	14.4	**14.6**	14.4	+1.1	+1
SE						49.6	**48.9**	48.8	-1.3	+0.1	27.6	**27.9**	29.3	+1.0	-4
SK	2.1	**2.0**	2.0	-6.0	-2.8	49.5	**46.1**	45.7	-6.9	+0.8	14.3	**15.7**	15.8	+10.0	-0
UK						54.6	**61.2**	56.9	+12.1	+7.5	40.3	**40.4**	42.0	+0.3	-3

MARS STAT yield forecasts for Black Sea and Maghreb countries: 18/09/2007

Country	WHEAT (t/ha)					BARLEY (t/ha)					GRAIN MAIZE (t/ha)				
	2006*	MARS 2007 forecasts	Average 5 years	% 2007/06	% 2007/ Average	2006*	MARS 2007 forecasts	Avg 5yrs	%07/06	%07/5yrs	2006*	MARS 2007 forecasts	Avg 5yrs	%07/06	%07/
DZ	0.9	**1.18**	1.3	+34.7	-5.8	1.4	**1.4**	1.4	-2.0	+2.9					
MA	1.0	**0.8**	1.4	-21.3	-43.0	0.5	**0.6**	0.8	+15.0	-31.3	-	**0.5**	0.8	-	-34
MD	-	**0.4**	2.3	-	-84.3	-	**0.7**	1.7	-	-59.9	-	**2.1**	2.9	-	-26
TN	1.5	**1.8**	1.7	+17.5	+4.5	0.8	**1.0**	0.9	+19.5	+6.6					
TR	2.2	**2.1**	2.2	-5.7	-5.3	2.5	**2.4**	2.5	-5.4	-3.3	6.2	**5.9**	5.6	-4.4	+6
UA	2.7	**2.0**	2.6	-23.9	-23.3	2.3	**1.5**	2.2	-33.8	-29.2	3.8	**3.3**	3.8	-13.4	-13

Country	RAPE SEED (t/ha)					SUNFLOWER (t/ha)				
	2006*	MARS 2007 forecasts	Avg 5yrs	%07/06	%07/5yrs	2006*	MARS 2007 forecasts	Avg 5yrs	%07/06	%07/5yrs
UA	0.9	**0.97**	1.1	+3.4	-13.4	-	**1.0**	1.1	-	-2.6

JRC — IPSC, T.P. 268, I-21020 Ispra (VA)

MARS stands for Monitoring Agriculture with Remote Sensing

Technical note:

The long-term average used within this bulletin as a reference is based on an archive of data covering 1975–2006.

The CNDVI is an unmixed normalised vegetation index on the base of Corine land cover 2000 mainly for arable land or grassland.

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

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1.1. Temperature and evapotranspiration

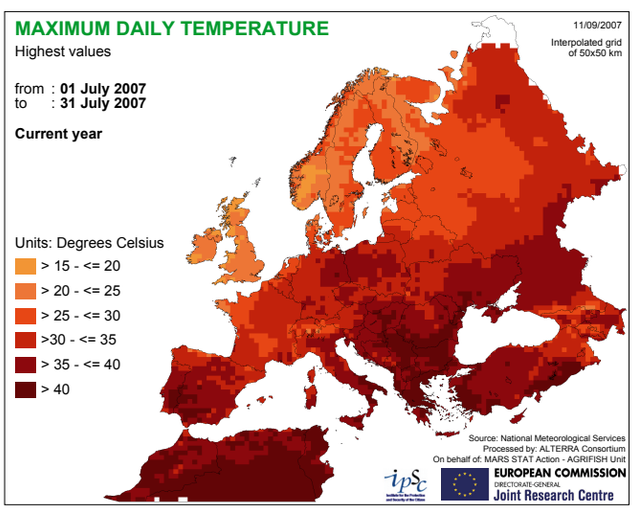
A mild or even cooler summer in the western EU contrasted with a warmer and, in some cases, very hot summer on the eastern side of the continent. Both eastern EU countries and the eastern Black Sea neighbours were affected at different levels. In mid-July, a peak of high temperatures hit those areas.

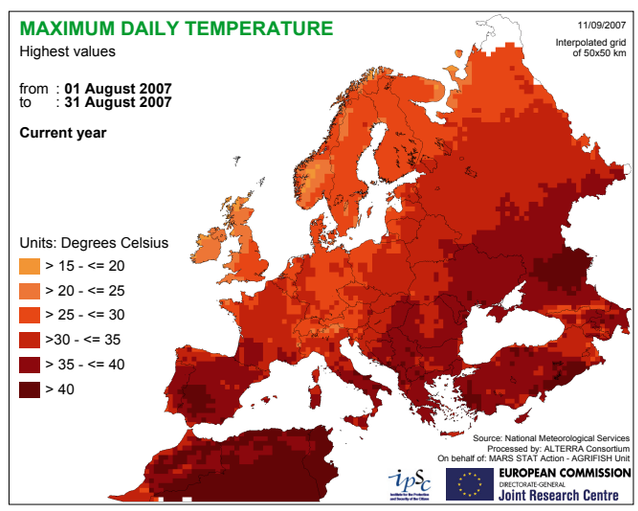
During July and August, the typical summer high-pressure system (Azorean anticyclone) limited its influence to the Mediterranean basin and did not expand further into central Europe, as normally happens in this season. That synoptic configuration made for a general southbound flux of cool air on the western side of Europe, whereas hot air from Africa was pushed towards the Balkans and Black Sea area. However, a couple of eastbound oscillations occurred, but they were brief.

Due to those conditions, in July the maximum temperatures recorded in southern and central Italy, in the Balkans and the Black Sea were, on average, 5–6 °C above the seasonal values. Extreme temperatures occurred between 22 and 25 July, when the maximum reached 40–43 °C and even locally 45 °C in Italy (Apulia), Greece, Bulgaria, Romania, Hungary, Bosnia and Turkey (10–12 °C above the long-term average). This hot spell followed the one which occurred in the second half of June, creating serious stressing conditions too for the summer crops still in the vegetative stages of development. In those areas, at the end of the month, the cumulated active temperatures presented a net surplus, estimable at 50–80 GDD. The highest surplus was recorded in Moldova and south-east Ukraine with more than 100°GDD. The cumulated values of the evapotranspiration recorded in these areas were significantly above average. On the other hand, in Scandinavia, the British Isles, western France, western Spain and northern Portugal, the recorded maximum values were, on average, 2 °C below the seasonal values. However, the influence on the cumulated active temperatures was limited: the deficit was estimable at only 20–40 GDD.

The synoptic configuration recorded in July occurred again in August. Consequently, all the areas progressively located eastward to longitude 12–13° experienced higher-than-average temperatures, whilst westward they were lower than average. Also in August, a brief oscillation of the general circulation determined the temporary increase or decrease of temperatures: at the very beginning of the month, an abrupt temperature drop occurred (12–14 °C) on the eastern side of Europe, followed immediately by a new rapid increase. The same thing happened, but the other way round, on the western side. From the last dekad of August and during the beginning of September, the Azorean anticyclone moved back eastbound determining a significant drop of temperatures (even 3–4 °C below the long-term average) in the whole central and eastern EU. Only in the eastern and southern Black Sea basin and in Portugal did temperatures remain above the seasonal average.

As a whole, during the period under consideration, the cumulated active temperatures (Tbase = 0 °C) presented (as compared to the long-term average) a surplus around the Black Sea and in Russia (150–200 GDD) and a deficit in France and northern Spain (80–100 GDD).





1.2. Rainfall and climatic water balance

There was a prolonged period of insufficient water supply in the central Mediterranean, Black Sea and Baltic areas. On the other hand, abundant and persistent rain in the central and northern EU interfered with field activities and prejudiced the potential winter crops yield.

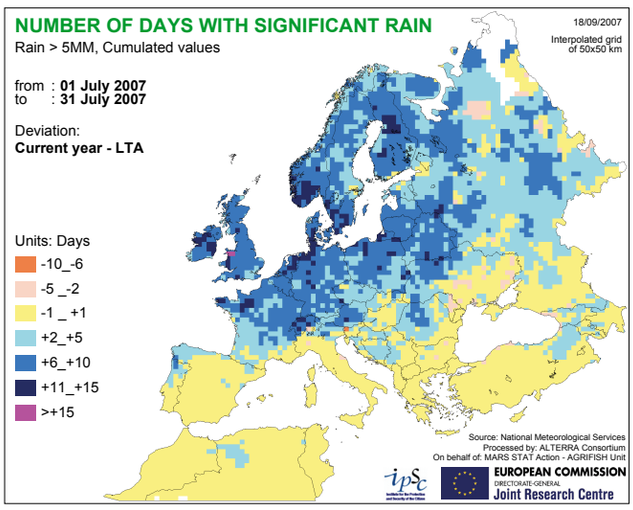
The rain's temporal and spatial distribution was mainly influenced by the particular synoptic circulation, which limited the influence of the Azorean anticyclone on the Mediterranean and therefore permitted the Atlantic rainy fronts to cross the central and northern EU territory but completely miss the southern countries.

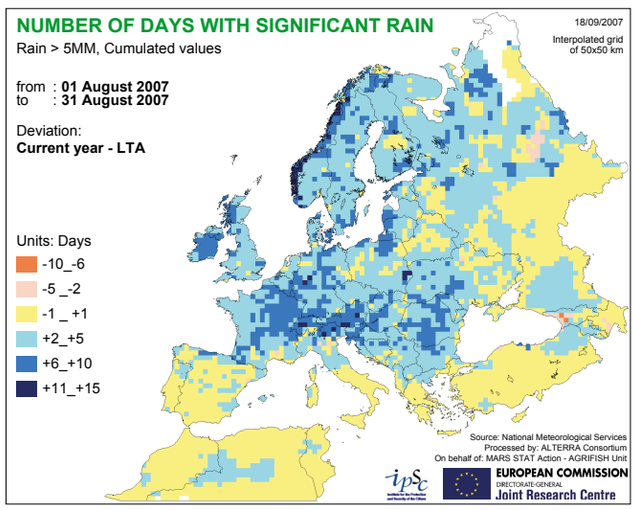
Consequently, there were two opposing conditions: on the one hand, water shortage in the Mediterranean territories (particularly in southern France, Italy and central and eastern Spain), the Baltic countries and in the eastern EU neighbouring countries (particularly Moldova, Ukraine and Russia);

on the other hand, abundant and persistent rain in central and northern Europe, particularly in the countries facing the North Sea and Atlantic Ocean.

The first group of countries, during the whole period under consideration, received on average around 100 mm less than excepted. In some areas (such as southern Italy, southern France, Spain) this deficit represents more than 60–70 % of the expected water. The effect of the water shortage was amplified by the very high temperatures which occurred in July and the consequent higher level of evapotranspiration. Therefore, the climatic water balance presented an even larger deficit with severe depletion of the soil water reservoirs, where still available. The largest deficits were estimated in Russia and the Baltic States, Belarus and the Black Sea basin. In those areas, several consecutive 'drought days' (i.e. daily evapotranspiration > daily rain) occurred both in July and August, with water stress conditions for the active crops.

The second group of countries, and in particular central and northern France, Great Britain, Ireland, central and northern Germany, Denmark, Sweden, northern Poland and Finland, experienced persistent rain and one of the wettest Julys since 1975: similar conditions occurred only in 1987 and 1998. In the whole period, 12–17 rainy days occurred more than the seasonal average. This meant that the longest period with consecutive dry days (i.e.: daily rain = 0) was, on average, no longer than four to five days. Temporary flooding occurred locally and the harvests were delayed or made under unfavourable wet conditions. Also, the activities for field preparation for the new winter crops (such as rapeseed) were delayed.





2. Campaign Analysis at country level

Europe 27

France: exceptional wet spell reduced the yield expectation

Yield forecasts are 7.16 t/ha for soft wheat (– 0.4 % compared to the five-year average), 4.5 t/ha for durum wheat (– 4.1 %), 6.41 t/ha for barley (+ 1.3 %), 42.5 t/ha for potato (+ 0.9 %), 8.82 t/ha for grain maize (+ 5.1 %), 78.1 t/ha for sugar beet (– 0.1 %) and 2.4 t/ha for sunflowers (+ 3.1 %).

The temperature in France was close to slightly below the average particularly from the central to the northern half of the country. The southern areas, particularly by the Mediterranean, experienced a few days of extreme temperatures for up to six days over 30 °C from July to the end of August without significant impact on crops. Consequently, the crops that had been initially boosted by much higher temperatures experienced normal growth.

Most of the northern part from Bretagne to Franche Comté experienced over-wet conditions in July with six to 10 more rainy days than the norm. Normandie and Picardie recorded up to 200 mm in the month more than 70 mm higher than the seasonal monthly rainfall.

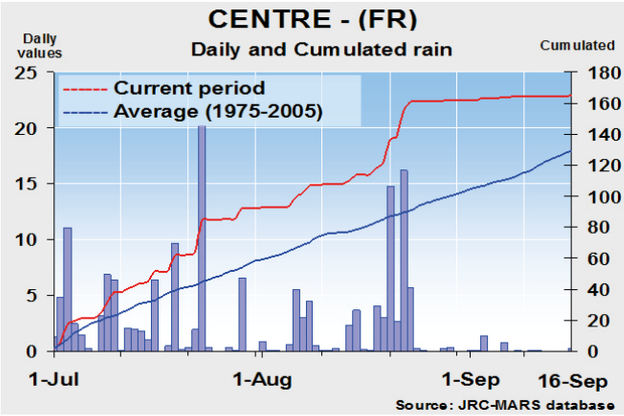
The winter crops that had been up to three weeks in advance under promising potential did not benefit from optimal harvest conditions. The over-wet conditions hindered field work, encouraged disease development and thus reduced grain quality.

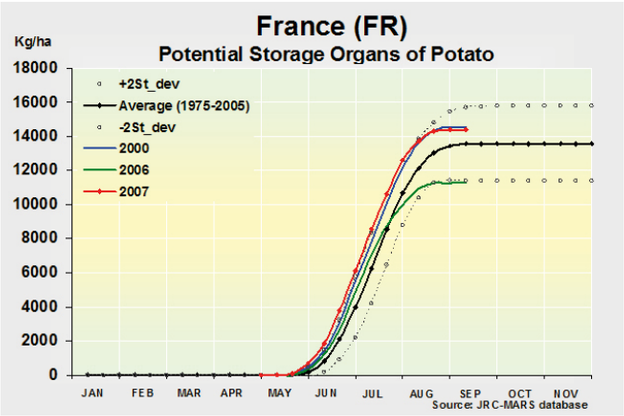
The harvest conditions in the southern half of France were much favourable.

In August, most of the country experienced higher precipitation than average with over 110 mm in Auvergne, Bourgogne, Lorraine, Alsace and Franche Comté: around 60 mm higher than normal.

In September all the country experienced a dry period.

The summer crops benefited from these exceptional wet conditions, which also reduced the need for irrigation. But the continual rain also encouraged the development of diseases, thus reducing the quality, for instance, of potato and sugar beet. The dry conditions at the beginning of September probably reduced the soil moisture excess.





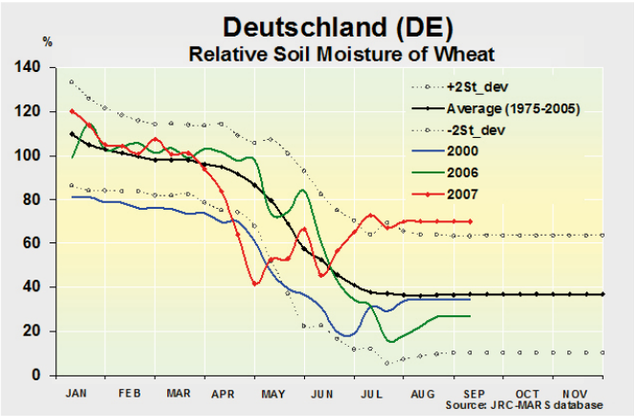
Germany: exceptional over-wet conditions hindered the harvest

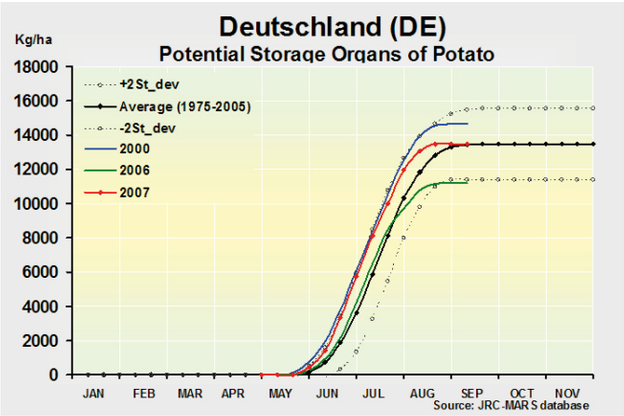
Yield forecasts are 7.18 t/ha for soft wheat (– 1 % compared to the five-year average), 5.62 t/ha for barley (– 3.3 %), 41.7 t/ha for potato (+ 6.1 %), 9.25 t/ha for grain maize (+ 7.3 %), 62.2 t/ha for sugar beet (+ 0.8 %) and 2.5 t/ha for sunflowers (19.1 %).

Following a warm mid-July, temperatures became slightly lower than average at the end of July in the western part of the country, then in the southern part of the country at the beginning of August. During the first part of September, most of the country recorded temperatures lower than average. These conditions allowed a normal crop growth.

Most of the country experienced an over-wet July, with a slight relief during the second dekad of July which might have been a rare opportunity for early winter crops harvest. However, the coastline and southern border recorded up to 200 mm, at least 70 mm over the seasonal values. In August, the situation was a little better except for the centre-west zone where up to 200 mm were also recorded. Most of the country experienced a relief in the rainfall either at the beginning of August for the eastern parts and during the second dekad of August for the western parts. Nonetheless, the climatic conditions did not allow an optimum harvest of winter crops and probably encouraged disease development thus reducing grain quality.

Potato, sugar beet and maize benefited from these conditions and have shown good development. However, these summer crops may have suffered from excess moisture and disease pressure. Potato, whose yield had been promising, also faced a problem of field access during harvest. Further wet days will probably again reduce the crops' potential.





BENELUX: over-wet situation in July hindered the harvest

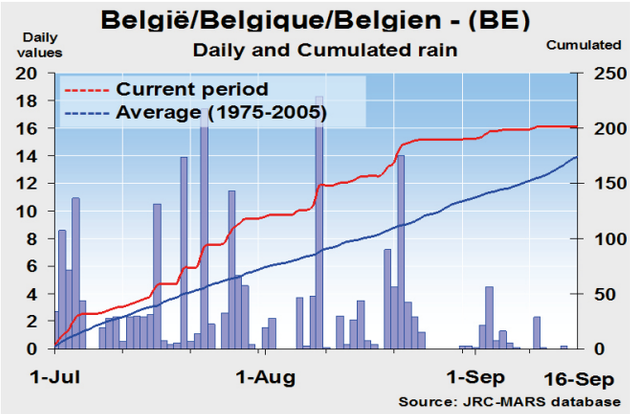
Yield forecasts for Belgium are 8.6 t/ha for soft wheat (+ 1.5 % compared to the five-year average), 7.47 t/ha for barley (+ 0.9 %), 46.5 t/ha for potato (+ 6.0 %), 11.83 t/ha for grain maize (+ 6.0 %) and 71.1 t/ha for sugar beet (+ 2.2 %)

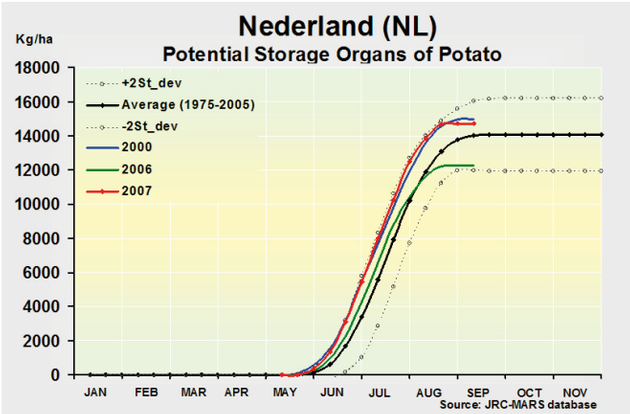
Yield forecasts for the Netherlands are 8.64 t/ha for soft wheat (+ 1.2 % compared to the five-year average), 6.19 t/ha for barley (+ 3.2 %), 45.5 t/ha for potato (+ 6.1 %), 14.19 t/ha for grain maize (+ 6.1 %) and 65.9 t/ha for sugar beet (+ 6.5 %)

Belgium and the Netherlands suffered from the excessive precipitation in July which hindered an early harvest for winter crops and which probably reduced grain quality.

In August, the cumulated precipitations were lower than average and diminished the excess soil moisture, benefiting summer crops such as potato, maize and sugar beet, which could then have an optimal development.

The temperatures were close to slightly below the average particularly at the end of July and contributed to a normal crop development





United Kingdom and Republic of Ireland: very wet and cooler than average

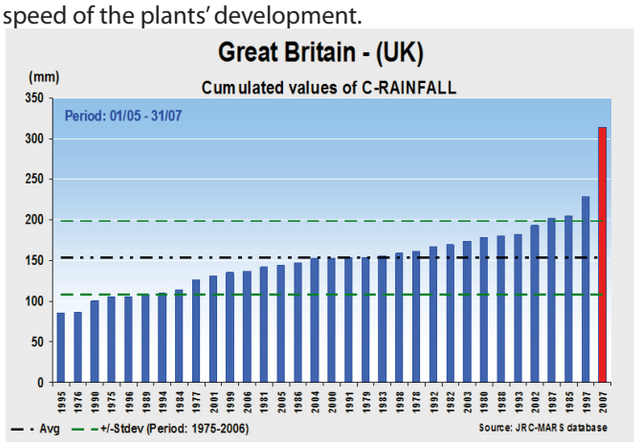
For the UK, yield forecasts are 7.77 t/ha for soft wheat (– 1.8 % compared to the five-year average), 6.52 t/ha for winter barley (+ 1.1 %), 3.29 t/ha for rapeseed (+ 1.1 %), 5.52 t/ha for spring barley (+ 3.5 %), 40.41 t/ha for potato (– 3.7 %) and 61.16 t/ha for sugar beet (+ 7.5 %).

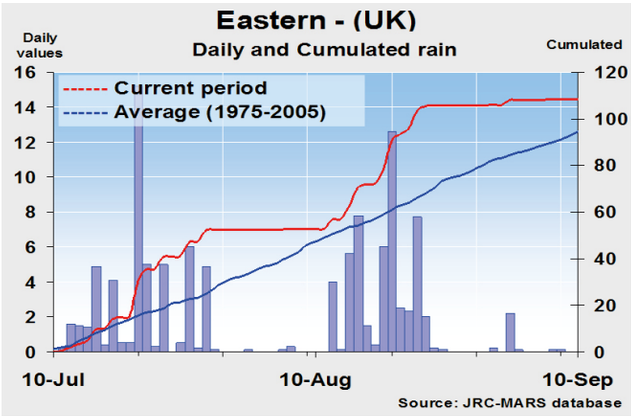
For Ireland, yield forecasts are 8.22 t/ha for soft wheat (– 7.5 % compared to the five-year average), 7.6 t/ha for winter barley (+ 0.6 %), 6.34 t/ha for spring barley (+ 0.3 %) and 33.49 t/ha for potato (– 5.8 %).

As in the previous period, in July abundant rain was again recorded. At the end of the quarter May–July, it appeared to have been, in absolute terms, the wettest since 1975 with a surplus estimable above 160 mm (equivalent to 105 % of the long-term average) and with around 60 rainy days (daily rain > 1 mm). The worst conditions were recorded locally in Wales, the West Midlands (+ 500 % as compared to the long-term average), Yorkshire (+ 300 %) and Eastern (+ 200 %). As mentioned, in the period under consideration, rain was very often present, but it mainly occurred in two time windows: the second half of July and the second half of August. In those periods, no extreme events occurred but the rain was always present. All the field activities (winter crop harvesting, field preparation, crop protection, haymaking, etc.) were postponed. Fortunately, a relatively dry window (10–12 days) suitable for field activities occurred between July and August and harvesting of cereals was finished. Again, from 23/24 August, in general the weather changed and a new dry period occurred. In Ireland, the frequency and the amount of rain was even higher than that in Great Britain.

The unseasonable amounts of cumulated rain and the higher frequency of the number of rainy days must surely have negatively influenced the active crops, impacting on the potential yields of these crops, which were already partially stressed by dry weather conditions in April. The rain must also have determined crop lodging and have created very favourable conditions for crop diseases, as well as increasing the nitrogen leaching. The dry period, which began in mid-August, must have allowed for re-establishing more normal soil moisture conditions.

Meanwhile, the temperatures were, in general, within the normal range of variation, even if characterised by large and frequent fluctuations. However, the cumulated values of active temperatures are slightly below average, particularly in August and September, with a consequent decrease in the speed of the plants' development.





Italy: two heat waves in July and August; drastic drop of temperatures

Yield forecasts are 5.73 t/ha for soft wheat (+ 5.8 % compared to the five-year average), 2.8 t/ha for durum wheat (+ 2.7 %), 3.6 t/ha for barley (– 1.4 %), 25.05 t/ha for potato (+ 3.8 %), 8.73 t/ha for grain maize (– 2.1 %), 51.5 t/ha for sugar beet (+ 7.5 %) and 1.93 t/ha for sunflowers (– 6.3 %).

Generally unfavourable conditions for spring/summer crops characterised this period: wide temperature fluctuations (both for minimum and maximum daily values); generally reduced water supply (except in the Alpine region and on the eastern side); two hot spells with severe heat stress;

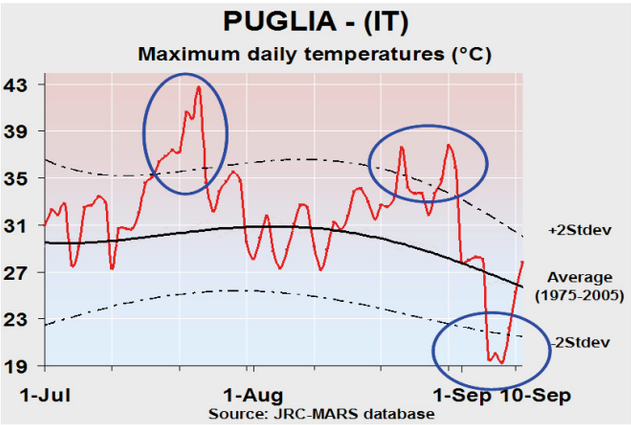
higher than average evapotranspiration and consequently a greater need for irrigation.

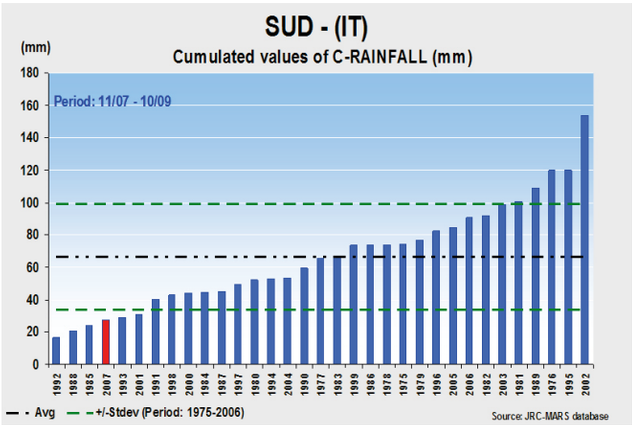
As with other Mediterranean areas, the spring/summer crops in Italy experienced weather conditions that limited their potential yields.

July started with favourable conditions but, during the month, temperatures progressively increased largely above the normal range of variation. On 20 July, the maximum daily values were largely above 35–38 °C: in Apulia the maximum daily values remained constantly above 35 °C between 17 and 25 July, also in Lazio, Basilicata, Campania, Sardinia and Sicily, the maximum values reached and exceeded 40 °C. At the beginning of August, more seasonal temperatures returned. Again though, in the middle of the month, a new hot spell erupted on the central and southern side of the country: again in Apulia the maximum reached 43–44 °C as well as in Basilicata, Campania, Sicily and Sardinia. Also in the Po valley, 35–36 °C was recorded for a few days. In September, a change in the synoptic circulation determined a drastic decrease of all the values, even largely below the seasonal average and especially for minimum daily values, which dropped below 8 °C even in southern areas. In general, due to the large fluctuation which occurred, the cumulated active temperature values remained at the end of the considered period close to the seasonal average.

During the period, rain was practically absent over most of the country, except for the first dekad of August, when there was rain in the central area. As a whole, the rain deficit was around 35–40 % of the seasonal value (equivalent to 35–40 mm), but in the southern regions higher deficits were recorded (e.g. Sicily: 95 %, Campania 60 %).

The rain shortage, coupled with higher crop water requests due to the high temperatures, made for an increase in the frequency and volume of irrigation, and severely limited the potentiality of the rainfed crops (grain maize in the Po valley or in the north-eastern area).





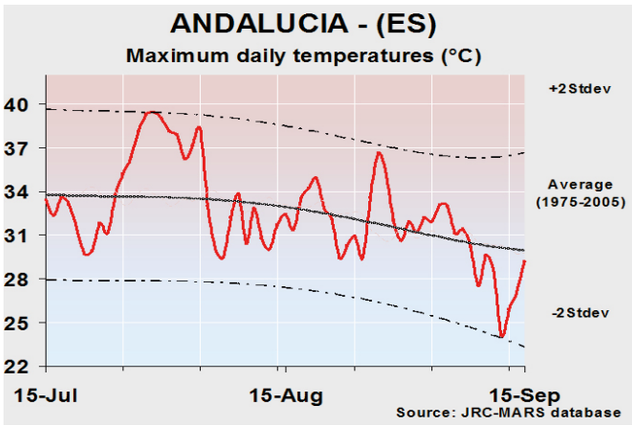
Spain: the positive climatic water balance in August and early September created positive expectations for most summer crops

The climatic water balance was in the norm throughout the month of August over most of the country. This condition continued into the first dekad of September. Rainfall was scarce overall even though still within the norm. There were significant local events during the second half of August, with peaks exceeding the long-term average by 30 %, but these were mostly concentrated along the north-western part of Spain and on the border with Portugal.

Temperatures were on the high side, at times exceeding 40 °C with the normal north to south gradient. Levels were, however, still within the seasonal average. These overall positive conditions came after a rather wet spring season and a dry July. This trend is clearly visible in the development of the NDVI vegetation index from remote sensing.

The specific climatic conditions that characterised the whole summer season were conducive to a positive outcome for both winter and spring crops. Winter cereal reported a bumper crop and cereals which completed their cycle in early July were also favoured by the wet-dry sequence. Spring barley specifically is expected to yield around 3.5 t/ha with a significant increase on the 2006 season and on the five-year average (+ 30 %). Regarding the most important spring crops, grain maize and sunflower, forecasts are for a substantially average season. This is true for the agricultural areas of Castilla and Aragon and for the south, in Andalucía.

The yield for grain maize is forecasted at ~ 9.8 t/ha, on the same level as in 2006. A better outcome is expected for sunflower which has a more vocational distribution in the south. The expected yield is about 1.0 t/ha, with a 3.4 % increase on the five-year average.

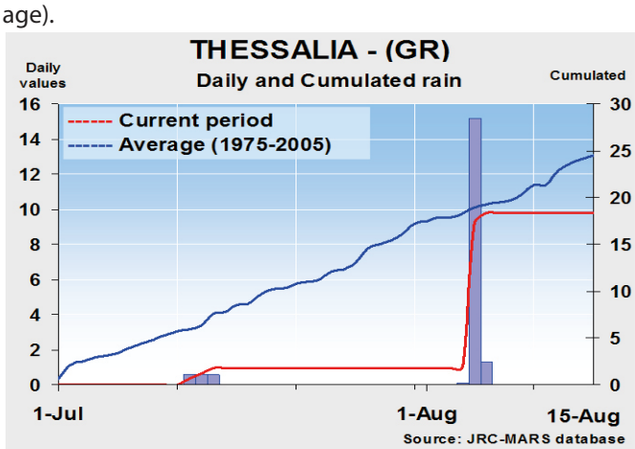


Portugal: an overall positive season

The summer climatic conditions in the most important agricultural regions of Portugal can be considered within the norm and conducive to a moderately positive outcome for the production cycle for most spring crops. Precipitation continued regularly in the centre and north of the country, while in the south of the Alentejo region, the month of July and the beginning of August were characterised by below-average rainfall. Temperatures were, however, particularly mild and, at times, the maximums were even 5 °C below the average of the period. This combination eased stress for most spring crops and resulted in a climatic water balance that remained within the norm. Rainfall picked up again, especially in the south, during the second half of August, and is continuing until the present, though still within the average of the period. Grain maize was moderately affected by the dry conditions in July and August, in the central phases of its cycle. Rains in the first dekad of September, however, coincided with the final maturation phases and are expected to make up for the losses. The forecasted yield is 5.5 t/ha, with an increase of 3 % on the five-year average and almost 10 % on 2006, which, however, was an exceptionally negative season. Sunflower yield stands at 0.53 t/ha and remained on the levels of 2006, though with an increase of over 7 % on the five-year average.

Greece: dry weather and several heat waves hit the country during summer affecting yield forecast for winter and summer crops

July was characterised by an almost complete absence of precipitation combined with heat waves over most of the country. This situation affected the final maturation phases of winter cereal and resulted in a decrease in the yield forecasts. Significant reductions were reported for both barley (~ 13 % on 2006 and – 5 % on the five-year average) and soft wheat (~ 13 % on 2006 and – 10 % on the five-year average). The potato harvest was also affected and the forecast is for a reduction of over 27 % with respect to 2006. The forecast for durum wheat is more positive as this crop took advantage of an earlier harvest. During August, the situation improved in the north and north-west regions. The cumulated rainfall was such as to allow an upturn in the climatic water balance. The agricultural districts in eastern and southern Greece experienced persistent dry conditions. These were made even worse by a number of heat waves with temperatures at times exceeding 40 °C. Summer crops were also affected through being mostly cultivated under irrigation in the vocational areas of Kentriki Makedonia and Thessalia. Grain maize and sunflower are currently closing their cycle. These crops could benefit from the return of rainfall, combined with a diffuse drop in temperatures in the first dekad of September. But this may not be sufficient to make up for the water deficit accumulated over the summer. The yield forecast for sunflower is 1.1 t/ha, with a 5 % decrease on 2006 and over 10 % on the five-year average. Grain maize yield is expected forecasted at 8.55 t/ha (– 5 % on 2006 and – 4 % on the five-year average).



Denmark, Swedenand Finland: very wet July, especially in Sweden

For Denmark, yield forecasts are 7.08 t/ha for soft wheat (– 0.2 % compared to the five-year average), 5.61 t/ha for winter barley (– 3.7 %), 3.22 t/ha for rapeseed (+ 1.3 %), 5.04 t/ha for spring barley (+ 1.3 %), 39.02 t/ha for potato (+ 0.7 %) and 58.14 t/ha for sugar beet (+ 0.6 %).

For Sweden, yield forecasts are 6.28 t/ha for soft wheat (+ 6.2 % compared to the five-year average), 2.61 t/ha for rapeseed (+ 7.5 %), 4.24 t/ha for spring barley (+ 2.2 %), 27.86 t/ha for potato (– 4.9 %) and 48.9 t/ha for sugar beet (+ 0.1 %).

For Finland, yield forecasts are 3.42 t/ha for soft wheat (– 1.9 % compared to the five-year average), 1.37 t/ha for rapeseed (+ 5.8 %), 3.54 t/ha for spring barley (+ 6.7 %), 23.75 t/ha for potato (+ 3.1 %) and 37.92 t/ha for sugar beet (+ 6.5 %).

The most relevant agrometeorological aspect characterising the period was the extremely abundant and persistent rain which occurred in July, which followed an already very wet June. Despite the large oscillation of temperatures, at the end of the period, the cumulated GDD values were close to the seasonal range.

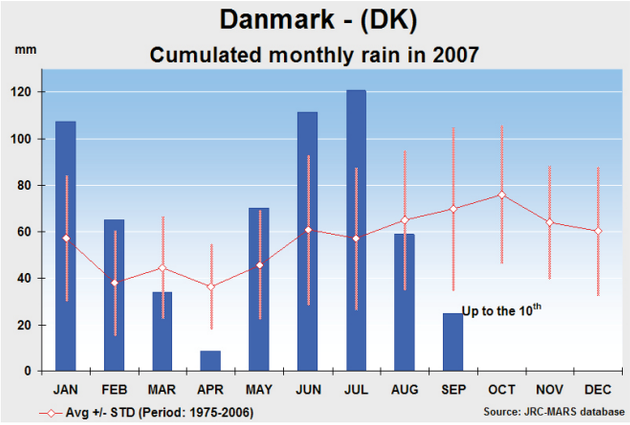
As described in the first part of this bulletin, the particular configuration of the synoptic air circulation pushed the Atlantic rainy fronts to the higher latitudes.

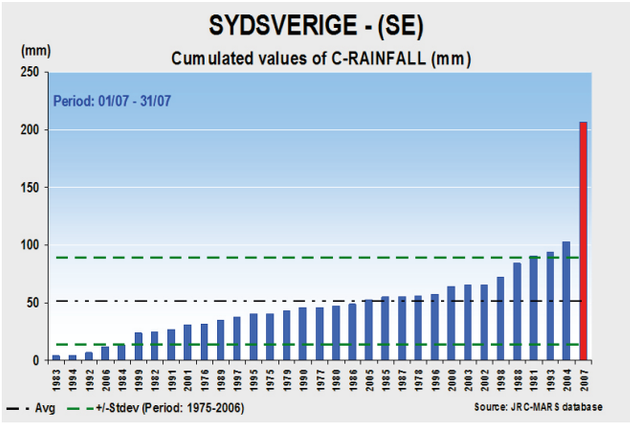
As a consequence, this group of countries experienced one of the wettest Julys since 1975: in Sweden, the worst conditions in absolute were recorded with a surplus of rain estimable at + 300 % (206 mm as compared to 51 mm of the long-term average) and more than 20 rainy days only in July; in Denmark, more than 120 mm were recorded (equivalent to + 112 % as compared to the long-term average); and in Finland 110 mm (+ 52 %).

The persistent rain and related cloudiness also negatively

influenced the amount of solar radiation available for plant growth which was largely and significantly below the average. The deficit recorded in July was partially compensated in August in Denmark and totally in Finland. But in Sweden, by mid-September, a significant deficit remained cumulated with possible negative influence on still active crops.

The abundant rain also created favourable conditions for the emergence of plant diseases, lodging of the plant ready to be harvested, nitrogen leaching and temporary root asphyxiating conditions.





Estonia, Latvia, Lithuania: drier in the north; wetter in the south

Until the first week of August, the sum of active temperatures was close to normal. During the second half of the period, the sum of active temperatures rose the levels several times above the long-term average until 26 August (+ 90 GDD above the long-term average, for Tbase = 10 °C). After that, the difference decreased slowly until 10 September, remaining, however, at above + 50 GDD. Some unusually warm days were recorded between 9 and16 August and on 23 August. The cumulated rain received during the period was higher than average southwards (drier than usual in Estonia, normal in Latvia and wetter than normal in Lithuania). In Estonia, the first half of the period under consideration was close to normal while the latter period was drier. In Lithuania, most of the rain events occurred at the beginning and end of July as well as around the end of August. The global solar radiation was in the normal range. The grain filling of winter crops and spring barley occurred under normal conditions and after maturity; there were some dry days for harvest. Generally, the simulated yields (expressed as percentages from the average of the last five years) followed the rain gradient: lower in Estonia, close to normal in Latvia and above the long-term average in Lithuania.

Poland: a wet summer

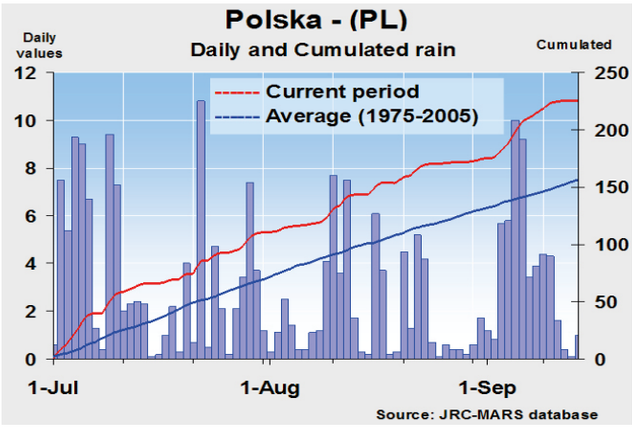
The sum of active temperatures (Tbase = 0 °C) was close to normal at the beginning of the period under consideration, and in the second half of the period it increased slightly above this level. The difference was larger (+ 70 GDD days at the end of August) for Tbase = 10 °C. Around 17 July, the maximum temperature (34.3 °C) exceeded the upper two standard deviations limit above the long-term average.

From the beginning of July, the precipitation regime rose above the normal level (> 50 mm) and remained thus throughout the period. Without being an absolute record year, the cumulated precipitation was above normal levels with more than one standard deviation. During the first two weeks of September, southern Poland was subject to heavy rain (>150 mm).

The level of solar radiation was close to normal for the whole period under consideration.

Maturity of winter wheat was anticipated by about three weeks. Due to limitation of the potential yield and the drought conditions from the first part of the vegetation season, the soft wheat yield estimation (3.5 t/ha) was slightly below the trend value. Soil moisture increased considerably at the end of the season causing some possible concern around harvest periods (diseases and water lodging).

The weather resources from July to August 2007 were favourable to the summer crops for which the simulated yields are so far at above the long-term levels. The estimations could not take into account the collateral negative effects of high humidity (pest and diseases impact).



Czech Republic and Slovakia:intense rain and high temperatures anticipated harvest for most summer crops

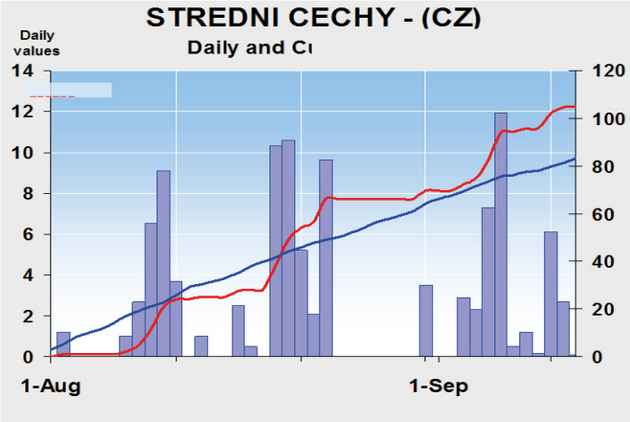
The months of July and August were characterised by a progressive increase of precipitation with a west–east trend affecting first the agricultural districts of the Czech Republic and then most of the region. To the east of Slovakia, the climatic water balance remained within the norm until the end of August and then responded to the increased precipitation with a steep upturn.

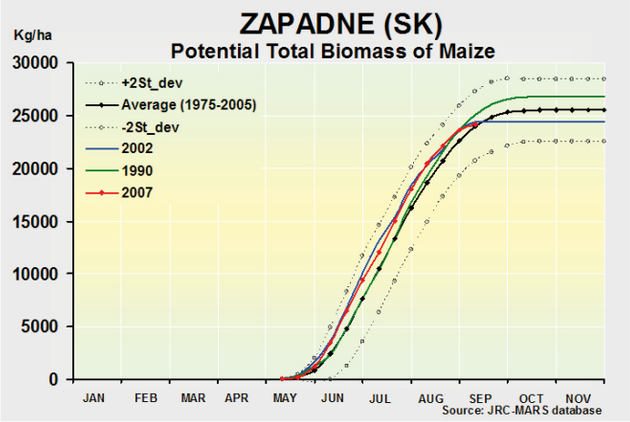
Temperatures remained at average levels throughout this period. Most summer crops are reaching the final phases of maturation, and, while soil moisture was not a limit, some problems may be caused by the low radiation and consequently the reduced evapotranspiration rate.

Winter cereals and rapeseed reported a less then average yield due mostly to the high temperatures in July and the shortened cycle. There are, however, better expectations for most summer crops. The high temperatures at the beginning of the growth period and the constant water supply in the following phases have resulted in a full month anticipation of maturity for both maize and sunflower. This anticipation is especially marked in the Czech Republic.

The increase in precipitation and lowering of temperatures may further prolong the grain-filling phase and the forecast is consequently for an increase in the average yield, partly compensating the effects of reduced evapotranspiration

. The forecast for grain maize in the Czech Republic calls for a yield of over 7.7 t/ha increasing both over the 2006 season (6.75; + 15.3 %) and the five-year average (+ 13.3). Sunflower is more susceptible to low radiation rates and consequently the yield forecast is 2.17 t/ha with a marginal increase (+ 1.2 %) on 2006. A similar trend was reported for potatoes and sugar beet. In Slovakia, wet weather and reduced radiation was less manifest and the impact of crop yield is such that overall yields should remain in the norm. Grain maize is forecasted for 5.63 t/ha (– 3 % on the 2006 and –1 % on the five-year average). For sunflower, the forecast is currently for a reduction: 1.97 t/ha as opposed to 2.1 in 2006.





Austria: generally favourable conditions; hot spot event in mid-July and intense showers in September

Yield forecasts are 4.78 t/ha for soft wheat (– 5.9 % compared to the five-year average), 3.75 t/ha for durum wheat (– 13.4 %), 4.93 t/ha for winter barley (– 4.3 %), 2.24 t/ha for rapeseed (– 18.1 %), 4.03 t/ha for spring barley (– 3.8 %), 31.6 t/ha for potato (+ 3.5 %), 10.15 t/ha for grain maize (+ 8.3 %), 65.73 t/ha for sugar beet (+ 1.3 %) and 2.74 t/ha for sunflowers (+ 3.1).

In general, both thermal conditions and water supply (except in mid-September) were favourable both for winter crops harvesting and for spring/summer crops still in the active growing stages.

In fact, a sufficient number of consecutive dry days (suitable for field activities) occurred both in July and August, but the climatic water balance meanwhile did not present values diverging from the norm, still providing an adequate water supply to satisfy crop needs. The temperatures in general remained within the normal range of variation permitting an appropriate course of crop development.

Outlier weather conditions occurred on spot at mid-July, when the maximum daily temperatures remained above the threshold of 33 °C for two or three consecutive days; and at the beginning of September, when there were three consecutive heavy rainy days, bringing more than 100 mm of water, with a likely temporary excess of water especially on top soil. This probably impacted negatively on the sugar beet sugar content (polarisation) and on potato, determining a depletion of root quality.

All the spring/summer crops, despite the anticipated crop cycle, still show a good potential yields.

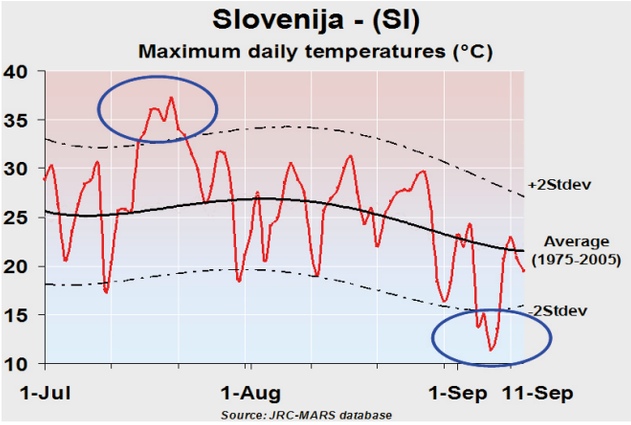
Slovenia: general favourable conditions; high temperatures in mid-July; wetter and cooler than seasonal in September

Slovenia is expecting a good season. Forecasted yields are: 4.35 t/ha for soft wheat (+ 9.3 % compared to the last five-year average and + 13.6 % compared to 2006), 3.74 t/ha for barley (respectively + 2.6 % and + 3.5 %) and 8.03 t/ha for grain maize (respectively, + 10.8 % and + 15.8 %).

In general, the summer was favourable: despite a considerable fluctuation of temperatures (extremely high temperatures occurring in mid-July and lower than seasonal temperatures at the beginning of September) no really limiting thermal conditions occurred and both winter and summer crops faced favourable weather.

In fact, the winter crops could close their cycle without limiting factors (high temperatures and relative dry conditions) and, at the same time, the spring/summer crops faced seasonal conditions which permitted a regular growth. However, the advance in the crop cycle cumulated during the previous months was maintained.

The rainfalls were normally distributed and quantitatively adequate to the seasonal values. Only in September were the frequency and the amount of rain above the long-term average. However, this water supply refilled the soil reservoirs, which will be useful for the next winter crops.



Hungary: July/August conditions unfavourable for summer crops.

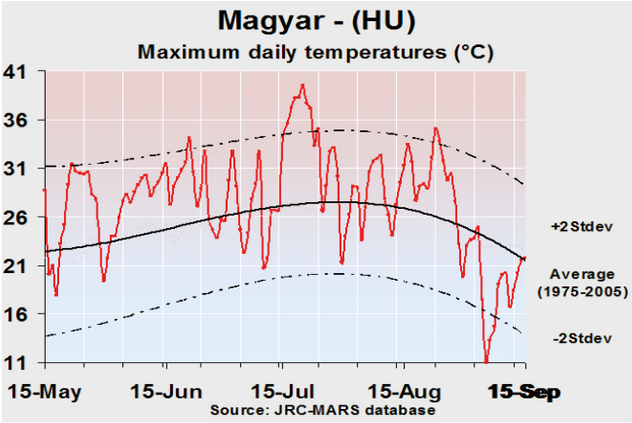
Grain maize yield is expected at 4.1 t/ha, a reduction compared to 2006 of about 40 % and 32 % lower than average (last five years). Sunflower yield forecast is 1.86 t/ha, 21 % below last year; potato is forecasted to yield about 18.5, i.e. – 21.5 % less than 2006; sugar beet is expected at about 40.2 t/ha which is about – 9.0 % lower than the previous year. For winter crops, the season closed with the following expectations: 3.66 t/ha for soft wheat, 3.62 t/ha for winter barley, 2.62 t/ha for spring barley and 2.26 t/ha for rapeseed.

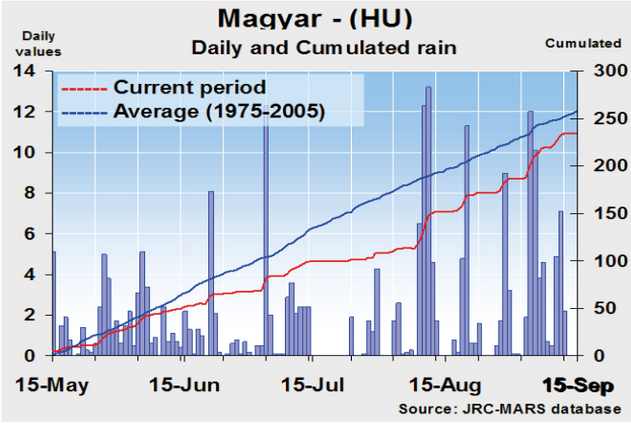
The very dry and hot summer continued throughout the month of July. The dry spell was interrupted only around mid-August.

However, rains were not sufficient to recover the deficit cumulated so far and too late to release plant stresses with the exception of sugar beet.

For the period 15 May–15 September, the climatic water balance is showing a deficit of > 350 mm. During the same dry period, temperatures reached high peaks of more than 40 °C for several days (maximum temperature record on MARS archive:1975–2006) adding heat stress to growing maize and other summer crops. The result is a clear deterioration of biomass formation with impact on final expected yields.

The higher-than-average temperatures had an effect on summer crops reaching maturity with an advance (simulated) from 20 days (potato) to one month (maize, sunflower).





Romania: persistent extremely hot weather

The 'warmer than usual' description for the thermal conditions for the first half of the year remained valid for the July–beginning of September period. In fact, for this period the average daily mean temperatures represent an absolute record for the last 33 years and the averages of minimum and maximum temperatures for 2007 are in second place after the records from 2002 and 1994 respectively. For 10 days after mid-July (16–25 July) and during 22–26 August, the

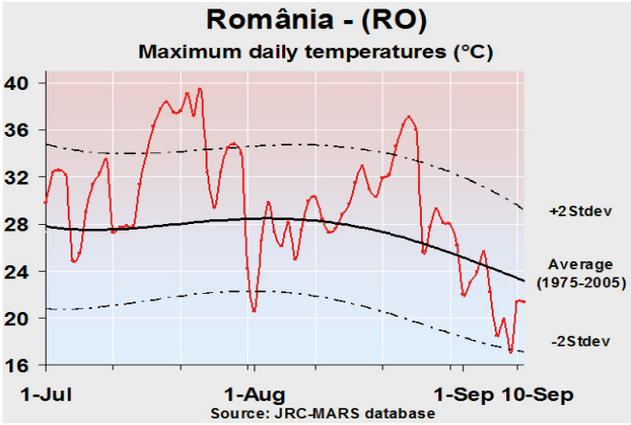
maximum temperature rose above the upper two standard deviation limits and it remained above 36 °C level for several days.

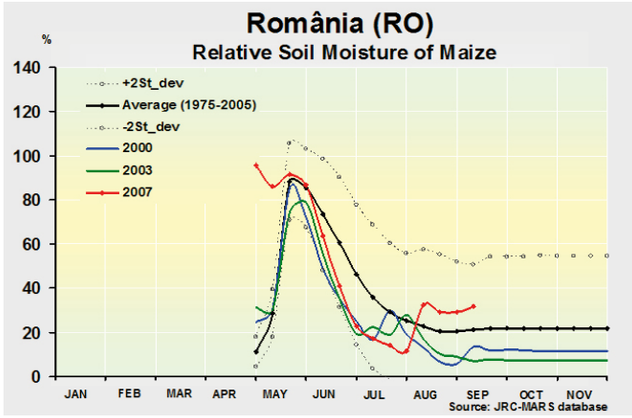
At the beginning of September, the weather started to be cooler than usual, without falling below the two standard deviation lower limit for minimum temperature.

During the first three weeks of July, the cumulated precipitation remained close to the normal level. The rainy days around 6 August improved the water balance but without reaching the normal level.Mid-August was relatively dry and only the rain received at the beginning of September succeeded in restoring the water balance at the long-term level. Most of the precipitation received by the agricultural areas in September was concentrated in the north-western and central areas.

The climatic water balance was very low especially in the south-eastern areas (Dobrogea).

Maturity of winter wheat was achieved with more than three weeks in advance. The hot and dry weather along the vegetation period (similar to the conditions from 2002) limited the estimation of the winter wheat yield at 1.19 t/ha. Until the beginning of August, the relative soil moisture remained very low and after this it rose, but the simulated impact on summer crops remained limited, especially due to the significantly anticipated maturity (more than six weeks for grain maize).

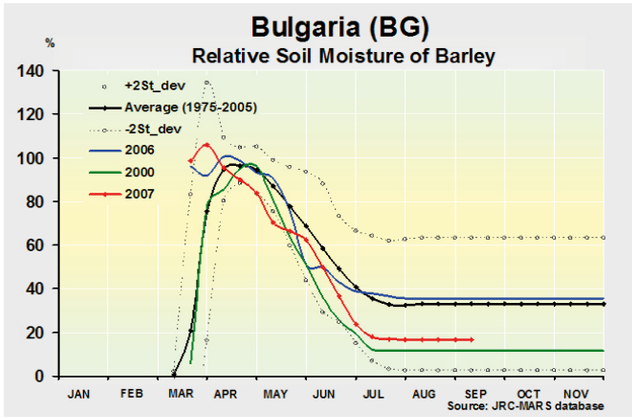




Bulgaria: persistent hot and dry conditions

The second half of July was very hot (maximum temperature exceeded 40 °C on 24 July). A second heat wave was recorded around 25 August. The average mean temperature for the considered period was the second highest (after 2001) in the last 33 years. Most of the rain events were concentrated around 6 August and the beginning of September. The global solar radiation cumulated for this period reached the absolute maximum since 1975.

At the beginning of the period, all of the winter crops were already at maturity. The grain filling of spring barley ended under the same dry conditions as in the previous growing stages. The precipitation from the beginning of August, allowed only a partial recovery of the normal grain filling of maize but the level of simulated yield remained below the long-term average. The simulated yield for the other summer crops is also very low.



Black Sea Area

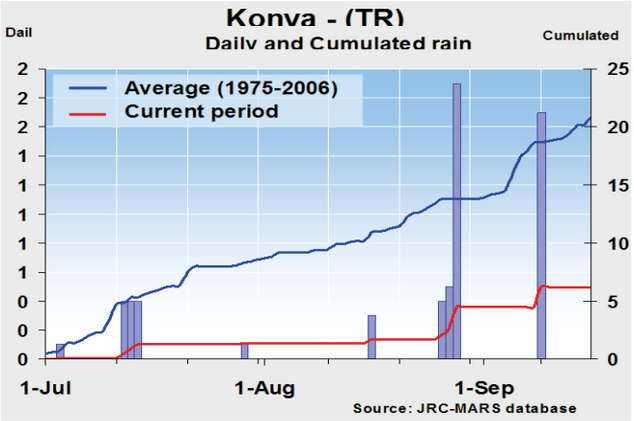
Turkey: a dry summer season negatively affected the final yield of most winter crops and affected summer crops

The beginning of the summer season was characterised by favourable weather conditions over most agricultural regions of central and western Turkey. However, from mid-July, the climatic water balance began to be in deficit over most of the country. As compared to the long-term average, this trend was even more considerable in western Turkey, ranging from the northern regions facing the Black Sea to the Mediterranean.

During July, there were heat waves in the Aegean regions of Ayden and Izmir. Precipitation was scarce or non-existent during July continuing into August and the cumulated rainfall rarely exceeded 10 mm over this period.

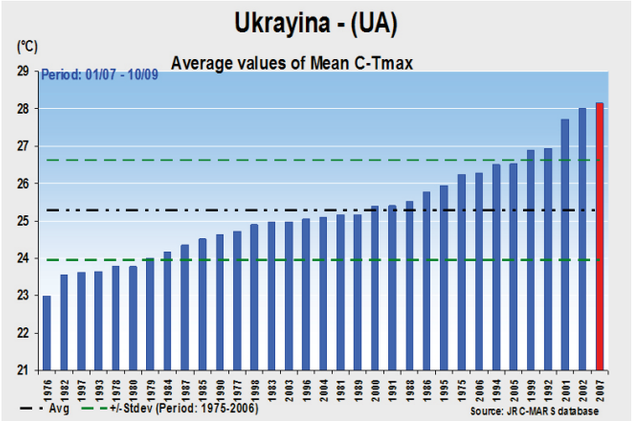
The main vocational areas for winter and spring cereals are located in the central highland (Antalya and Ankara) where harvest takes place during July. In these regions, the

dry weather coincided with the final maturation phases of wheat and barley. Crops in these regions are expected to have significant decrease in the final yield. Harvesting of wheat, however, takes place during June in the western and Mediterranean regions. This should have allowed the crop to avoid the onset of the drought and partly compensate for the overall negative outcome of the season. Wheat is forecasted for ~ 2 t/ha with a reduction of around 6 % on 2006. The same conditions are forecasted for barley (2.3 t/ha; – 5.4 % on 2006). Regarding summer crops, grain maize is mostly cultivated under irrigation in the western region of Bati Marmara and is taking advantage of late rain in its final maturation phases, partly compensating for previous losses. The forecasted yield is 5.9 t/ha, – 4.5 % on 2006.



Ukraine: extremely low yields due to very hot and dry weather

The period under consideration was second (after 2002) from the top in terms of highest average daily mean temperature, and in top place in terms of average maximum temperature. The level of cumulated rain was below the long-term average and lower than one standard deviation level. The climatic water balance for this period was the lowest for the last 33 years for the agricultural areas from the Black Sea zone and the second lowest (since 1994) for the north-eastern zone. Due to the fact that these unfavourable conditions started to be manifest from the beginning of the vegetation, the negative impact on simulated yields was very high: the lowest simulated yields of winter wheat (frost damages not considered in those simulations), spring barley, maize and sunflower since 1975 are obtained. The north-western zone shows a close to normal situation and in some areas the simulated yield is above the long-term average.

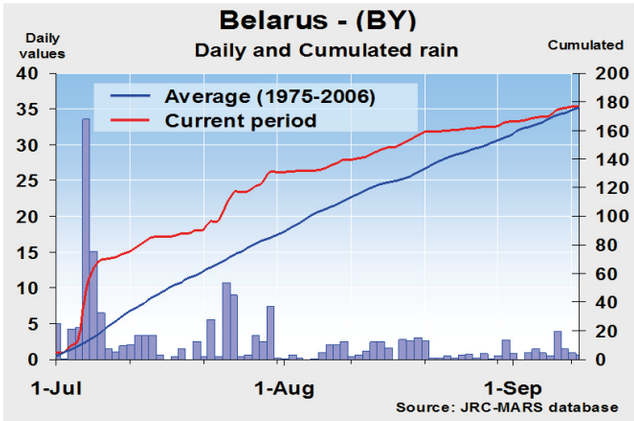


Eastern countries

Belarus: yields close to trend

The level of thermal resources (Tbase = 0 °C) for the period analysed compared with the long-term average remained at seasonal levels until 10 August. After this date, the weather was warmer than usual. The first 10 days of July brought some positive rain to ease the previous deficit. From August until the end of the period under consideration, many days with low precipitation (< 5mm) were recorded.

The climatic water balance for the period remained above normal for most of the time, and only around 5 September did it fall to a normal level. The simulated yields were slightly below the long-term average for winter wheat and summer crops and at the normal level for spring barley. Development of summer crops was anticipated by about three weeks.



Russia: unfavourable conditions for spring cereals

The period under analysis is the period of winter crop harvesting, and the time for spring crop flowering.

The June 2007 was slightly colder than normal everywhere excepting southern regions, where air temperature was higher than normal in 5-10 degrees. The air temperature was not extreme for winter crop; however in southern regions it should affect spring crop development.

Amount of precipitation was lower than normal in central

and southern regions. In other regions amount of precipitation was close to normal or slightly higher (in middle Volga region). Extremely low rain (less than 20 mm per month) was observed in Moscow, Smolensk and Rostov regions.

Agro-meteorological conditions during the winter and spring leads to soil moisture deficit in central regions of Russia, and in Rostov region.

The CGMS winter wheat growth simulation results demonstrate that the situation at the beginning of July 2007 was close to normal practically everywhere. The simulated crop biomass is lower than normal only in some regions of central Russia and in Rostov region.

Based on analysis of all crop growth indicators it seems possible to conclude that agro-meteorological conditions in season 2007 were in general good for winter crop. The agro-meteorological situation for spring crop was unfavourable in many regions due to low amount of precipitation in June. The yield of winter cereals is expected close to the previous good year or slightly lower. The yield of spring crop at the European part of Russia is likely to be lower than normal and lower than in the previous year.

Maghreb countries

Winter cereal estimate update for Morocco for the 2006/07 season

The yield forecast (1.485 t/ha) provided in a previous bulletin and based on the CGMS model was largely over-estimated. The cause of this was the misjudgement of the positive effects of climatic factors at the end of the development cycle of winter cereals.

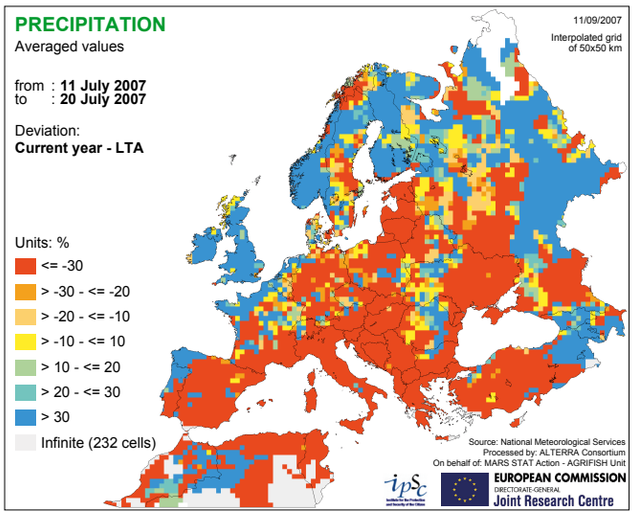
Comparing the forecasts provided by the alternative tools available, it can be concluded that a better estimate is provided by the model based on remote sensing data. This estimate, in this case, is 0.8 t/ha for wheat and 0.6 for barley.

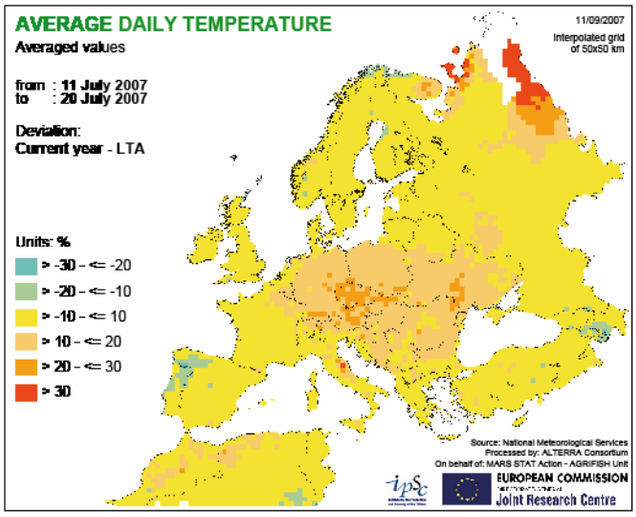
This approach was considered more appropriate when considering that, in the semi-arid Maghreb region, there is a very strong link between the conditions of the vegetation cover of crops and their yield.

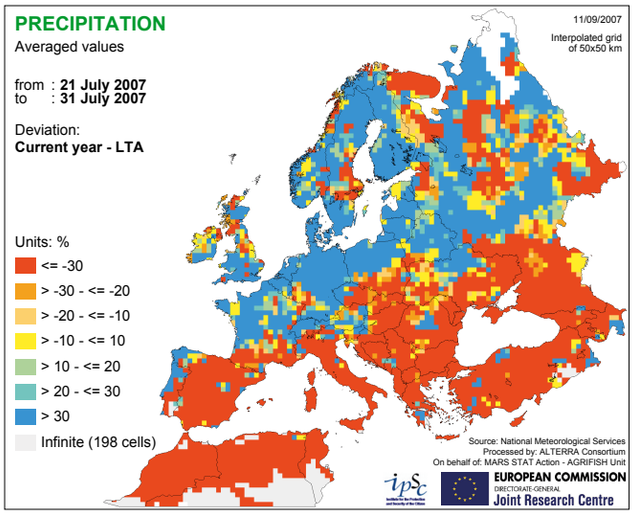
These conditions are well monitored with the use on the NDVI (normalised differences vegetation index) based on the infrared channels of the SPOT vegetation sensor.

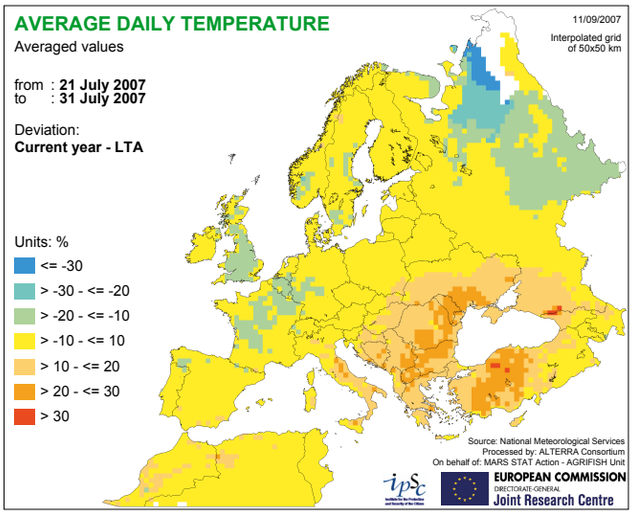
It is necessary to proceed with a recalibration of CGMS to the specifics of the Maghreb region, especially Morocco, for the next agricultural campaign. Updates on the evolution of this task will be provided.

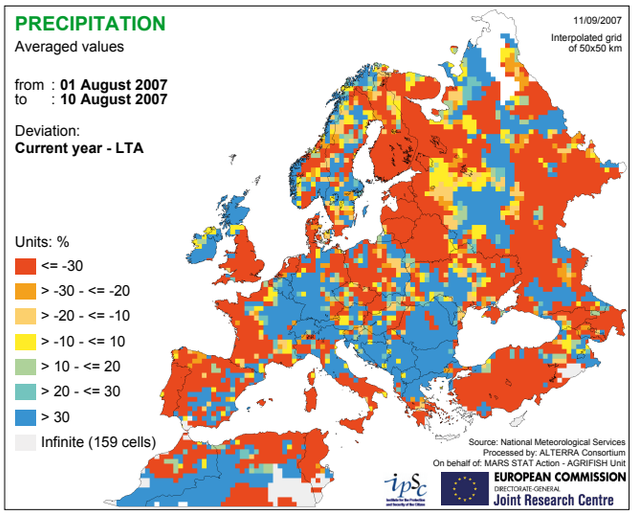
3.1. Rainfall and Temperature

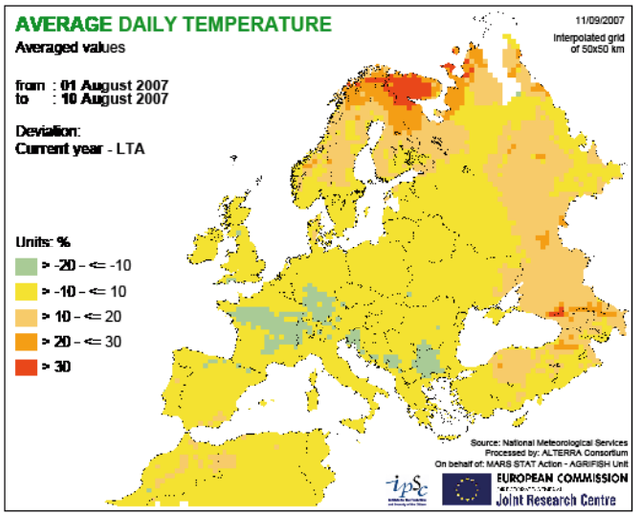




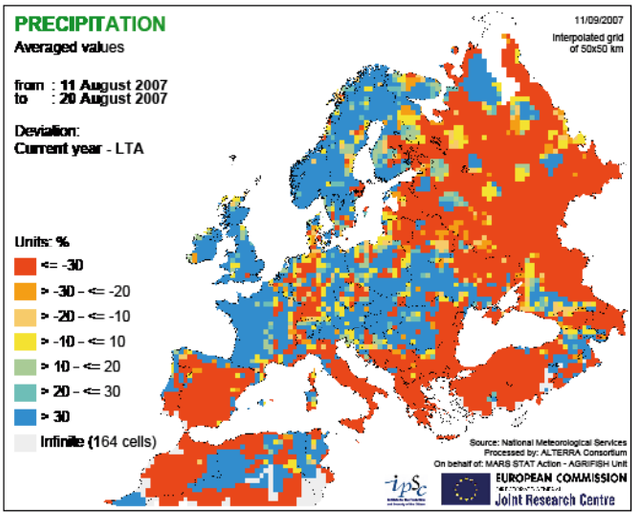


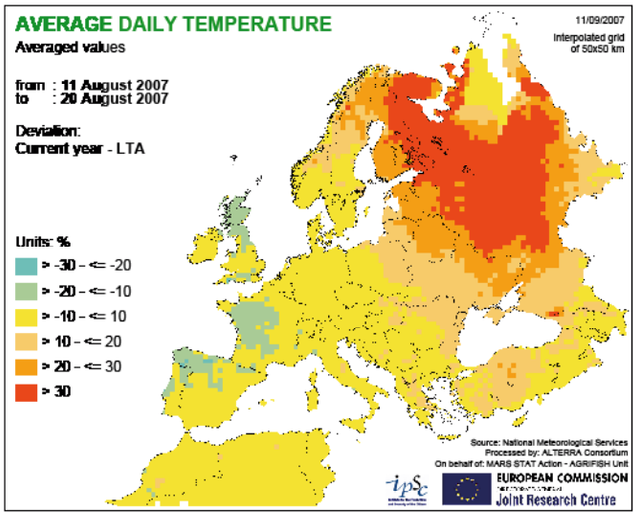


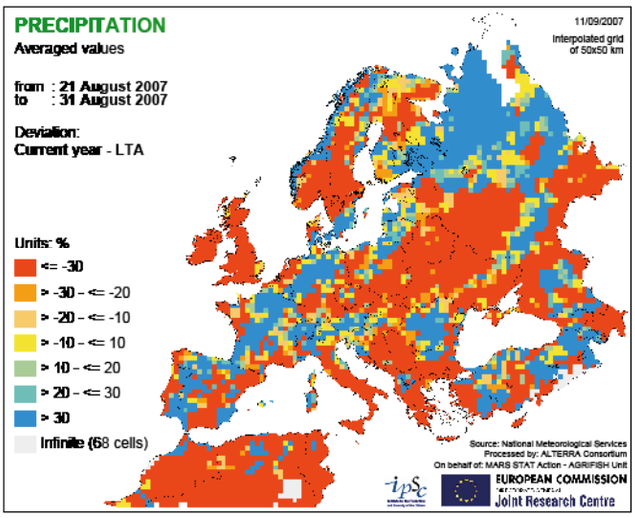


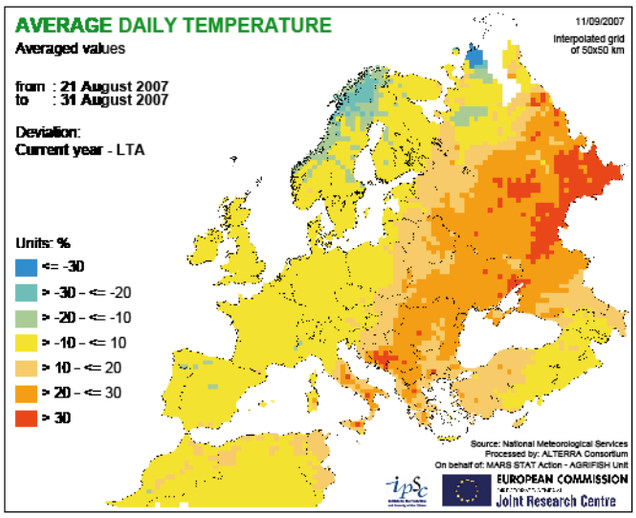


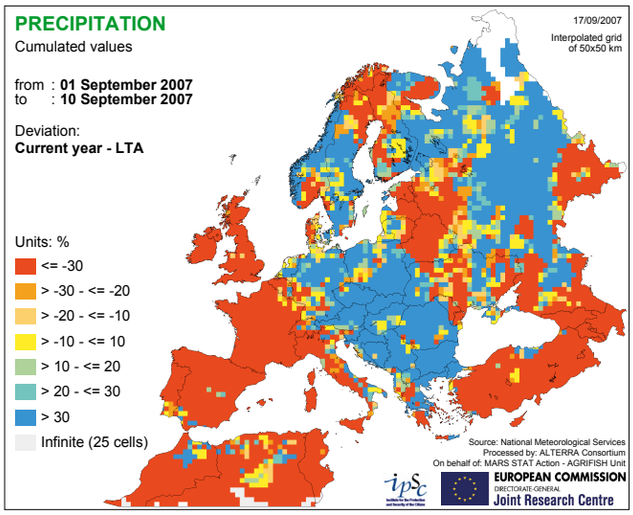
3.2. Rainfall and Temperature

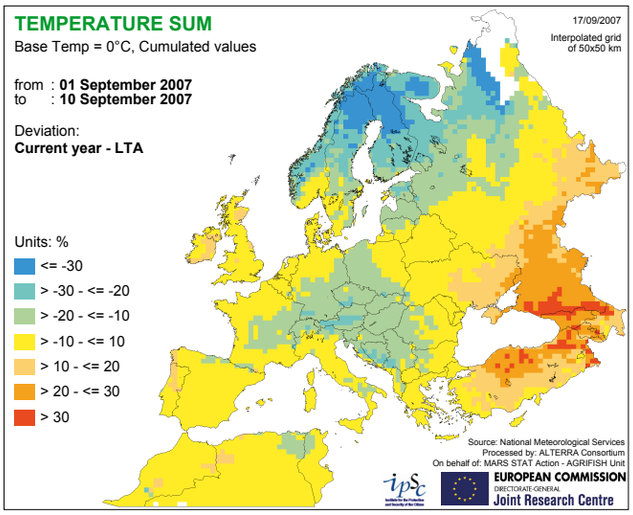




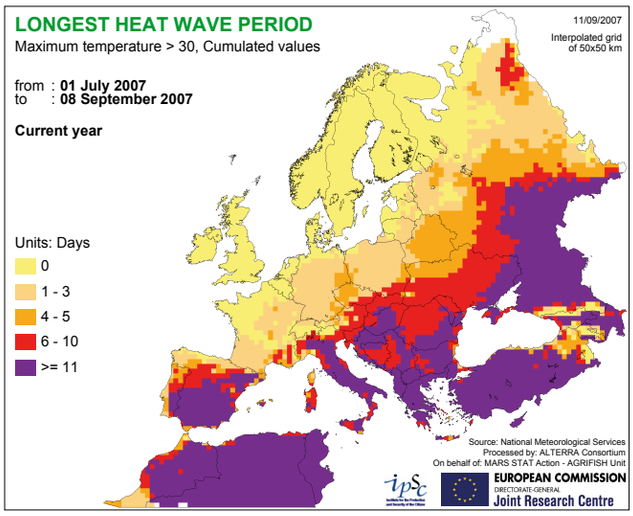


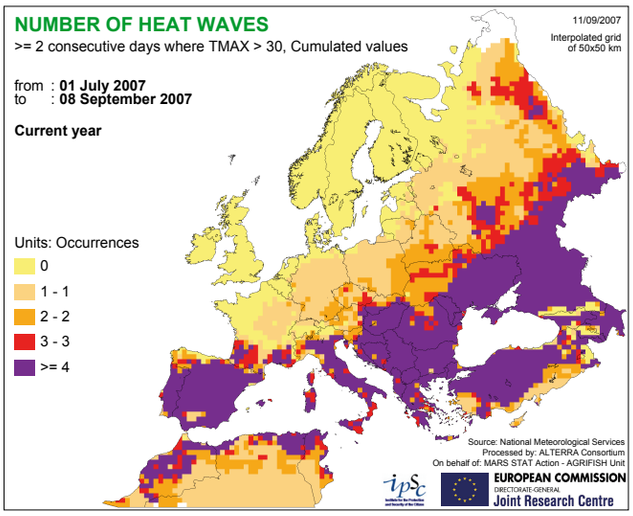


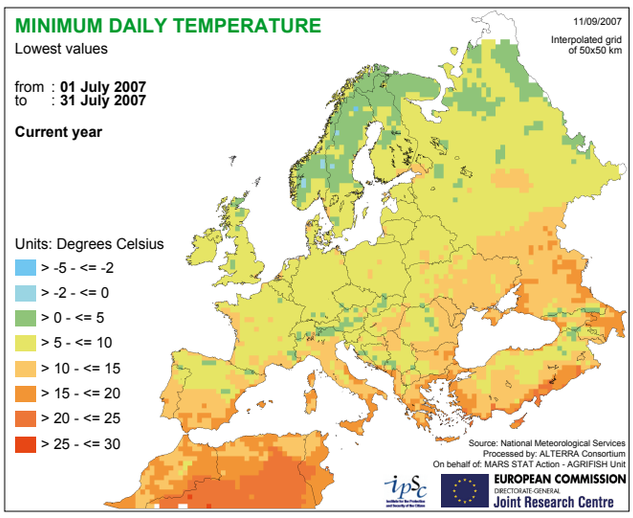


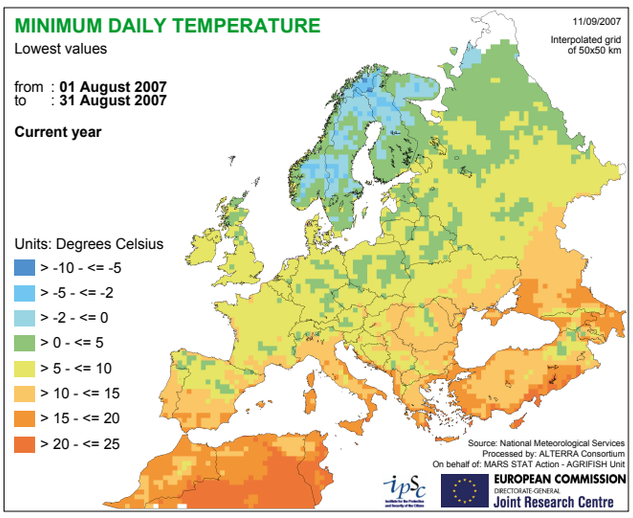


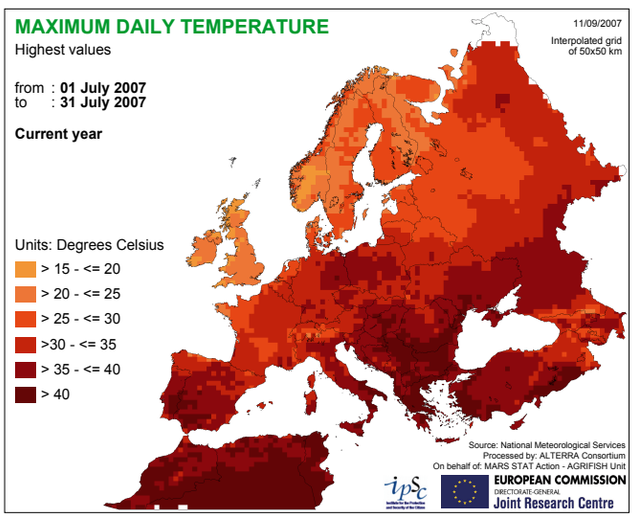
3.3. Extreme Temperature

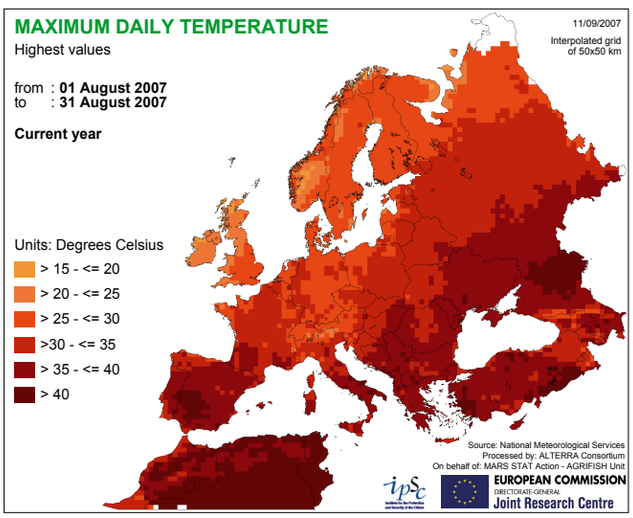




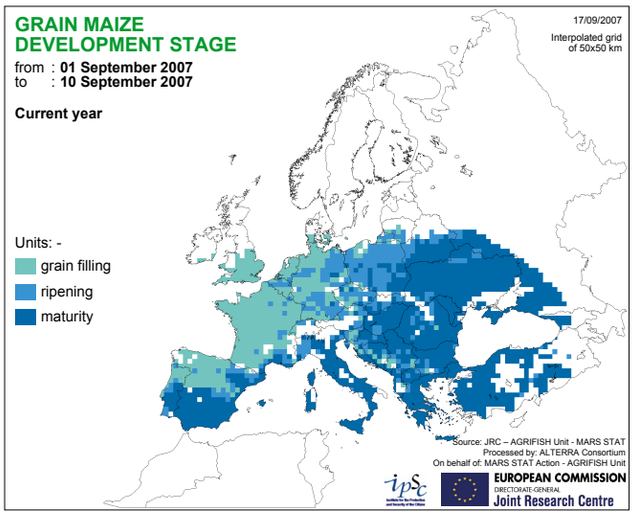


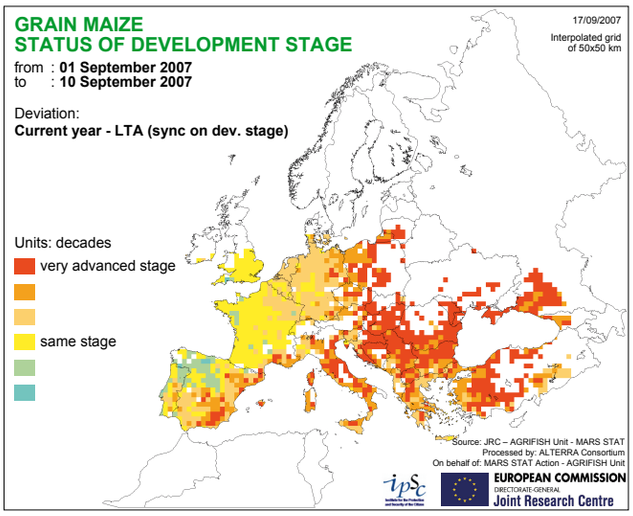


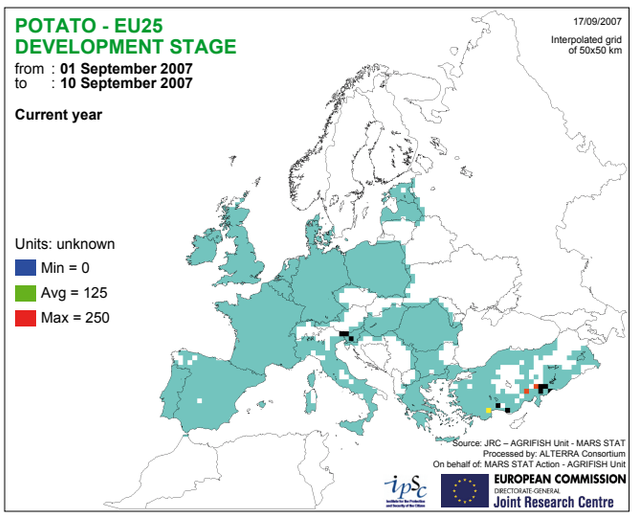


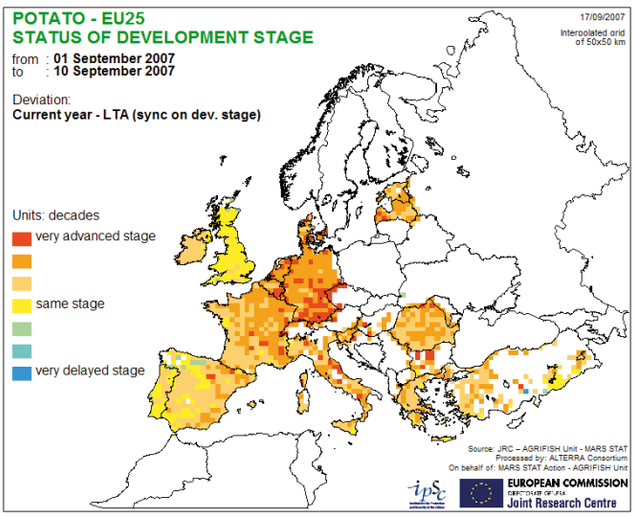


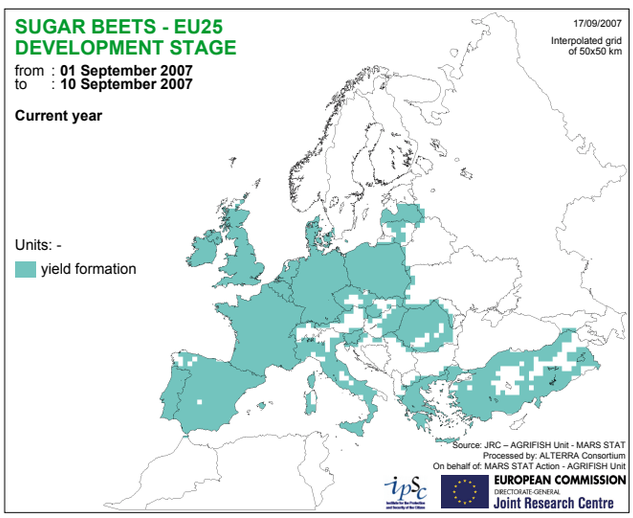
3.4. Crops development stage

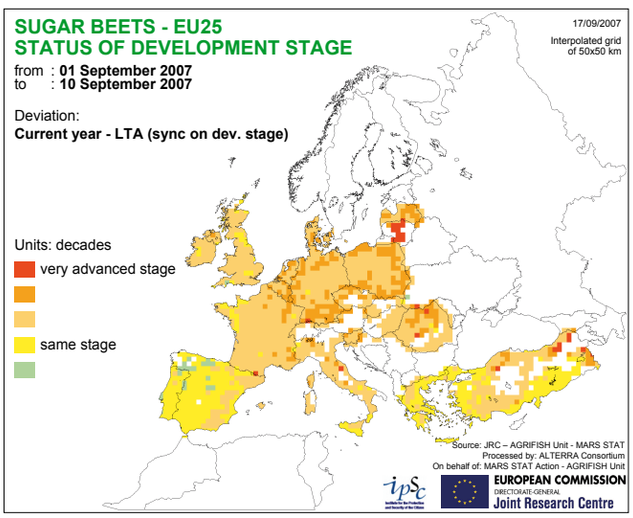








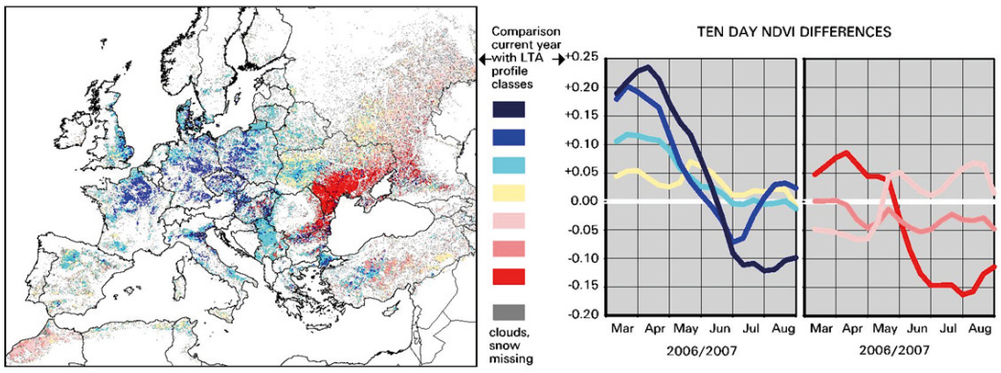




4. SPOT Vegetation satellite anaysis

Normal to better NDVI profiles for most of Europe; worrying season for Romania, Moldova and southern Ukraine

TEN DAY NDVI CLUSTER ANALYSIS OF SPOT VEGETATION DATA FOR ARABLE LAND - DIFFERENCE BETWEEN CURRENT YEAR (2006/2007) AND LONG TERM AVERAGE (1998 - 2006)



The above map shows the results of the cluster analysis of NDVI values throughout the season from March until the end of August compared with the behaviour of the NDVI values in the calculated long-term average year (1998–2006).

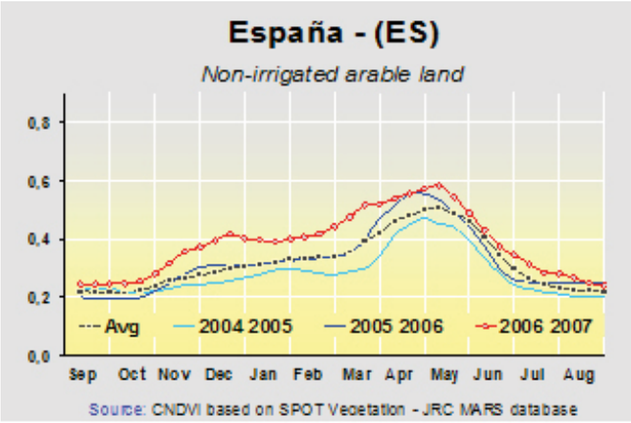
The well-advanced start to the season and the early vegetation boost for large parts of France, Germany and Poland is demonstrated by the blue profiles. They show high values early in the season compared to the long-term average and then a significant drop below the long-term average, due to the advanced cycle. Nevertheless, the cumulated NDVI values from March until August for the majority of arable land in Spain, France, Italy (Po valley) Germany, Denmark and Poland are the highest in the available time series (1998–2006).

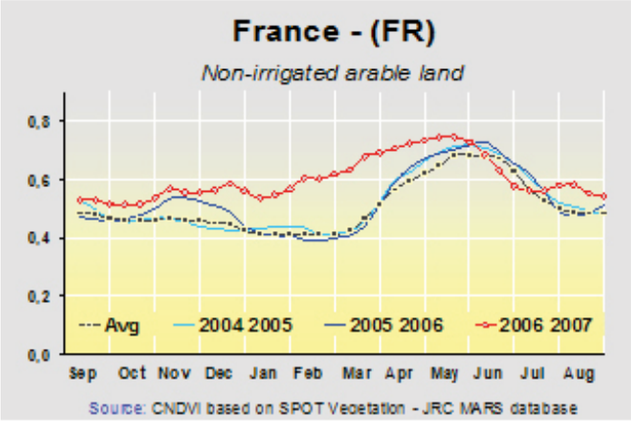
The persistent dry and hot weather in the Black Sea area has left a clear mark in the NDVI values (red class). The season started off well but the biomass development was considerably hindered from May onward entering into an untimely senesce phase and spoiling the yields.

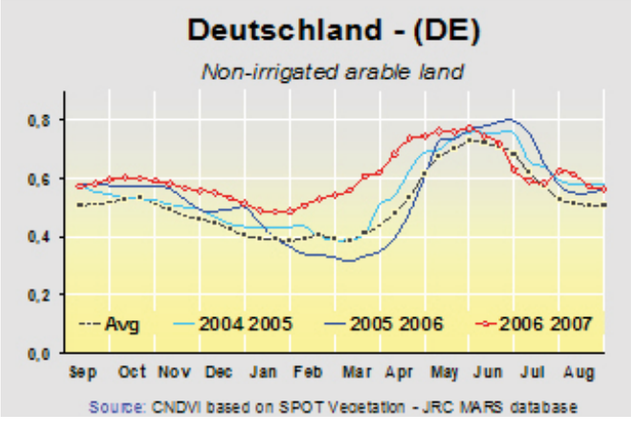
To conclude this year's vegetation cycle, country profiles are chosen. Starting with the Mediterranean countries, Spain has experienced a favourable season. The profile is well above the long-term average all along the season and shows a harmonic development, without the depression of NDVI values that characterised the last two campaigns, where Spain was hit by a drought.

France is characterised by an early start to the season and an early onset of the senescence phase with values well above the long-term average. The recent drop of the values below the long-term average is owed to the advanced cycle. According to the C-NDVI values, yield expectations are good.

The profile for Germany shows very similar behaviour, but the overall NDVI maximum reached is below the last two years' maxima.







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