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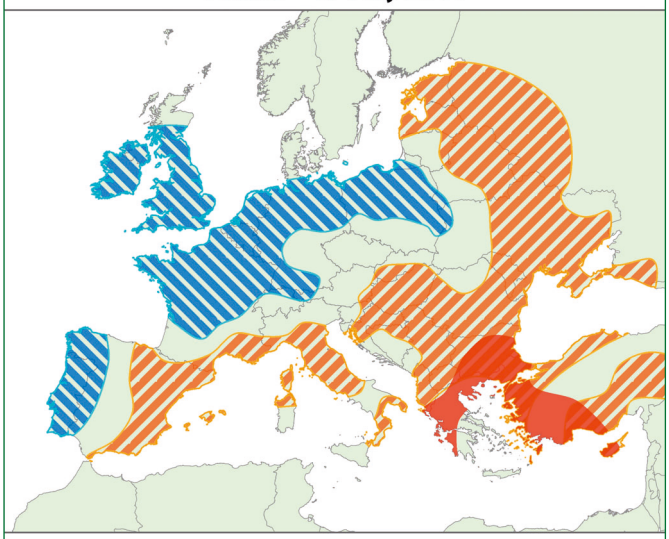
MARS AGROMETEOROLOGICAL Crop Monitoring in Europe

11st May 2007 to 10th July 2007

Vol. 15, No 4

Heat waves, droughts and excessive rain brings mixed results

Areas of Concern
1 June - 17 July 2007



Dry conditions | Heat wave | Excess of precipitation

1. Crop yield forecasts

Compared with the average for the past five years, the **main crop yields prospects at EU-27** level are: soft wheat ± 0 %; durum wheat + 13.5; barley + 3.4 %; grain maize – 0.8 %; rapeseed – 5.1 %; sunflower – 3.4 %; potato + 8.1 %; and sugar beet + 4.2 %. **Crop areas for cereals** are expected to **decrease in total by 2.3 %**.

The final **EU-27 cereal production** could be not more than **276 million tonnes**, a result about 5 million tonnes (– 1.6 %) lower than the average but 10 million tonnes higher than in 2006.

In terms of production, the most important **areas affected by the unfavourable weather** conditions are:

Romania – 20.1 % for wheat yield compared with the average, – 19.9 % for barley, – 17.7 % for maize, – 16.9 % for sunflower, – 50 % for rapeseed; **Bulgaria** – 14.6 % for barley yield compared with the average, – 12.4 % for soft wheat, – 40.4 % for maize, – 20.0 % for sunflower;

Hungary – 6.7 % for maize yield compared with the average, – 7.9 % for potato, – 5.9 % for barley;

Slovakia – 8.9 % for soft wheat compared with the average, – 2.0 % for winter barley, – 15.6 % for rapeseed; and the **Czech Republic** – 7.1 % for soft wheat yield compared with the average, – 7.7 % for barley.

MARS STAT yield forecasts: 17 July 2007

CROPS	European Union 27 Yield (t/ha)				
	2006	2007	Average 5 years	% 2007/06	% 2007/ Average
TOTAL CEREALS	4.7	**4.8**	4.7	+2.1	+0.7
Soft wheat	5.4	**5.4**	5.4	+1.3	-0.0
Durum wheat	3.0	**3.0**	2.7	+1.3	+13.5
Total wheat	5.1	**5.2**	5.0	+1.5	+2.3
Total barley	4.1	**4.3**	4.2	+5.7	+3.4
Grain maize	6.5	**6.4**	6.5	-1.9	-0.8
Other cereals (1)	2.9	**3.0**	3.2	+3.8	-4.3
Rape seed	3.0	**2.9**	3.0	-4.3	-5.1
Sunflower	1.7	**1.6**	1.6	-7.5	-3.4
Potato	25.6	**28.9**	26.7	+12.8	+8.1
Sugar beet	58.7	**60.3**	57.9	+2.7	+4.2

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

Contents

EUROPEAN COMMISSION
Joint Research Centre

EC publication from JRC/IPSC/Agrifish/MARS_STAT: mars-stat@jrc.it
MARS bulletin: http://agrifish.jrc.it/marsstat/bulletins/2007.htm
MARS agrometeorological database: http://www.marsop.info

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MARS STAT yield forecasts at national level for EU27: 17 July 2007

Country	TOTAL WHEAT					SOFT WHEAT					DURUM WHEAT				
	Yield t/ha					Yield t/ha					Yield t/ha				
	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average
EU27	5.08	**5.2**	5.0	+1.5	+2.3	5.37	**5.44**	5.4	+1.3	-0.0	2.98	**3.02**	2.7	+1.3	+13.5
AT	4.91	**5.0**	5.0	+2.7	+0.1	4.91	**5.10**	5.1	+3.9	+0.4	4.82	**4.02**	4.3	-16.6	-7.2
BE	8.17	**9.0**	8.5	+9.9	+6.0	8.17	**8.60**	8.5	+5.3	+1.5	-	-	-	-	-
BG	3.27	**2.7**	3.1	-16.2	-12.4	3.24	**2.72**	3.1	-16.0	-12.8	4.52	**3.85**	3.3	-14.8	+16.0
CZ	4.49	**4.5**	4.8	-0.7	-7.1	4.49	**4.46**	4.8	-0.7	-7.1	-	-	-	-	-
DE	7.21	**7.5**	7.3	+4.6	+4.0	7.21	**7.54**	7.3	+4.6	+4.0	-	-	-	-	-
DK	7.00	**7.1**	7.1	+1.1	-0.3	7.00	**7.08**	7.1	+1.1	-0.3	-	-	-	-	-
EE	2.42	**2.4**	2.5	+0.4	-2.4	2.42	**2.43**	2.5	+0.4	-2.4	-	-	-	-	-
ES	2.85	**3.3**	2.7	+15.2	+23.0	3.00	**3.56**	3.0	+18.7	+18.3	2.52	**2.63**	2.2	+4.4	+21.8
FI	3.56	**3.4**	3.5	-3.9	-1.7	3.56	**3.42**	3.5	-3.9	-1.7	-	-	-	-	-
FR	6.75	**7.2**	7.0	+6.2	+2.4	6.94	**7.37**	7.2	+6.2	+2.5	4.64	**5.03**	4.7	+8.4	+7.2
GR	2.26	**2.1**	2.1	-6.9	+1.2	2.95	**2.55**	2.9	-13.6	-10.8	2.15	**2.02**	2.0	-6.0	+3.1
HU	4.06	**4.0**	4.0	-2.2	+0.0	4.06	**3.97**	4.0	-2.2	+0.0	-	-	-	-	-
IE	8.76	**9.4**	8.8	+7.2	+6.7	8.76	**9.39**	8.8	+7.2	+6.7	-	-	-	-	-
IT	3.68	**3.7**	3.4	+0.0	+9.2	5.48	**5.37**	5.1	-2.0	+5.7	2.90	**2.90**	2.7	+0.0	+6.6
LT	2.36	**3.2**	3.5	+34.7	-8.4	2.36	**3.18**	3.5	+34.7	-8.4	-	-	-	-	-
LU	5.97	**6.2**	6.2	+3.9	+0.3	5.97	**6.20**	6.2	+3.9	+0.3	-	-	-	-	-
LV	2.80	**2.9**	3.1	+5.0	-5.2	2.80	**2.94**	3.1	+5.0	-5.2	-	-	-	-	-
NL	8.55	**8.6**	8.5	+0.7	+0.8	8.55	**8.61**	8.5	+0.7	+0.8	-	-	-	-	-
PL	3.24	**3.6**	3.8	+11.1	-4.0	3.24	**3.60**	3.8	+11.1	-4.0	-	-	-	-	-
PT	2.33	**1.8**	1.5	-24.9	+20.7	2.33	**1.75**	1.6	-24.9	+11.5	-	-	-	-	-
RO	2.75	**2.0**	2.5	-27.6	-20.1	2.75	**1.99**	2.5	-27.6	-20.1	-	-	-	-	-
SE	5.46	**6.1**	5.9	+11.4	+2.7	5.46	**6.08**	5.9	+11.4	+2.7	-	-	-	-	-
SI	4.19	**4.8**	4.4	+13.6	+9.4	4.19	**4.76**	4.4	+13.6	+9.4	-	-	-	-	-
SK	3.82	**3.6**	4.0	-5.8	-8.9	3.82	**3.60**	4.0	-5.8	-8.9	-	-	-	-	-
UK	8.04	**8.0**	7.9	-0.7	+0.8	8.04	**7.98**	7.9	-0.7	+0.8	-	-	-	-	-

Country	TOTAL BARLEY					GRAIN MAIZE					RAPE SEED				
	Yield t/ha					Yield t/ha					Yield t/ha				
	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average
EU27	4.08	**4.3**	4.2	+5.7	+3.4	6.54	**6.42**	6.5	-1.9	-0.8	2.97	**2.85**	3.0	-4.3	-5.1
AT	4.43	**4.5**	4.5	+0.5	-2.0	9.24	**10.16**	9.4	+10.0	+8.4	3.22	**2.30**	2.7	-28.8	-16.2
BE	7.50	**7.6**	7.4	+1.6	+3.0	10.19	**11.86**	11.2	+16.4	+6.3	-	-	-	-	-
BG	2.94	**2.4**	2.8	-18.4	-14.6	4.53	**2.67**	4.5	-41.1	-40.4	1.80	**1.56**	1.6	-12.9	+0.0
CZ	3.59	**3.7**	4.0	+3.9	-7.7	6.75	**7.43**	6.9	+10.1	+8.2	3.01	**2.61**	2.7	-13.5	-2.1
DE	5.91	**6.1**	5.8	+2.7	+4.5	8.03	**9.06**	8.6	+12.8	+5.1	3.73	**3.62**	3.5	-3.2	+3.6
DK	4.82	**5.1**	5.1	+5.0	-1.4	-	-	-	-	-	3.06	**3.00**	3.2	-2.2	-5.7
EE	2.13	**2.4**	2.2	+11.3	+9.2	-	-	-	-	-	1.35	**1.32**	1.6	-2.4	-16.8
ES	2.57	**3.3**	2.6	+28.0	+28.0	9.79	**10.96**	9.7	+12.0	+13.2	-	-	-	-	-
FI	3.49	**3.3**	3.3	-4.9	+0.0	-	-	-	-	-	1.37	**1.37**	1.3	-0.2	+6.1
FR	6.23	**6.4**	6.3	+3.4	+1.7	8.55	**8.91**	8.4	+4.2	+5.9	2.95	**3.18**	3.3	+7.9	-3.6
GR	2.50	**2.3**	2.3	-8.4	+1.3	9.00	**8.68**	8.9	-3.6	-2.5	-	-	-	-	-
HU	3.68	**3.2**	3.4	-13.6	-5.9	6.87	**5.68**	6.1	-17.3	-6.7	2.34	**2.20**	2.1	-5.8	+4.5
IE	6.50	**6.6**	6.4	+0.8	+2.3	-	-	-	-	-	-	-	-	-	-
IT	3.88	**3.6**	3.7	-7.2	-1.4	8.73	**9.52**	8.9	+9.0	+6.7	-	-	-	-	-
LT	1.94	**2.5**	2.6	+27.8	-3.9	-	-	-	-	-	1.12	**1.65**	1.7	+46.4	-3.7
LV	2.02	**2.0**	2.1	-0.5	-4.3	-	-	-	-	-	1.56	**1.93**	1.7	+24.2	+11.3
NL	5.98	**6.2**	6.0	+3.3	+3.0	17.86	**13.09**	13.4	-26.7	-2.1	-	-	-	-	-
PL	2.59	**2.8**	3.1	+8.9	-7.8	4.16	**5.79**	5.4	+39.2	+7.0	2.65	**2.44**	2.5	-7.8	-1.2
PT	2.11	**1.6**	1.5	-22.7	+9.4	5.37	**6.33**	5.4	+17.9	+17.0	-	-	-	-	-
RO	2.33	**1.9**	2.3	-20.6	-19.9	3.62	**2.98**	3.6	-17.7	-17.7	1.59	**0.61**	1.2	-61.4	-50.6
SE	3.60	**4.4**	4.2	+22.2	+6.0	-	-	-	-	-	2.45	**2.73**	2.4	+11.6	+12.5
SI	3.62	**3.7**	3.7	+3.3	+2.5	6.93	**7.96**	7.3	+14.9	+9.8	-	-	-	-	-
SK	3.47	**3.5**	3.6	+0.3	-2.0	5.47	**5.87**	5.6	+7.3	+5.4	2.10	**1.72**	2.0	-18.1	-15.6
UK	5.94	**5.9**	5.8	-1.0	+1.0	-	-	-	-	-	3.39	**3.29**	3.3	-2.8	+0.9

Publication issue

The fourth 2007 printed MARS analysis (Vol. 15, No 4) 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.

Previous related analysis available:

— Climatic updates, 31/05/2007 to 31/06/2007 (CU2007/07)

— Climatic updates, 10/05/2007 to 30/05/2007 (CU2007/06)

— Climatic updates, 16/04/2007 to 30/04/2007 (CU2007/05)

— Climatic updates, 20/03/2007 to 15/04/2007 (CU2007/04)

— Complete Bulletin, 01/04/2007 to 31/03/2007 (Vol. 15, No2)

— Climatic updates, 25/02/2007 to 14/03/2007 (CU2007/03)

— Climatic updates, 01/02/2007 to 25/02/2007 (CU2007/02)

Next printed issue:

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Contributions

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MARS STAT yield forecasts at national level for EU27: 17 July 2007

Country	SUNFLOWER					SUGAR BEETS					POTATO				
	Yield t/ha					Yield t/ha					Yield t/ha				
	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average
EU27	1.71	**1.6**	1.6	-7.5	-3.4	58.73	**60.32**	57.9	+2.7	+4.2	25.58	**28.85**	26.7	+12.8	+8.1
AT	2.44	**2.7**	2.7	+11.4	+2.4	63.28	**68.57**	64.9	+8.4	+5.6	29.86	**31.63**	30.6	+5.9	+3.5
BE	-	**-**	-	-	-	68.34	**69.63**	69.5	+1.9	+0.1	38.55	**46.54**	43.9	+20.7	+6.0
BG	1.59	**1.2**	1.5	-25.3	-20.1	-	**-**	-	-	-	15.78	**13.66**	15.5	-13.4	-11.7
CZ	2.14	**2.3**	2.3	+5.2	-0.1	51.48	**52.02**	50.0	+1.0	+4.1	23.05	**25.68**	23.5	+11.4	+9.2
DE	1.93	**2.3**	2.1	+21.1	+10.8	57.74	**60.98**	58.2	+5.6	+4.7	36.57	**41.68**	39.3	+14.0	+6.1
DK	-	**-**	-	-	-	55.86	**58.30**	57.8	+4.4	+0.9	35.25	**39.56**	38.8	+12.2	+2.1
EE	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	-	-	-
ES	0.96	**1.1**	1.0	+14.0	+15.2	69.57	**69.68**	69.3	+0.2	+0.6	28.79	**28.68**	27.2	-0.4	+5.3
FI	-	**-**	-	-	-	39.83	**37.78**	35.6	-5.1	+6.1	20.49	**25.09**	23.0	+22.5	+8.9
FR	2.24	**2.5**	2.3	+9.4	+6.1	78.44	**79.11**	78.1	+0.9	+1.3	40.21	**43.00**	42.1	+6.9	+2.1
GR	1.20	**1.2**	1.3	+1.7	-4.1	59.26	**61.25**	61.2	+3.4	+0.1	33.80	**24.43**	26.0	-27.7	-5.9
HU	2.18	**2.1**	2.1	-1.9	+0.6	50.76	**46.78**	47.3	-7.9	-1.1	25.44	**24.18**	23.5	-5.0	+3.0
IE	-	**-**	-	-	-	-	**-**	-	-	-	40.01	**38.95**	36.9	-2.7	+5.7
IT	2.13	**2.1**	2.1	-3.6	-0.1	52.76	**51.50**	47.9	-2.4	+7.5	24.61	**24.91**	24.1	+1.2	+3.2
LT	-	**-**	-	-	-	38.76	**36.32**	38.0	-6.3	-4.3	8.00	**13.96**	12.8	+74.6	+9.1
LU	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	-	-	-
LV	-	**-**	-	-	-	38.00	**37.16**	37.9	-2.2	-1.8	12.00	**13.30**	13.5	+10.8	-1.2
NL	-	**-**	-	-	-	62.21	**63.79**	61.9	+2.5	+3.1	41.99	**45.51**	43.3	+8.4	+5.1
PL	-	**-**	-	-	-	43.79	**43.56**	42.7	-0.5	+2.0	15.04	**18.21**	17.9	+21.1	+1.7
PT	-	**-**	-	-	-	-	**-**	-	-	-	13.94	**18.25**	14.8	+30.9	+23.5
RO	1.54	**1.1**	1.4	-25.6	-16.9	28.94	**18.44**	26.0	-36.3	-29.1	14.44	**14.51**	14.4	+0.4	+0.9
SE	-	**-**	-	-	-	49.55	**49.03**	48.8	-1.0	+0.4	27.59	**27.32**	29.3	-1.0	-6.8
SI	-	**-**	-	-	-	-	**-**	-	-	-	-	**-**	-	-	-
SK	2.10	**2.0**	2.0	-3.9	-0.6	49.51	**48.42**	45.7	-2.2	+5.9	14.26	**15.68**	15.8	+9.9	-0.8
UK	-	**-**	-	-	-	56.30	**60.52**	57.2	+7.5	+5.7	41.94	**41.64**	42.3	-0.7	-1.5

MARS STAT yield forecasts at national level for EU27: 17 July 2007

Country	WHEAT					BARLEY					GRAIN MAIZE				
	Yield t/ha					Yield t/ha					Yield t/ha				
	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% 2007/ Average	2006*	2007	Avg. 5yrs	% 2007/06	% Ave
DZ	0.88	**1.2**	1.3	+34.7	-5.8	1.44	**1.4**	1.4	-2.0	+2.9	-	**-**	-	-	
MA	1.02	**0.8**	1.4	-21.3	-43.0	0.50	**0.6**	0.8	+15.0	-31.3	-	**-**	-	-	
TN	1.50	**1.8**	1.7	+17.5	+4.5	0.82	**1.0**	0.9	+19.5	+6.6	-	**-**	-	-	
TR	2.20	**2.1**	2.2	-5.7	-5.3	2.52	**2.4**	2.5	-5.4	-3.3	6.19	**5.4**	5.6	-12.7	-
UA	2.65	**2.0**	2.6	-23.9	-23.3	2.31	**1.5**	2.2	-33.8	-29.2	3.78	**3.9**	3.8	+3.4	+

MARS Agrometeorological web database is accessible at: http://www.marsop.info

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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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2. Agrometeorological overview

A warmer than seasonal May (especially during the second half), more seasonal in June (with a brief but intense hot spell), and cooler in the first part of July; very wet in the northern EU, whilst quite dry in eastern Spain, central Italy, Black Sea areas and Russia

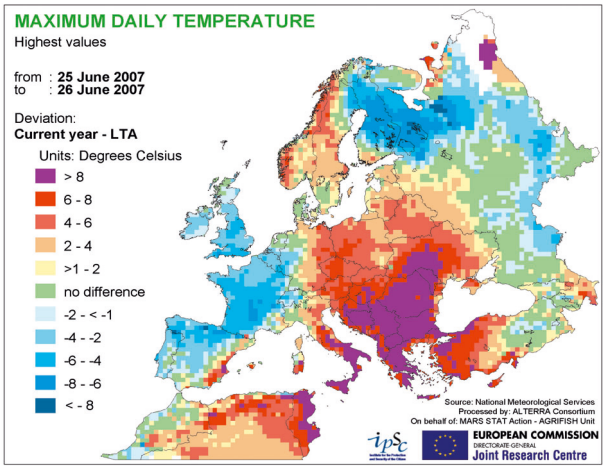
Temperatures and evapotranspiration

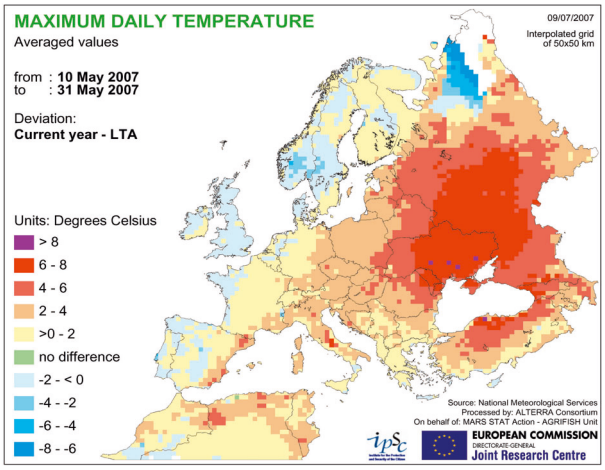
The anomalous thermal conditions which occurred in winter continued during spring: **May** was characterised by a strong west–east thermal gradient (mainly on maximum daily values) with cooler conditions along the Atlantic and North Sea line (on average 2 to 3 °C below the LTA) and with a progressive increase eastward up to Ukraine, the Black Sea, Turkey and Russia, where the maximum values were even 6 to 8 °C above the seasonal average. Consequently, the cumulated active temperatures (GDD with Tbase = 0 °C) presented significantly higher values for the majority of the continent (except in the western EU): on average 60 to 70 GDD above the LTA, with the maximum in Ukraine (100 to 120 GDD) and Turkey (120 to 140 GDD). Locally, many territories on the Mediterranean basin also experienced warmer than seasonal temperatures; i.e. the eastern coast of Spain, central Italy, Algeria and Tunisia.

June started with more normal conditions in the southern EU but remained warmer in northern latitudes. During the month the 'warm wave' moved south-eastwards, invading progressively the central and eastern EU and then the southern countries and central Mediterranean. Between 25 and 26 June a very hot wave blew from Africa through Tunisia and covered southern Italy, Greece and the Baltic Peninsula up to southern Ukraine. Maximum temperatures shot up, reaching very anomalous values (15 to 16 °C above the average), and in many cases they were above 40 °C, for example 47.0 °C in Puglia (IT), 45.3 °C in Sterea Ellada (EL), 44.6 °C in Thessaly (EL), 43.5 °C in Basilicata (IT), 42.4 °C in Macedonia, and 42.1 °C in Yugozapaden (BG). Meanwhile, colder fluxes were attracted from the northern latitudes affecting the western EU and Finland.

In **July** the thermal conditions which occurred at the end of June persisted. Slightly cooler than normal temperatures (mainly on maximum daily values) occurred in the central and northern EU, but temperatures remained slightly higher in the Mediterranean, Baltic Peninsula and Black Sea.

The unusually warmer thermal conditions impacted on crops, accelerating the growth and increasing the evapotranspiration and thus the crop water demand.





Rainfall and climatic water balance

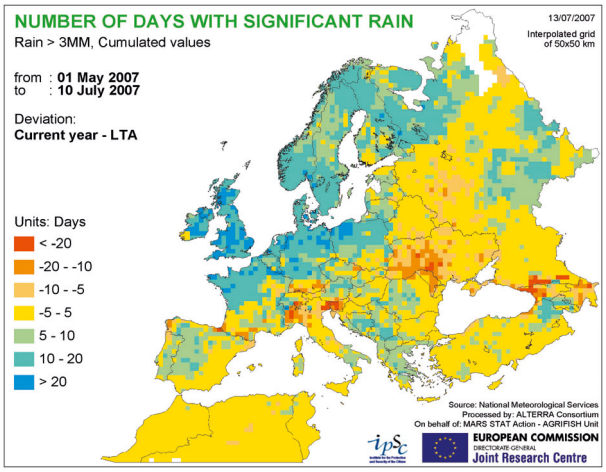
Rain supply was alarmingly low in the Black Sea areas and Russia. In contrast, it was very wet in the central and northern EU (except Finland). Conditions were favourable in Portugal and western Spain.

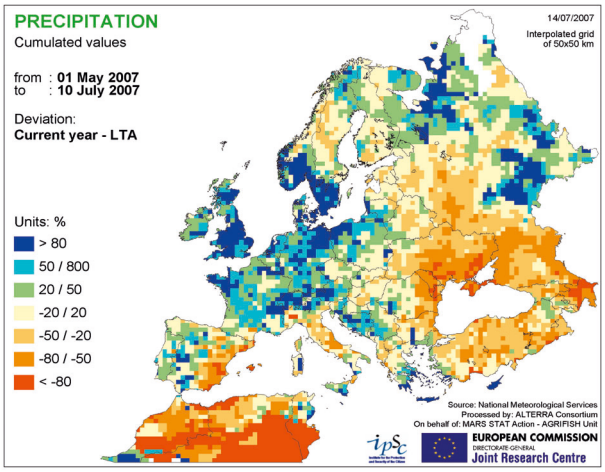
The whole period was characterised by a general abundant rainfall in the majority of the EU territories, except eastern Spain, northern and central Italy, western Romania and western Bulgaria. In contrast, light rain and quite persistent dry conditions occurred in the Black Sea basin, Turkey and Russia.

A prominent phenomenon occurred in **May**, **June** and **July** (except during the first dekad of May and the first of June): a particular and quite stable synoptic circulation pattern with higher pressure on the Mediterranean Basin and low pressure centred on the North Sea. That configuration pushed the Atlantic rainy fronts into northern and central Europe and at the same time blocked them on the Alps. Therefore, the rain was quite persistent and abundant in the British Isles, northern France, Benelux, Germany, Poland, Denmark and Sweden, but Portugal and northern Spain also received more than the seasonal amount of rain. In contrast, the areas south of the Alps (Po Valley and central Italy), eastern and south-eastern Spain, the Maghreb countries, eastern countries (namely Ukraine and the Black Sea area) and part of Hungary experienced significant rain shortages.

In the wet areas the largest difference from the seasonal average was recorded in Great Britain (Wales, with more than 560 mm compared with the 150 mm expected, +280 %; west Midlands, 530 mm compared with 150 mm, + 260 %), In central and east France (+ 50 to 55 % as compared with the LTA), central and north-eastern Germany (+ 90 to 100 %, equivalent to 250 mm as compared with 120 mm), north-western Poland (+ 210 % with 380 mm of cumulated rain). In those areas the rain was persistent: on average, they experienced 10 to 15 or even 20 rainy days more than the expected (out of 70 days of the period considered).

In contrast, in the drier areas the largest difference was recorded in northern Italy (Piedmont, Lombardy, Friuli-Venezia with – 200/– 160 mm, equivalent to – 90/– 80 % compared with the LTA), eastern Spain (– 70/– 80 %), eastern Romania and Bulgaria (– 40/– 50 %), central and southern Ukraine (– 80/– 70 %), Turkey (– 20/– 30 %), western Russia.





3. Campaign Analysis at country level

Europe 27

France: precipitations and showers hindered first crop harvest

The temperature was higher than the seasonal value up to the last dekad of June and beginning of July, when it dropped significantly in the south-west and then in the north-east.

After a dry period, the country benefited from rainy conditions from the second dekad of May, recovering partially from the low soil moisture. The beginning of June, drier again than average, was followed by an over wet period, particularly during the second dekad of June, with intensive precipitations. The beginning of July was again over wet for most of the country. The Mediterranean border areas and south-west received lower rainfall than normal from the end of June onwards.

In June, due to the cloudy conditions, radiation was lower than normal and in the northern area suboptimal for the vegetative development.

Rapeseed reached maturity almost one month in advance in the main production regions in the Paris Basin. After a dry spell up to May, the crop could complete its cycle under optimal soil moisture up to maturity. However, the general fast crop development associated with a dry spell restricted the vegetative biomass production, reducing the crop yield capacity. Moreover, despite the earlier stage, the harvest could have been delayed by the wet conditions from the second dekad of June and the final quality reduced. The 2007 yield is still estimated at **3.2 t/ha** as previous bulletin figures, **lower than the five-year average** by – 3.7 %.

The main areas of **durum wheat** production in Sud-Ouest, Languedoc-Roussillon and Provence-Alpes-Cotes d'Azur received good rainfall in the last part of the crop cycle that contributed to optimal ripening and maturity phases. The anticipated harvest could be done mostly in normal conditions. In Centre, the other main production region, the conditions were not so optimal due to the continuous showers and precipitations at harvest time. However, as a whole, the yield forecast is still promising and we maintain the last bulletin figures with 5.03 t/ha, + 7.2 % compared with the five-year average.

Winter wheat recovered from the low soil moisture in May. However, the soil moisture reached exceptionally high levels in June to July. The conditions were over wet in the western areas and some regions in the east and north, like Franche-Comté, Basse-Normandie. The earliest harvest was hindered but could be made in between the showers and precipitation days. These general wet conditions at maturity stage could be favourable for crop diseases. The intensive precipitations could also have locally facilitated crop lodging, reducing the yield potential. The foreseen coming dry days will be very important for the harvest of the main wheat areas and will be determinant for the final crop yield particularly in the Paris Basin. The yield forecast is still at a higher level than the average, with 7.37 t/ha (+ 2.5 %). However, we reduced the previous bulletin figures by 100 kg to take into consideration the suboptimal conditions

Winter barley should have also suffered from these wet conditions even if it is matured earlier than soft wheat. The yield forecast is lowered by 100 kg compared with the last bulletin and reaches 6.7 t/ha, + 1.7 % higher than average.

Most of the spring and summer crops benefited from the abundant rainfalls and saved irrigation. The foreseen high temperature will boost the crops that will grow under optimal conditions at an advanced stage. We forecast a good potential for most of the crops.

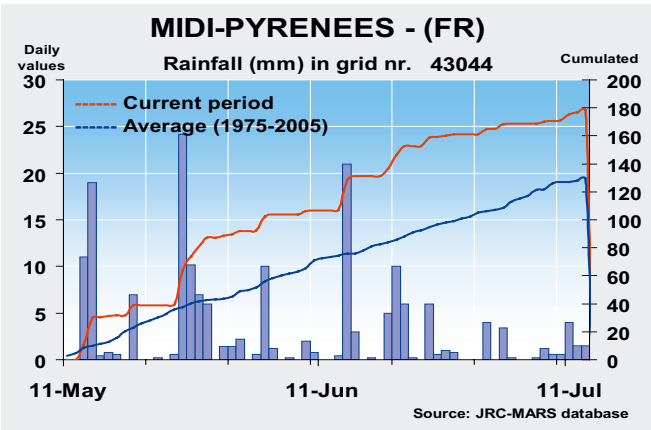
For **grain maize** we maintained the previous yield forecast: 8.91 t/ha, + 5.9 % on the five-year average.

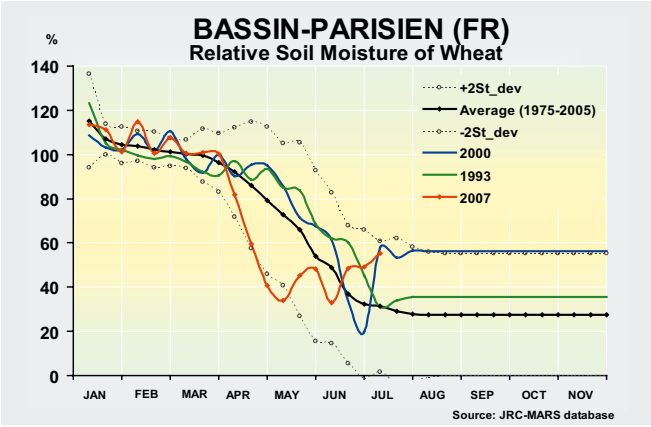
Spring barley is slightly reduced from 6.0 t/ha to 5.9 t/ha still + 0.3 % above average.

For **potato** the condition remained excellent; we kept the previous forecast 43 t/ha, + 2.1 %.

Sugar beet is still at the beginning of the cycle and we maintained the good potential of 79.1 t/ha, very close to the last five-year average, + 1.3 %.

Sunflower is foreseen with 2.5 t/ha, + 6.1 %.





Germany: further dry days determinant for the final harvest results

The average temperature from mid-May remained 20 to 30 % higher than the normal up to the third dekad of June when it reached average to lower values particularly in the south-east. At around 30 °C, maximum daily temperatures did not reach extremes values.

After a dry spell in April, the country experienced a wet period from 10 May to 10 July. The rainfall remained at least 30 % higher than the seasonal value, except during the dry first dekad of June. The Bayern region also got lower precipitation around mid-May. From mid-June to mid-July the country received at least 100 mm; the northern area received up to 190 mm. The precipitations were continuous from mid-June with some heavy showers (20 to 30 mm a day) that could facilitate lodging.

Winter rapeseed benefited from the precipitation from May that replenished the soil moisture favourably for grain filling. However, due to the mild temperature, the whole crop cycle was shortened, reducing optimum vegetative production and the grain-filling capacity. Thanks to a much earlier maturity the harvest might have been done before or in between the heavy precipitations, to keep a normal yield potential.

The forecast gives 3.6 t/ha, which is still + 3.6 % higher than the last five-year average.

The winter cereals continued their fast development and reached from maturity in the southern to grain filling in the north. Thanks to normal temperatures at the end of the period, the grain filling could take place more slowly. The earlier possible harvest in the south should have been delayed, due to the precipitations, or done in suboptimal conditions. However, these over wet conditions could have a lower than expected impact, particularly in the north, with light and draining soil. The crops are reaching the harvest period and from mid-July. A dry window is foreseen that could allow harvesting, even if it is later than the early crop stage led to expect. The next meteorological conditions will be determinant for the final crop production.

The **winter wheat** yield forecast was slightly lower compared with the last bulletin but we still kept a good potential with 7.54 t/ha, 4 % higher than the five-year average. It could go down if the wet conditions continue.

Winter barley, being earlier than wheat, could have benefited from narrow dry windows before July for the earliest harvest. The yield forecast remained unchanged with 6.5 t/ha, still with a better potential than average (+ 3.1 %). As for winter cereals, the coming days will be crucial for the quality and quantity of the grain.

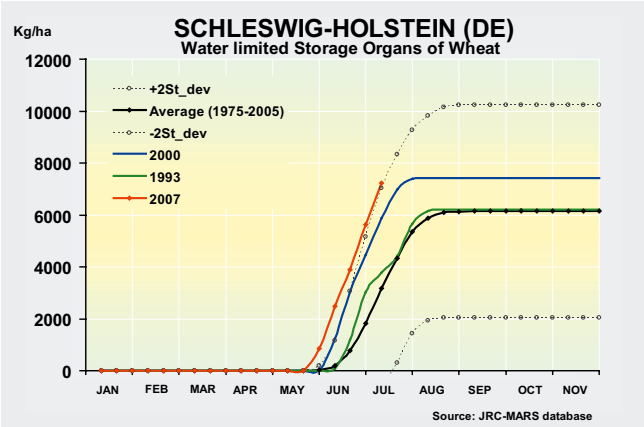
The spring and summer crops could benefit from a good soil moisture and continue an optimal development.

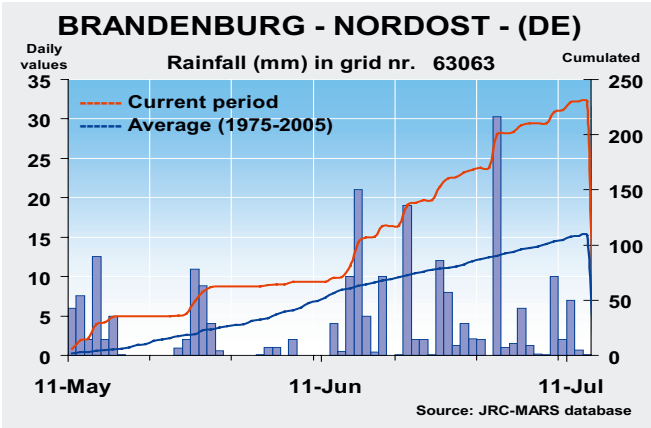
Grain maize is very close to the last bulletin forecast with 9.06 t/ha. The potential is good, within the highest last five-year level (+ 5.1 %), and shows better perspective than last year.

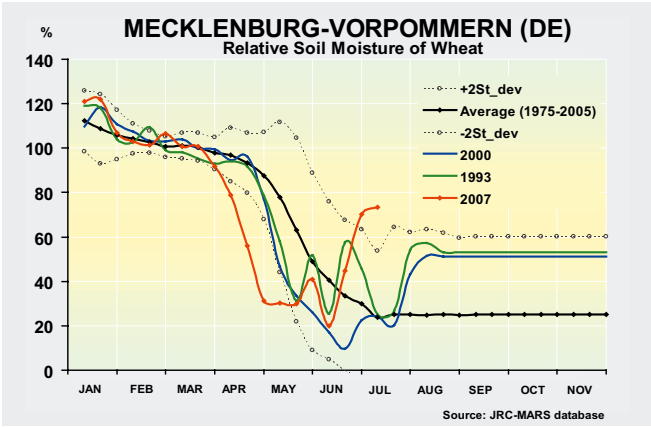
Potato is slightly adjusted to 41.7 t/ha but still with better potential than average (+ 6.1 %).

Spring barley is close to the last bulletin forecast with 4.9 t/ha and better than average (+6.2%).

Sugar beet remains with an excellent potential + 61.0 t/ha (+ 4.7 %).







Belgium, the Netherlands and Luxembourg: beneficial rainfalls

Belgium and to a lesser extent the Netherlands continued to recover partially from the previous dry spell in May. From the second dekad of June they received important precipitations that replenished the soil moisture.

The winter crops could benefit from an optimum water level at critical grain-filling to maturity phases and summer crops continued with optimal vegetative growth. However, the late showers could partially have interfered with the early harvest.

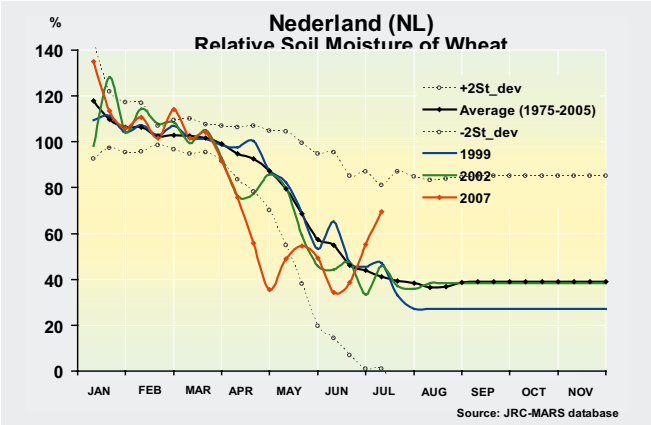
The temperature remained higher than average up to the last dekad of June, when it dropped to normal or slightly below average values slowing down the grain-filling phase.

The **soft wheat** yield is foreseen at 8.6 t/ha in Belgium, 45.5 t/ha in the Netherlands and 6.2 t/ha in Luxembourg, respectively 6 %, 5.1 % and 0.3 % higher than the respective average.

Figures for **winter barley** reached 7.9 t/ha (+ 1.5 %) in Belgium and 6.2 t/ha (+ 3.1 %) for **spring barley** in the Netherlands.

Potato and sugar beet are foreseen with a good potential, respectively 46.5 t/ha and 69.6 t/ha for Belgium, and 45.5 t/ha and 63.8 t/ha for the Netherlands.

Maize is forecast at 11.86 t/ha for Belgium and 13.09 t/ha for the Netherlands.



United Kingdom and Republic of Ireland: very wet with fluctuating temperatures

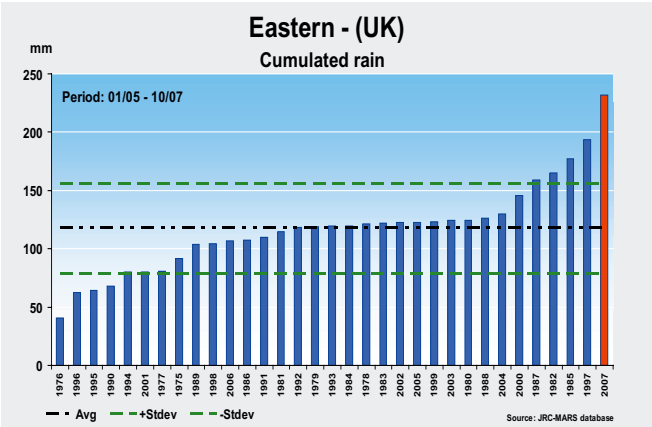
As mentioned in the first chapter of this report, the particular synoptic configuration determined very frequent passages of Atlantic rainy fronts. Therefore, the most relevant phenomenon was the very unseasonable amount of cumulated rain and the higher frequency of the number of rainy days compared with the LTA. In the whole period, in general the agricultural areas received around + 70 to + 180 % of rain compared with the seasonal values (equivalent to 200 to 350 mm), but in west Wales the surplus reached + 280 % (equivalent to 560 mm of rain), in Cheshire + 260 % (equivalent to 530 mm) and in Lincolnshire and Yorkshire + 230 % (equivalent to 405 mm).

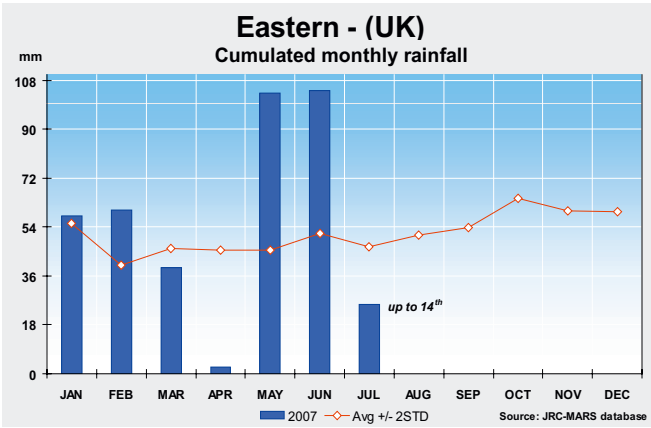
Still very wet conditions, but less unfavourable, also occurred in Ireland, with + 90 % in the south and east (equivalent to 230 mm).

The period of interest in the current year was the wettest recorded since 1975: only 1995 and 1997 reached similar cumulated values. Also the number of rainy days was quite anomalous, and in the current year in central Great Britain and southern Ireland differences larger than 20 days (daily rain > 3 mm) were recorded compared with the LTA.

Surely, the very wet conditions influenced negatively the active crops, depleting the potential yield of those crops (e.g. barley and rapeseed) already partially affected by the water shortages which occurred in the previous months. The rain was also an obstacle for field activities, and probably determined crop lodging while creating very favourable conditions for crop diseases and increasing nitrogen leaching.

In contrast the temperatures were in general within the normal range of variation, even if characterised by large and frequent fluctuations. In June and the first part of July a slight progressive reduction occurred. Therefore, the accelerated crops' development recorded in the previous months was likely to have slowed or slowed slightly, but it still remained quite advanced compared with the LTA.





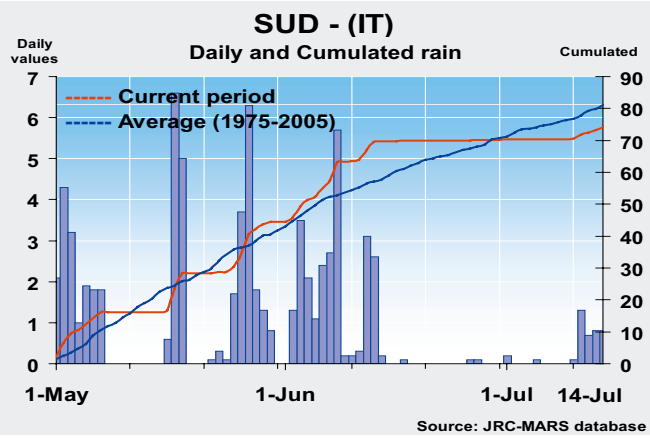
Italy: June was very hot and dry in the south wet in north and dry in the centre

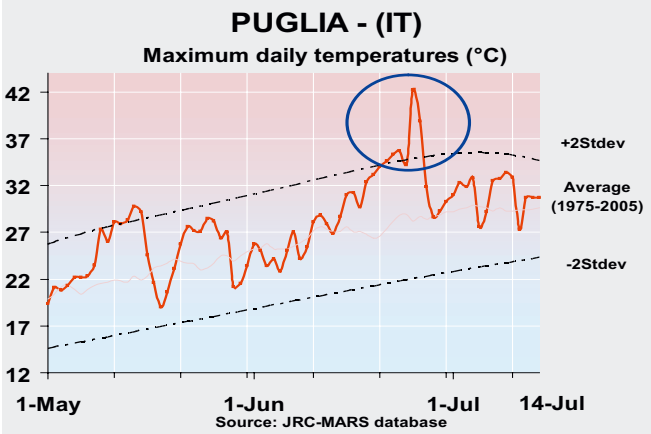
The **anomalous high temperatures** which started at the beginning of April continued throughout **May**. Both minimum and maximum daily values persisted, in many cases, largely above the seasonal averages: on average the temperatures were 2 to 3 °C above the seasonal values, with higher values in central areas. Similar conditions were recorded in 1986, 2000, 2001 and 2003. The cumulated active temperatures also presented surpluses compared with the LTA: 50 to 100 GDD. In this month rain was mainly present at the beginning and at the end, when a temporary change in the synoptic circulation permitted the eruption of cooler air. However, the northern area (already suffering due to water shortages in the previous months) and Sicily received only a small quantity of water. In those areas, at mid-May, the soil moisture figures presented critical values, even lower than those recorded in 2003; similar conditions were recorded in 1992 and 1997.

June presented quite fluctuating conditions with different spatial distribution: wet in the first dekad and very dry in the following, cool at the beginning and extremely hot at the end in southern regions (on 25 June: Puglia 47.0 °C, Molise 44.1 °C, Sicily 44.1 °C, Basilicata 43.5 °C and Campania 40.0 °C). The first part of **July** was dry but with more normal temperatures.

The hot spell was intense but limited in time (three to four days); therefore impact on crops could have occurred but was probably quite limited. The rain shortage increased the irrigation needs for spring/summer crops, mainly in central Italy. In the northern Alpine regions, the rain which occurred refilled the superficial reservoirs, giving new prospective for future irrigation resources.

In southern areas, in spite of the fact that the final maturity (harvestable) for winter cereals was reached in advance, the harvest was disturbed by the rainy events recorded in the first half of June.

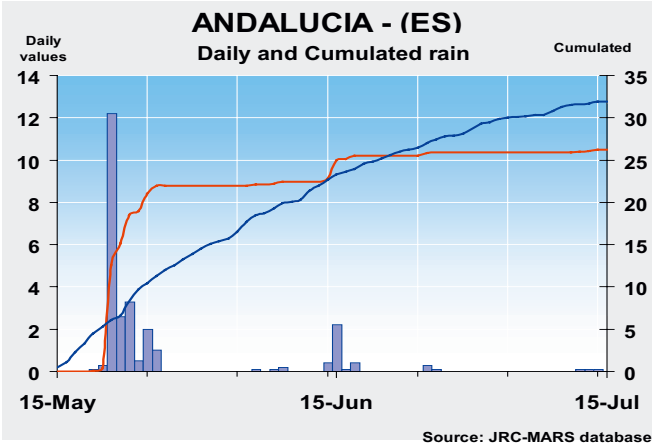


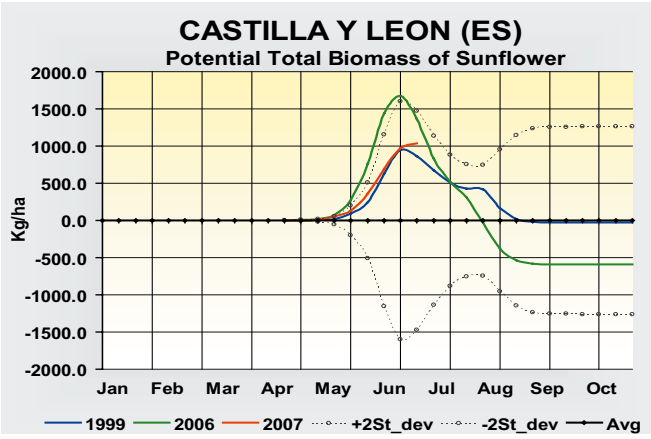


Spain: dry June did not significantly affect the yield of winter cereals

The favourable weather trend started at the beginning of spring and continued until early June over most of central Spain, from north to south. In the agricultural regions of the north-west, especially Castilla y Leon, the climatic balance was unseasonably positive until the first dekad of June. Cumulated rainfall remained stable at 10 to 20 % above average, while both maximum and minimum temperatures were in the norm and at times even slightly higher, especially the maximum. Since the first dekad of June, most of the country has been affected by a dry spell and consequently cumulated rainfall levels are levelling back to the norm for the period. Conditions started worsening earlier in the south-east (Andalusia and Murcia), where the last significant precipitation events took place during the last week of May (~ 20 mm over five days). The situation increasingly worsened with a northward trend during the second and third dekad of June. At present, the decline in cumulated rainfall is around 30 % on the long-term average (~ 10 mm).

The early spring season, characterised by wet and mild weather, had favoured an early vegetative start for winter cereals to the point that when eventually the season turned drier, in mid-June, cereals had completed grain filling and were not significantly affected. Temperatures remained in the norm and this contributed to the positive conclusion of the productive cycle for durum and soft wheat as well as for winter barley. Durum wheat is expected to yield 2.6 t/ha with an increase of over 4 % on 2006. A significant increase is observed for soft wheat (3.6 t/ha: about + 18.4 % on 2006). Spring barley is heading towards a bumper season (3.3 t/ha; + 30 % on the long-term average). In central and north-eastern Spain the effects of the lack of precipitation have not yet been felt by summer crops. Conditions remain substantially favourable for sugar beet, sunflower and maize, and other cultivations which largely rely on irrigation. Besides mild temperatures, industrial crops are also taking advantage of the available soil moisture which built up from April to May. What has been stated for industrial crops in north-central Spain can be extended to the irrigation districts of the Guadalquivir basin to the south. The availability of abundant water reserves should help overcome the present dry spell. Expectations are positive for sunflower (1 t/ha; + 14 % on 2006) and grain maize (11.5 t/ha; + 20 % on 2006).





Portugal: an overall positive season with well distributed precipitation

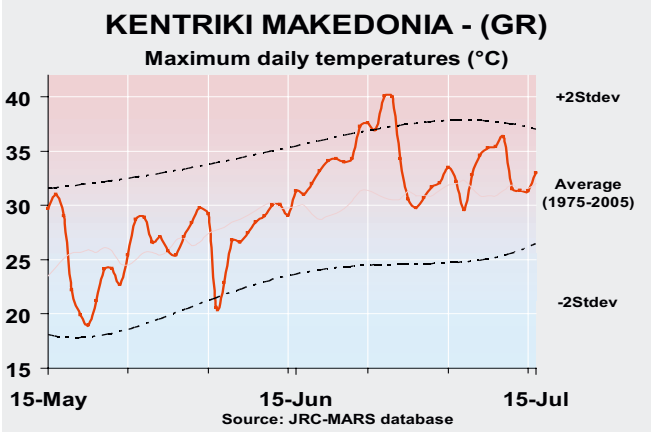
At the beginning of May, Portugal benefited from diffuse precipitation over the whole country. There was a short dry spell in the south-western districts at the end of May and early June. The north of the country was not significantly involved and, from the first dekad of June onward, continued to benefit from abundant rains. In most of the agricultural areas of south and central Portugal, winter cereals reached maturity during the first dekad of June. The post-flowering phase took advantage of the rain in early May and during the second dekad of the month. The moderately dry period that followed actually favoured the final maturation. Harvest was only marginally disturbed by the June rain, which was positive for summer crops at the beginning of their cycle. The southern regions of Portugal were not affected by the dry spell that hit southern Spain from the beginning of June. Even though not in absolute terms (~ 20 mm in concentrated events), cumulated rainfall remained largely above the long-term average (over 50 %). Temperatures were stable within the norm until the second dekad of June and have actually became slightly cooler since then. The onset of dry conditions from the second dekad onward has not significantly affected the overall climatic balance to date, especially in the north of the country. The development of summer crops, after an early start due to the mild and wet spring, is proceeding within the norm.

The expected yield for durum wheat is 1.5 t/ha, lower then the bumper crop of 2006, but still 8 % higher than the 2002–07 average. The same level of yield can be expected for winter barley (1.63 t/ha; + 9.5 %). Expectations for summer crops at present are also positive. Yield for gain maize is estimated at 6.3 t/ha with an increase of over 17 % on the long-term average of recent years.

Greece: favourable May made up for a dry spring; hot conditions in June

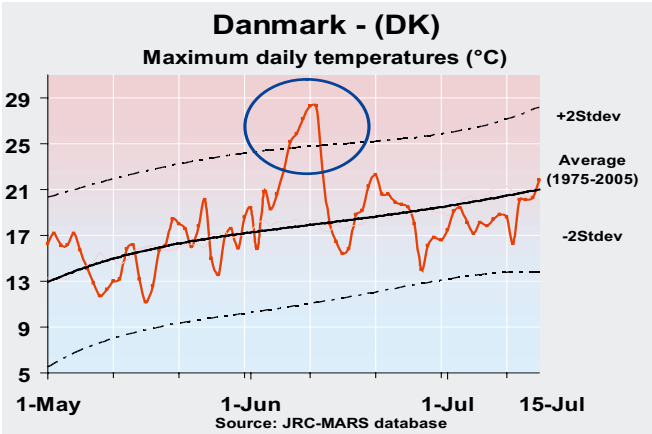
Greece has experienced one of the worst winter and spring seasons in recent years and this situation continued until the second dekad of May. From that moment on there was abundant and well-distributed precipitation over the whole country for a full month. Temperatures remained mild in early spring and converged back to normal levels during May, even though the minimums were still above average for most of the month. In the main cereal production areas of the north and central Greece (Kentriki Makedonia and Thessalia) precipitation was particularly intense in the second and third dekad of May and continued with more distributed events until mid-June. In the extreme east of Anatoliki Makedonia and Thraki rainfall dropped again to unseasonable lows at the beginning of June, and continues to date. The development of winter wheat had been anticipated by the mild and dry spring and this condition also affected the beginning of the final maturation in mid-June. The anticipated calendar allowed cereals to take advantage of the May rain during the grain-filling phase, and when the dry weather started again, in the second dekad of June, the harvest season was under way. There has been no significant precipitation since the third dekad of June in the whole of Greece. These conditions, coupled with the heatwave that hit the country for over a week at the end of June, contributed to the significant reduction of the climatic water balance (– 30 to 50 % on the long-term average). The main spring crops are cultivated under irrigation and the rainfall deficit should have a limited effect. More serious damage can be expected from the heatwave, even if it is still early for a more detailed assessment.

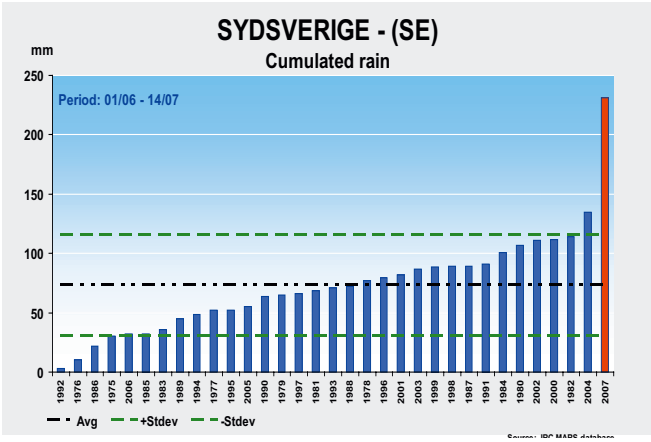
Durum wheat is expected to yield 2.9 t/ha on the same level as 2006. The situation for both soft wheat and winter barley appears less favourable due the shortened season. Both crops saw a reduction in yield on 2006 and also on the five-year average. Potatoes, in the final phases of development, should experience a drop in yield (~ 25 t/ha) on 2006 (– 27 %) and on the five-year average (– 6 %).



Denmark, Sweden: very wet and advanced crops; Finland: more seasonal

In **Denmark and Sweden** the whole period was characterised by very abundant and frequent rain. During the considered period, only a few days (in mid-June) were without rain. On 10 July the cumulated rain in Denmark reached the second highest value since 1975: similar conditions occurred only in 1980. In the current year, the main agricultural areas received 170 to 180 mm of rain, compared with 80 to 90 mm for the LTA (surplus larger than 100 %). In Sweden the amount of rain was even higher, with on average 230 to 240 mm compared with the 70 to 80 expected (> + 200 %), and the current year was the wettest recorded in the MARS database: a similar year was 2004 but with 'only' 130 mm cumulated in the same period. The rain was particularly persistent from the second half of June up to the end of the considered period, with more than 27 rainy days. Another peculiarity was the intensity of the rain: the current year recorded the highest number of daily rain events heavier than 15 mm/day. The temperatures were in general within the seasonal ranges of variation but in mid-June a warm high pick was recorded with maximum daily values around 30 °C (10 to 11 °C above the average). Therefore, the advanced crop development reached in the previous months continued in this period.The very anomalous wet conditions influenced negatively the active crops, having an effect on potential yields, creating an obstacle for field activities, determining crop lodging and creating very favourable conditions for crop diseases, as well as increasing nitrogen leaching. **In Finland,** as in the previous period, more seasonal agrometeorological conditions were recorded: the rain was quantitatively on average both in May and June and slightly more persistent in July. In general, the temperatures increased according to the seasonal course and only at the end of May were warmer conditions recorded, but only for a few days.



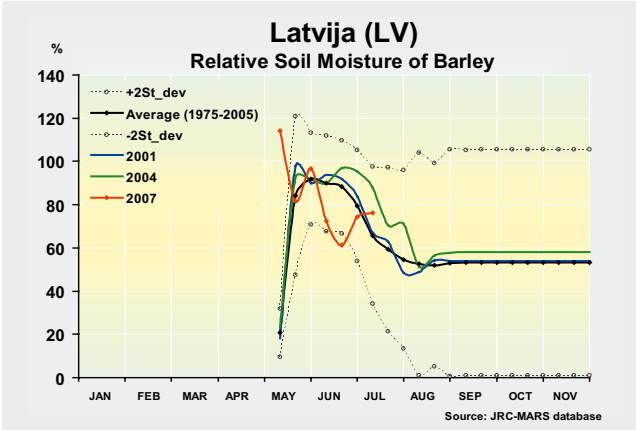


Estonia, Latvia, Lithuania: anticipation in development of winter wheat

For the considered period, the current year was the second (after 1988) for highest average temperatures in Estonia and the first in Latvia and Lithuania. The climatic water balance was below the long-term average in Estonia and Latvia and above this level in Lithuania. Only Estonia received more than normal solar radiation in this period (the other Baltic States received the normal level).

The maximum level of LAI for winter crops reached in this vegetation season was extremely low.

At the end of the considered period, the total biomass weight simulated for non-irrigated conditions was clearly below normal for winter wheat crops in Estonia and slightly below normal for the other two Baltic States. Due to the anticipated development, the weight of the storage organs is below normal. The moisture for the spring barley crops was increased by the rain from the beginning of June.



Poland: the country is experiencing a wet period

Forecast yields for Poland are: soft wheat 3.60 t/ha, winter barley 3.37 t/ha, spring barley 2.73 t/ha, rapeseed 2.44 t/ha, grain maize 5.79 t/ha, sugar beet 43.56 t/ha and potatoes 18.21 t/ha . Except for grain maize (+ 7.0 %), sugar beet (+ 2.0 %) and potatoes (+ 1.7 %), forecast yields are lower than average: soft wheat (– 3.8 %), winter barley (– 2.6 %), spring barley (– 9.2 %) and rapeseed (– 1.2 %).

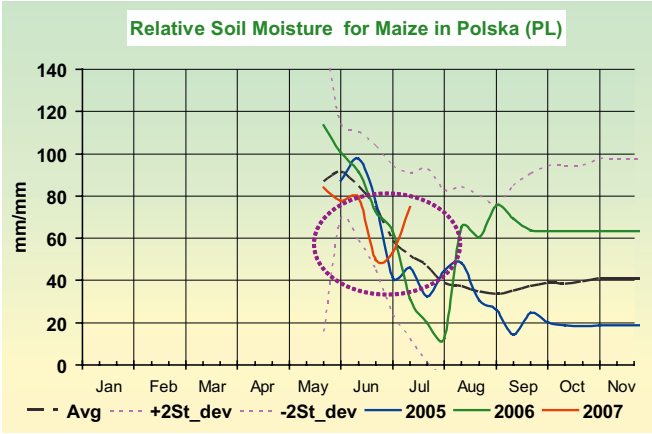
The frequent precipitations of the last month are pushing cumulated values for the analysed period above the long-term average, although they are probably not enough to create big problems to harvests in the case of rapeseed, which has already reached maturity. Cumulated values of radiation are slightly above the average and temperatures have been higher than the average for most of the time. These factors are generating a high evapotranspiration demand which is supported by satisfactory values of soil moisture.

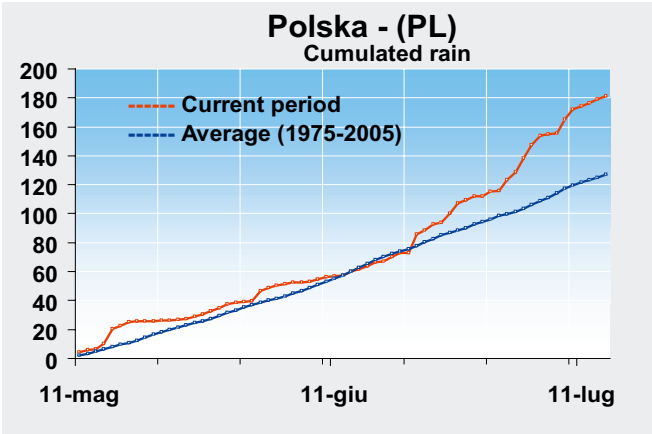
Winter wheat is in the second part of the ripening phase with a two-dekad advance on the average. Temperatures are still pushing the development rate to high values: after a vegetative phase shorter than the average; the same is happening for the reproductive stage, which is most related to the yield formation. The precipitations of the last dekads are increasing the soil moisture till values decidedly above the average.

Rapeseed has completed its cycle, under optimal water supply, with almost a three-dekad advance compared with the average.

Spring barley is in the first part of the grain-filling stage. Also in this case, a slight advance (one dekad) is characterising the season.

Grain maize has entered the flowering stage with a one-dekad advance on the average. Due to the high evapotranspiration demand, the crops suffered for some days at the end of June because of suboptimal water availability.





Czech Republic and Slovakia: a strong advance in harvest time is expected

Yields forecast for the Czech Republic are: soft wheat 4.46 t/ha; winter barley 3.62 t/ha, spring barley 3.72 t/ha, turnips 2.61 t/ha, grain maize 7.43 t/ha, sunflower 2.26 t/ha, sugar beet 52.02 t/ha and potatoes 25.68 t/ha. Winter crop forecasts are lower compared with the yields recorded for 2006: soft wheat – 0.6 %, winter barley – 3.6 % and rapeseed – 13.5 %. There is good potential for spring and summer crops: spring barley + 5.8 %, grain maize + 10.0 %, sunflower + 5.2 % , sugar beet + 1.0 % and potato + 11.4 %.

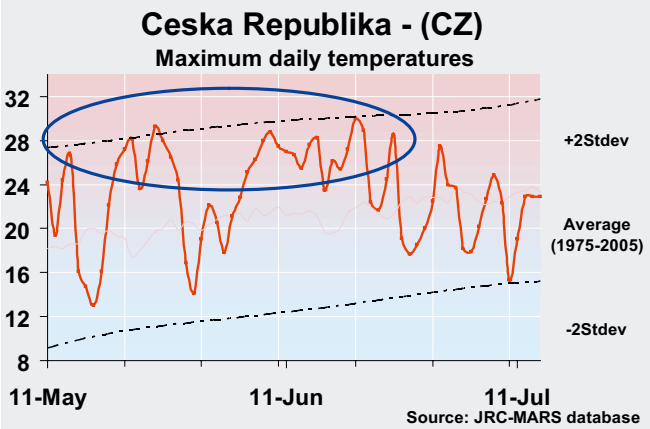
For Slovakia, yield forecasts are: soft wheat 3.60 t/ha (– 5.8 % compared with 2006), winter barley 3.09 t/ha (– 0.9 %), spring barley 3.51 t/ha (+ 0.2 %), rapeseed 1.72 t/ha (– 18.1 %), grain maize 5.87 t/ha (+ 7.3 %), sunflower 2.01 t/ha (– 3.9 %), sugar beet 48.42 t/ha (– 2.2 %) and potato 15.68 t/ha (+ 9.9 %).

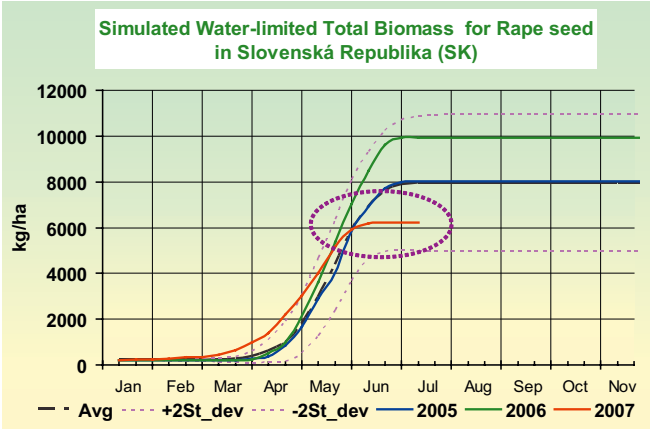
Above average temperatures were recorded throughout the period since the previous analysis. On some days, the maximum daily temperature has been high enough to possibly create problems for winter cereals: high respiration rates and shortening of the crop cycle. For the whole period of analysis in the Czech Republic, rainfall and radiation have been consistent with average values while, in Slovakia, levels of precipitation have been slightly lower than average, with related above average radiation.

Soft wheat is reaching the maturity stage with a one-month advance on the average. After the problems due to insufficient water availability in April and in the first dekad of May, discussed in the previous analysis, soil moisture has come back to average values. Simulated yields are strongly penalised by the extremely warm season: the advance in crop development has led to low leaf area index values (decidedly suboptimal light interception) and to a short period for grain filling.

Simulations indicate 2007 as a low year for rapeseed, especially for Slovakia, because of the short cycle. Spring barley is reaching the mid-grain-filling period with a one-dekad advance compared with the norm, under slightly suboptimal conditions for soil moisture.

Maize has entered the flowering stage with a dekad advance on the average, under satisfactory conditions for soil water content. Although the advance has slightly decreased the maximum leaf area index, especially for Slovakia, simulations are depicting a good season for maize.





Austria: grain filling period of winter crops shortened by high temperatures

Yield forecasts are: soft wheat 5.10 t/ha (+ 0.4 % compared with the five-year average), durum wheat 4.02 t/ha (– 7.1 %), winter barley 4.90 t/ha (– 5.0 %), rapeseed 2.30 t/ha (– 16.2 %), spring barley 4.18 t/ha (– 0.2 %), potato 31.63 t/ha (+ 3.5 %), grain maize 10.16 t/ha (+ 8.4 %), sugar beet 68.57 t/ha (+ 5.6 %) and sunflower 2.72 t/ha (+ 2.4 %).

Temperatures decidedly higher than the average were registered during the whole analysed period. This increases the lowering of yield expectations for winter crops because, after a short vegetative phase, the ripening phase has also been considerably shortened. For the same reason, summer crops are experiencing a strong advance in their cycle. Frequent precipitations were registered in the country, leading to average cumulated values for this part of the season. Absolutely average values were also recorded for the irradiance level.

Winter wheat is reaching the maturity stage with a one-month advance on the average. The potential has been lowered by a reduced number of days available for grain filling. Soil moisture remained stable, around average values.

Rapeseed completed its cycle with a half-month advance compared with the average, under optimal conditions for soil water content. The short cycle, due to the abnormal thermal conditions, caused a reduced leaf area index and consequently an insufficient light interception. This is penalising the (simulated) yield.

Spring barley is at the mid-grain-filling period with about a one-dekad advance on the average. The crop has not suffered despite insufficient water supply for the whole season.

Maize is close to the mid-flowering phase under favourable conditions: although the cycle is anticipated (about one dekad), a good potential is shown.

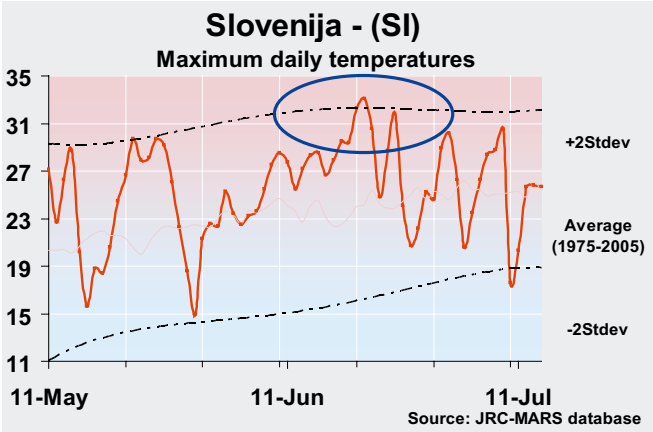
Slovenia: a good year is forecast for all the crops

Slovenia is experiencing a good season. Yield forecasts are: soft wheat 4.76 t/ha, barley 3.74 t/ha and grain maize 7.96 t/ha. These figures are higher than for both 2006 (respectively, + 13.6 %, + 3.5 % and + 14.9 %) and for the five-year average (+ 9.3 %, + 2.6 % and + 9.9 %).

Cumulated rainfall and radiation are slightly higher than the long-term average for the period of interest. Temperatures have been higher than the norm in most of the days, with peaks which exceeded the average + 2 standard deviations, both for daily minimum and maximum.

Winter wheat has reached the maturity stage with a two-dekad advance on the average. Except in the last two dekads of April and the first of May, simulated soil moisture has always been fully responding to the plant requests.

Barley is in the last part of the ripening stage and grain maize has entered the flowering stage. No problems due to insufficient water availability are expected for either of these crops.



Hungary: definitely a low yield year compared with 2006 for all crops

Yield forecasts are: soft wheat 3.97 t/ha, winter barley 3.62 t/ha, spring barley 2.62 t/ha, rapeseed 2.20 t/ha, grain maize 5.68 t/ha, sunflower 2.14 t/ha, potato 24.18 t/ha and sugar beet 46.78 t/ha. For all the crops, these figures are lower than those recorded for 2006: soft wheat – 2.2 %, winter barley – 5.4 %, spring barley – 24.7 %, rapeseed – 5.8 % , grain maize – 17.3 % , sunflower – 1.9 %, potatoes – 5.0 % and sugar beet – 7.9 %.

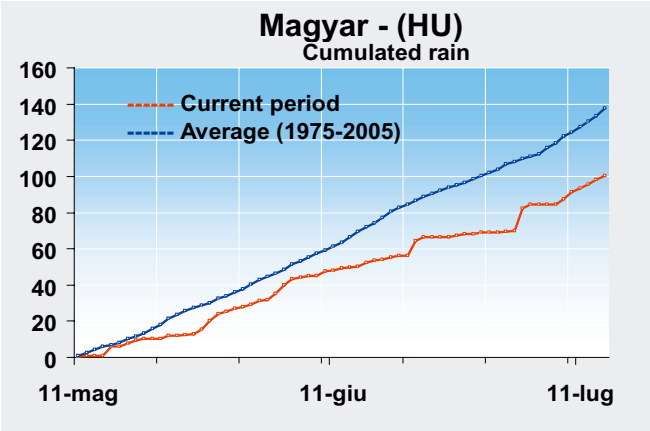
Hungary is experiencing a dry summer. In the last two months, cumulated rainfalls have been about 30 % lower than the long-term average. This is causing problems for the crops, especially maize, also because this lack of rainfall is coupled with high irradiative levels and above average temperatures. These two factors are pushing potential evapotranspiration to high values and therefore the impact of the scarcity of rainfall is even wider because of the difference between water demand and water availability.

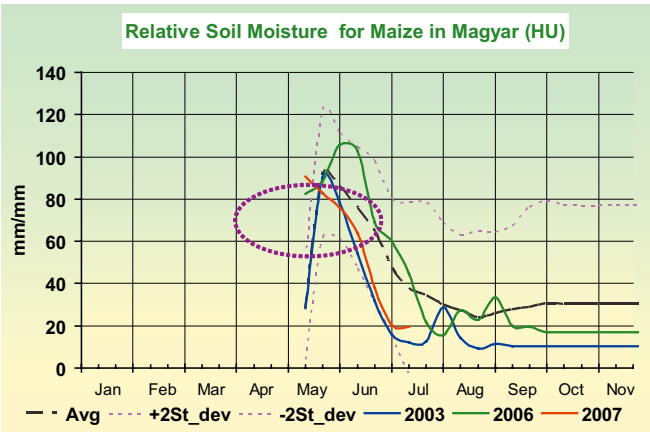
Soft wheat has completed the growth cycle with a three-dekad advance on the long-term average. Soil moisture is suboptimal but still not catastrophic: simulated low values are mainly due to the advance in development.

Rapeseed has reached the maturity stage with almost a one-month advance and this is strongly affecting simulated yields.

Spring barley is in the second half of the grain-filling period. In this case the advance in development is limited to one dekad, but the high temperatures forecast for the coming days will probably further reduce the length of this crucial phenological phase.

Grain maize is at the mid-flowering stage with a dekad advance compared with the average. Precipitations have not been able to provide the crop with sufficient water: although slightly better, the simulated soil water content is close to that recorded in 2003.





Romania: an extremely hot and dry period

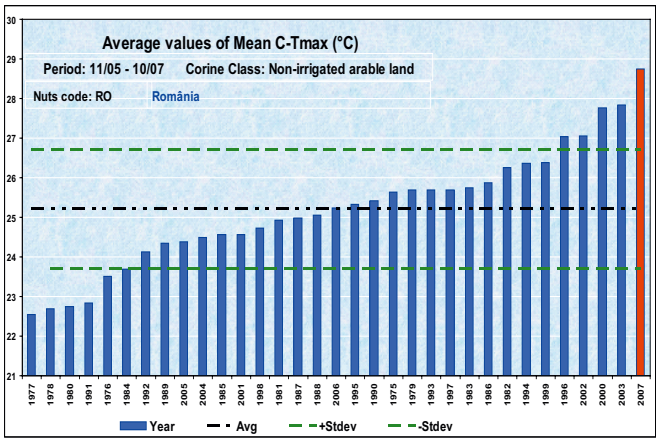
The average and the mean and maximum temperatures for the considered period were the highest for Romania in the CGMS database (last 32 years). The climatic water balance was the second lowest (after 2000) — and for south-eastern Romania it was the absolutely lowest value for this period.

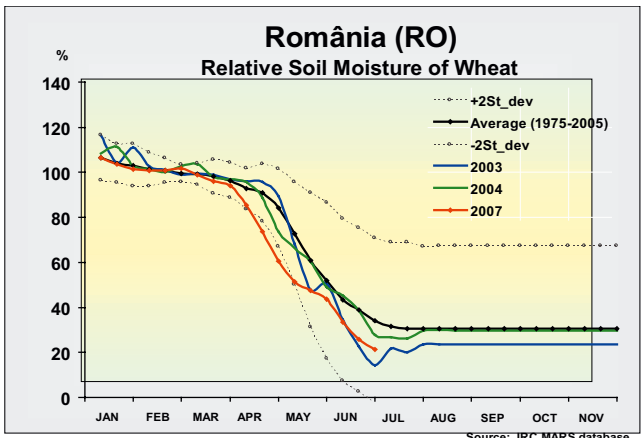
All the crops were affected by the heatwaves but the damages are difficult to be fully simulated. The maximum value for leaf area index for winter crops was achieved about two to three weeks early but the maximum value was below normal maximum (especially due to foliar senescence induced by heat stress).

The poor development of the foliar apparatus reduced the interception capacity of the photosynthetic active radiation so, finally, the potential total biomass was much below long-term average. The level of soil moisture for winter crops was very low and this situation was already visible from the beginning of April.

The simulated weight of storage organs for winter wheat was below the long-term average (– 30 %) in eastern Romania (Moldavia). In western areas the wheat yield was closer to the normal level and the light rain (< 22 mm) recorded in those areas during the first week after maturity had only a slightly limited negative impact.

The development for summer crops is anticipated but relative soil water moisture is below normal.





Bulgaria: very low level of soil moisture

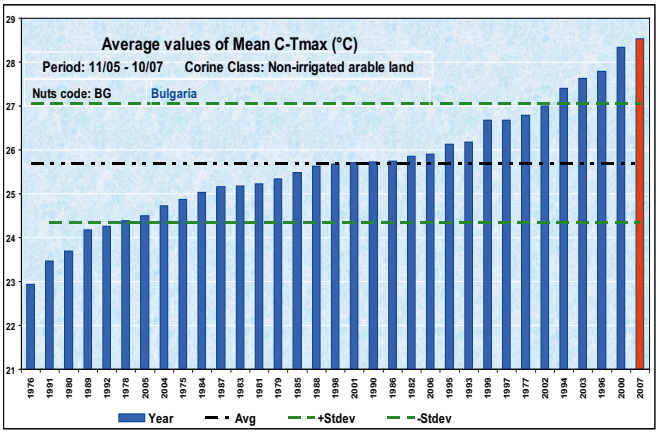
The sum of active degrees (Tbase = 0°C) was slightly above the long-term average (+ 75 degree days). This situation is a less intense continuation of the warmer than usual period.

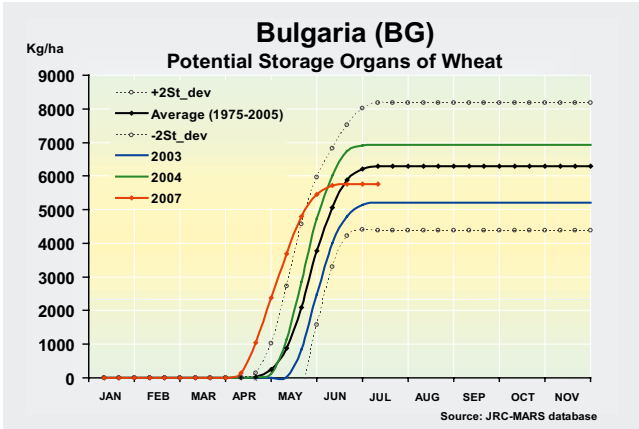
For the considered period, the cumulated precipitation was rather low (falling more than one standard deviation below the long-term average), but the high level of global radiation (second after 2003) increased the evapotranspiration and, as a result, the climatic water balance for the period was very low (the fourth driest year since 1975).

The anticipated development of the winter crops is considerable as is the simulated total above-ground biomass and the weight of the storage organs, but compared with the normal situation the level of the soil moisture is extremely low (below two standard deviations).

In agreement with the simulated LAI for winter crops, the NDVI derived from SPOT vegetation data for the non-irrigated agricultural areas in the northern part of Bulgaria is showing an anticipated decrease. A rather dry weather forecast is suggesting a very low yield scenario for the winter crops.

The sowing of the spring crops was performed under dry conditions.

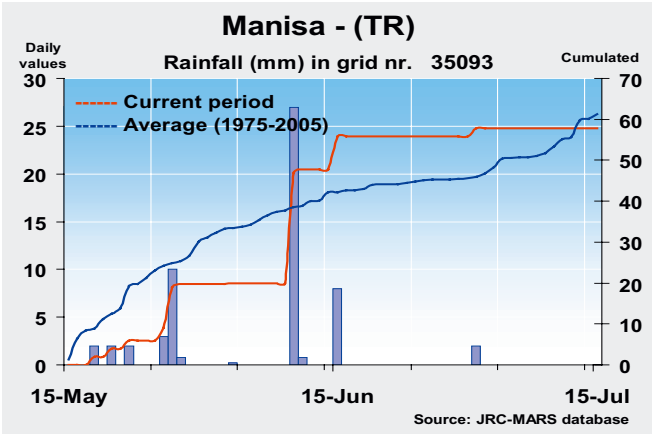




Black Sea Area

Turkey: dry and warm weather is affecting the crops

The dry conditions that had characterised the early spring season continued throughout May affecting mostly the centre and west of the country, including the major cereal production areas. In the same period, the south-east Aegean costal regions benefited from abundant precipitation combined with moderate temperatures. At the end of May, conditions started gradually to improve. Wet weather moved into the Peninsula from the north-west, affecting progressively the Black Sea coast and then the central areas. Temperatures were stable on average levels and even slightly warmer than the norm in the internal highlands. Wheat crops in the central highlands were at that moment mostly in the flowering stage and took advantage of these favourable conditions, partly compensating what had been a bad start to the season. Conditions remained favourable for cereals in the final maturation phases in the coastal areas. The overall climatic water balance continued to improve until the first dekad of June, especially in the southern and central regions, combining sufficient rainfall and mild temperature. The onset of abnormally high temperatures starting in mid-June changed the picture. The heatwave, though not dramatic in magnitude, with maximum temperatures not exceeding 30 °C, brought temperatures 25 to 30 % above the average for the period. These conditions combined with the contemporary reduction in precipitation, affected winter cereals during the grain-filling and final maturation phases. Harvest is still ongoing and so it is too early to evaluate the weight of this occurrence on the overall yield of the cereal crop in Turkey. A first estimate for winter wheat is 2.1 t/ha, with a reduction of ~5 % on both 2006 and the five-year average. The same trend is expected for barley (2.4 t/ha; – 5.5 % on 2006 and – 3 on the five-year average). Summer crops, which are prevalent in coastal and irrigated areas, should have been less affected by this particular climatic combination even though they could eventually suffer from a protracted drought from this moment onward.

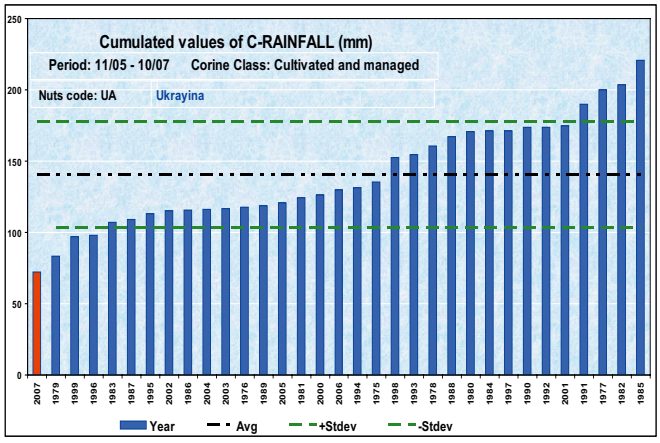


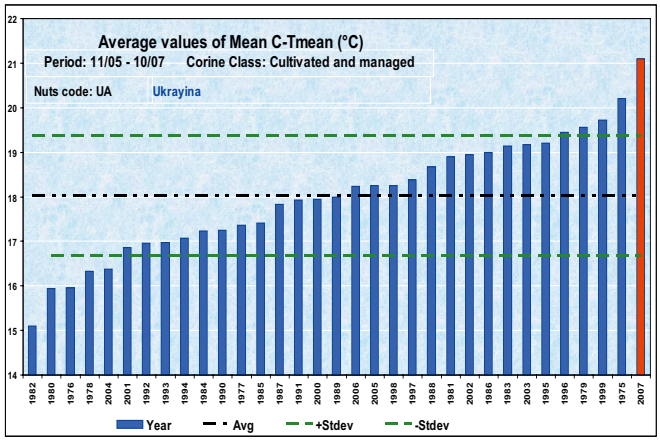
Ukraine: extremely hot and dry

For the considered period the average mean and maximum temperatures were the highest, at least since 1975. Another record for this year was the lowest amount of rain cumulated for this period. Only in 1979 was a lower climatic water balance recorded.

The maximum leaf area index was one of the lowest and it was achieved about 10 days in advance. The level of soil moisture for winter crops was very low (about two standard deviations below normal level or even lower in the case of winter wheat). At the beginning of July, the weight of grains simulated for the non-irrigated wheat was, with – 30 %, below the long-term average for most of the main agricultural areas of Ukraine.

Up until the end of June, the relative soil moisture for spring barley was with two standard deviations below the normal level, but the rain at the beginning of June stopped the decline. The weight of the storage organs for spring barley is very low.



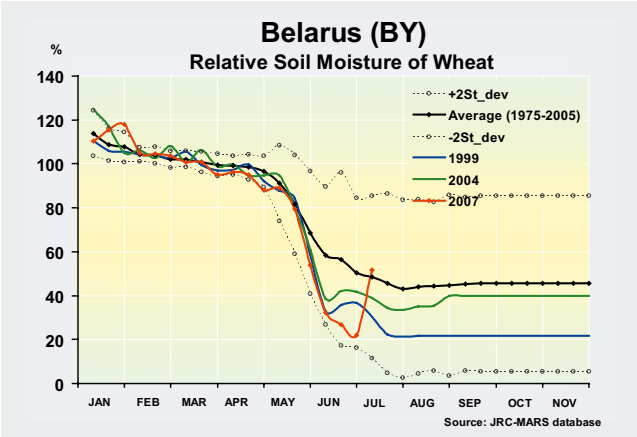


Eastern countries

Belarus: anticipated development for winter crops

The level of thermal resources (base temperature = 0 °C) from the current period compared with the long-term average decreased from 'unseasonably higher than normal' in the last 10 days of May (more than 75 degree days above the LTA), to 'higher than normal' in June, and finally to 'close to normal' at the beginning of July. The climatic water balance for the whole considered period is 'lower than normal' (– 30 % LTA). The first 10 days of July brought some positive rain to release the deficit.

The development of winter crops was anticipated for the considered period, but the simulated leaf area index, total biomass and the weight of the storage were significantly lower than the long-term average. The development of spring crops is also anticipated, but the chances for an average yield remain still open. The rain from the beginning of July improved the relative soil moisture for the spring barley; however, for the early-sown varieties, the positive impact on the yield may remain very limited.



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.

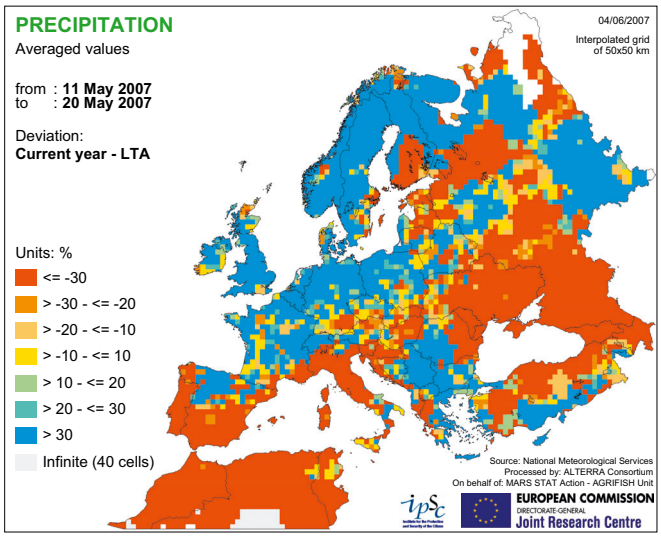
Amount of precipitation was lower than normal in central and southern regions. In other regions amount of precipitation was close to normal or slightly higher (in middle Volga region). Extremely low rain (less than 20 mm per month) was observed in Moscow, Smolensk and Rostov regions.

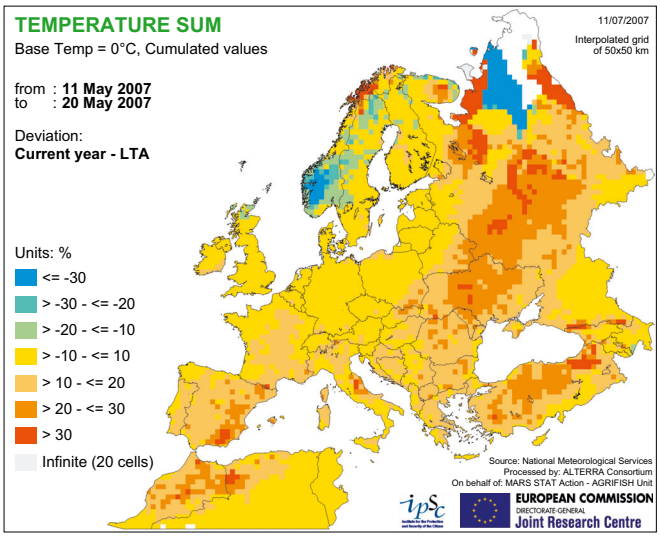
Agro-meteorological conditions during the winter and spring leads to soil moisture deficit in central regions of Russia, and in Rostov region.

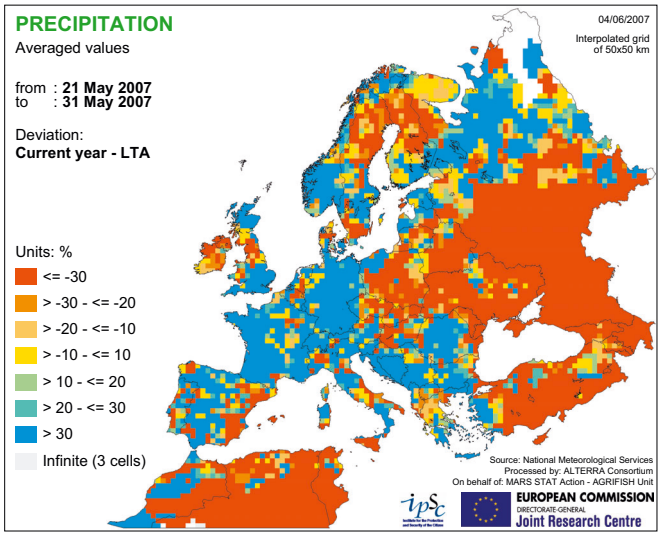
The CGMS winter wheat growth simulation results demonstrate that the situation at the beginning of July 2007 was close to normal practically everywhere. The simulated crop biomass is lower than normal only in some regions of central Russia and in Rostov region.

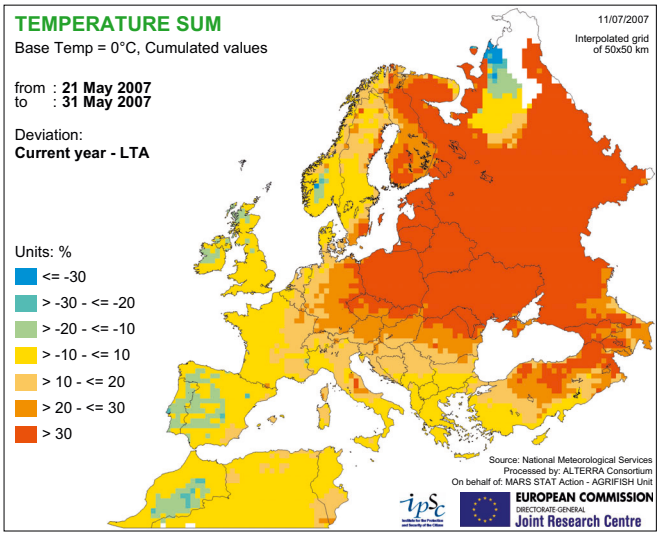
Based on analysis of all crop growth indicators it seems possible to conclude that agro-meteorological conditions in season 2007 were in general good for winter crop. The agro-meteorological situation for spring crop was unfavourable in many regions due to low amount of precipitation in June. The yield 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.

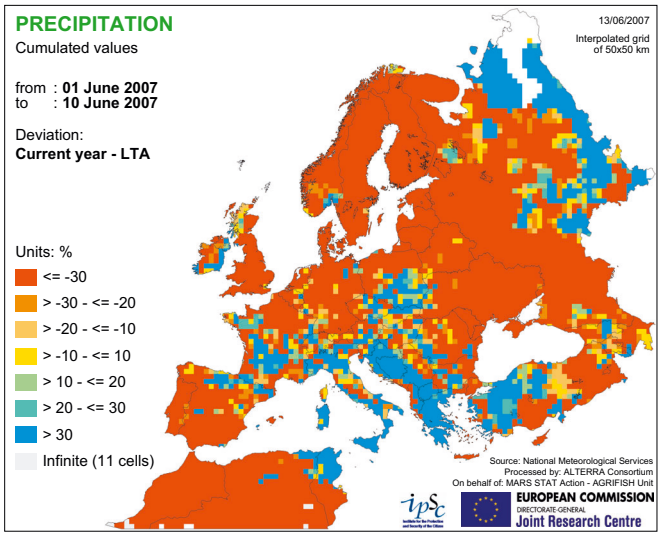
4.1. Rainfall and Temperature

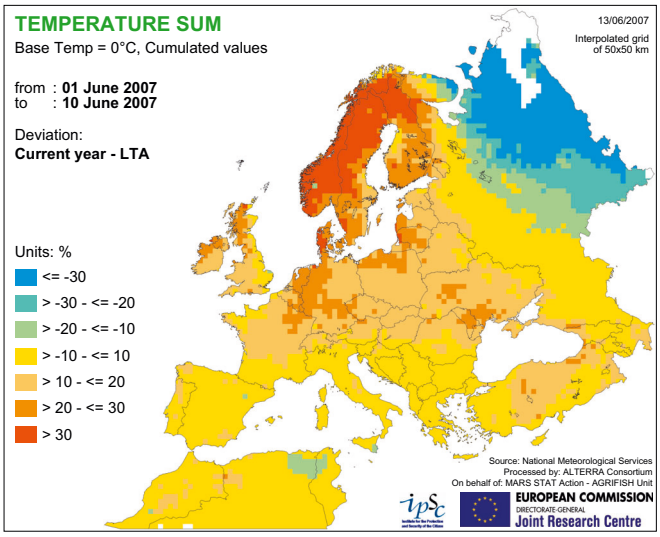




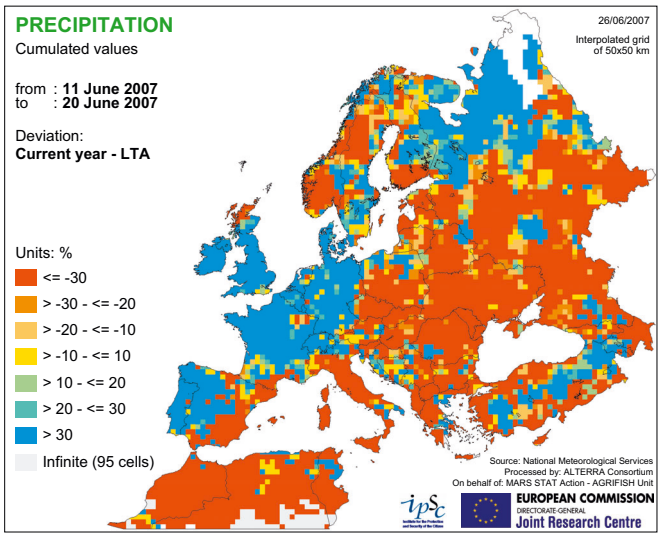


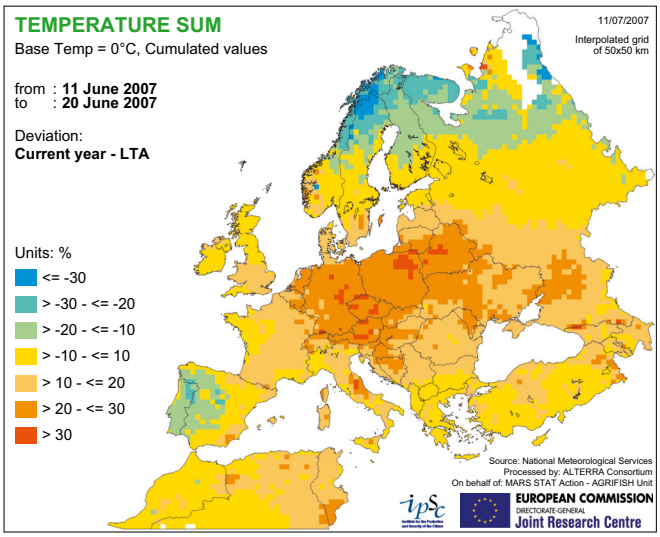


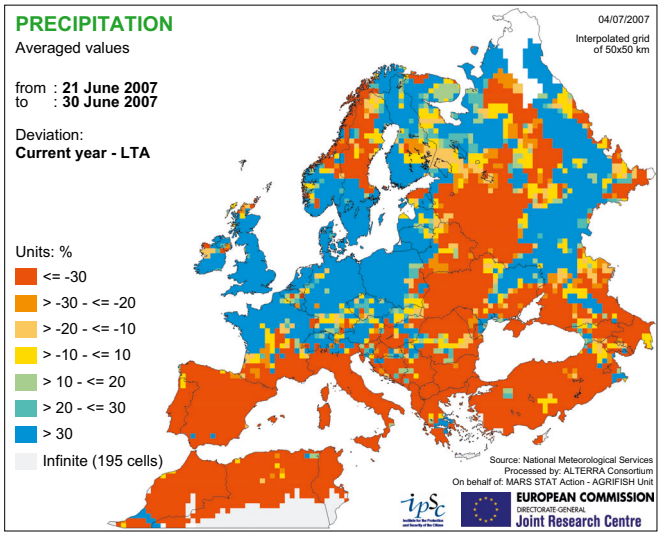


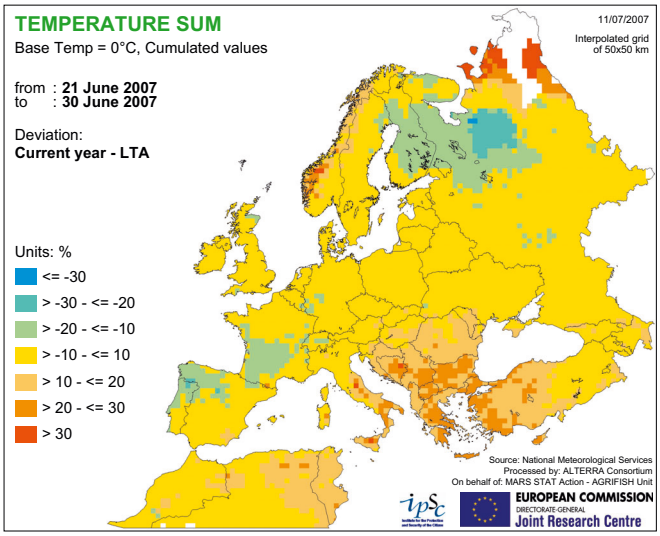


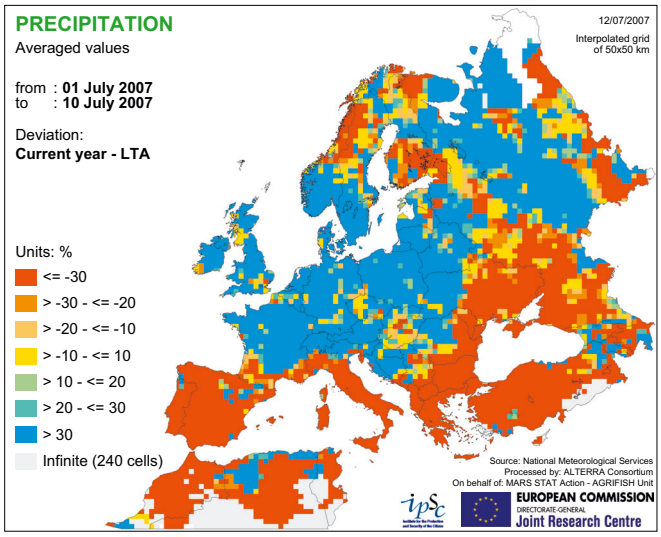
4.2. Rainfall and Temperature

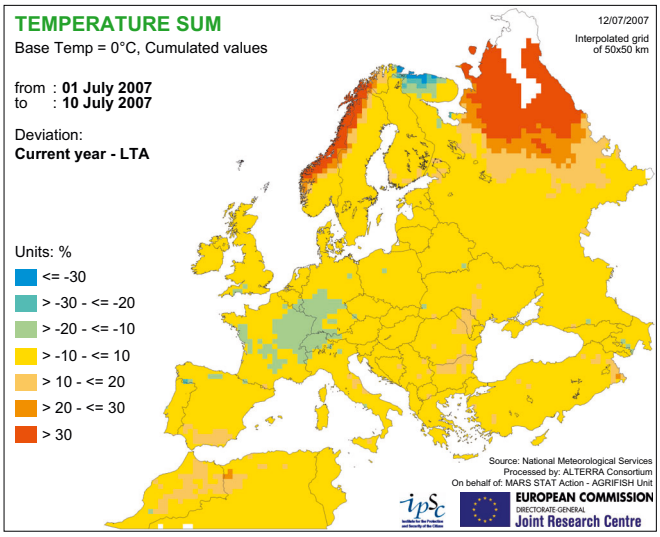




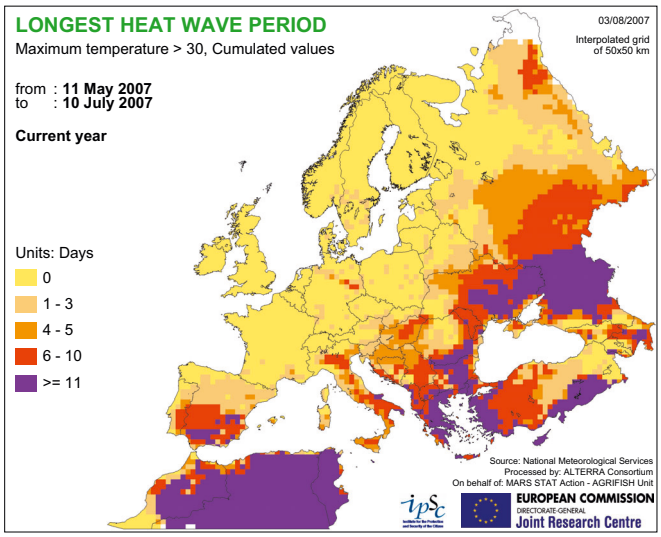


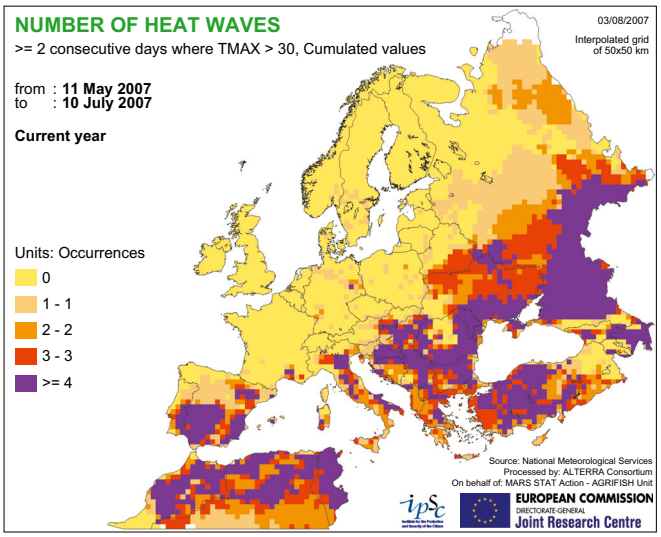


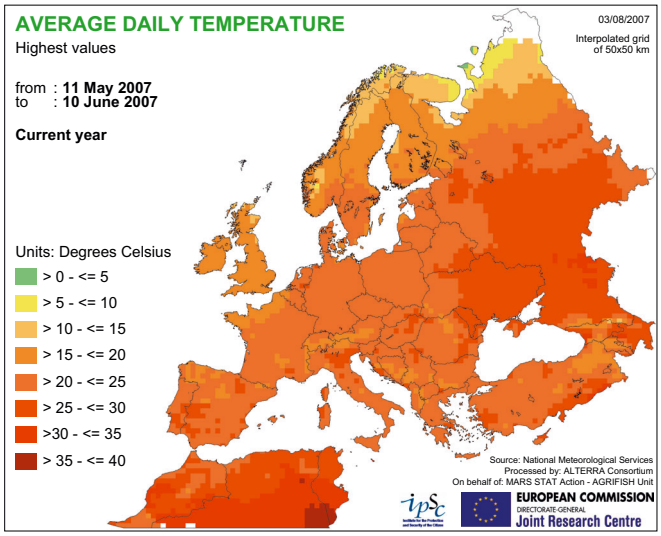


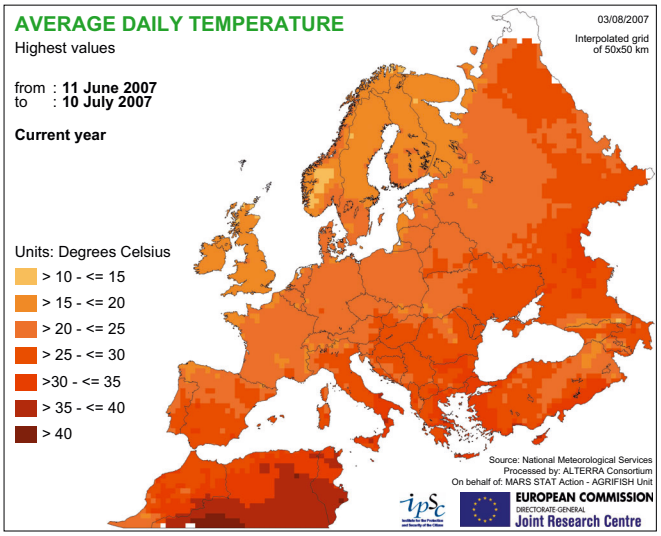


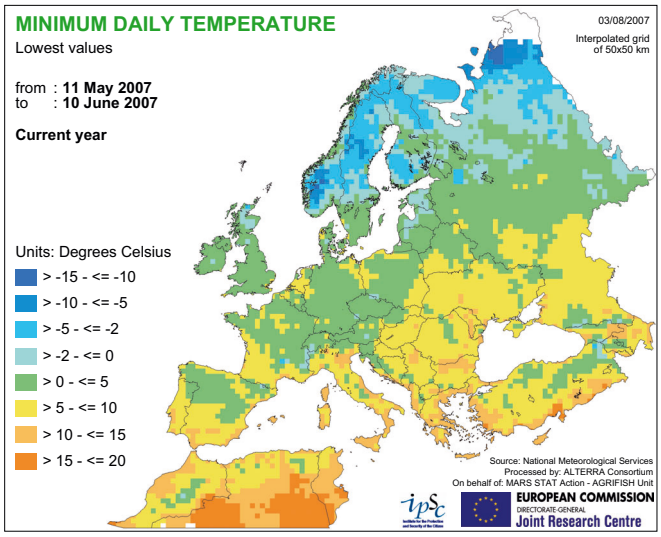
4.3. Extreme Temperature

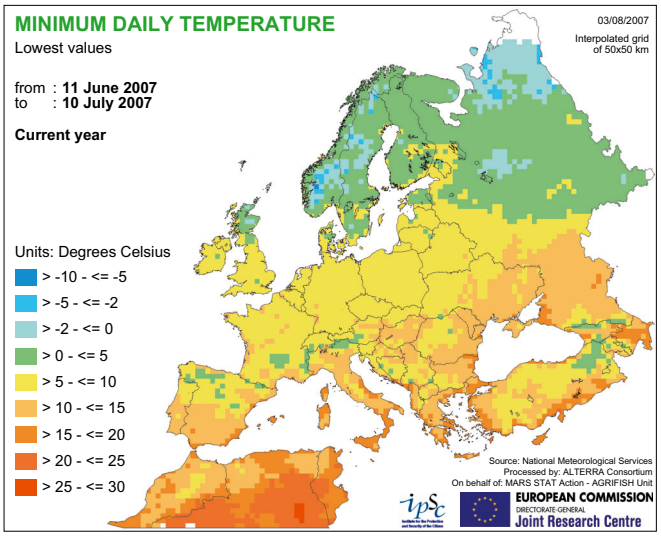




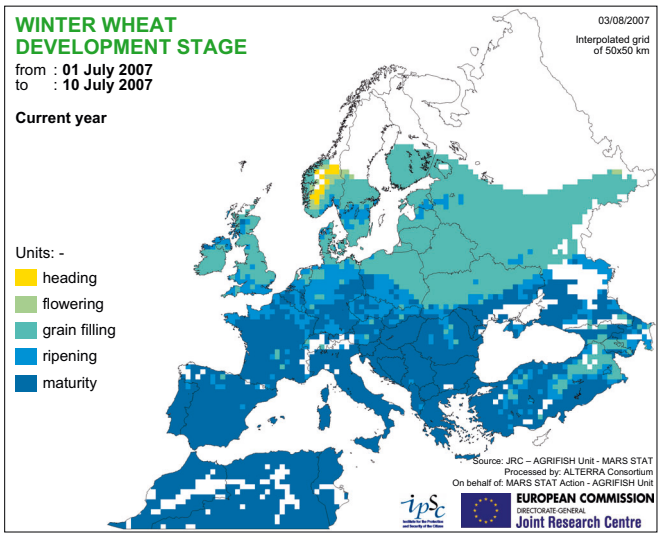


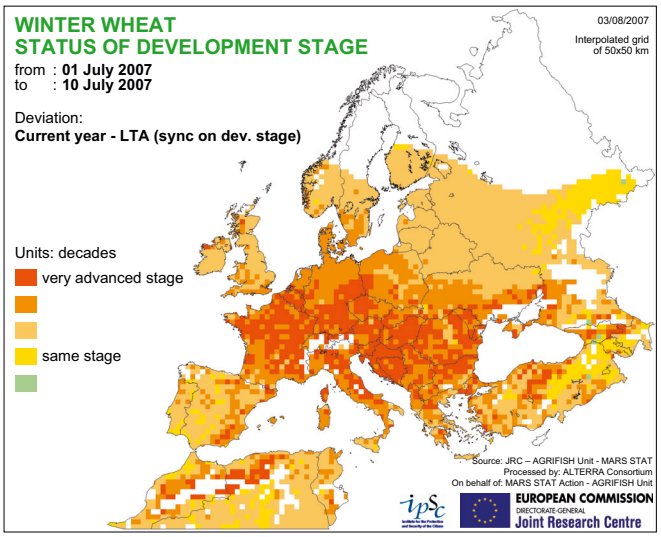


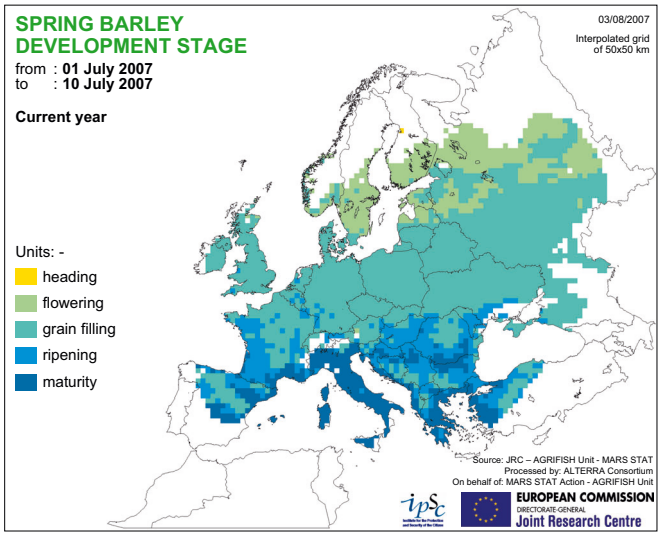


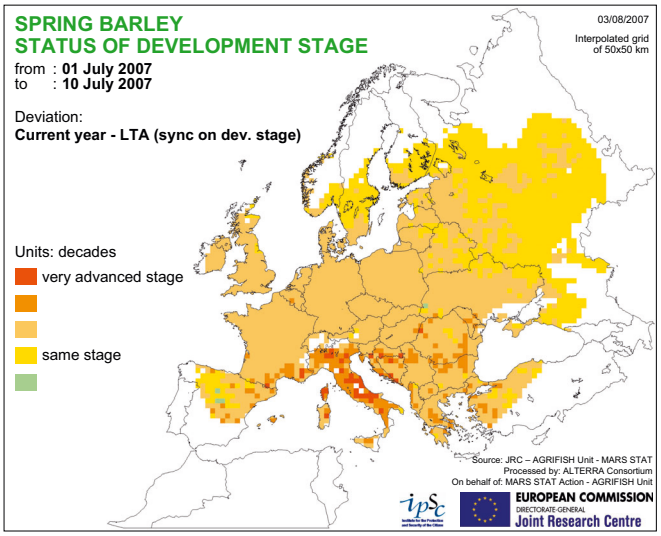


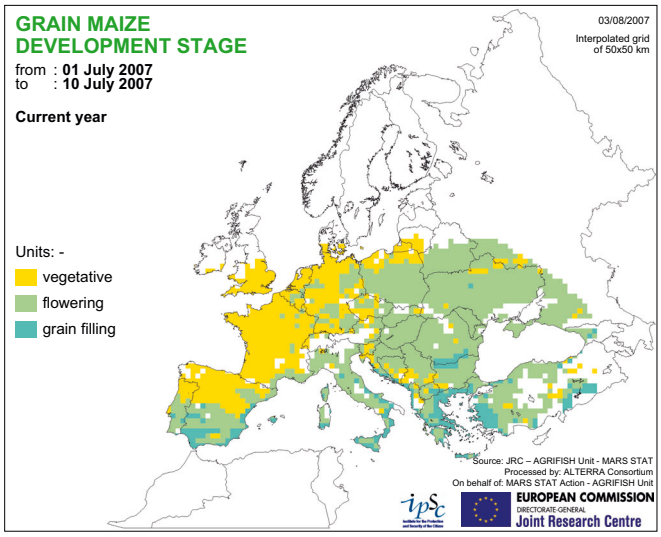
5.1. Crops development stage

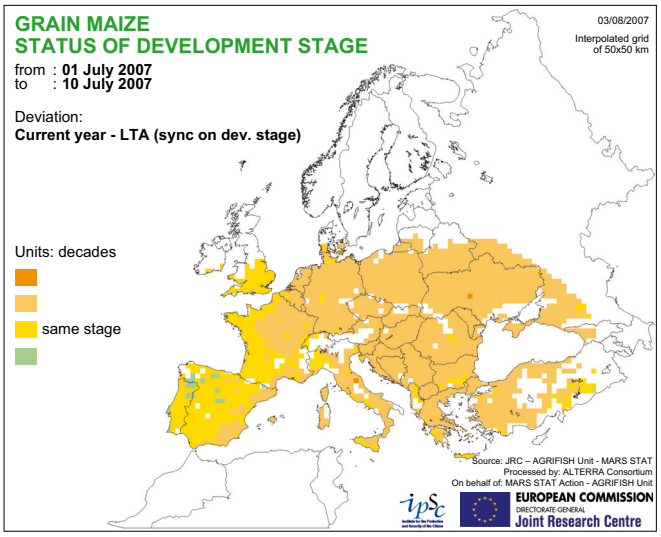




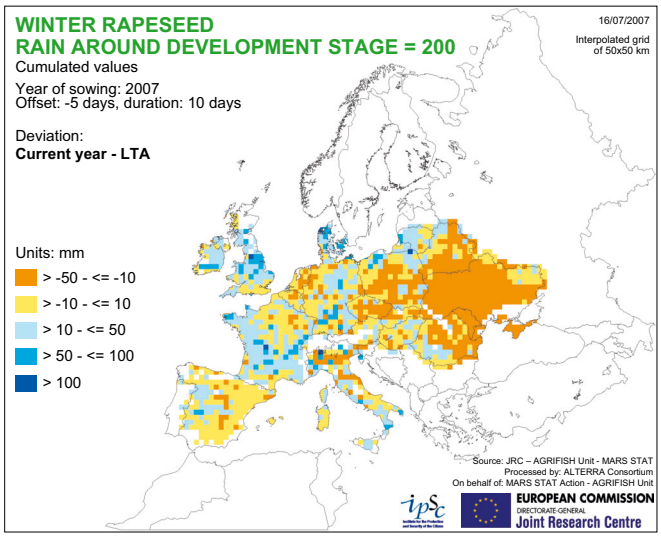


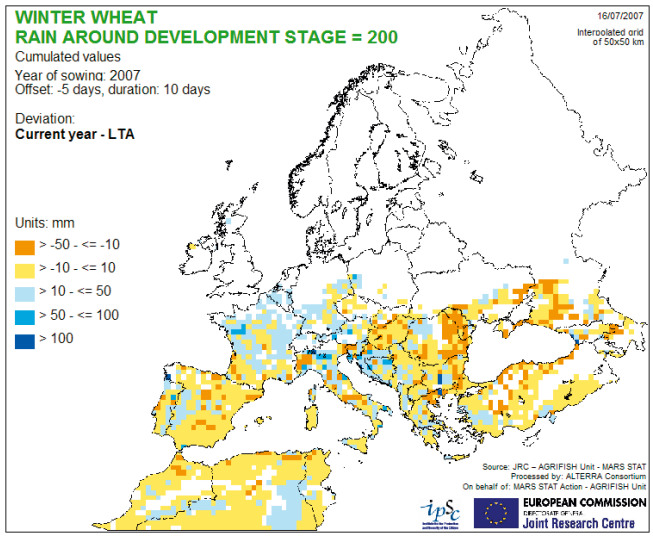


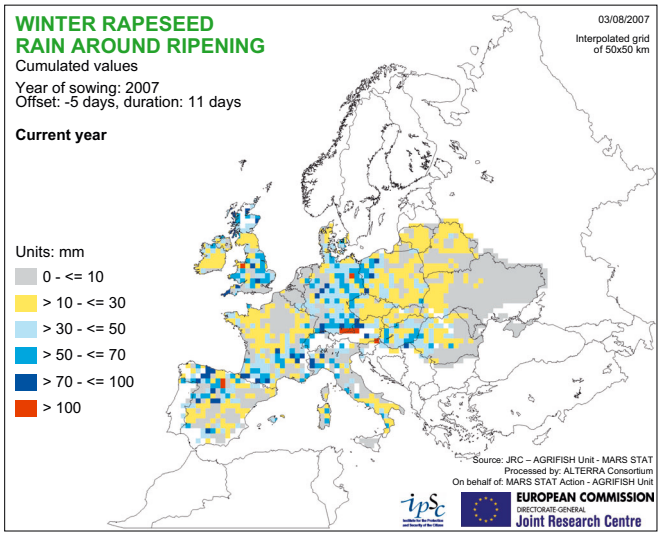


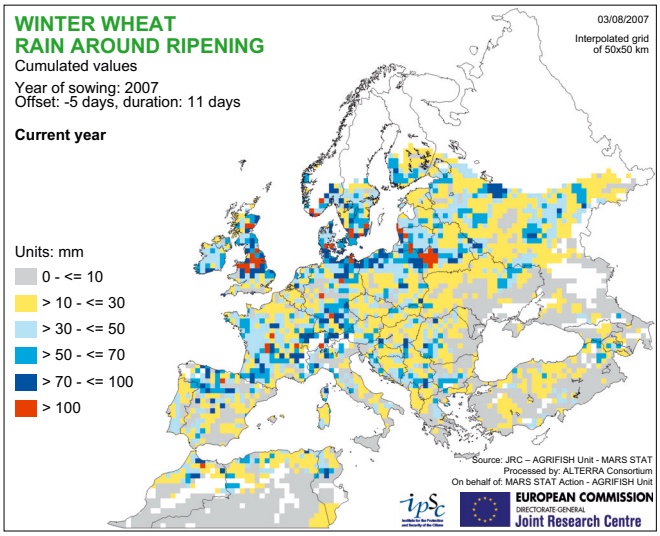


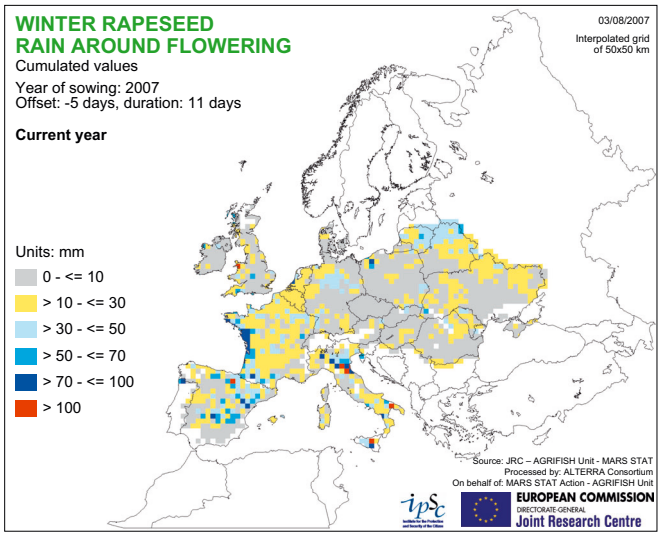
5.2. Rain around crops development stage

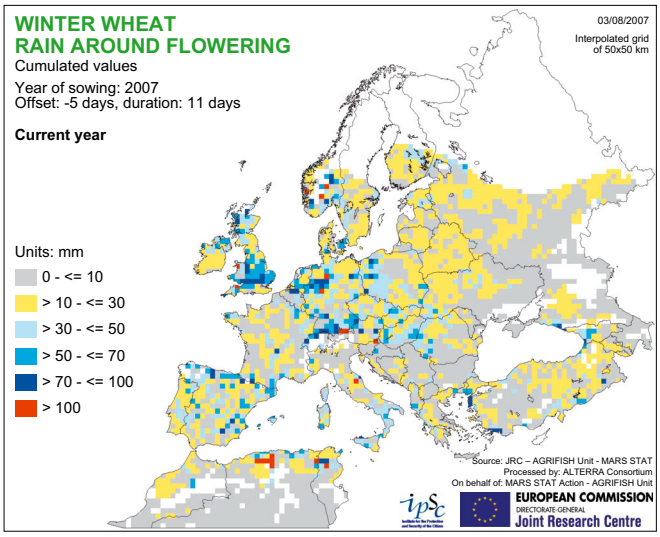




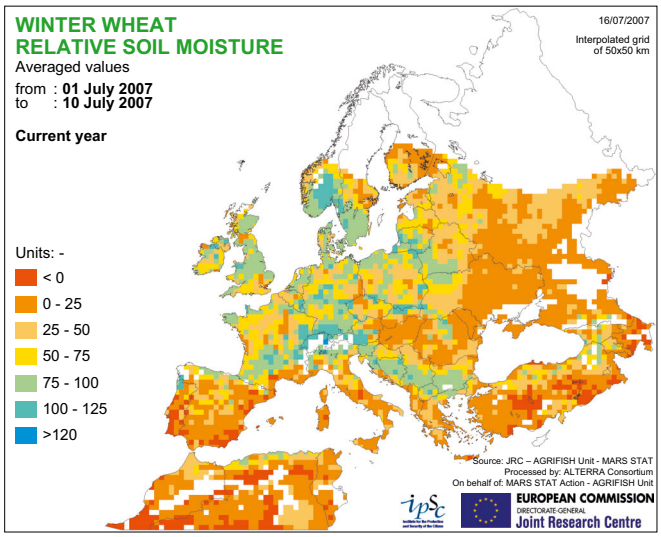


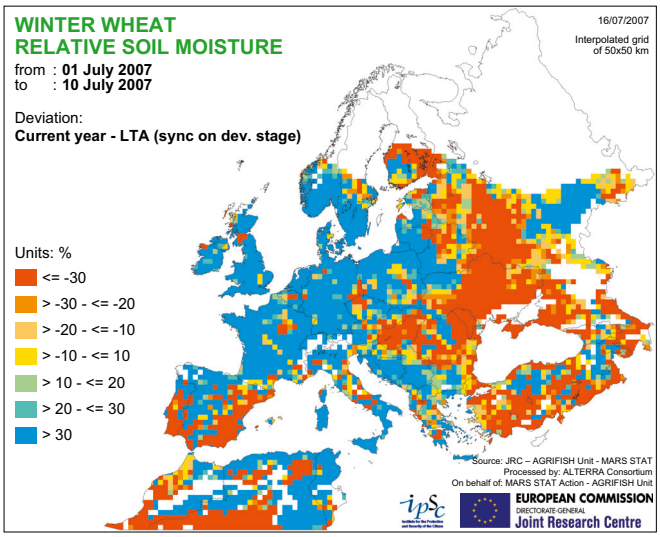


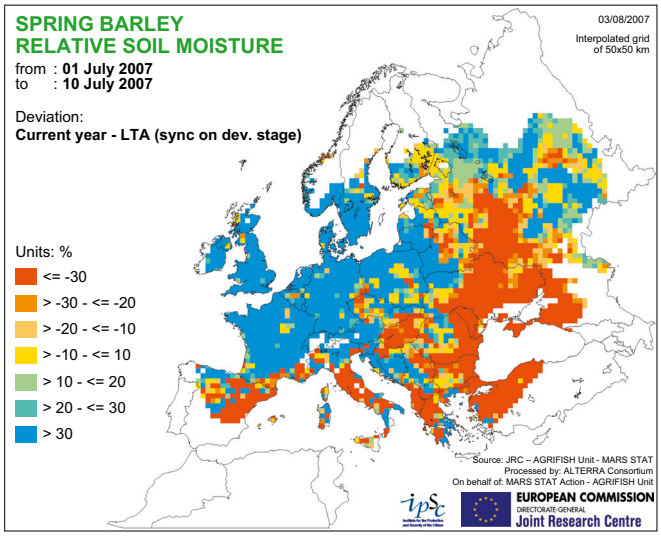


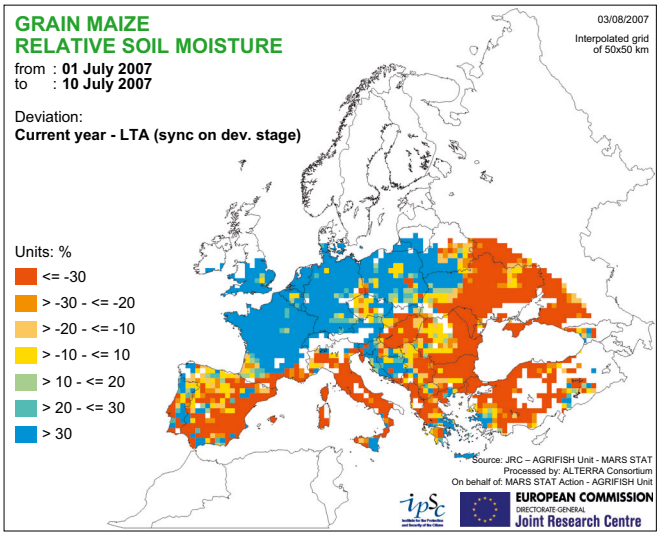


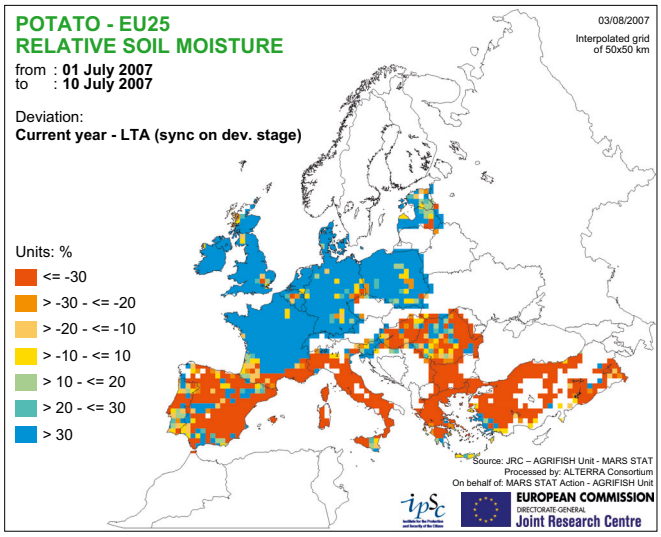
5.3. Soil moisture per crop

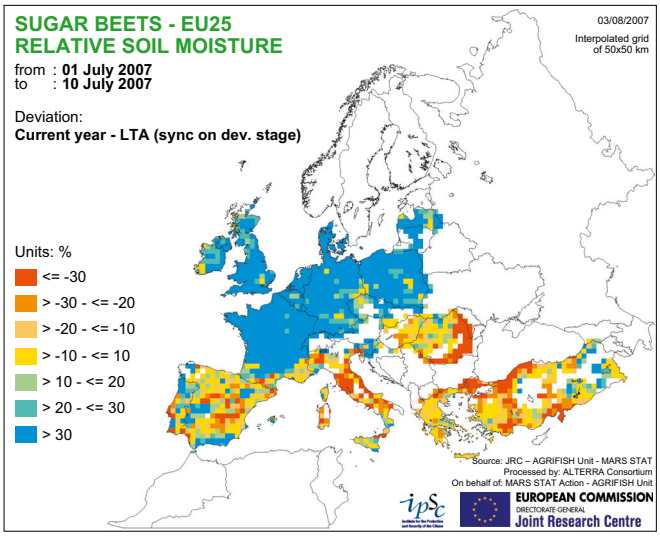






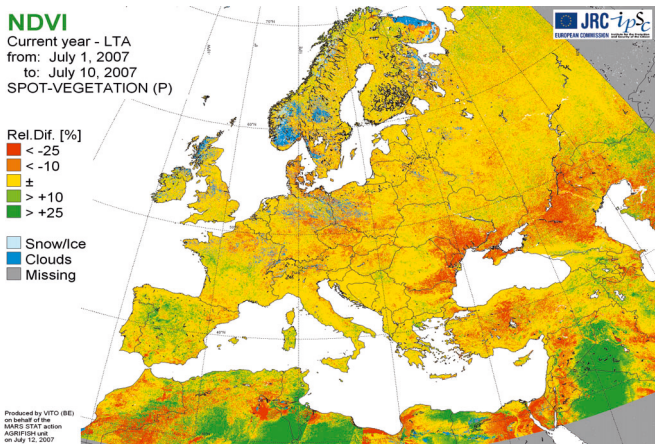






6. SPOT Vegetation satellite anaysis

Favourable season for Spain and Portugal, short and advanced senescence phase for Romania and Bulgaria



Comparison of actual NDVI values with the long-term average shows low levels of NDVI for the Black Sea area, with differences greater than 25 % from the long-term average. The previous positive picture of a well-advanced season with high NDVI values has turned into the opposite with a quick senescence phase too early in the season.

A relative increase in NDVI values compared with the long-term average can be observed for the Iberian Peninsula, which experienced a favourable season.

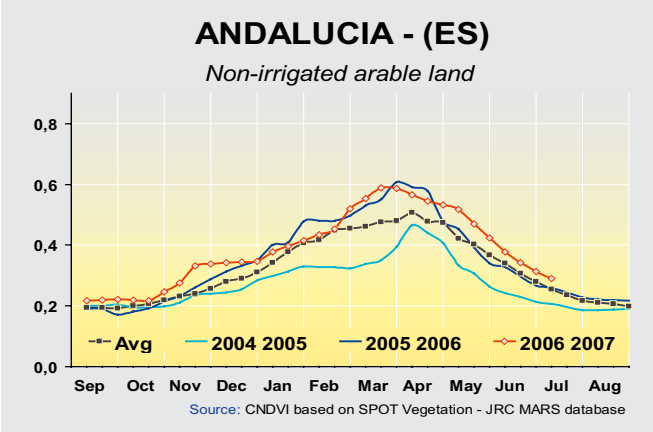
This is supported by the profile of **Andalusia (Spain)** with a typical profile well above the average and a long phase with maximum NDVIs sliding into a slowly decreasing senescence phase.

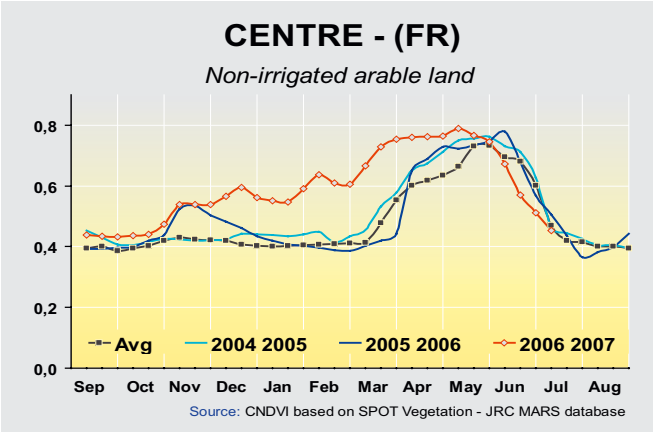
Moving to **France**, the profile for the **Centre** experienced a long maximum phase, which is a good signal towards positive yield expectations. Entering into the senescence phase is quite sharp and early, due to the advanced overall season. The same advancement of the season can be observed for **Picardie**, with a maximum reached four dekads before the maximum of biomass accumulation of the long-term average. Profiles for **Germany** also show a dominant feature for the advanced vegetation cycle of 2007, like in the profile for **Karlsruhe.**

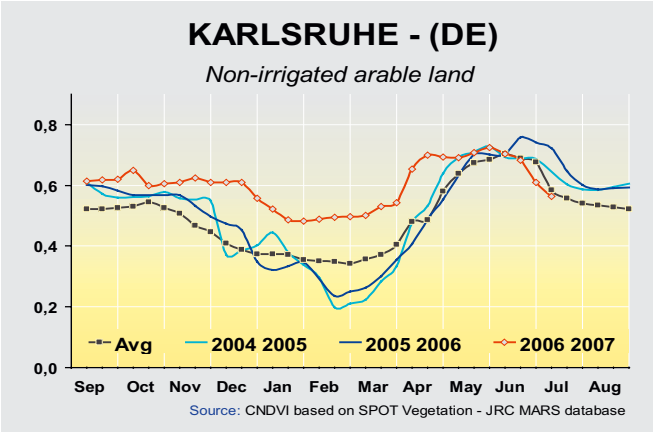
Despite these examples of biomass accumulation throughout the season with positive yield expectations the picture for Bulgaria and Romania is less positive for the last third of the vegetation cycle, as documented by NDVI values.

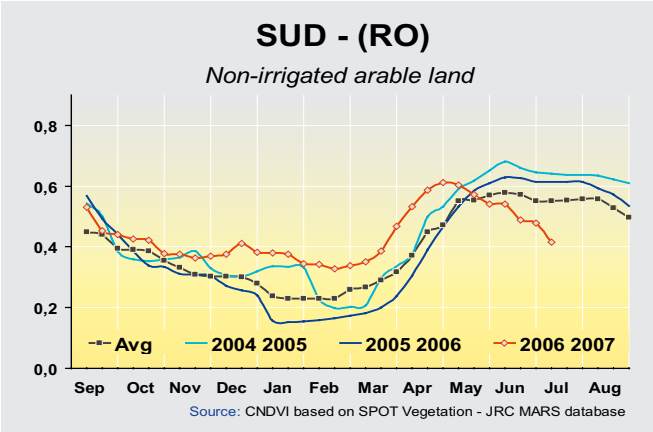
The overall C-NDVI for **Severoiztochen** in **Bulgaria** shows a very advanced season up to May, where the maximum biomass accumulation is reached. Instead of a well-pronounced maximum phase, the NDVI values start to decrease after two dekads and drop considerably below the average, diminishing yield expectations.

The profile for **Sud** in **Romania** shows an overall lower level of NDVI values and an even faster entry into the senescence phase than for Bulgaria. The sharp drop of the senescence phase is in contrast to the behaviour of the long-term average and the previous years, where a moderate decrease of NDVI values can be observed.









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