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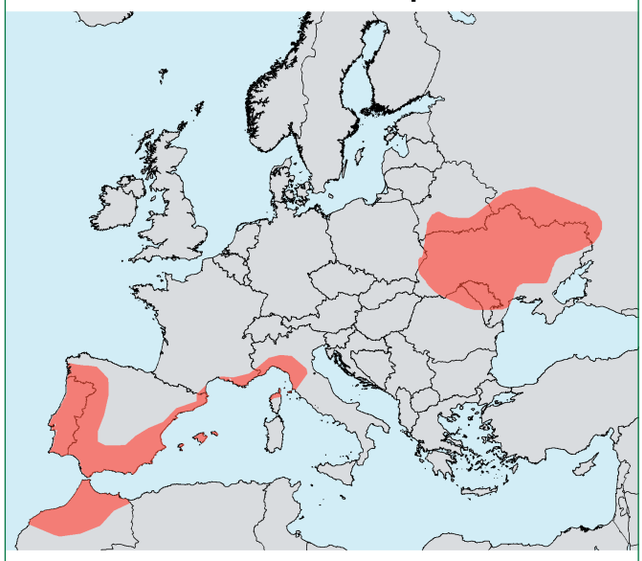
MARS AGROMETEOROLOGICAL Crop Monitoring in Europe

1st February 2007 to 31st March 2007

Vol. 15, No 2

Exceptional mild winter

Areas of concern - 1st April 2007



Soil moisture deficit in March

MARS STAT yield forecasts: 31 MARCH 2007

CROPS	European Union 27 Yield (t/ha)				
	2006	2007	Average 5 years	% 2007/06	% 2007/ Average
TOTAL CEREALS	4.7	**5.0**	***4.8***	+5.9	+4.4
Soft wheat	5.4	**5.7**	5.5	+6.0	+4.9
Durum wheat	2.8	**2.9**	***2.6***	+4.6	+10.6
Total wheat	5.0	**5.3**	***5.1***	+5.5	+5.4
Spring barley	3.4	**3.7**	***3.7***	+9.5	+2.0
Winter barley	5.1	**5.3**	***5.0***	+3.5	+6.2
Total barley	4.1	**4.3**	***4.2***	+6.3	+4.0
Grain maize	6.5	**6.7**	***6.5***	+3.0	+3.9
Other cereals (1)	3.0	**3.1**	***3.2***	+5.5	+4.5
Rape seed	2.9	**3.0**	3.0	+3.6	+1.0

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

There are still unseasonably mild conditions over most of the continent. A winter tail in the second half of March brought strong winds and the risk of frost damage. It is fairly dry in large parts of the Mediterranean and Black Sea areas but wetter in the central and northern EU. There has been heavy rain in Sicily.

Temperatures and evapotranspiration

Following a quite mild January, warmer-than-seasonal temperatures again occurred in February and March (except in the western EU, Greece and the Maghreb). There were drastic changes in the central and western EU in the second half of March.

Winter 2007 can be considered one of the mildest in the last 20 years: only 1990 and 2001 presented similar thermal conditions. At the end of March, in the whole central and eastern EU, the accumulated active temperatures (GDD with base temperature = 0 °C) were present largely in surplus: on average 130–150 GDD but with a maximum of 200–230 GDD between Romania and Hungary. Only in the west of the continent (in Ireland, south-western France, central and western Spain, Portugal and the Maghreb) were more sea-

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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

sonal values recorded.

The milder-than-seasonal temperatures were not uniformly distributed over the period. In February, higher temperatures (both minimum and maximum were 6–8 °C above the long-term average) occurred mainly in the central EU, Italy and the Balkans. Meanwhile, very cold conditions (even <– 35 °C) were recorded in Sweden and Finland. It was more seasonal in Spain, the UK and Ireland.

From mid-March, the warm front moved eastward and in the western and central EU a drastic drop occurred (mainly in minimum values). Due to the higher absolute temperatures in March, the effect on the cumulated GDD surplus was thus bigger in this month than in February. As compared to the seasonal average, the largest anomalies were recorded in March both for minimum values (in Spain with 6–8 °C below the LTA) and maximum (in central Italy, south-western and southern France, Ukraine and Russia with 10–12 °C above the LTA and in Turkey with 18–19 °C above the LTA).

Frost events occurred again in March, due to the cold air mass eruption, but in general coupled with snow, which probably prevented crop canopy damages. The lowest temperatures occurred in Spain (– 7.5 °C in Aragon and Castilla y Leon, – 7.0 °C in Cataluña) and southern France (– 7.3 °C in Provence) between 22 and 25 March. In these areas, crop damage was likely.

The above-mentioned thermal conditions positively influenced the value of the potential evapotranspiration, mainly in March. At the end of March, the cumulated values were significantly above the seasonal average in the eastern EU (mainly Romania, Poland, Benelux, Denmark and northern Germany) and eastern countries (e.g. Ukraine, Belarus and Russia).

Rainfall and climatic water balance

Dry conditions in Mediterranean regions (except Italy and the Balkans), Portugal and Ukraine. Rather wet in France, northern Spain, the Balkans and southern Italy. Intense showers in Sicily.

As a whole, in the EU countries during this period, the rain generally did not limit potential crop production, except in specific regions: southern and eastern Spain, central and southern Portugal and north-western Italy, where it was scarce. In effect, the rain was abundant and largely spread in February over most of the EU territory: in many cases (northern Spain, France, southern UK, Germany, western Poland, Denmark, southern Sweden, Romania, Hungary) it was largely above the seasonal cumulated values (>+ 50 % of the LTA and in some areas even > 100 %). On the other hand, in some Mediterranean regions, relatively dry conditions persisted with a water supply shortage: southern and eastern Spain, southern France (Rhône valley), north-western Italy (Po valley), eastern Greece (Makedonia) and the Black Sea basin. However, in these areas, thanks to the quite low winter crop water consumption (early stage of development of the active crops) the climatic water balance presented shortfall but not dramatic values.

In March, the rainy events moved partially southward and some areas affected by a shortage of rain received abundant and beneficial water supply: southern Italy, eastern Greece, south-eastern Spain and the Maghreb (> 100 mm above the LTA). In Sicily, some intense showers (> 160 mm on 9 March) occurred with possible local over-welling and temporary floodings. In these areas, the rain will allow for consistent soil water reservoirs for future reproductive stages of development of winter crops (e.g. durum wheat). But some regions still received less rain than expected: southern Spain, southern Portugal, Rhône valley, Po valley, eastern Ukraine, southern Turkey and Morocco, where the soil water content was even more depleted (deficit estimable around 80–100 mm). In these areas, considering the more advanced crop development, the potential yield could be affected and the final result will be strongly linked to future water supplies.

Publication issue
The second 2007 printed MARS analysis (Vol. 15, No 2) of the agricultural campaign covers the period 1 February 2007 to 31 March 2007.
It makes a synthesis of the major issues pertaining to:
— meteo and agrometeorological situation,
— winter crop sowings and development.
Previous related analysis available:
— Climatic updates, 25/02/2007 to 14/03/2007 (CU2007/03)
— Climatic updates, 01/02/2007 to 25/02/2007 (CU2007/02)
— Complete Bulletin, 01/11/2006 to 31/01/2007 (Vol. 15, No1)
— Climatic updates, 10/12/2006 to 13/01/2007 (CU2007/01)

Next printed issue:
Vol. 15, No 3 : April-10 May 2007 analysis and forecasts; available mid May 2007.

Contributions
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http://agrifish.jrc.it/marsstat/bulletins/2007.htm
MARS Agrometeorological web database is accessible at: http://www.marsop.info

2. Campaign Analysis at country level

Europe 27

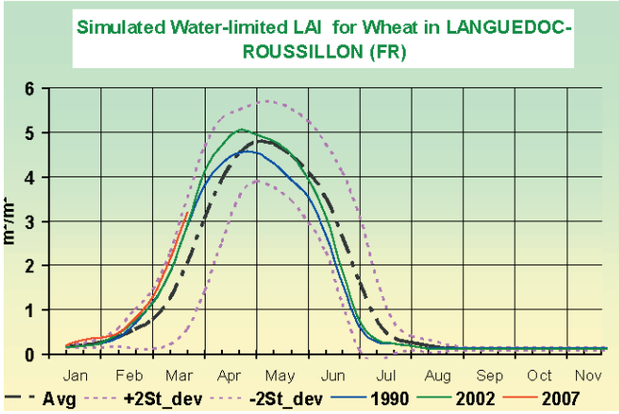
France: anticipated crop development under optimal conditions

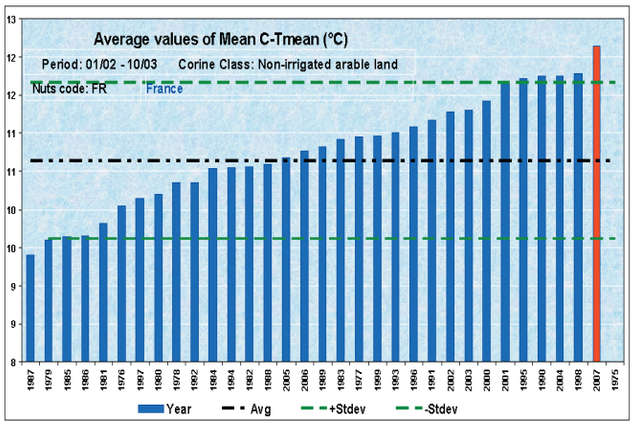
The exceptionally mild winter continued up to the beginning of March and crop development was anticipated by two dekads for wheat and one month for rapeseed, which is very similar to the 2002 and 1990 plant cycles. From mid-March, a general cold spell associated with snow in eastern France slowed down crop growth but this should not have made frost-kill damages.

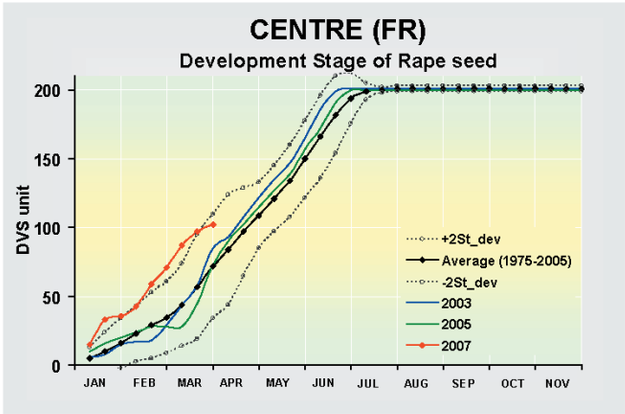
The mild temperatures will have limited the frost regulation of parasites, so plants will probably suffer in the coming weeks from a higher parasite pressure.

Most of the country benefited from higher-than-seasonal rainfall (> 30 %) from February to the first dekad of March. After that, precipitation remained lower than the seasonal values. For the coming vegetative growing period, the crop can still rely on good soil moisture. However, Languedoc Roussillon and Provence-Côte d'Azur have water reserves slightly lower than the average.

Early spring crop preparation was probably hindered in early and late February by the rainfall, but it should have continued within normal conditions in March. In eastern France, the snow in March may also have interfered with field activities.







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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.

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server (http://europa.eu.int).

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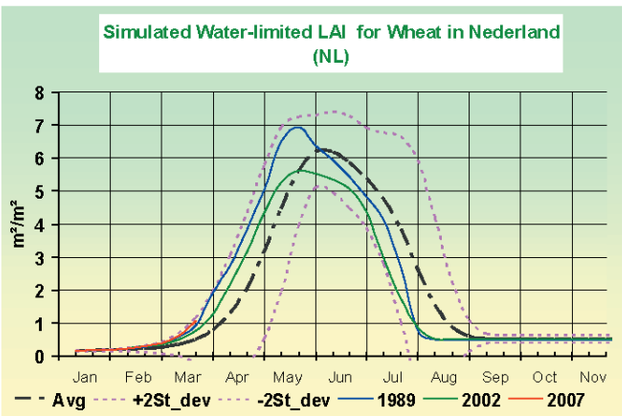
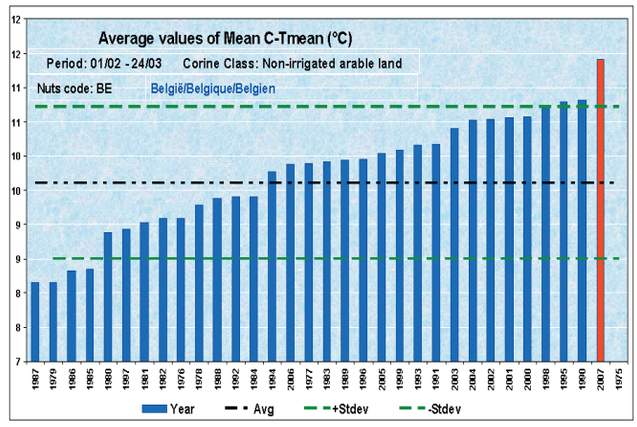
Belgium, the Netherlands, Luxembourg: exceptionally mild and wet

After a very mild winter, Belgium and the Netherlands experienced the highest average temperature for February/March since 1975. Late March was characterised by a colder spell but it did not reach frost-kill temperature. As a result of these exceptionally mild conditions, vegetation development is anticipated by one month for wheat and 40 days for rapeseed, as in 1989 and 2002.

Benelux recorded 20–60 mm above the seasonal rainfall which represents one of the wettest February/March periods for the last 30 years. The replenished soil moisture will benefit crops at a re-growth stage. However, early spring crop sowing will have been hindered.

The lack of a significant frost spell in winter, which usually reduces parasite pressure, and the ongoing mild temperature associated with the wet conditions will facilitate the development of pests and diseases in the coming days.



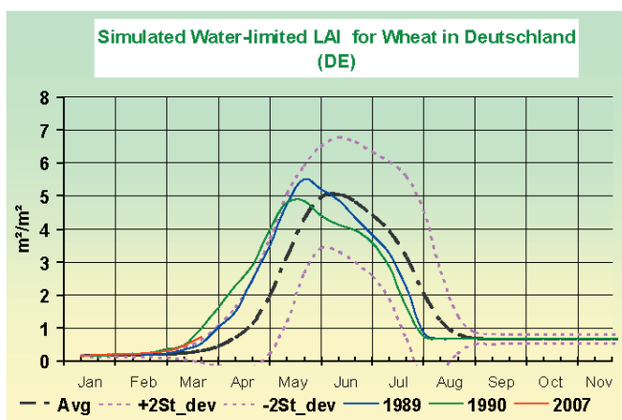


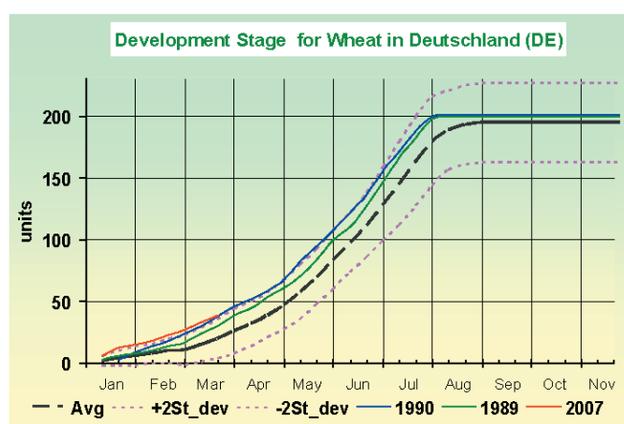
Germany: exceptional anticipated crop development with optimal soil moisture

Germany experienced an exceptionally mild winter. The average temperature remained above average until the second dekad of March. From then, a limited cold spell affected the southern half of the country with low temperatures. Despite the crop de-hardening, this temperature drop associated with snowfall should not have affected the crops. As a result of the mild period, wheat and rapeseed showed an anticipated crop development by more than four dekads, as in 1989.

Precipitations were abundant at a higher level than the seasonal value with two drier periods in mid-February and mid-March. The country experienced two main snow spells at the beginning of February and the end of March. The crops will benefit from optimal soil moisture and will not be water limited in the coming fast-growing period. The early spring sowing could have been slightly hindered by the precipitation, particularly in late February and March.

The mild and wet conditions will probably encourage parasite development in the coming period.





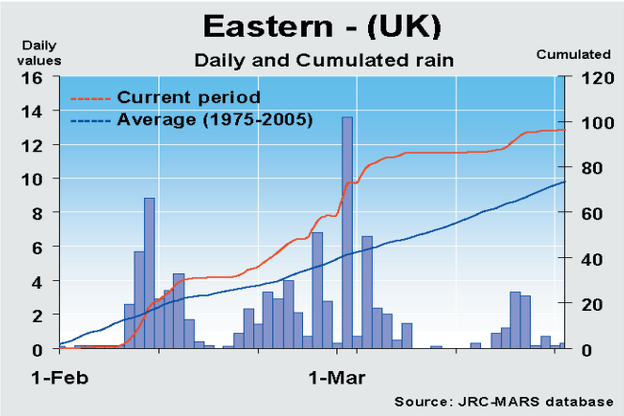
The UK and Republic of Ireland: mild and wet winter, drier since mid-March

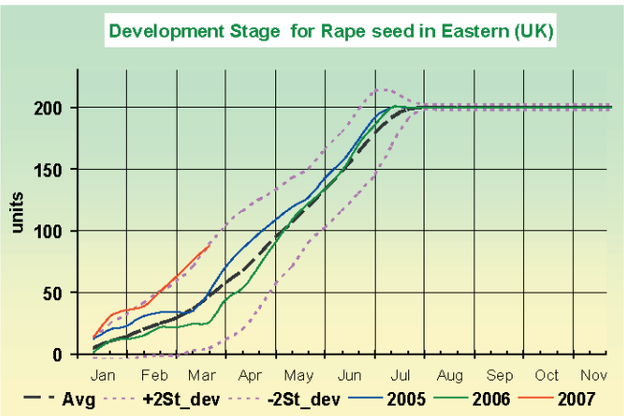
Following a mild start to the year, at the beginning of February more seasonal temperatures were restored; but this was only for a short period, because warmer conditions returned again in mid-February. In the second half of March, more seasonal thermal conditions occurred. However, during the period, temperatures always remained within the normal ranges of variation and no significant extreme events occurred. Late light frost events were recorded in the latter part of March but without significant impact on active crops, also thanks to snow cover. As a whole, in the period under consideration, temperatures on average were 1.5–2 °C above the seasonal mean and therefore the cumulated active temperatures presented 70–90 GDD above the LTA values (+ 25–30 %). Consequently, all of the developments of the active crops, but especially for winter rapeseed, were boosted. At the end of March, winter cereal stages were 15–20 days in advance and more than 30 days for rapeseed (practically at the flowering stage). Similar conditions occurred in 1998 and 2002, and more advanced stages were recorded only in 1990.

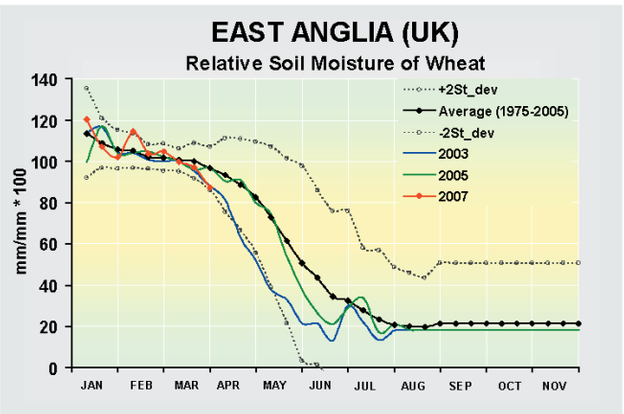
The very advanced and sensitive stages of development reached (e.g. rapeseed) and the probability of having late frost events (normally possible until the end of April) expose those crops to future risks, despite the seasonal forecasts still showing mild conditions for the next months.

During the period, the rains were abundant (on average + 20–25 % as compared to the LTA), and frequent (more than 15 rainy days), especially in the western UK, but more seasonal in Ireland.

In the eastern UK particularly, persistent rain and mild temperatures determined favourable conditions for pests and diseases and for nitrogen leaching. Therefore, the current high crop potentiality could be reduced, given the absence of appropriate crop management and protection. The rainfall and snow (mainly in Wales and Scotland) was also an obstacle for spring sowing (e.g. barley).







Italy: warmer than normal up to mid-March; drier in the north, beneficial rain in southern areas

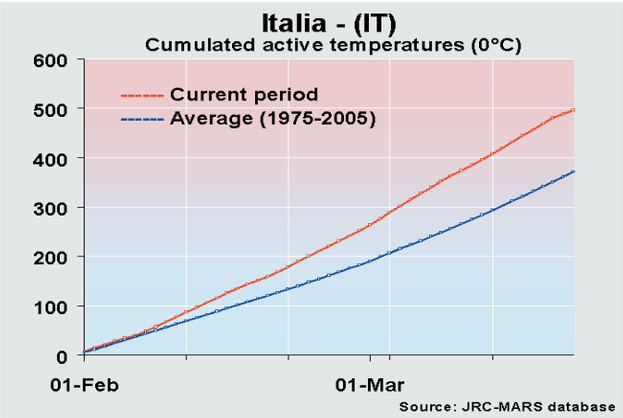
February and March were characterised by milder-than-seasonal temperatures. Both the minimum and the maximum daily values remained above the seasonal average (on average 2–3 °C) from the second dekad of March. Therefore, the active temperatures presented higher accumulation values of around 80–120 GDD as compared to the LTA. Similar thermal conditions occurred in 1990, 2001 and 2002.

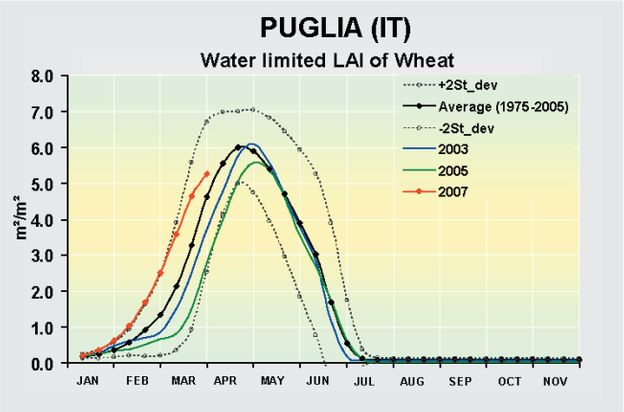
Geographically, the surplus GDD was not uniformly distributed: the highest values (> 200) were recorded in central Italy, along the Adriatic and in the Po valley; lighter surplus occurred in the southern part, in Sicily and the north-west. In the second half of March, a drastic temperature reduction occurred (on average 6–8 °C, and even more in southern areas).

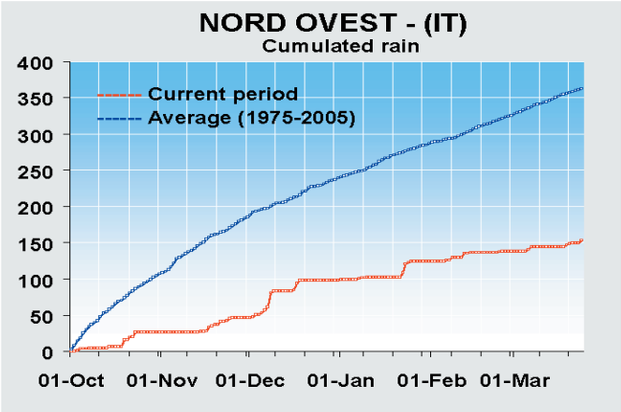
Despite that, as a whole, plant growth was accelerated and, at the end of March, the development stages were, on average, one or two weeks in advance as compared to the LTA and similar to 2001; they were even more advanced in central Italy. As a whole, only a few frost days were recorded and solely in the Po valley, and the minimum reached – 3 °C or – 4 °C in mid-February, but hopefully without evident damages.

In general, rainfall was scarce in northern and central areas whilst in southern areas, particularly Sicily, they were abundant and well spread over the period (12–15 rainy days). In Sicily, at the beginning of March, intense showers occurred, determining the second wettest year since 1975 (the wettest was 1996); the soil reservoirs were filled and are available for the future reproductive stages of winter crops (durum wheat).

On the other hand, in the Po valley, and in particular in the north-west, dry conditions, which had already begun during the previous autumn, persisted. The water deficit was around 50–60 mm (– 40/– 50 % as compared to the LTA) but is estimable around 200 mm since last October (– 60 %). In the Po valley, the current campaign is the second driest since 1975 (the absolute driest was 1990). Fortunately, the weather forecast for the next weeks shows a high probability of having relevant water supplies.

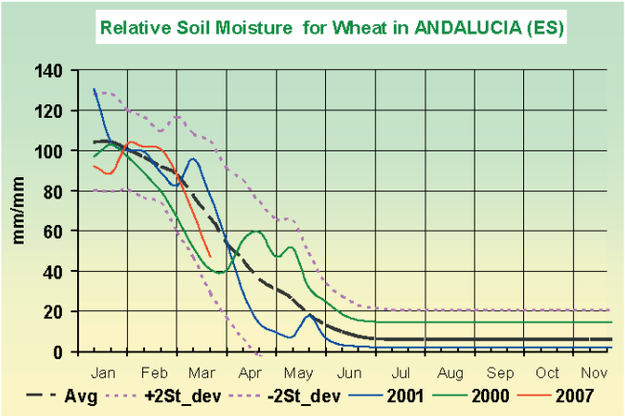


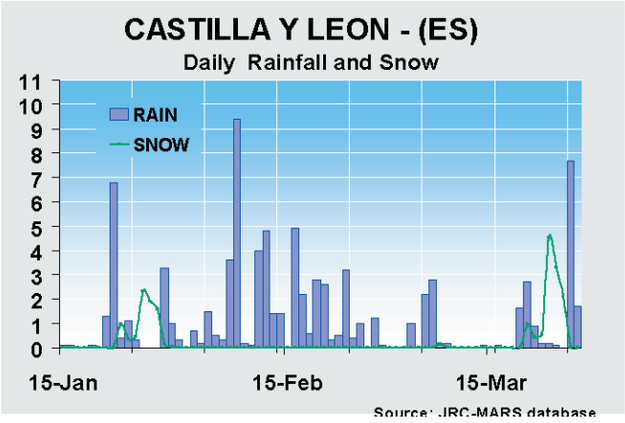




Spain: a bad start to the season, followed by a significant improvement in March

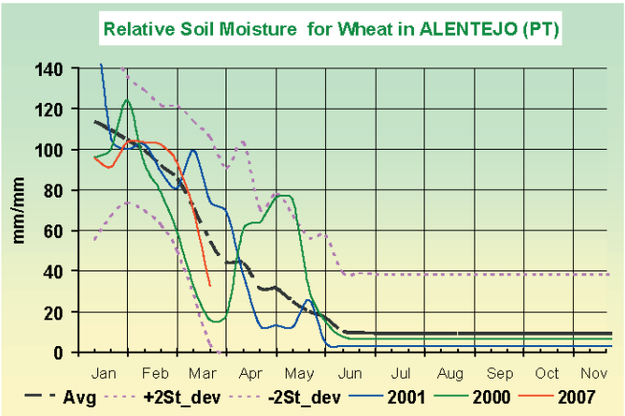
Following a dry spell that lasted from December up to the third dekad of January, climatic conditions improved significantly in March in the main winter cereal production areas of Spain. There were diffuse rains in Castilla-Leon, Castilla-La Mancha, Extremadura and Andalucía and even some snowfall in the north-east (Aragon). Crops which had been sown late in autumn 2006, and which had suffered from the water shortages in the emergence and first tillering phases, should have taken advantage of the recovery of topsoil moisture. Temperatures, which usually see a marked distinction between the north and south of the country, were uniformly high this year and with minimum levels systematically above the 0 °C limit for most of the period. In mid-March, there was a reduction in precipitation, especially in the south, but it was soon recovered in the last dekad of the month, when rainfall picked up again especially across the south-west regions. This break of precipitation in the course of a rather wet winter season could actually be considered positive for field preparation works in view of spring crop planting. Overall, conditions can be considered positive for winter cereals. The expected yield for durum wheat takes into account the favourable conditions and stands at 2.5 t/ha, significantly increased on 2006 (+ 40 %) but also on the five-year average (2 t/ha), which is, however, affected by the disastrous 2005 and 2006 season. Soft wheat, mostly concentrated in the north of the country, is estimated at 3 t/ha (11 % on 2006) on the same trend as durum wheat but affected by the drier conditions in the east of the country. Winter barley yield is expected at 2.6 t/ha (+ 2.8 % on 2006).

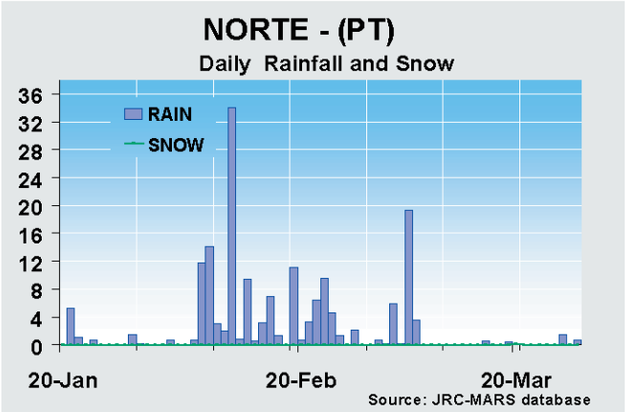




Portugal: the climate improves going into spring with a positive outlook for crops

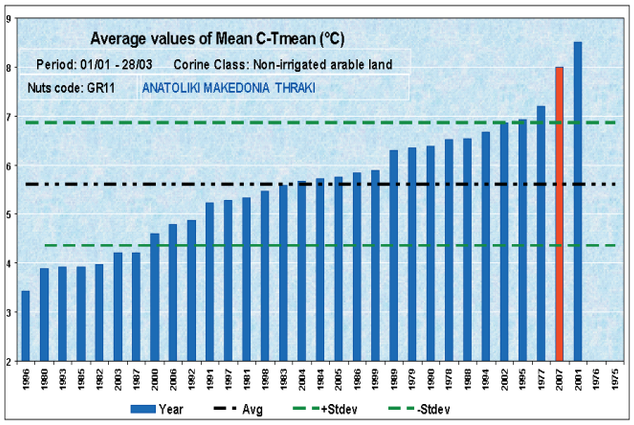
Winter 2007 in Portugal has had a climatic evolution similar to that of neighbouring Spain. The sowing season had been hampered and delayed by intense rain causing access problems for machinery. The period that followed, until the end of January, saw some reduction in rainfall but, considering that there was a short cold spell, conditions should not have affected crops in the dormancy phase. Precipitation picked up again in the second and third dekad of February, more significantly in the west and northern part of the country (Norte). The evolution to the end of March again saw a reduction of precipitation especially in the south. Since these areas are the most relevant for the cultivation of winter cereals, this trend, coinciding with the beginning of the shooting phases, could negatively affect crops. Considering the variability of the first months of 2007 and the uncertainties of the season ahead, the estimate for soft wheat is in the order of 1.8 t/ha, slightly increased with respect to the five-year average, but significantly lower than 2006 (2.33 t/ha). Winter barley, developing later, should have been less affected by the dry period of early March and taken benefit from the latest rains. The yield forecast is for 1.6 t/ha.

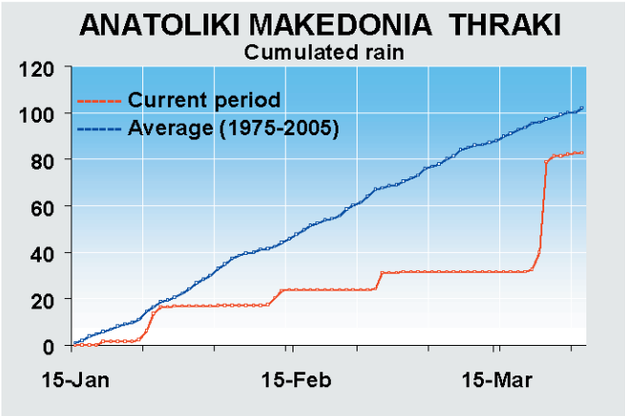




Greece: very dry conditions in January and February, improving in March

Winter 2007 started with a rain deficit over most of the country. Precipitation during January was over 60 % lower than the long-term average of the same period and this was reported to be the driest January in 50 years. Conditions were worse in the east, in Kentriki Makedonia which is also the bread basket of the country; here, the overall cumulated moisture deficit was more than 50 mm. The drought started easing in February and the greater part of the deficit was recovered within the last dekad of March. Just as January and February ranked among the worst of the last 32 years in terms of precipitation, the last two dekads of March were among the best in the same length of time. This trend was reported over most of the main agricultural areas of the country from Anatoliki Makedonia to Thessalia and the Adriatic coast. Temperatures to the present are higher than normal for most of the period with a decreasing north–south trend. The conditions described are conducive to an early brake of vernalisation of winter cereals and, at the moment, the climatic conjuncture with sufficient moisture in the topsoil and warm weather can be considered favourable to crop development. The same considerations are valid for barley, even though it is still early, due to the delayed development. Given the precocity in development of wheat, the risk of damage due to late frost or the return of dry spells is significant and so is the susceptibility to pest and diseases. In light of this climatic trend, the expected yield for durum wheat is estimated at around 2 t/ha, slightly increased on the five-year average. Soft wheat which is more common in the north-west is forecasted at 2.9 t/ha. For barley, the expected yield stands at around 2.35 t/ha, with a slight increase on 2006.



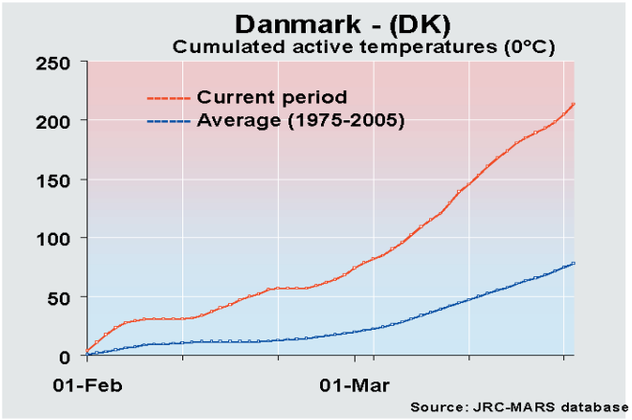


Denmark, Sweden and Finland: unstable February, mild and wet March in Denmark and Sweden, quite cold February in Finland

In Denmark and Sweden, the weather was quite variable in February and March despite generally milder-than-seasonal temperatures occurring (mainly in March). During the period, minimum values remained generally higher than seasonal values, but still some degrees below zero. Some colder north Atlantic air mass erupted, with associated snowy events: light snow was recorded during the first and third dekad of February. In March, maximum values progressively increased and unseasonably high temperatures were recorded: around 15–16 °C on 12 March. Those conditions probably interrupted the winter cereal dormancy. At the end of March, the cumulated GDD showed a significant surplus: more than 200 GDD as compared to the climatic average (80 GDD).

Rainy and light snowy events were quite frequent during the period, especially in March. Consequently, abundant water supply was recorded, but also lower levels of solar radiation, particularly relevant at that latitude.

In Finland, February was characterised by changeable and quite cold conditions: consecutive cold waves also determined extreme events (<– 30°C). Then, in March, temperatures increased rapidly with the maximum reaching values largely above the seasonal average. However, some snowy events occurred at the end of March and the snow cover was still partially present, prolonging the crop dormancy stage.



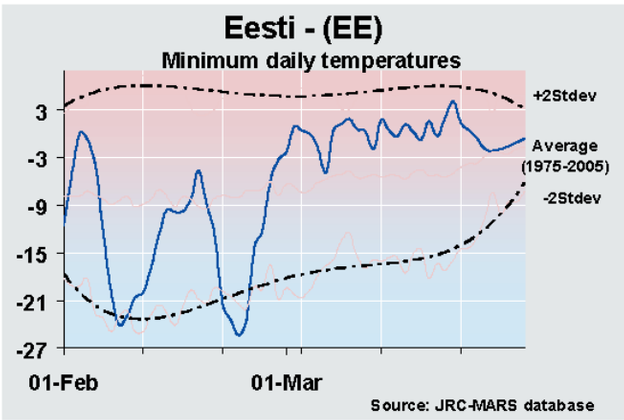
Estonia, Latvia, Lithuania: two frost waves in February, warmer than usual in March

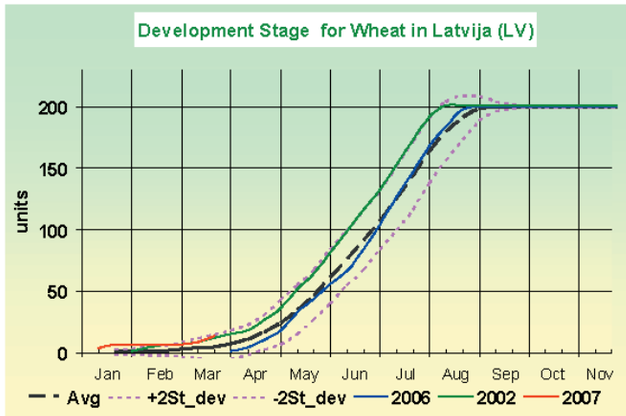
Precipitation received during this period was slightly below the long-term average. Solar radiation was above the long-term average. As a result of lower precipitation and increased evaporation capacity the climatic water balance was below the normal level, but it remained positive until the end of March (with a decreasing graduation from north to south).

The thermal resources available for the period under consideration were slightly above normal and the number of days with temperatures below 0 °C was 10 days lower than in an average year.

The remote sensing data suggest a higher-than-normal growth of vegetation.

For Estonia, the development stage is above the long-term average. For this indicator, the most similar year is 2002.

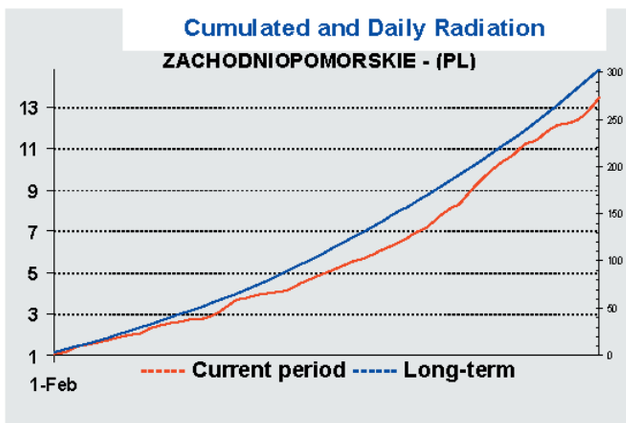


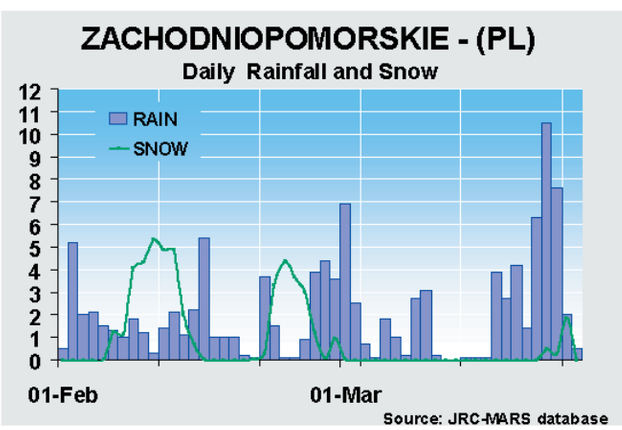


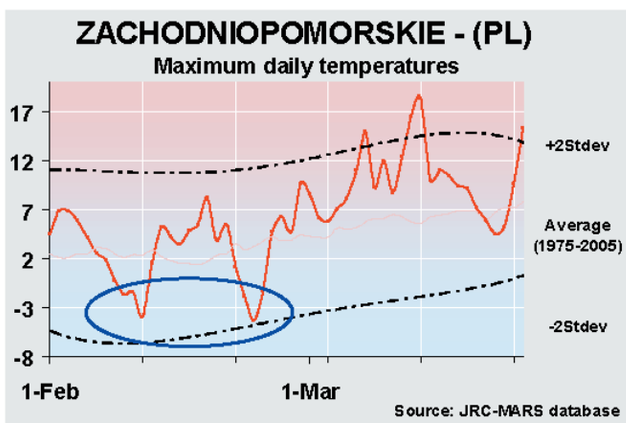
Poland: high temperatures recorded in the whole country

Poland has experienced a mild end of winter and a warm spring. Cumulated active temperatures for winter crops since the beginning of February are more than 200 % higher than the long-term average. The northern part of the country experienced two cold air irruptions around 11 and 23 February. The intensity of these events has been higher in the north-eastern regions than in the north-western ones. Rainfall has been characterised by slight although almost daily events; this partially explains the irradiation levels, in most cases below the long-term values.

Winter wheat is anticipating the end of the tillering phase by about one month; in the south-western regions, it is entering the stem elongation stage. In some regions, problems related to soil moisture excess could have been confirmed. Rapeseed is at the middle of the vegetative phase with about a three-week advance. Also for this crop, the soil water content is reaching high values in many parts of the country.



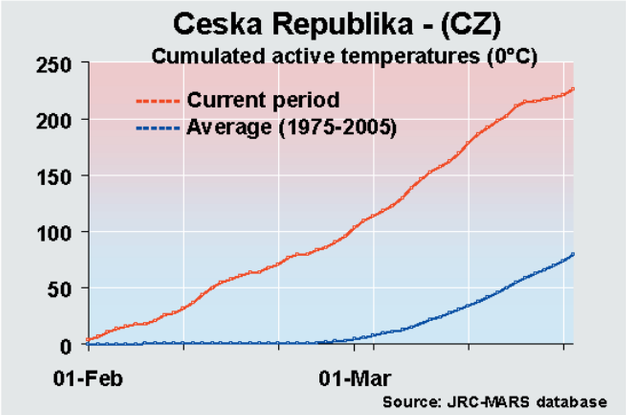


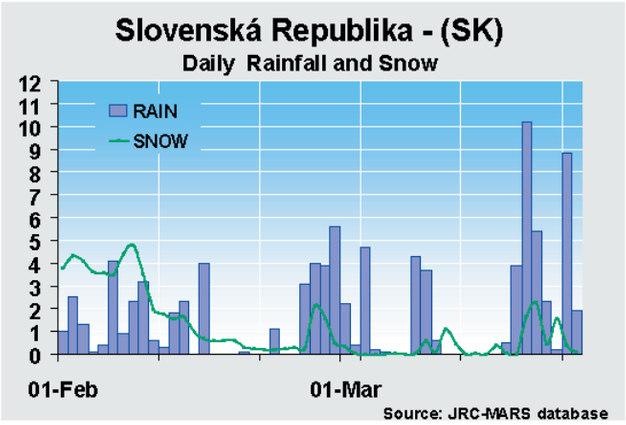


Czech and Slovak Republics: 2007 started as a warm and wet season

Meteorological conditions experienced by the Czech and Slovak Republics are similar to those described for Austria. Cumulative rainfalls have started exceeding the average values from the end of February and are now about 50 % higher than the long-term average. Maximum values of cumulated rainfall within the two countries have been recorded in the western part of the Slovak Republic (Bratislavsky and Zapadne) and in the eastern part of the Czech Republic (Severovychod, Jihovychod, and Stredni), therefore at the border between the two countries. Frequent rainfall events have been associated with a not very high irradiance level, especially between late February and early March. Temperatures are showing an extraordinary year, although the vegetative phase being so much shorter than the average could indicate a sub-optimal potential from a productivity point of view. As with Austria, the combined effect of the abundant rainfall and the warm thermal conditions could possibly have a triggering effect on diseases.

CNDVI (non-irrigated arable land Corine class) shows values much higher than the average, because of the anticipated crop cycles which are leading to an early canopy development. Winter wheat has entered the stem elongation stage with roughly a one-month advance with respect to the long-term average. Some problems due to soil water content excess could have verified in some areas because of the combined effect of melting snow and precipitations. For the same reasons, spring barley sowings could have encountered some difficulties related to machines being able to access the fields. Rapeseed is in the second part of a vegetative phase which is expected to be more than 20 days shorter than average.





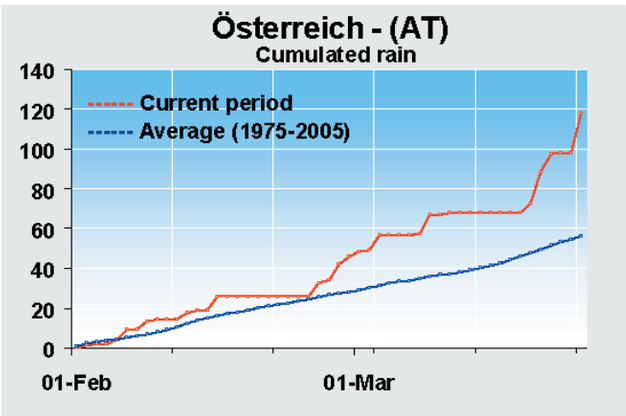
Austria: unusually high temperatures recorded since the beginning of the year

The country experienced temperatures considerably higher than the average for the whole period under consideration. The daily thermal minima were always above the average and maxima fell below the average only for a couple of days around 21 March, due to a storm event. The extraordinary availability of thermal units is shortening the crops' vegetative phase. Cumulated rainfalls are exceeding the standard values of about 100 %. Problems due to soil moisture excess could affect the crops because of the combined effect of rapid melting snow due to high temperatures and abundant rainfall. This, combined with the high temperatures mentioned, could depict a favourable condition for diseases. No frost damages are expected anywhere in the country.

For winter wheat, a one-month advance in development is simulated because of the high temperature. This is an extraordinary value: the current development stage (beginning of stem elongation) has been reached with a more than one-dekad advance too compared to the value corresponding to the average – 2 standard deviations. Soil moisture excesses are simulated between February and March.

Spring barley is probably experiencing unfavourable sowing conditions in some areas because of the soil moisture excess which is threatening field accessibility. In some cases, mild temperatures could have induced farmers to anticipate the sowings and this could have avoided problems related to field accessibility.

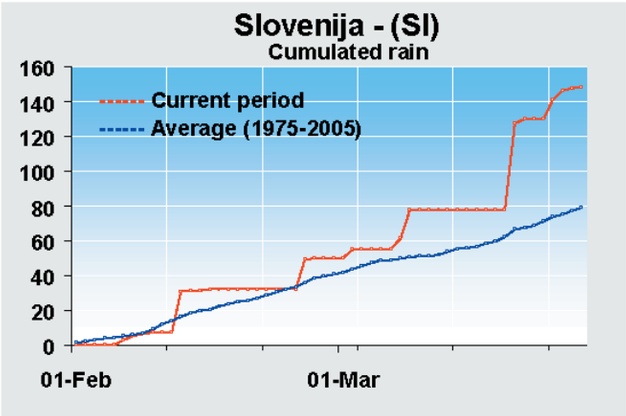
Roughly a one-month advance in development is simulated too for rapeseed, currently in the second part of the vegetative phase.



Slovenia: temperatures higher than average

Higher-than-average temperatures characterised February and March. In particular, daily minima have always maintained at values between 1 and 2 standard deviations higher than the long-term average. Cumulated precipitations from the beginning of February are about 100 % higher than the mean value, mainly because of the important event verified on 19 March.

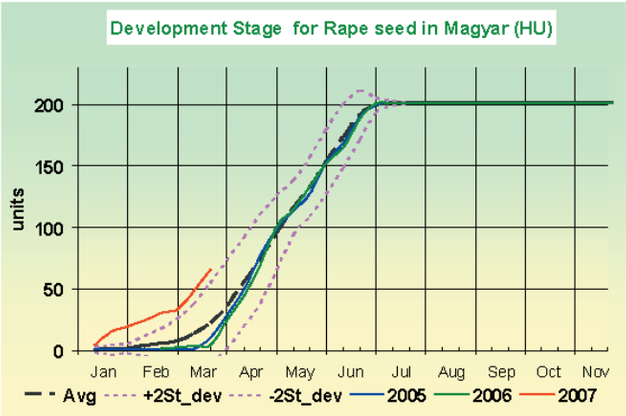
Winter wheat is at the mid-stem elongation stage with a one-month advance compared to the five-year average. Despite the abundant precipitation recorded since the beginning of February, no significant problems related to soil moisture excess are simulated. Spring barley should not have suffered from the storm event occurring at the end of the second dekad of March. Unusually warm thermal conditions are pushing rapeseed development to pass the middle of the vegetative phase with a 25-day advance.

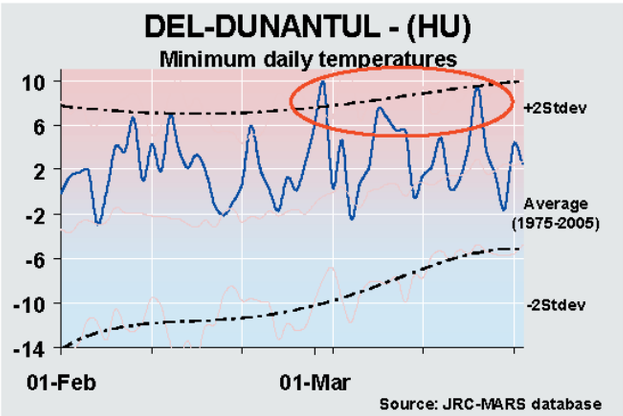


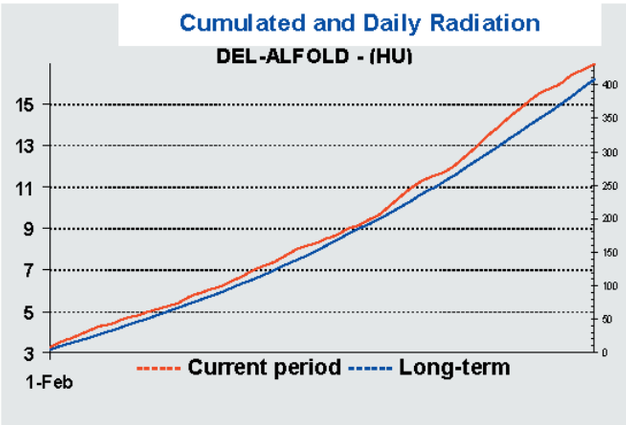
Hungary: one-month advance is simulated for winter crop cycles

Higher-than-average temperatures have been recorded since the beginning of the year, inducing winter crops to strong advances in the crop cycles. Precipitation too has been higher than average (almost + 60 % compared to the long-term average for the whole country), especially in the western regions. The main rainfall events were concentrated in February in the eastern regions (e.g. Eszak-Alfold) and in March in the western regions (e.g. Nyugat-Dunantul). South-eastern regions experienced satisfactory irradiance levels.

Winter wheat entered the stem elongation phase with about a one-month advance with respect to the five-year average. In spite of precipitation being higher than average, the simulated soil moisture is close to average. This suggests that no problems related to field accessibility should have affected spring barley sowings. Rapeseed is in the second part of the vegetative phase and presents a 25-day advance compared to the norm.



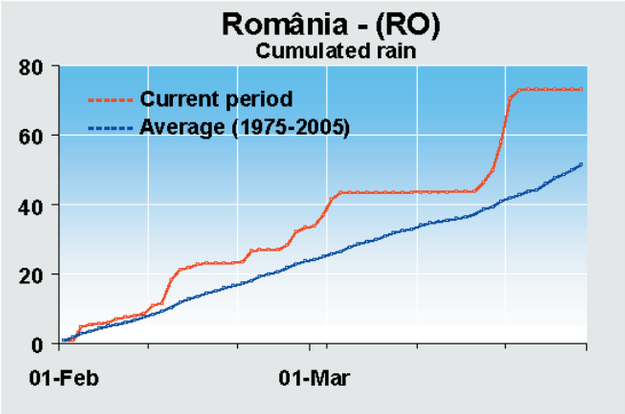


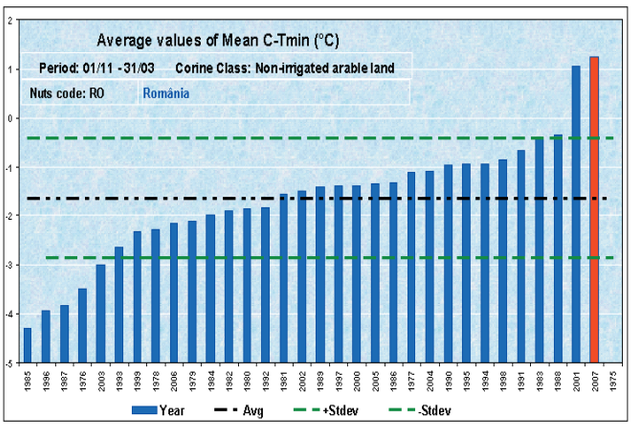


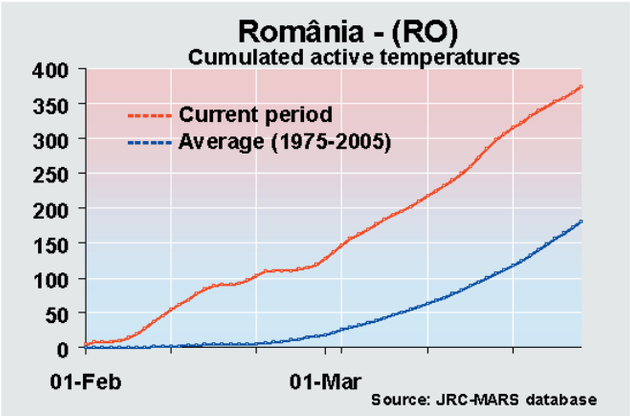
Romania: the warmest winter in the last 30 years

A mild February/March (the sum of active temperatures above the long-term average was enough for the unfolding of two new leaves) ended the warmest winter for the last 30 years. Simulated development of winter wheat was with about 2 standard deviations above the normal (the most similar year until now is 2002).

The precipitation received during February was slightly above the long-term average and the two rain events from February partially improved the climatic water balance (– 5 mm for February/March 2007, which is above the long-term average of – 13 mm and much better than – 48 mm recorded for the similar period of the reference year 2002).







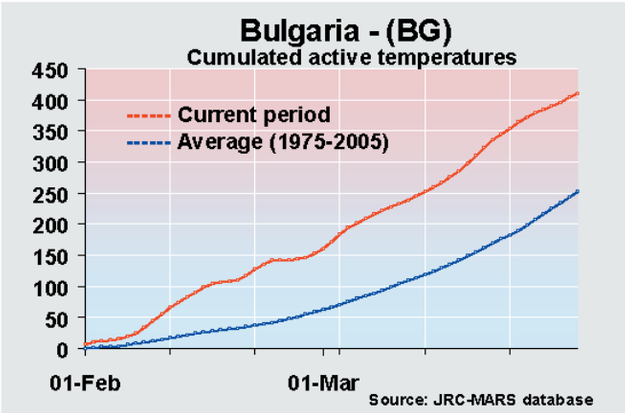
Bulgaria: the warmest winter in the last 31 years

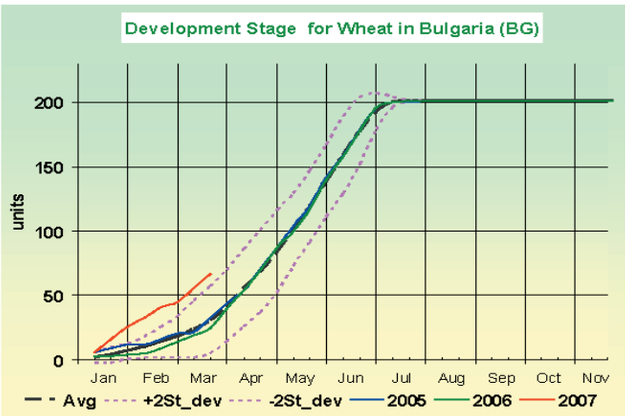
The mild period February/March was the warmest winter of the last 31 years. During these last two months, 16 days with minimum temperatures below 0 °C were recorded (compared with a long-term average of 29 days) and only one day with the minimum temperature below – 5 °C (the long-term average for this threshold is 14 days). During the period under consideration, the sum of active temperatures (Tbase=0°C) exceeded the normal level with more than 160 GDD and this was enough to provide a gain of two leaves on the main stem of winter wheat plants.

The development stage is anticipated for all the winter crops. It is expected that the soil moisture will decrease more quickly than usual due to an increasing water demand of better developed crops. Expressed as an average for all agricultural areas of the country, the precipitation received since the beginning of February is close to the normal level. The wetter-than-normal areas are located along the southern Danube, meanwhile the agricultural areas from eastern Bulgaria were drier than usual.

The climatic water balance (calculated since 1 November) was lower than usual, but still positive.

The level of solar radiation was close to normal, excepting some northern areas which were slightly above. The higher values of CNDVI based on SPOT vegetation data are in agreement with the simulation of an anticipated development stage and a high LAI.



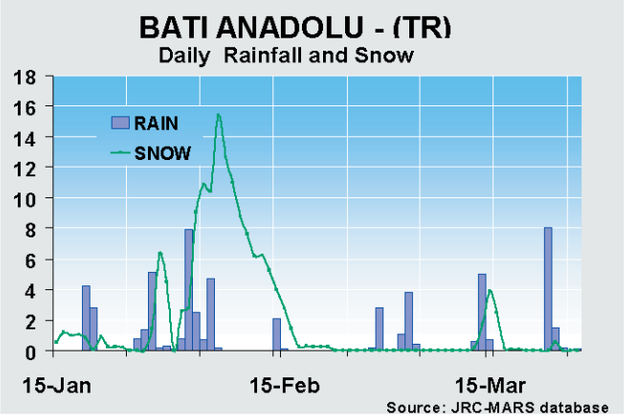


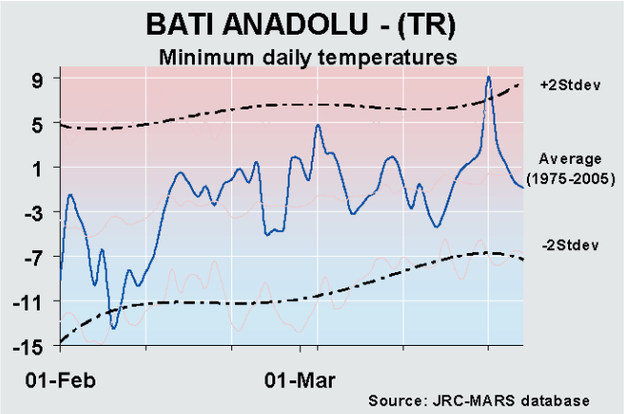
Black Sea Area

Turkey: dry and warm in the west, cold and wet in the north-east

The winter climate over the main cereal production areas of western and central Anatolia was characterised by alternating periods of intense rain and dry spells. From January to the beginning of February, intense rain and snow spread from northern Turkey towards the south-east. Dry conditions continued to prevail in the west (Bati Marmara) and in the south-west of the country, particularly on the Aegean coastal regions, with a reduction of over 20 % in precipitation with respect to the long-term average. Throughout this period, the Black Sea area was not affected and precipitation remained in the norm. There was a dry spell between mid-February to early March followed, however, by a pickup in precipitation in the last dekad of this month. Throughout winter, average temperatures remained in the norm, slightly higher in western and central Turkey, lower in the east. The start of the shooting phase of wheat should be favoured by the present conditions of temperature and top soil moisture. Shooting of barley, the cultivation of which prevails in the west, is slightly delayed and its outcome depends on the climatic developments of the next few weeks.

Given the conditions described, the expected yield of winter wheat is quite uncertain and could still be influenced by such hazards as late frost events in April or a dry spell in central Anatolia during May/June. At the moment, a reasonable estimate is on the average levels of 2.24 t/ha for wheat and 2.5 t/ha for barley.

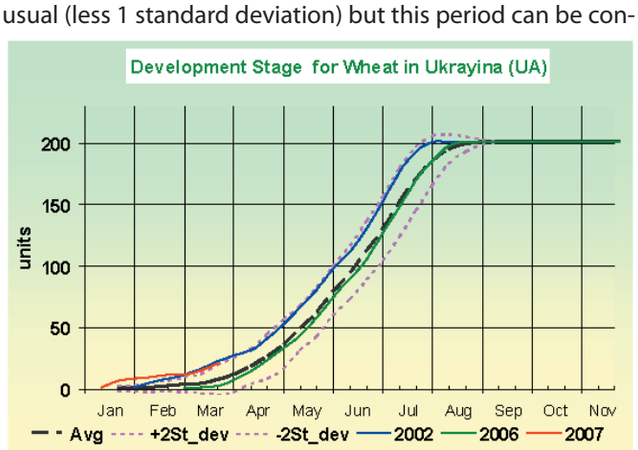


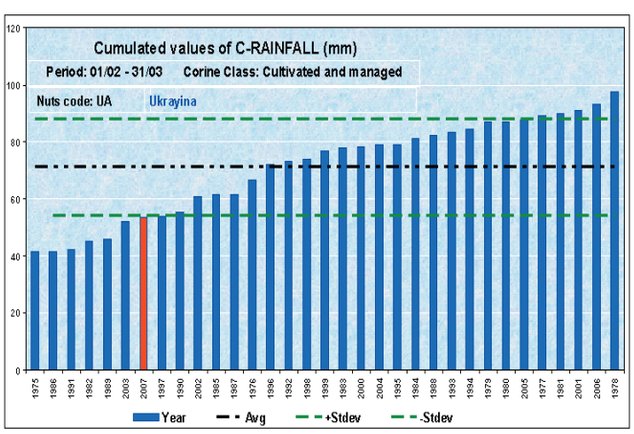


Ukraine: mild winter, dry in the south-east

Wheat forecast: the highest degree development of winter crops is in advance by more than one month. The year with the most similar developmental pattern for the period January–March is 2002. In contrast to 2002, the number of days with temperatures below – 10 °C was about 40 % lower (seven days for the period November 2006–March 2007, compared with 12 days from the winter 2001/02). The global radiation was close to the long-term average.

The rain received during February–March was lower than usual (less 1 standard deviation) but this period can be considered as exceptionally dry only for the south-eastern areas. No good rains are foreseen for the first 10 days of April, except a slight alleviation (4 April) for the south-eastern areas of concern. The precipitation regime for the period under consideration from the comparison year (2002) was slighter better but the climatic water balance since January 2007 was better than in 2002. There are still good chances for an average winter wheat yield. Conditions for the spring field labours are somehow advantaged by the drier-than-usual soil but not optimal for crop emergence.



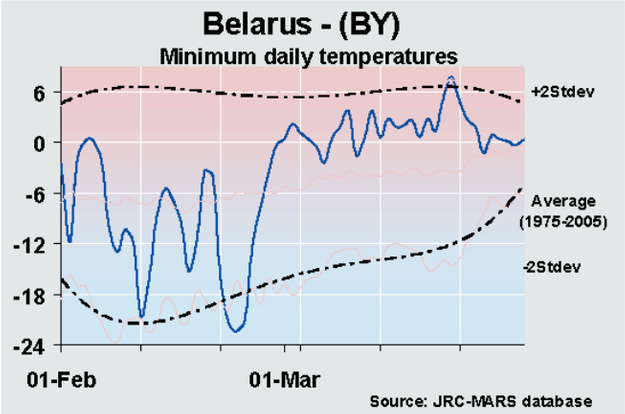


Eastern countries

Belarus: two frost waves in February, warmer than usual in March

The minimum temperature dropped twice below – 20 °C (11 and 23 February). Locally, the level of – 30 °C was reached in north-western Belarus, but the optimal snow cover (around 15 cm) partially reduced the impact of the frost. From the first week of March, rising temperatures re-launched the growth of winter crops (the sum of active temperatures was enough for the unfolding of one new leaf) but also increased vulnerability to late frosts due to de-hardening. Simulated development of winter wheat was with about 2 standard deviations above the normal.

Precipitation received during this period was close to the long-term average until the last 10 days of March when it dropped below normal (– 20 mm).

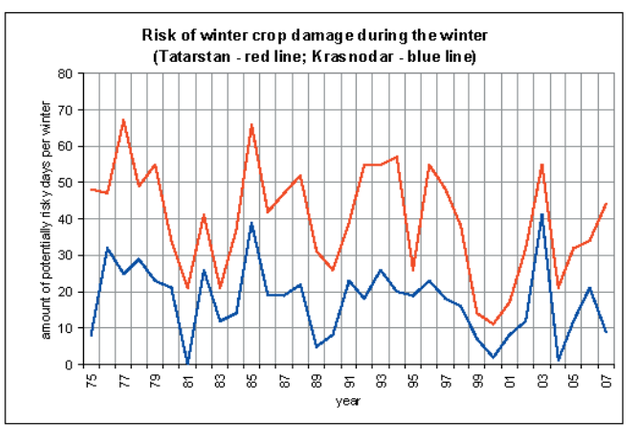


Russia: good conditions for winter crops

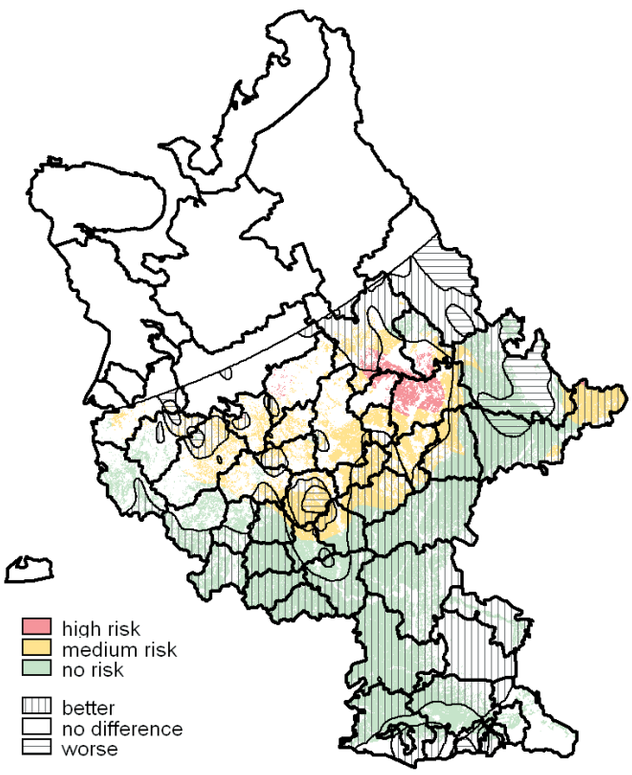
The period under analysis is the last stage of the dormant period of winter crops in all regions of European Russia. The winter started later than normal, and the period before was optimal for winter crop development. The remote sensing indicators demonstrate a good status of winter crops before the winter.

The maximum cold air invasion took place at the end of January, when the minimal air temperature in many regions was lower than – 20 °C. However, the lowering of air temperature was accompanied by snow. As a result, the winter crops were protected from frost action in the main winter crop growing regions. Only in Tatarstan was the thickness of snow cover extremely low, and this could lead to winter crop damage in the region. The map below demonstrates difference in risk of crop damage during the current winter (colour), and difference of the situation with the previous winter (hatchings). In general, the current winter was more favourable for winter crops than the previous winter.

The warm December and first half of January should lead to a high soil moisture content, which creates good conditions for the spring period of crop growth.



It is likely that the percentage of winter crops killed by frost this winter is lower than in previous years. In Tatarstan, unfavourable winter conditions could affect nearly 30–50 % of winter crops, but, in general for the European part of Russia, the meteorological conditions were close to optimal for winter crops during the current winter period, and were better than in the previous season



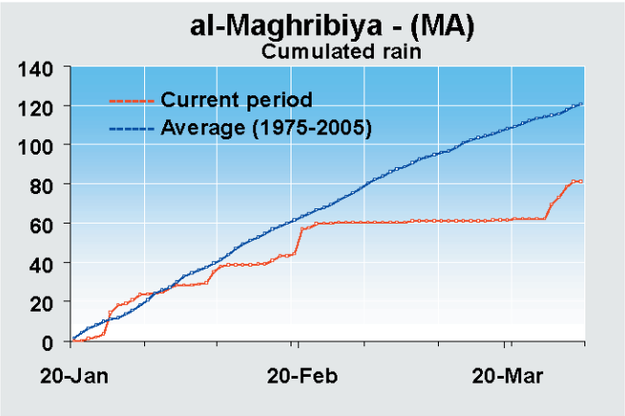
Maghreb countries

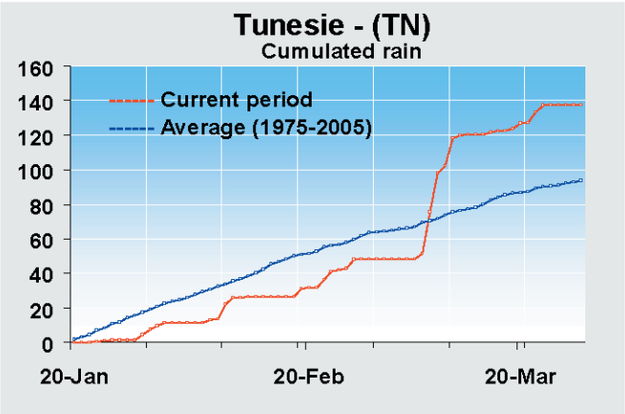
Maghreb: recent rainfalls are supporting cereal development

Western Maghreb (Morocco) reported normal rainfall levels from the third dekad of January to February. Conditions started becoming drier going into March, especially in the agricultural regions east of Gibraltar (centre–north) and in the south. These events coincided with the delicate phases of tillering and heading of wheat. Recent rains, however, could partly help recover available soil moisture and support the crops in the flowering and yield formation phases.

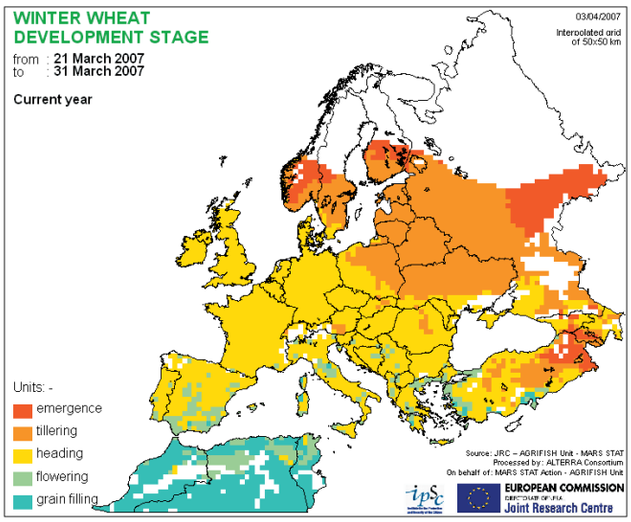
The yield forecast for wheat in Morocco is 1.3 t/ha increased on 2006 (+ 30 % but reduced on the five-year average. The same trend is expected for barley (0.74 t/ha). Looking eastward to Algeria and Tunisia, January was characterised by scarce rainfall along the Mediterranean coast, from Algeria to Tunisia. With average temperatures below 8–9 °C, crops were still in vernalisation and the water deficit should not have affected development.

From February onward, rainfall was abundant on most of the coastal regions of Algeria, improving in the east, over Tunisia, where it also rained inland. Temperatures were reported normal for the whole season. Wheat and also barley, past the flowering stage, should have taken advantage of these conditions. The expected yield of wheat in Algeria stands at 1.27 t/ha, improved on 2006 and on the same level as in the last five years; a similar trend is expected for barley in Algeria and for wheat and barley in Tunisia, 1.72 t/ha and 1 t/ha respectively.





3. Crop maps

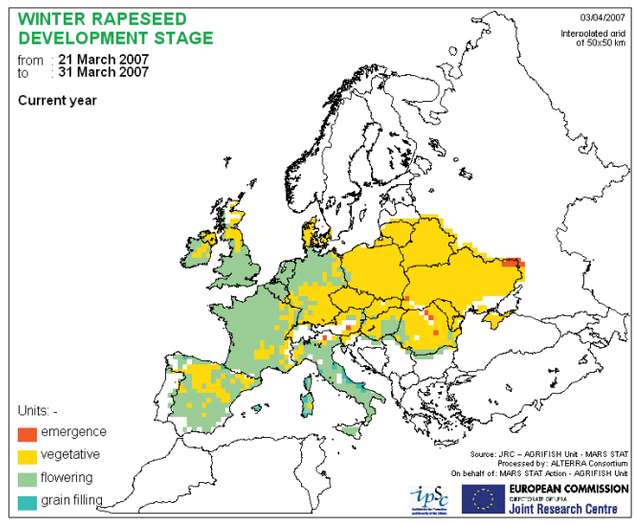


WINTER WHEAT
DEVELOPMENT STAGE
from : 21 March 2007
to : 31 March 2007

Current year

03/04/2007
Interpolated grid of 50x50 km

Source: JRC – AGRIFISH Unit - MARS STAT
Processed by: ALTERRA Consortium
On behalf of: MARS STAT Action - AGRIFISH Unit

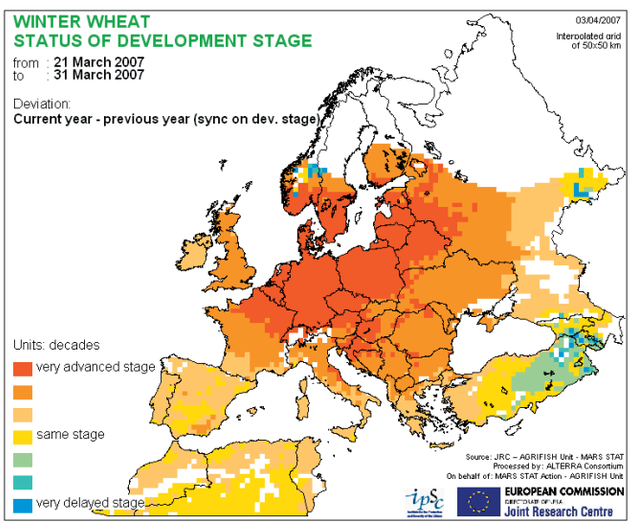


WINTER RAPESEED
DEVELOPMENT STAGE
from : 21 March 2007
to : 31 March 2007

Current year

03/04/2007
Interpolated grid of 50x50 km

Source: JRC – AGRIFISH Unit - MARS STAT
Processed by: ALTERRA Consortium
On behalf of: MARS STAT Action - AGRIFISH Unit

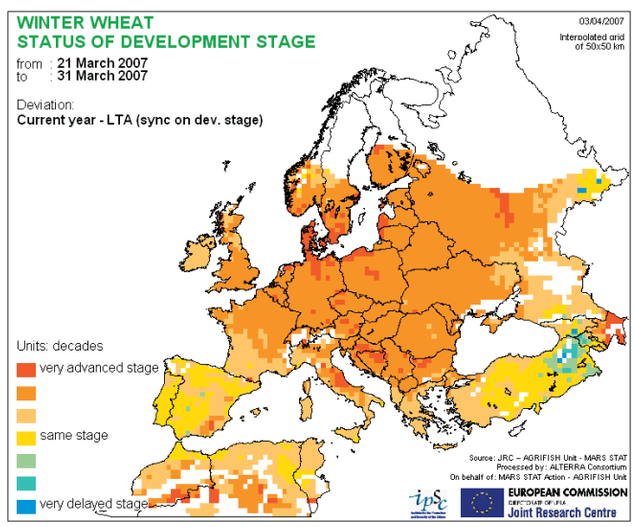


WINTER WHEAT
STATUS OF DEVELOPMENT STAGE
from : 21 March 2007
to : 31 March 2007

Deviation:
Current year - previous year (sync on dev. stage)

03/04/2007
Interpolated grid of 50x50 km

Source: JRC – AGRIFISH Unit - MARS STAT
Processed by: ALTERRA Consortium
On behalf of: MARS STAT Action - AGRIFISH Unit

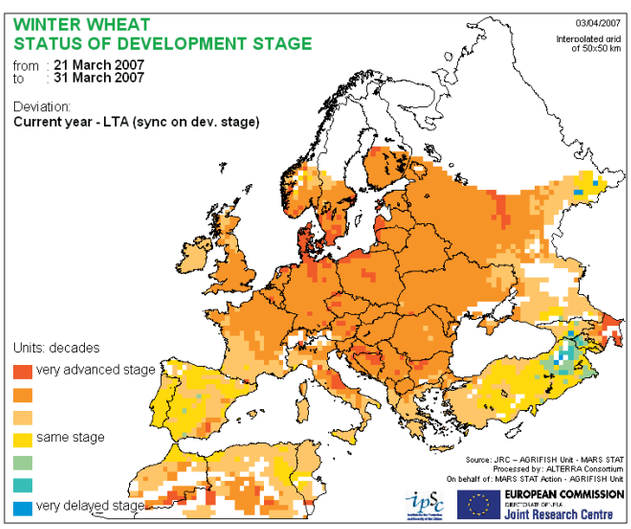


WINTER WHEAT
STATUS OF DEVELOPMENT STAGE
from : 21 March 2007
to : 31 March 2007

Deviation:
Current year - LTA (sync on dev. stage)

03/04/2007
Interpolated grid of 50x50 km

Source: JRC – AGRIFISH Unit - MARS STAT
Processed by: ALTERRA Consortium
On behalf of: MARS STAT Action - AGRIFISH Unit

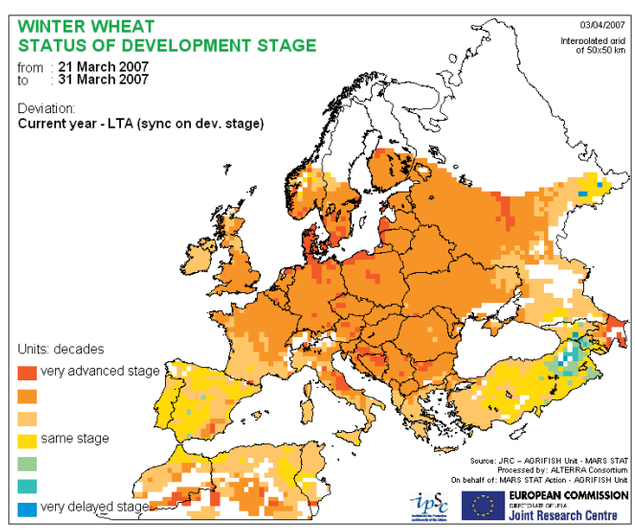


WINTER WHEAT
STATUS OF DEVELOPMENT STAGE
from : 21 March 2007
to : 31 March 2007

Deviation:
Current year - LTA (sync on dev. stage)

03/04/2007
Interpolated grid of 50x50 km

Source: JRC – AGRIFISH Unit - MARS STAT
Processed by: ALTERRA Consortium
On behalf of: MARS STAT Action - AGRIFISH Unit



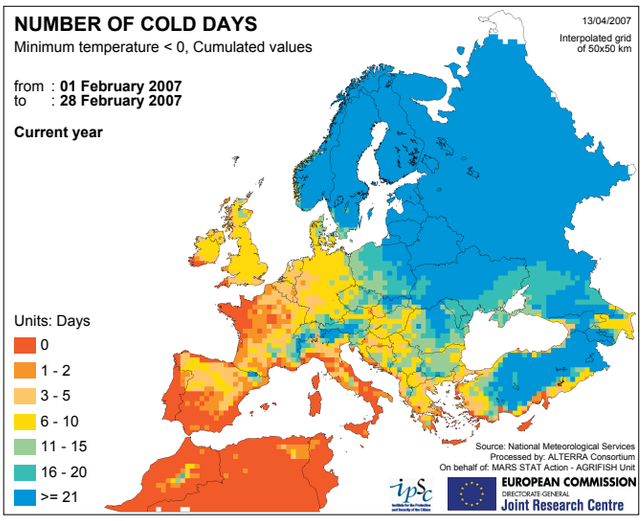
WINTER WHEAT
STATUS OF DEVELOPMENT STAGE
from : 21 March 2007
to : 31 March 2007

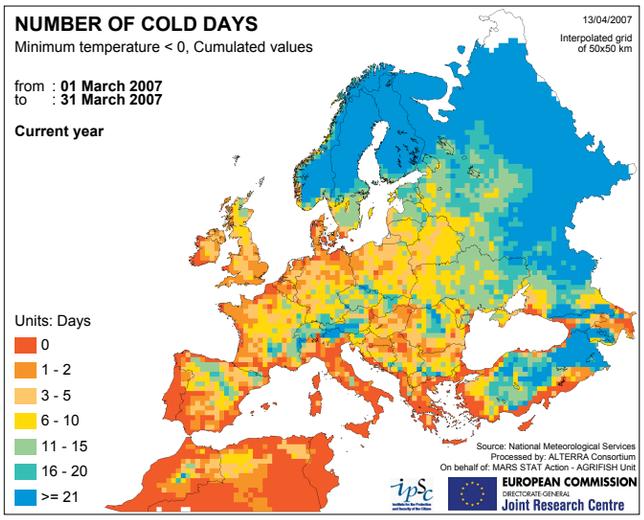
Deviation:
Current year - LTA (sync on dev. stage)

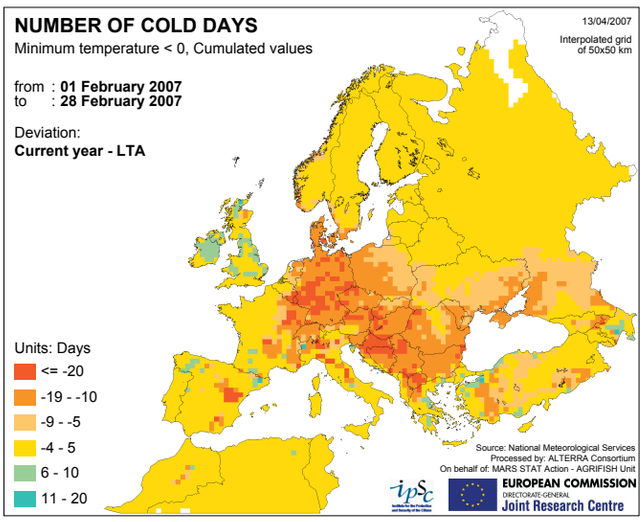
03/04/2007
Interpolated grid of 50x50 km

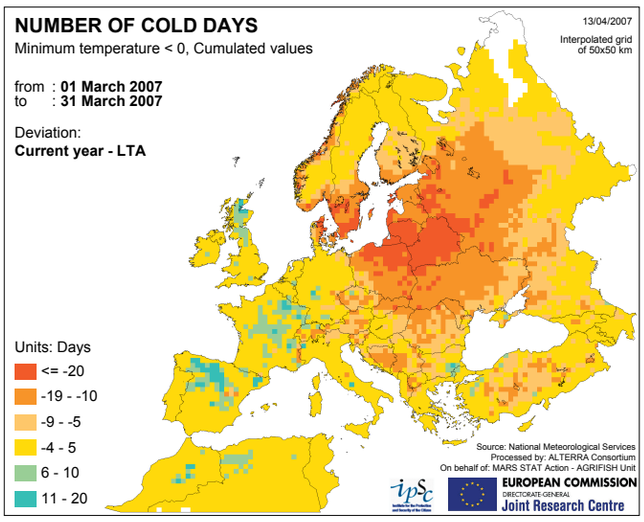
Source: JRC – AGRIFISH Unit - MARS STAT
Processed by: ALTERRA Consortium
On behalf of: MARS STAT Action - AGRIFISH Unit

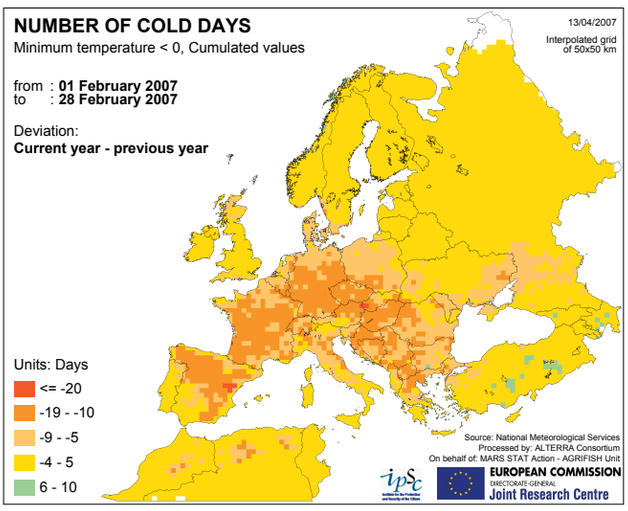
4. Cold days in February and March 2007

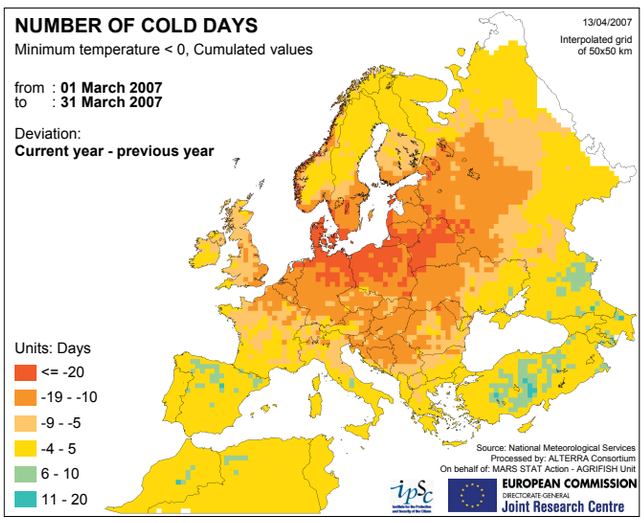




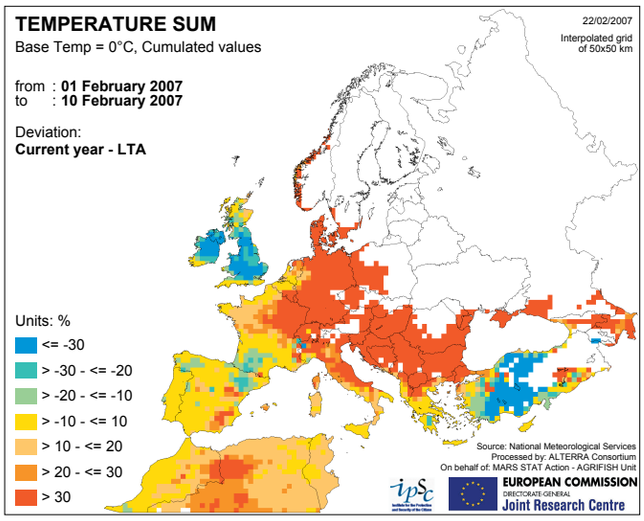


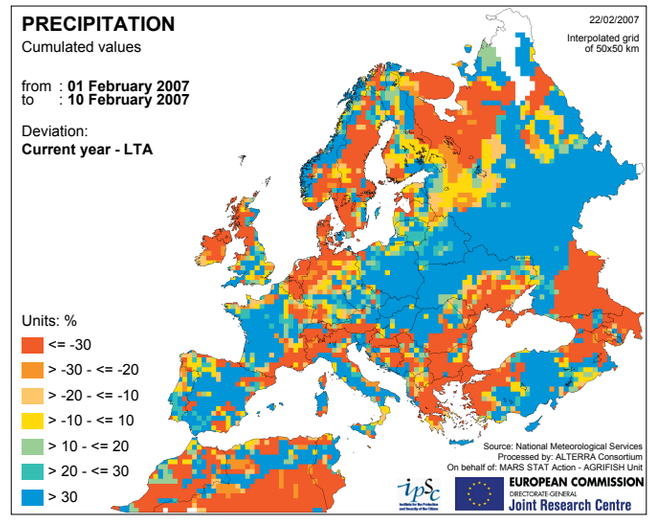


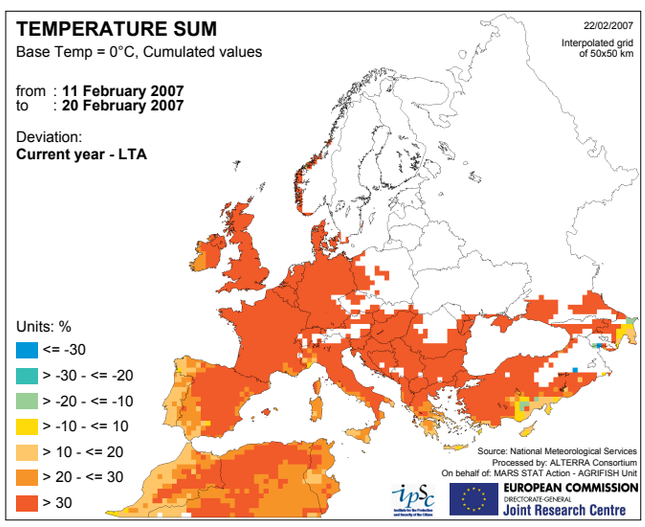


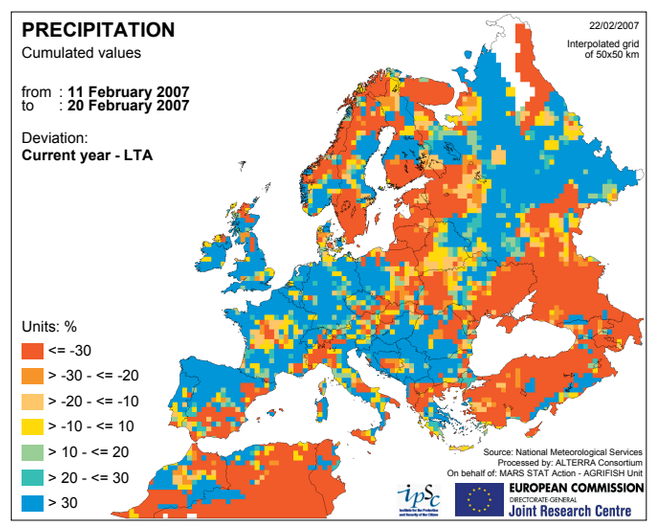


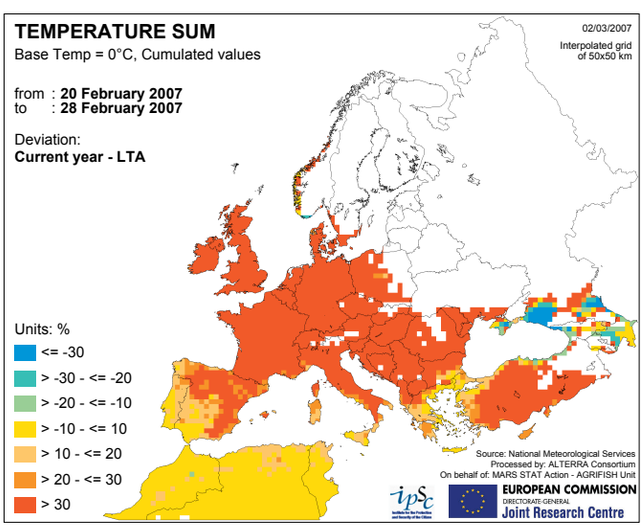
5. Temperature and precipitation in February 2007

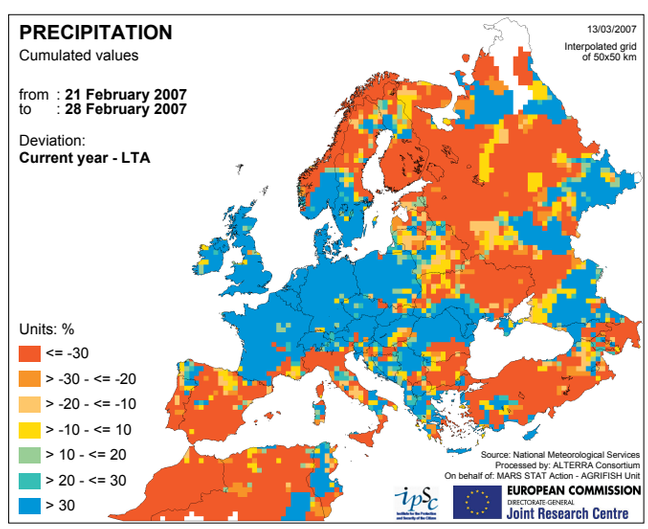




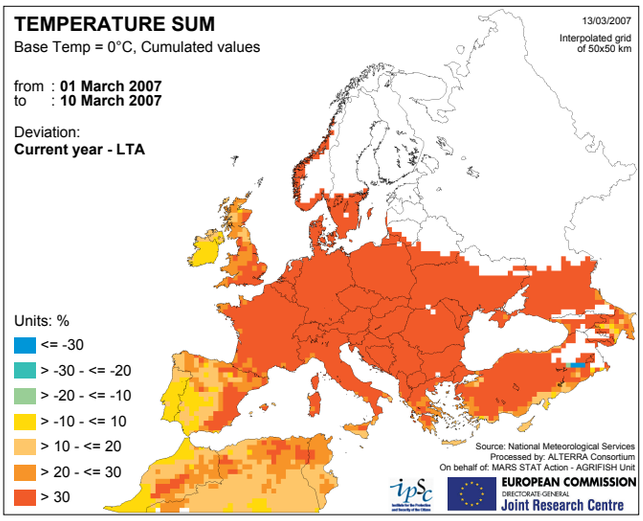


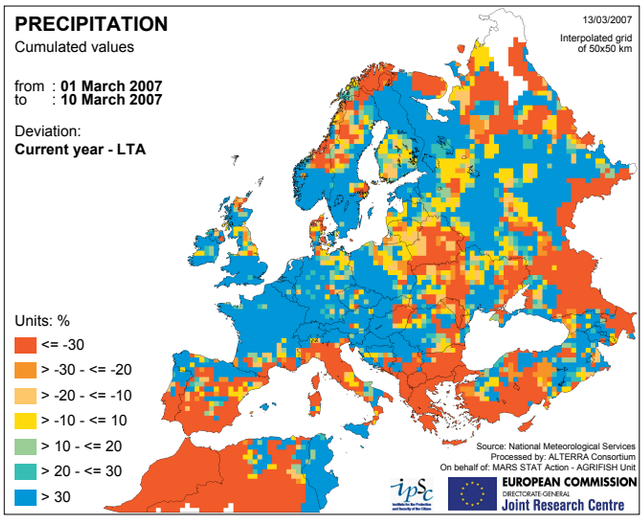


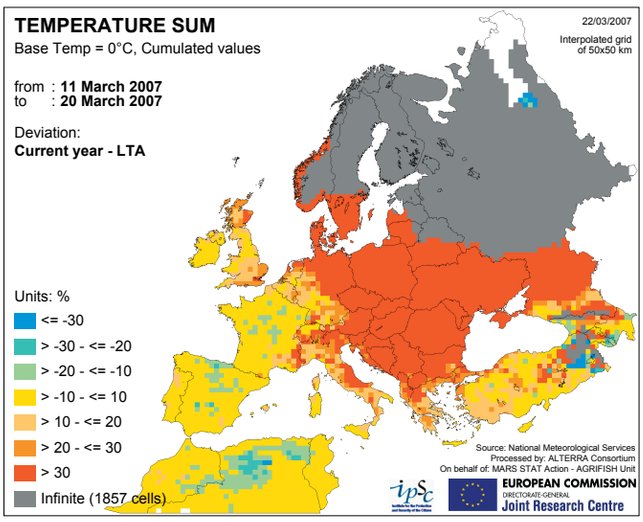


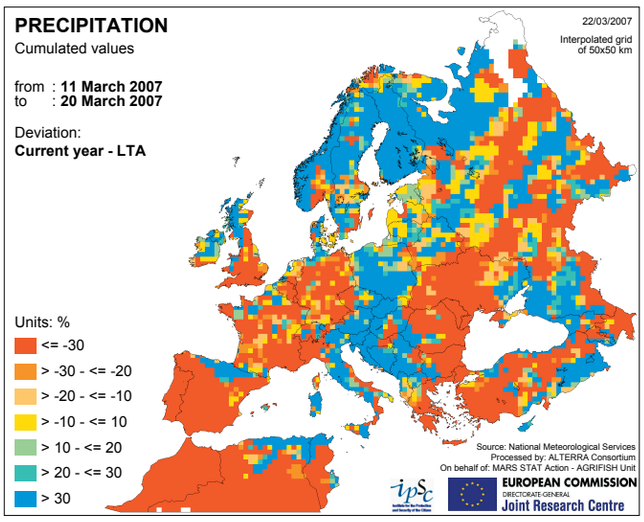


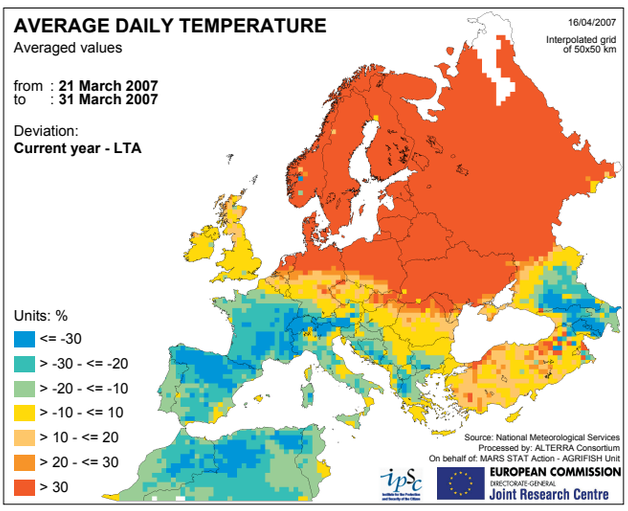
6. Temperature and precipitation in March 2007

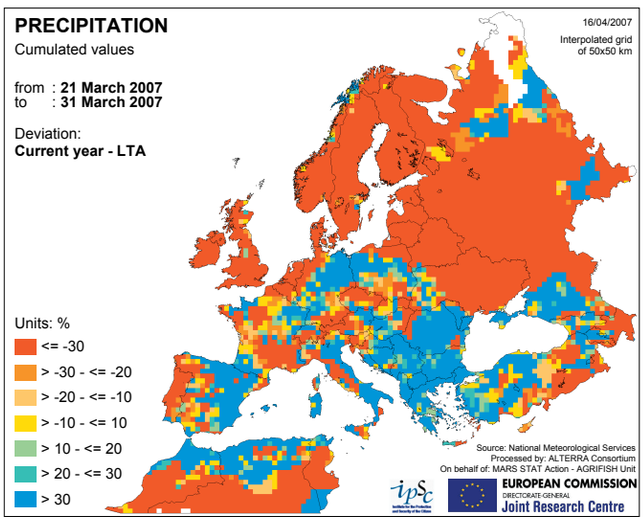








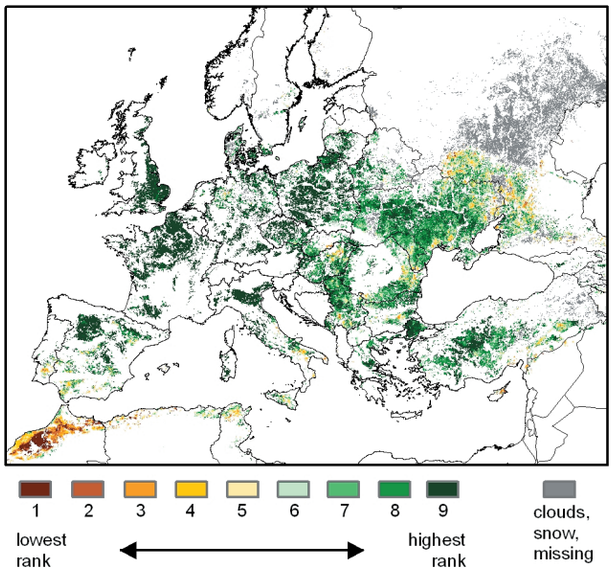




7. Spot Vegetation satellite anaysis

Well advanced vegetation development throughout Europe

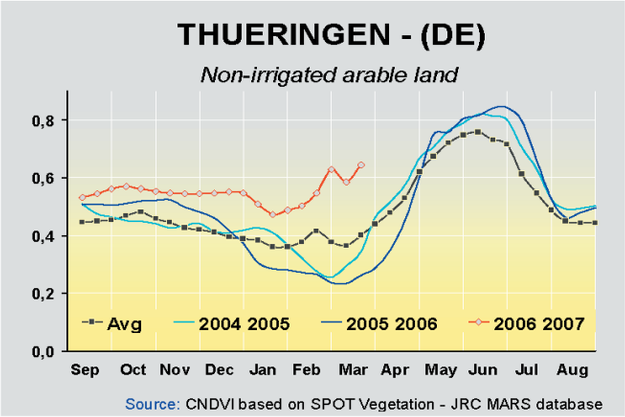
Highest cumulated NDVI values (October - March) since 1999

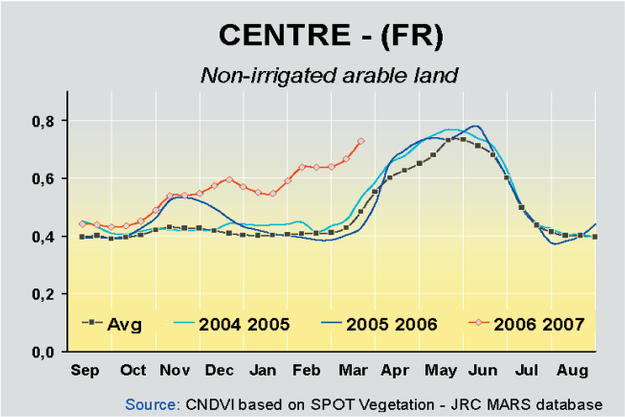


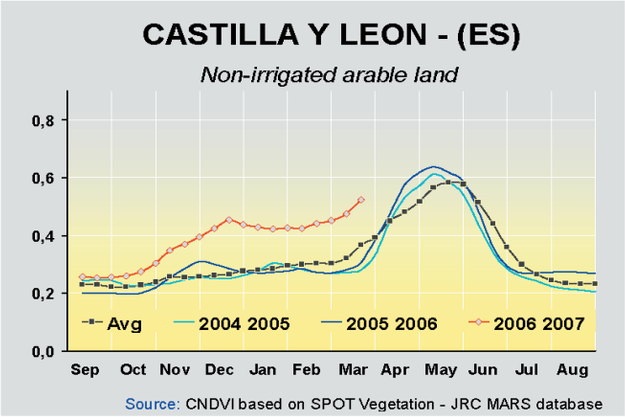
Cumulated NDVI from October 2006 to March 2007, ranked for all years

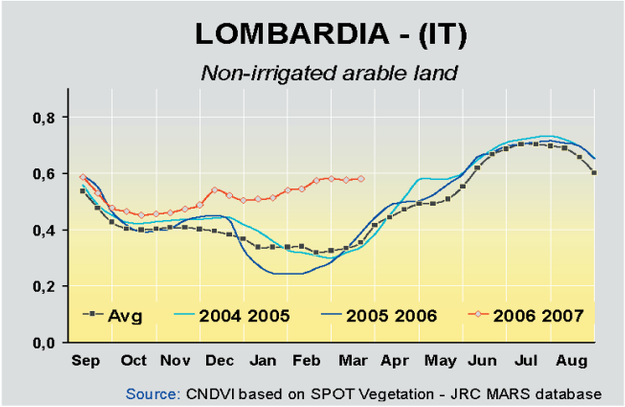
The NDVI map on arable lands (Corine class) is showing the relative differences with the NDVI values of the second March dekad taken from the average from 1998 until 2006. Positive deviations from the long-term average can be found almost throughout the whole of Europe. Biomass accumulation is especially advanced in central and eastern Europe.

This is reflected too in profiles for non-irrigated arable land with exceptionally high values. The profile for Thüringen in Germany shows biomass accumulation since the second dekad of February with values high above the average. The same is true for the NDVI values of central France. Values have been increasing since the second dekad of January and showing an advancement of five dekads (second dekad of May) compared to the long-term average. The positive trend that has been shown for Castilla y Leon (Spain) in January continued throughout February and March with biomass accumulation and an advancement of three dekads compared to last year. A comparable situation is also found for Lombardia in Italy with constant biomass accumulation throughout the winter months.









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