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AGRIFISH Unit

M A R S

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Part 1/2: Campaign analysis

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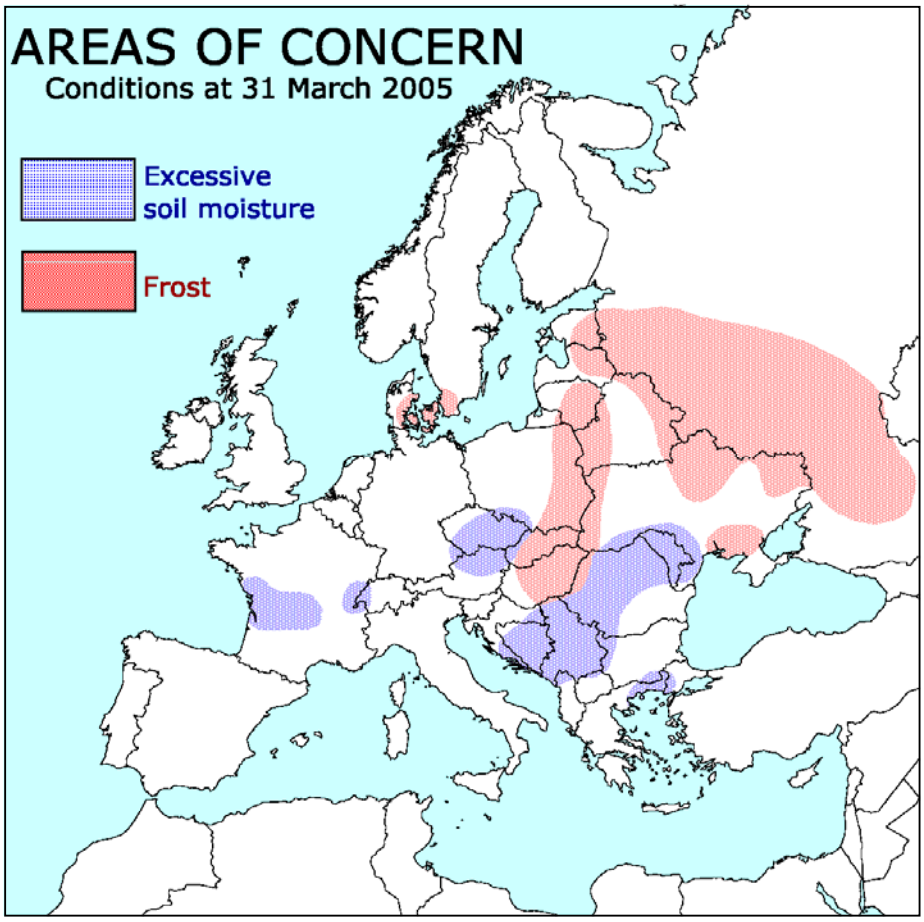


Contents

1. Crop yield forecasts

MARS STAT yield forecasts at EU25 level: 31 MARCH 2006

CROPS	EU-25 yield (t/ha)				
	2005	2006	Avg. 5 years	% 06/05	% 06/Avg.
Total wheat	5.5	**5.7**	***5.3***	4.1	*6.8*
Soft wheat	6.0	**6.2**	***5.9***	2.7	*4.9*
Durum wheat	2.5	**2.9**	***2.5***	18.9	*15.0*
Total barley	4.1	**4.4**	***4.3***	9.0	*3.8*
Spring barley	3.4	**3.9**	***3.7***	13.0	*3.2*
Winter barley	5.2	**5.4**	***5.2***	3.0	*3.6*
Rape seed	3.3	**3.1**	***3.0***	-3.3	*5.0*

Yield figures are rounded to 100 kg

Sources:

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

(for national figures see ANNEX 1)

2. Agrometeorological overview

Colder than normal in central and northern EU, as well as in Eastern Europe with possible significant frost damages. Beneficial water supply in Mediterranean, relatively dry in higher latitudes.

2.1 TEMPERATURES AND EVAPOTRANSPIRATION

Several cold waves coming from northern latitude invaded regularly the continent, and determined generally low minimum temperatures, snow falls and also frost risk conditions especially in Central and Eastern Countries.

The particular synoptic circulation determined a reduced accumulation of **active temperatures** (GDD with base temperature = 0°C) in the central and northern EU countries. In general, in Northern France, Belgium, The Netherlands, Germany, Hungary, Poland, Czech Republic and Austria the average daily temperatures (as well as the minimum temperatures) were 2-4°C below the seasonal value. Consequently in those areas, at the end of March, the GDD deficit was more significant and estimable around 70-90°GDD. Less intense deficits in Ireland, Italy, Slovakia, western Romania and western Poland were also recorded.

As a further consequence, the **frost events** were both more frequent than expected (even above the 95th percentiles) and more severe: in the eastern continent and eastern EU countries the absolute minimum recorded was also below -30°C, while in Germany, Hungary, north-east Italy around -15°/-18°C. Despite that, in the majority of cases the snow cover depth was able to protect the crops present, at least from severe damage. Major damages more likely occurred in Belorussia, eastern Ukraine, Hungary, Southern Romania, northern Bulgaria and locally also in Slovakia, eastern Poland and eastern Germany. The most critical periods were the last part of **January** and the second dekad of **March** when the temperatures dropped by several degrees even below the absolute extreme values recorded since 1975 (MARS interpolated data ref. archive).

Opposite conditions were experienced around the Black Sea (mainly in southern and eastern part of the basin), in Greece, Tunisia and Algeria; where light surpluses (compared with the LTA) between 30 and 80° GDD were recorded.

The above-mentioned thermal conditions marginally influenced the seasonal low values of the **potential evapotranspiration** but prolonged the "winter stasis" of crops activity. Consequently the crops' development was significantly influenced: largely delayed all over the continent and in particular in all the Central and Eastern EU members, as well as in Eastern Countries, where up to now the current campaign is the most delayed since 1975.

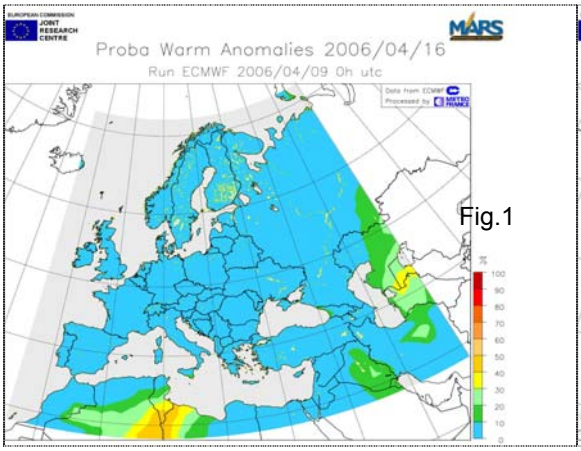
2.2 RAIN AND CLIMATIC WATER BALANCE

Reduced rain supply in northern EU Members, on the contrary more water than normal in southern

Italy, southern Spain, Maghreb, Balkans, Hungary and Slovakia.
The cold air masses determined a reduced rain supply whilst providing quite abundant snow falls in many areas of Europe. In particular, **January** was significantly dry and practically the majority of the continent received only the 40-50% (equivalent to 20-30mm) of the seasonal cumulated rainfall (in average 60-70 mm). The water deficit was particularly high in southern UK, Poland, The Netherland, Northern France, Denmark, Northern Germany, Benelux, Baltic's, Sweden and southern Finland where the reduction also reached 70-75% of the expected cumulated values. **February** presented an evolution more close to the normal and rainy events were recorded mainly in the first and last part of the month. Beneficial abundant rains were present again the southern shore of the Mediterranean Basin, southern Italy (where the cumulated values were even above than 100% compared with LTA), Balkans, Hungary, Greece and north Turkey. In the Iberian Peninsula (except in Andalucia and Galicia), Ireland and Baltic areas were recorded as having still drier than normal conditions. In these areas the rains were merely able to compensate the potential evapotranspiration or even less (e.g.: Calatuna, Comunidad Valenciana, Murcia). In **March** the new cold waves determined in the higher latitude (as well as in Northern Italy and Hungary) generally clear sky conditions and consequently relatively higher levels of solar radiation but still dryer then normal conditions. On the contrary, mainly in the first and last dekad of the month, in Portugal, central Spain, France, Italy (except North), the whole Balkan's Peninsula (the wettest march since 1977), as well as in Ukraine (the third wettest March since 1975), southern Belorussia and western Turkey, more than normal cumulated rain occurred, as well as the persistent snow presence on the fields, certainly disturbing the field activities related to the spring sowings in many cases.
As a whole, the **climatic water balance**, mainly driven by the rainfalls, presented negative values only in northern part of the continent, in north Italy, north Spain and central Turkey. Anyway, no negative impacts are foreseen considering the early stage of development of the existing crops. Vice versa, the abundant rains which occurred in the southern areas determined a very positive recharge of the soil water reservoirs necessary for the close future reproductive stage (e.g.: durum wheat).

2.3 WEATHER FORECAST FOR NEXT DAYS (APRIL. 4 - 14)

TEMPERATURES: Temporary increase in Mediterranean Basin; still some frost events in central EU.
From today, the areas in the Mediterranean Basin will attend to a temporary and significant (more than 8°C) increase of the temperatures. In Spain and southern Portugal, the maximum values will be several degrees above 20°C and the minimum above 10-12°C. In the next days, the warm wave will move eastward, interesting Southern Italy and then Greece and Turkey.
On the contrary, in the central part of EU and in the northern latitudes still the minimum temperatures will remain below 0°C. A temporary warmer intrusion will be possible the 9th. The general tendency for the following days is anyway forward a progressive increase of temperatures.



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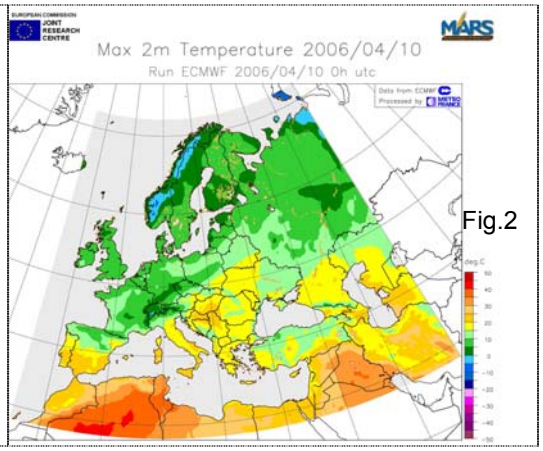

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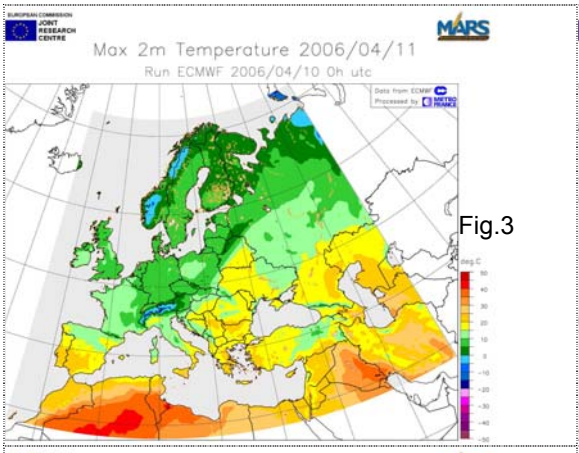
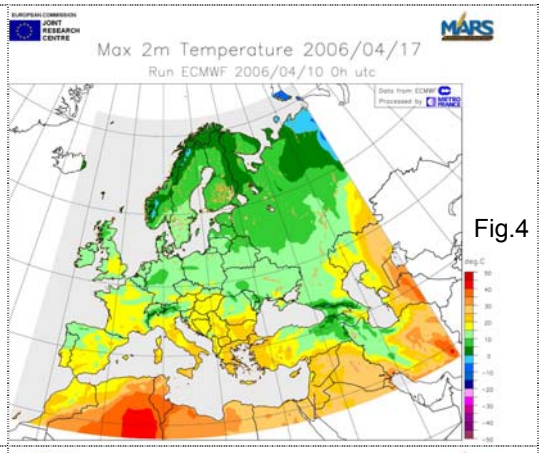


Fig.3



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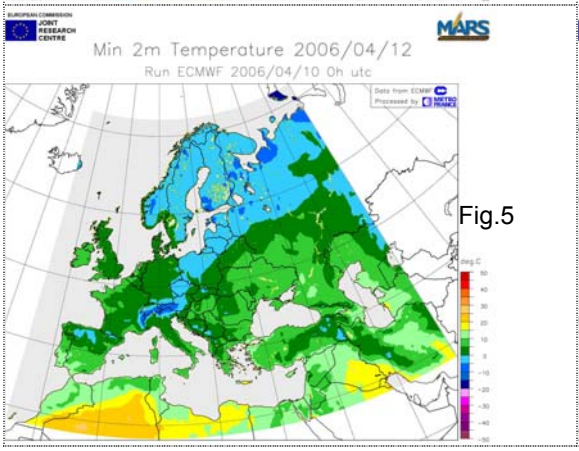


Fig.5

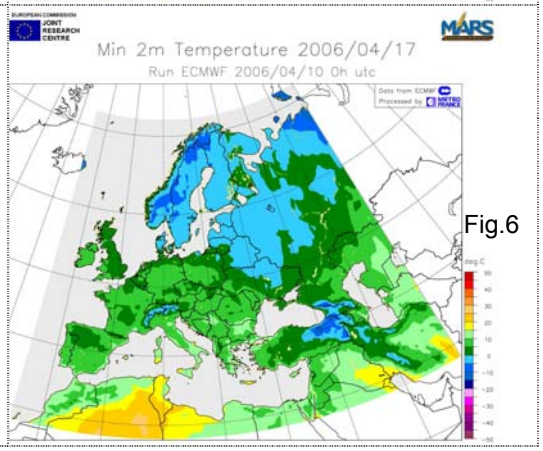


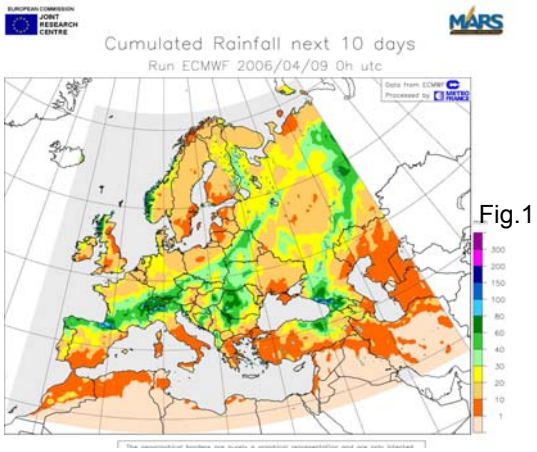
Fig.6

RAIN: rain excess in France and Balkans.

In the next days, the rain will be mainly concentrated in France (Central and Eastern), Southern Germany, North Italy, Serbia, Romania and Bulgaria. Due to the low temperatures likely still present in the next days, in the Alpine areas also snowfalls will be likely.

The rain will prolong the concerns in Central France and Balkans, As well as, in south Germany a Czech Republic, where already excesses of soil water are delaying the fields' activities (preparation and spring sowing).

On the contrary, positive water supply will be possible in Spain and Portugal where the increase of temperatures will boost both the potential evapotranspiration and the crops water requirements (due to the advancing stages of developments and the related "crops coefficient").



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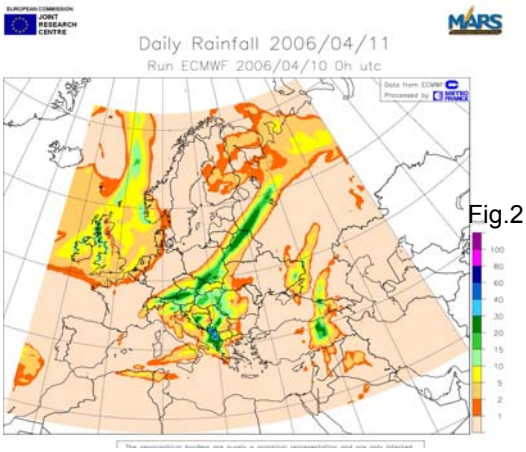

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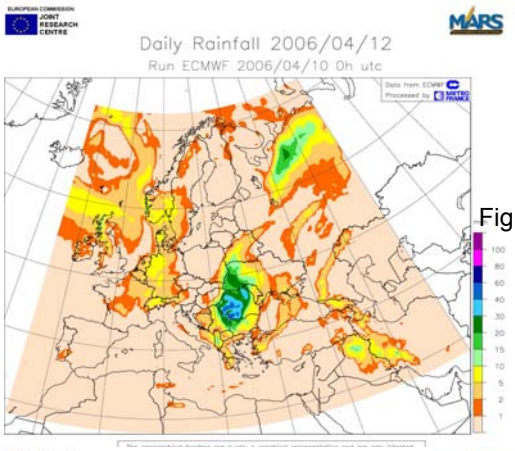

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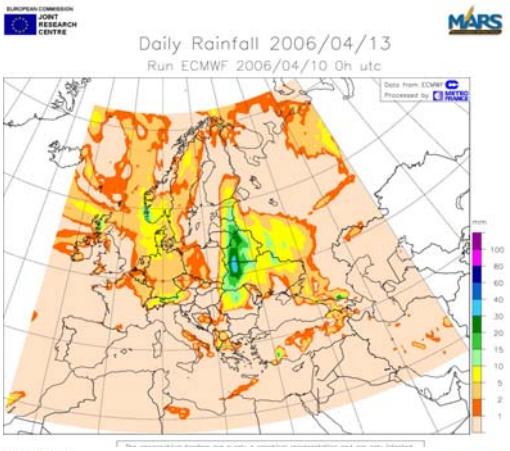

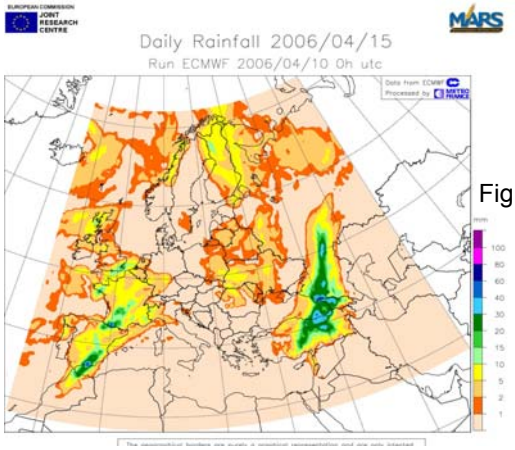

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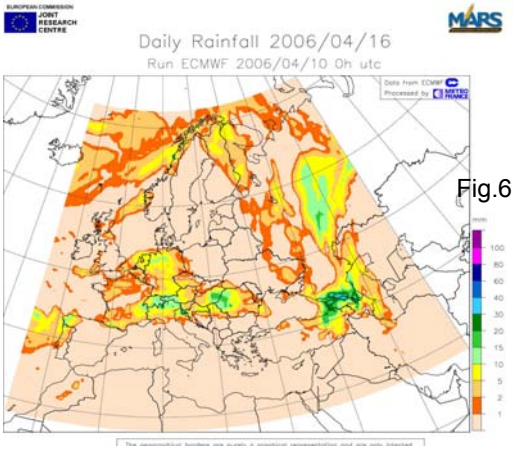


Fig.6

3. Highlights by region of interest

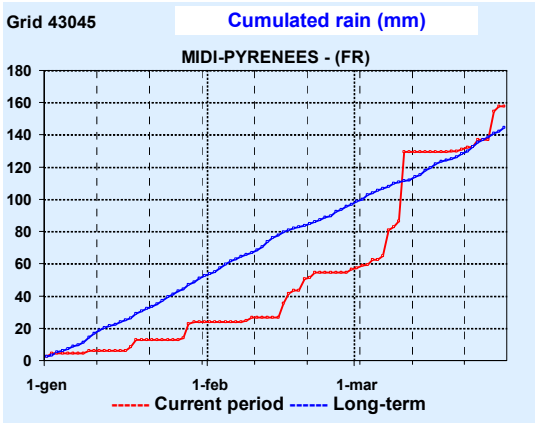
3.1. EU25

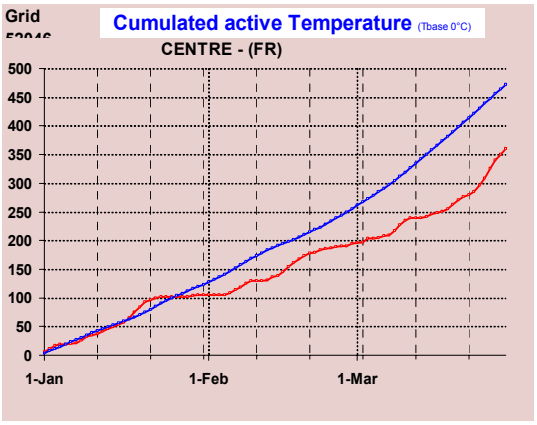
FRANCE: Long cold winter, overwet in South-West in March

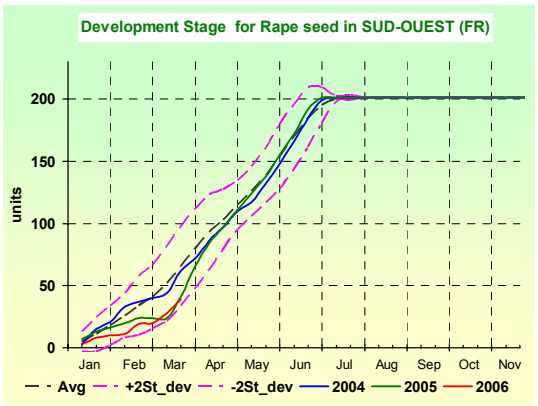
The **average temperatures** remained far below the normal level (-30%) during most of the time period and territory. Only the 2nd dekad of January, February and finally the end of March recorded higher temperatures than the seasonal values. The cold and **long winter extended the crop dormancy and delayed the crop development up to one month** in comparison to the normal stage. The last decade of March should mark the end of the winter period with positive minimum temperatures and much higher temperatures than average. The crop should start a new development phase.

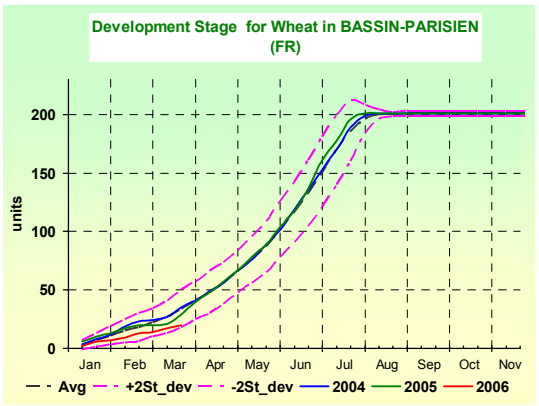
Most of the country area received **beneficial rainfall** (150 to 350mm) mainly from the end of February. This refilled partially the low soil moisture from the previous dry spell and should benefit the restart of winter crops. These precipitations were particularly higher than the seasonal values in March with more than 150 mm in Limousin, Poitou Charentes and Franche Comté cumulating from 250 to 300mm on the 3 months period. However some zones received less precipitation than normal particularly in Normandie, Nord Pas-de-Calais, Lorraine, Provence Cotes d'Azur and Aquitaine.

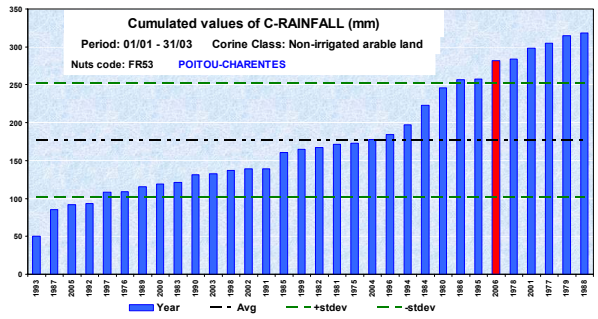
The overwet conditions from the end of February to the end of March should have hindered the **spring crops preparation particularly in the quarter south west of France.** This delay should reduce the crop cycle length and diminish the crop yield potential.
On the contrary the winter crops should benefit from this wet episode by providing the water needed for the vegetation regrowth.

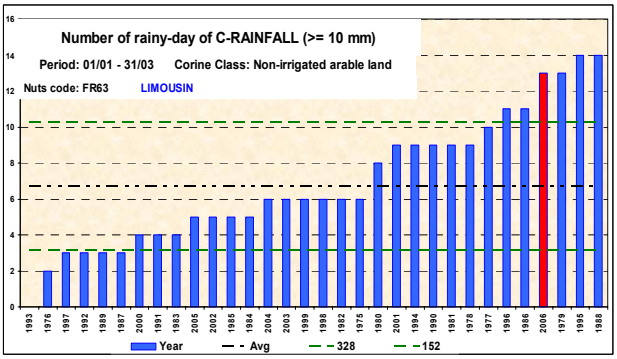












GERMANY: Unusually cold and long winter

Germany experienced an unusual long cold wave lasting 10 to 30 more days than normal with temperatures below -8°C along a western, south-eastern gradient. Snow cover and good cold hardening should have prevented most of the crops from frost kill. However the plant biomass should have suffered, hampering an optimal vegetative regrowth, particularly in the eastern part of the country.

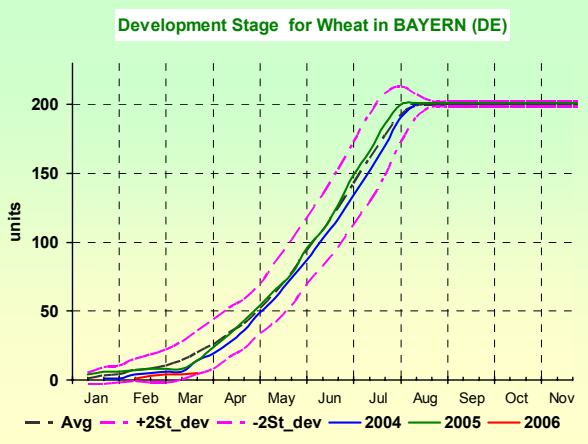
The deficit in “growing degree days” above 0°C, reached more than 30% of the normal sum of temperature for the half northern of the country and from 10 to 20% in the southern. This temperature deficit had a direct impact on the extension of the winter crops dormancy, delaying the vegetation restarting by more than one month.

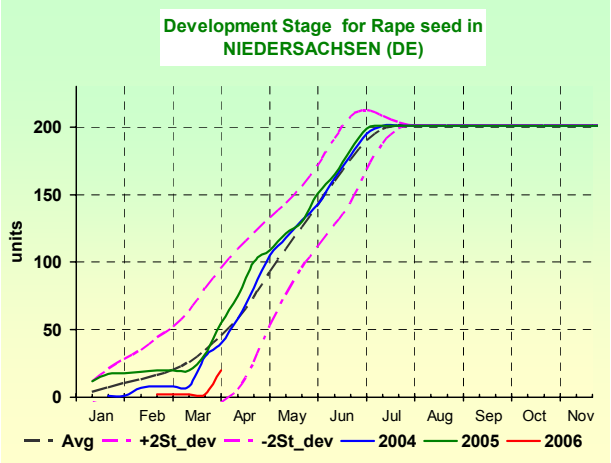
2006 was one of the six coldest years since 1975 concerning the average temperature from January to March: Meklenburg-vorpommern(-1.5°C), Nierdersachsen(0.5°C), Bayern (-1°C), Sachsen (-1°C).

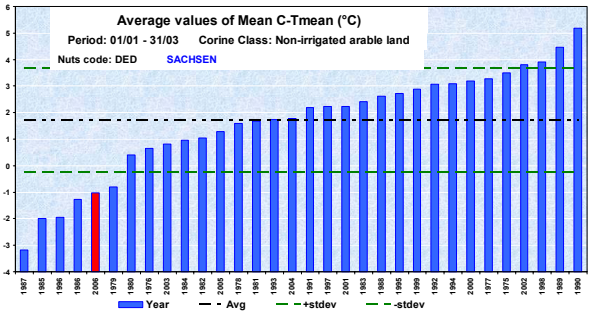
The last decade of March was characterised by positive minimum temperatures. Further temperature increases in April will be required to complete the snow melt and boost finally the winter crop growth.

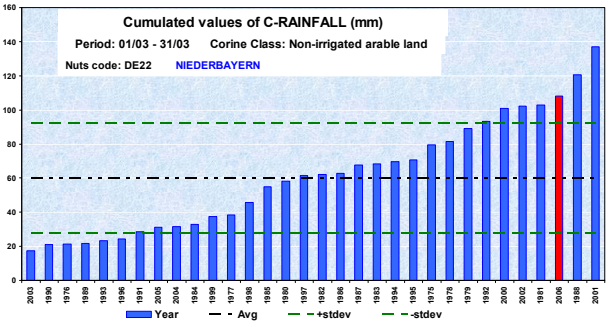
After a dry month of January, the country benefited from significant rainfalls in February and even more in

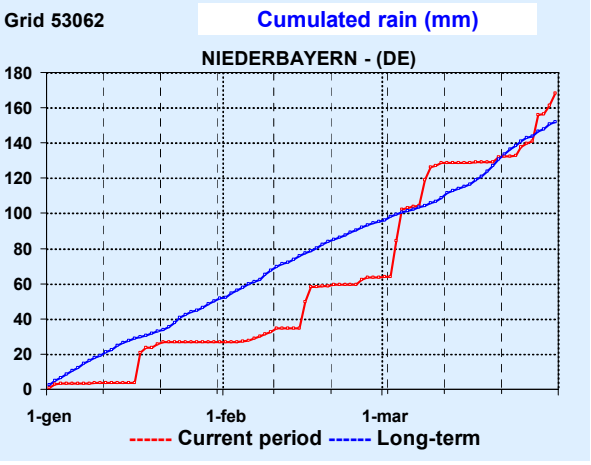
March. They replenished partially the soil moisture. Further precipitation will be necessary to face the increasing winter crop needs. Some limited areas in NIEDERBAYERN received abundant precipitation during the last decade of March with more than 90mm. Associated with snow melt it could flood some crop areas.
The fields' preparation for the spring crop was delayed due to the frozen soil and the late precipitation in March. Dry and warm conditions will be necessary to facilitate the spring crop sowings at the beginning of April.

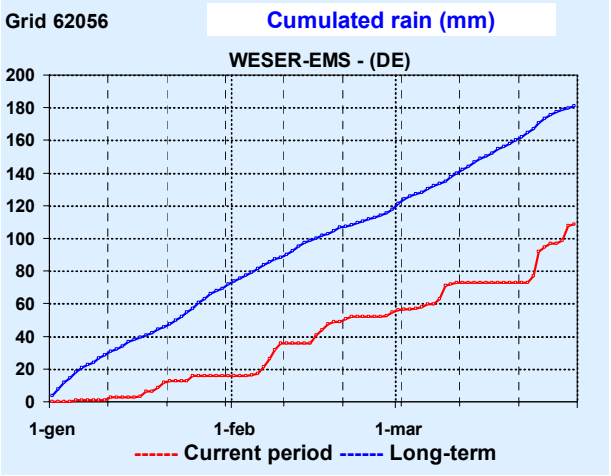








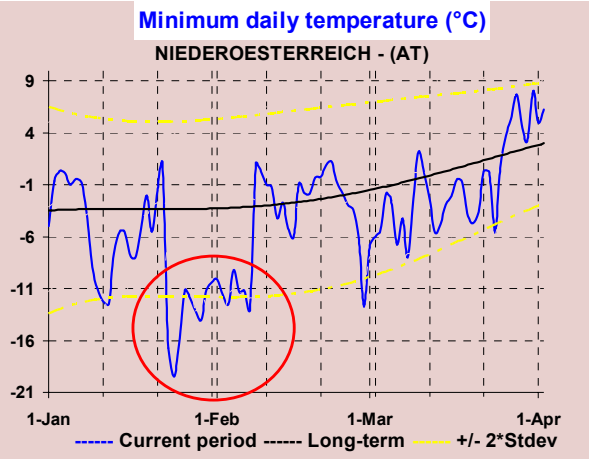


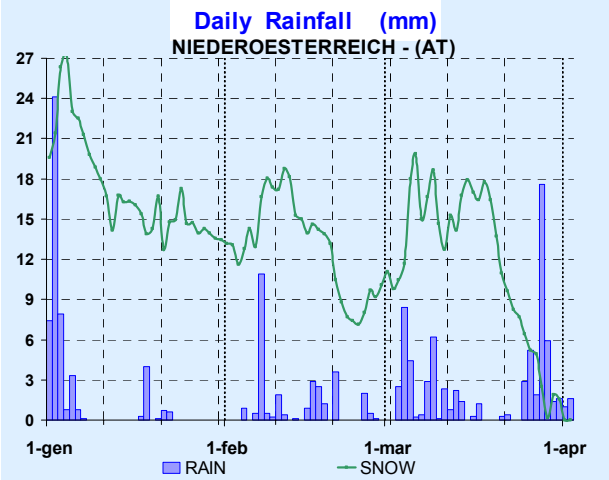


AUSTRIA: snow is covering the country

Forecasted yields show generally a good potential: 5.5 t/ha for soft wheat (+8.8% with respect to that recorded in 2005), 5.5 t/ha for winter barley (+0.7%), 2.9 t/ha for rapeseed (-1.4%). In all cases, these figures

are abundantly higher than the 5-year average.
The main part of the country is still covered with snow which has protected the crops from frost between the end of January and the beginning of February. Crop cycles are expected to be longer than the average because of the low cumulated active temperatures between the end of February and the first two decades of March. During this period, in fact, temperatures were lower than the average, with peaks reaching -20°C at the end of February. Possible soil saturation and perched water problems are expected due to the concomitant actions of melting snow and the rainfall recorded in the last days.
Winter wheat: a remarkable delay (about half a month) has to be underlined because of the low temperature recorded since the beginning of the year. This could have protected the crop against risks related to the lack of water in the Eastern Niederoesterreich. In the rest of the Country, the presence of snow (higher than average) has probably avoided damages due to cold temperatures. Simulated soil moisture is absolutely in the average. A 1-month sowing delay is foreseen for **spring barley**. This might cause decreases in the final yield due to a possible shorter cycle.
Rape seed the trend is analogue to that simulated for winter wheat, with the exception that the delay is even more evident (about two decades). In the Oberoesterreich, the snow currently present will probably assure a sufficient amount of water for the next period.



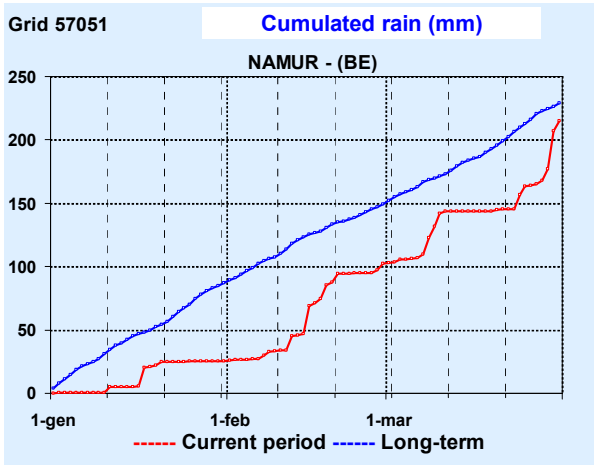


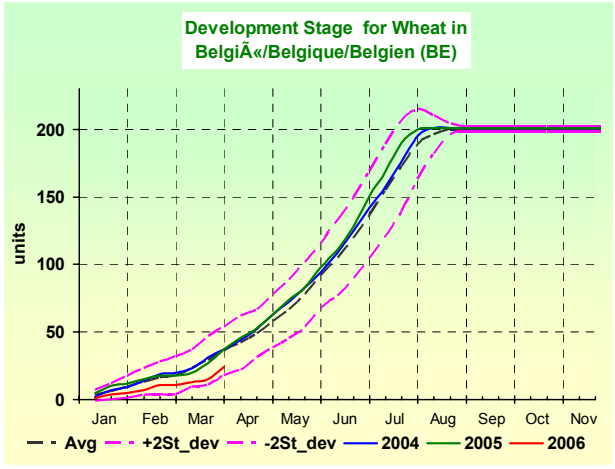
BELGIUM, THE NETHERLANDS, LUXEMBOURG: Dry and cold

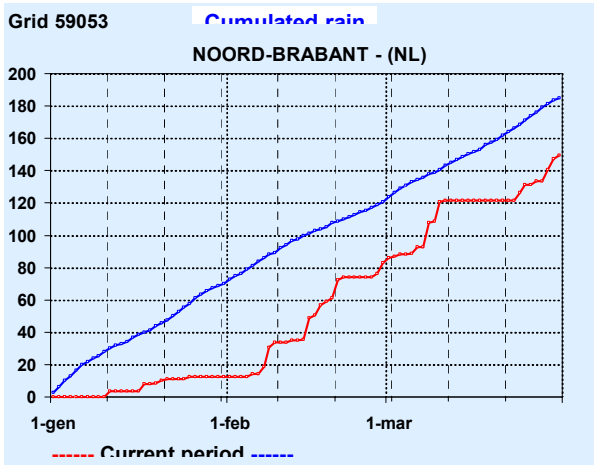
Belgium and the Netherlands experienced respectively the sixth and fourth coldest winter since 1975. With 20 to 40 more cold days below 0°C than normal, the growing degrees days were much lower than average and as a consequence the winter crop shows a delay in the development of around three weeks. However from the end of March the temperature started to rise with minimum above 10°C initialising the vegetation re-growth.

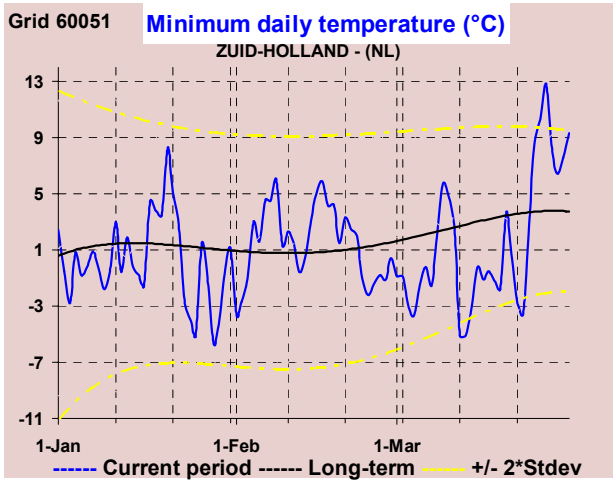
Few days recorded extreme temperatures below -8°C that should not have affected the crops prepared by a good hardening or protected by snow.

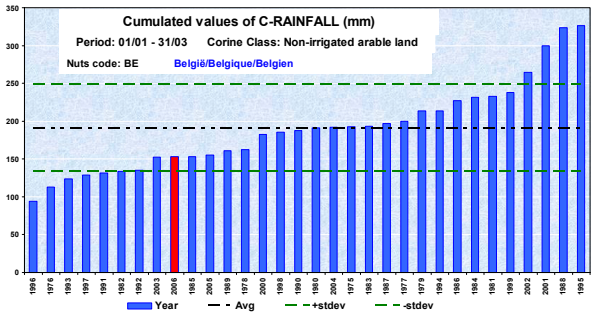
The precipitations varied from 120 to 170mm for most of the territories and reached 260mm in Liège and Luxembourg. After a dry January most of the rainfalls were distributed in February and in the first and third decades of March. The rainfalls remained below the seasonal values for the three month period particularly in the Netherlands.

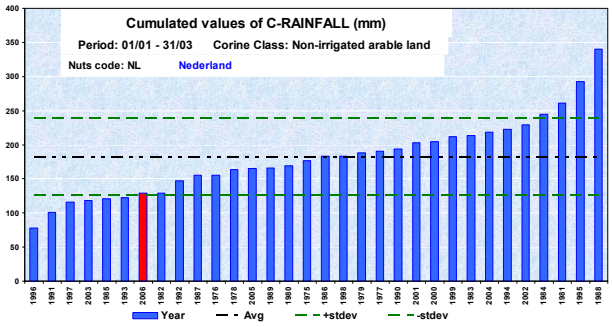












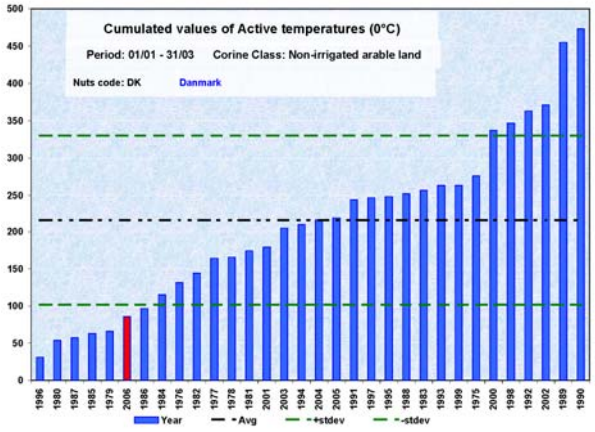
DENMARK and SWEDEN: colder (with severe frost) and drier than seasonal

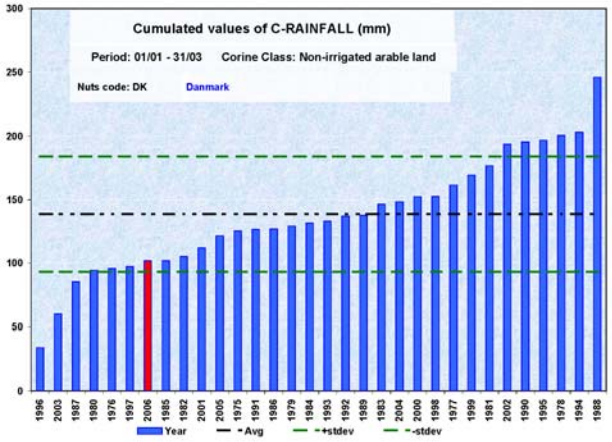
In January and March, two extreme cold waves interested this area. The two cold periods were separated by one warmer than seasonal. The second one had a particular impact on crops. In general, the average daily temperatures remained 2-3°C below the seasonal mean and the maximum daily were even 4°C below the expected values. In March, some severe frost events were also recorded. E.g.: -15.3°C the 7th, -12.6°C the 14th, -7.9°C the 23rd.Quite likely the vegetative organs of the winter crops were affected and damaged by the frost kill.

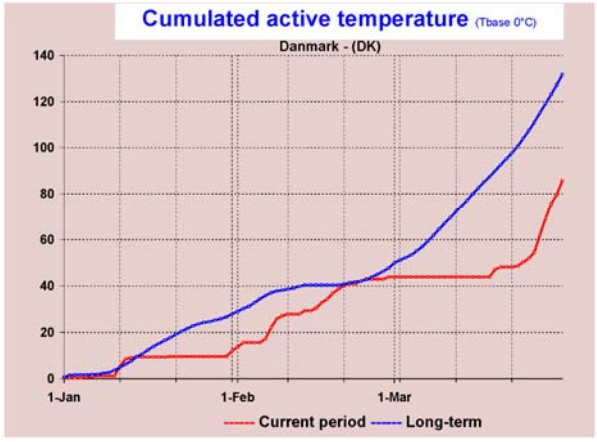
As a further consequence, at the end of March a GDD (Growing Degree Days with Base-Temp=0°C) deficit was estimable in more than 100° and all the crops prolonged the winter dormancy.

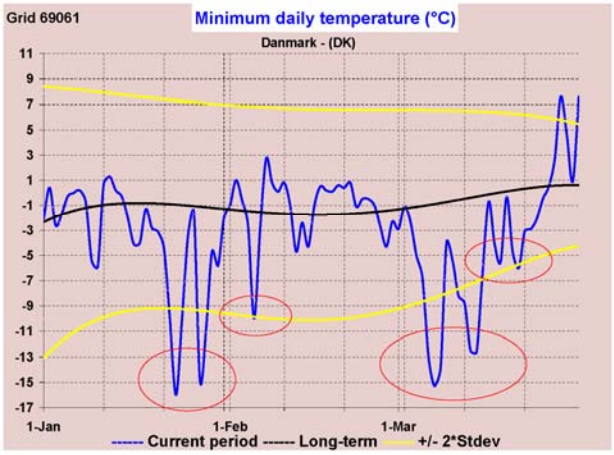
Considering the above described conditions it is possible to estimate a significant reduction of the potentiality

of the winter crops (wheat, barley and rapeseed) due to both the direct effects of frost events and the delay in reactivation of vegetative growing process.



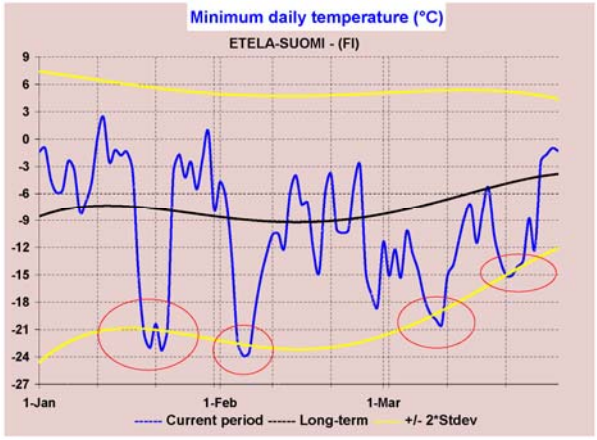


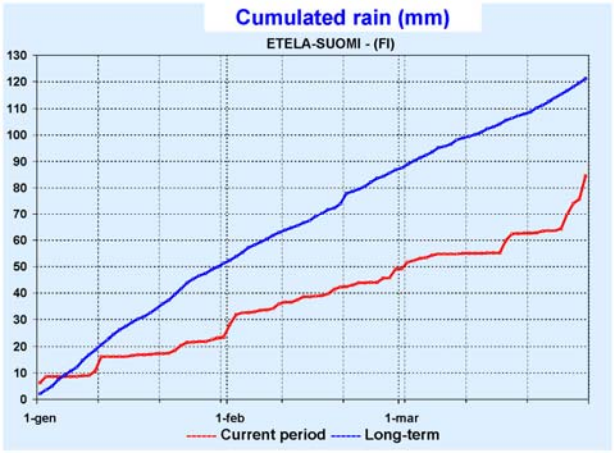




FINLAND: extreme cold and drier than normal

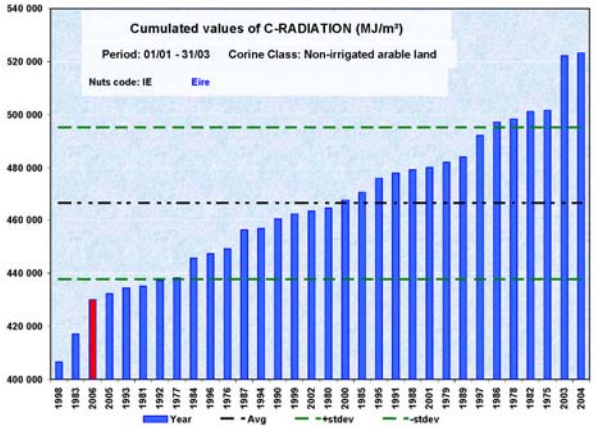
As in the whole northern part of the continent, also in Finland the first quarter of the year was characterized by extremely cold conditions. At least four consecutive polar air irruptions interested the country, determining extreme minimum temperatures: -23.3°C the 23rd of January, -23.5°C the 6th of February, -20.5°C the 11th of March and again -15.1°C the 23rd of March.
At the end of March the snow cover was still present in the whole territory and all the possible crops present remained in dormancy stage.

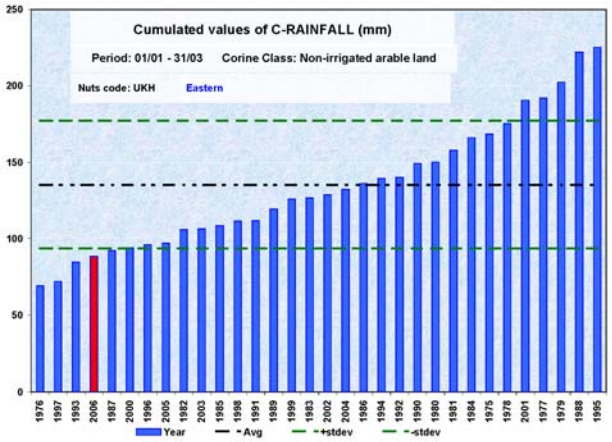


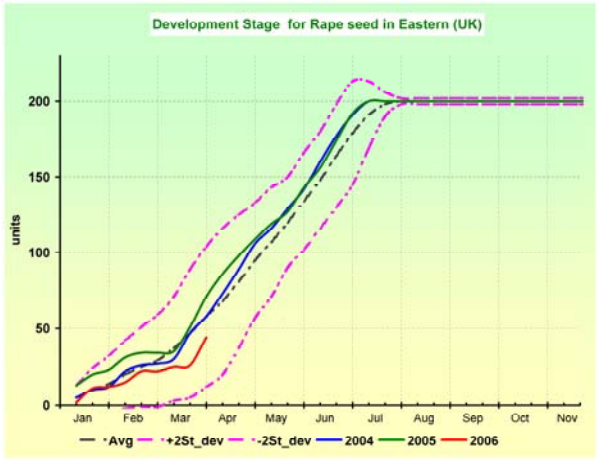


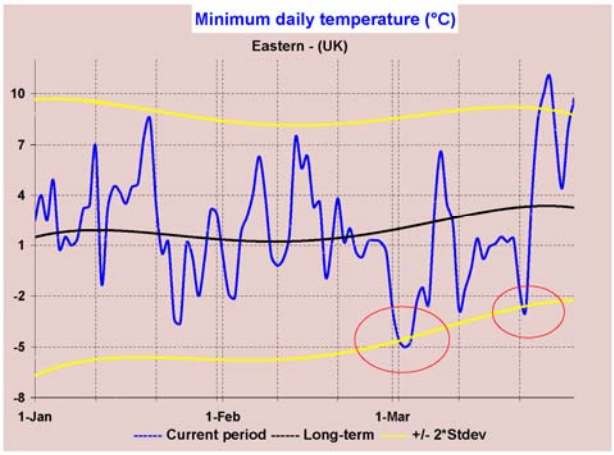
UK and REPUBLIC of IRELAND: Significantly drier conditions, colder March and reduced solar radiation

The year started (both in **January** and **February**) with temperatures within the seasonal range of variation. Even though, the minimum daily values were in general slightly above the average and the maximum slightly below. In **March** the thermal conditions significantly changed and both the minimum and maximum drastically dropped also below the 95th percentile: in general the minimum values were 2°C below the average and the maximum even 3-3.5°C below the seasonal values. In Ireland that phenomenon was less intensive. Consequently, in the UK, at the end of the considered period the GDD deficit was estimable in 50-60°. Thus all the crops significantly reduced their development which shows now at least 10 days of delay (higher for rapeseed), whilst in Ireland the crops presented a development closer to the normal.
Another relevant possible limiting factor was the reduced cumulated value of the **solar radiation** recorded during the whole period, and especially in March: below the 95th percentile.
The **rains** were particularly scarce in January: in average around 20 mm compared to 60 expected. January 2006 was the third driest year since 1975. In February the distribution and the amount of rain (even if lower than average) was closer to the seasonal conditions. In the same period in Ireland still anomalous drier conditions persisted. In March abundant rains were recorded and in some cases, due to the lower temperatures, also scattered snowfalls were reported. Thanks to those water supplies the soil water content remained at optimal level. Lower levels were simulated in Ireland due to the very dry conditions occurred in January and February.





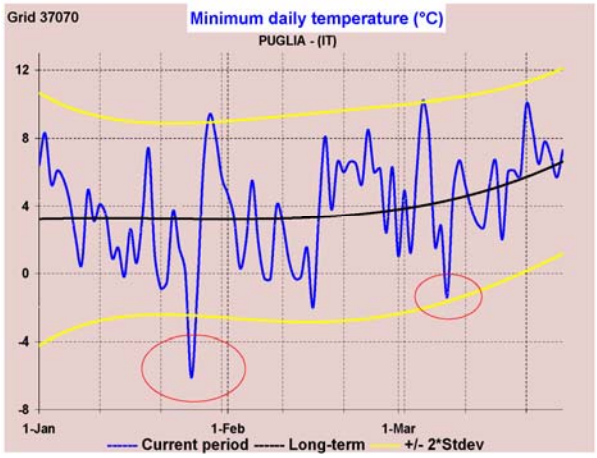


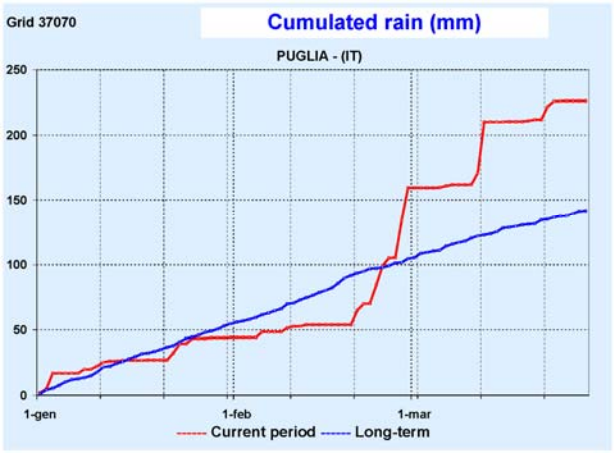


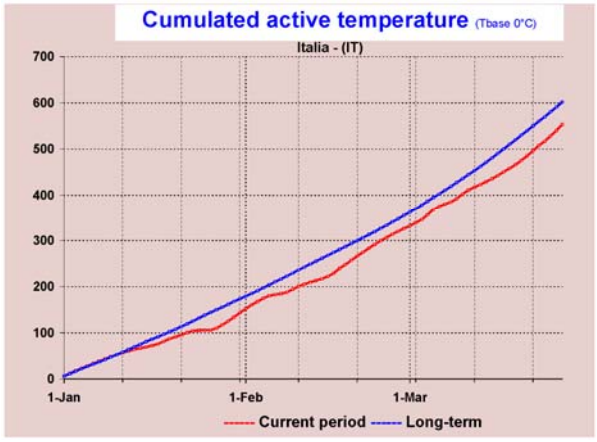
ITALY: colder than normal up to March; drier (but snowy) in the north, beneficial rain in southern areas.

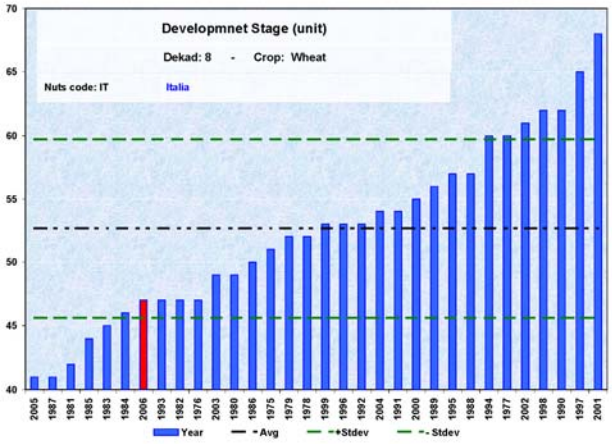
The three months were significantly characterized by lower than seasonal **temperatures**. Both the minimum and the maximum daily values remained below the seasonal average and since the second dekad of January the active temperatures (base temp = 0°C) presented a reduced accumulation. At the end of the considered period, the thermal deficit was estimable in 70-80 GDD. This deficit, mainly accumulated in February and during the first half of March, was particularly significant in southern areas, where the current campaign was one of the coldest since 1975 (13-15 frost-day compared to the seasonal 5 days). In this period (mainly in January but also at mid February and again at mid March), some extreme minimum temperatures (below the 67th percentile) were recorded (e.g.: at the end of January, -7.0°C in Puglia and Basilicata, -7.9°C in Veneto and Lombardia, -7.2°C in Emilia-Romagna) with possible impacts on vegetative crops' organs. Due to the reduced thermal accumulation, the development of the active crops was consequently reduced and they presented stages significantly delayed compared to the norm (1-2- weeks). The **rainfalls** were differently distributed (in frequency and quantity) between northern and southern areas. In northern districts, in general, they were scarce (in particular in January) and scattered up to mid February, when several consecutive rainy days occurred. At the beginning and end of January two abundant snowfalls interested the region. In southern Italy, the rain presented a more normal distribution but it was particularly abundant and persistent between the end of February and mid March. That period was the second wettest year since 1975; the soil reservoirs were filled and promptly available for the future reproductive stages of winter crops.

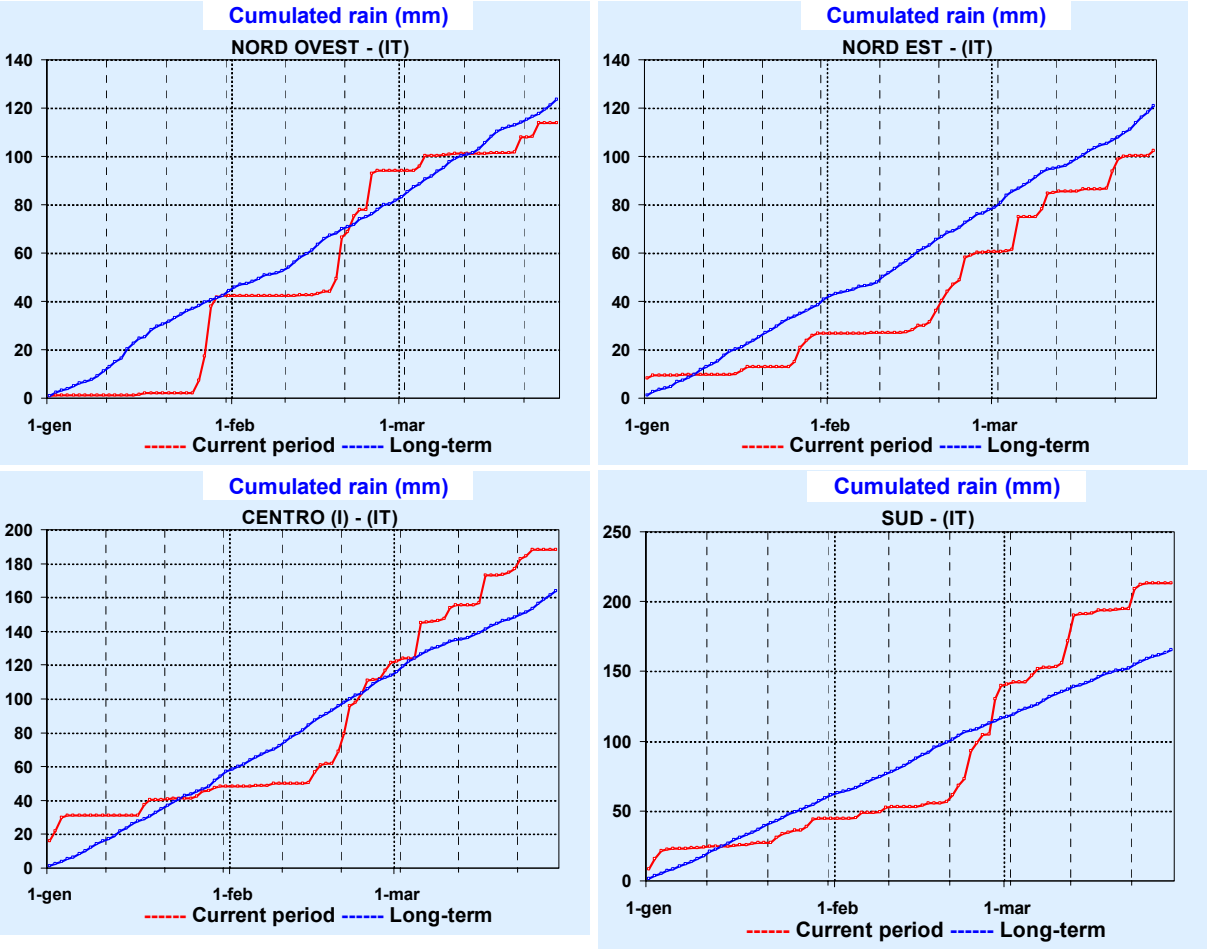
Considering the above described agrometeorological conditions and despite the delayed development, still a good potentiality is estimated for winter cereals and especially for durum wheat (soil water reservoirs). Also for rapeseed likely limited impacts due to the frost events is estimable.


Grid 37070
Minimum daily temperature (°C)
PUGLIA - (IT)
12
8
4
0
-4
-8
1-Jan
1-Feb
1-Mar
Current period
Long-term
+/- 2*Stdev


Grid 37070
Cumulated rain (mm)
PUGLIA - (IT)
250
200
150
100
50
0
1-gen
1-feb
1-mar
Current period
Long-term


Cumulated active temperature (Tbase 0°C)
Italia - (IT)
700
600
500
400
300
200
100
0
1-Jan
1-Feb
1-Mar
Current period
Long-term


Developmnet Stage (unit)
Dekad: 8 - Crop: Wheat
Nuts code: IT
Italia
70
65
60
55
50
45
40
2005 1987 1981 1985 1983 1984 2006 1993 1982 1976 2003 1980 1986 1975 1979 1978 1999 1996 1992 2004 1991 2000 1989 1995 1988 1994 1977 2002 1998 1990 1997 2001
Year
Avg
+Stdev
-Stdev



SPAIN and PORTUGAL: Cold and dry in the centre-north of Spain but good precipitation in the south. Overall positive conditions in Portugal

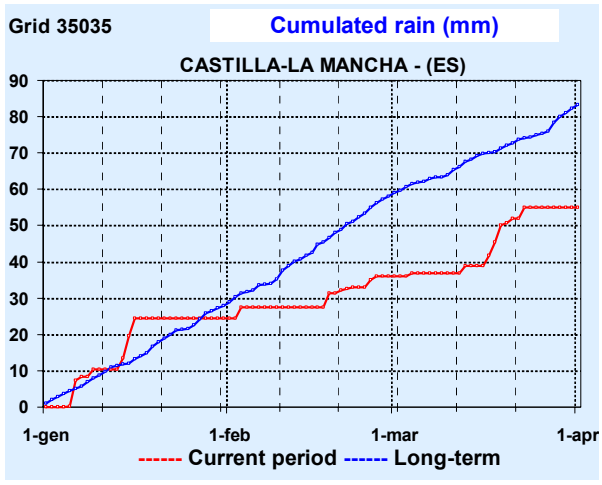
From January most of southern Spain experienced higher than average precipitation while cumulated active temperatures remained in the norm. Conditions were less favourable in northern and north–central Spain were winter was characterized by the co-incidence of generally reduced rainfall and lower cumulated active temperatures which induced some delay in the development of winter cereal. This condition however, associated with a recovery in rainfall at the end of March cannot be considered overall negative.

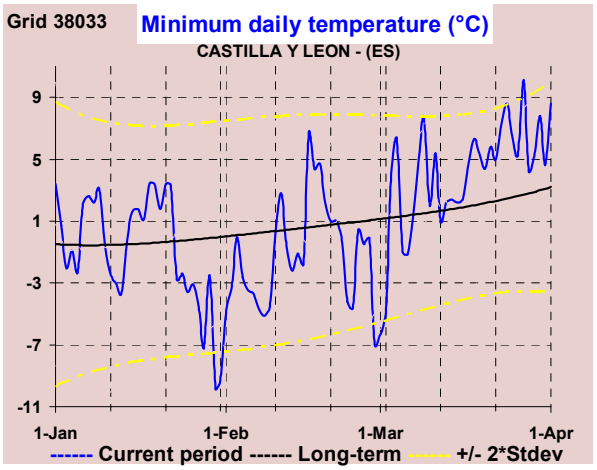
The general situation is any case improved with respect to the drought that characterized the 2005 season and yields are expected to return to norm and possibly improve. A more sensitive increase is expected for barley (+ 10-15 % on the 5 yrs average) and even more (+ 40 % on 2005). The forecast is for 2.8 t/ha Vs 2.4 t/ha on average and 1.41 t/ha in 2005. A similar though lower increase (+ 5-10 % on the 5 yrs average) is expected for soft (2.8 t/ha) and durum winter wheat (2.2 t/ha). This is however more than double than the levels experienced in 2005.

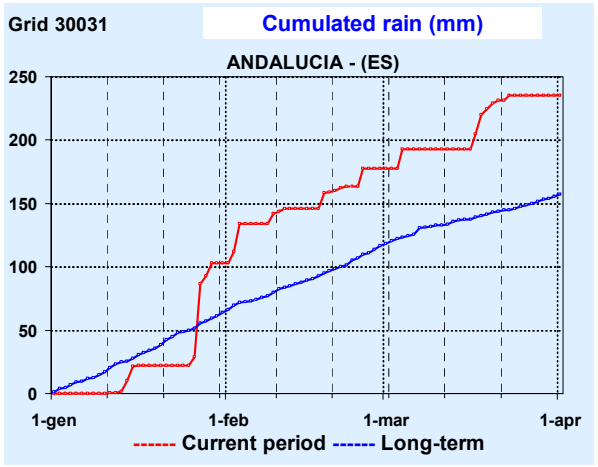
At the end of January a frost spell (about -14°C) was reported in limited areas of south-eastern Spain and snow covered the north and north central regions of the country (Castilla Y Leon and Aragon). During the first half of February weather was drier than normal (-25%) especially in the north-eastern areas with some concern for the water balance status. Precipitation increased at the end of February and in March, progressively higher with a southward trend.

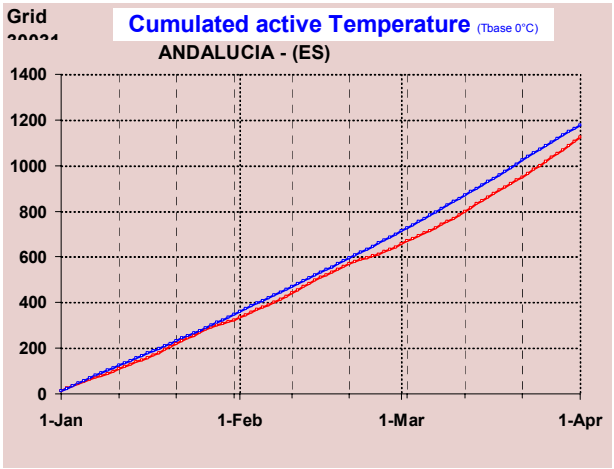
In Portugal the 2006 season started with reduced precipitation and low temperatures especially in the south. The situation however started improving in the second half of February and continued into March with

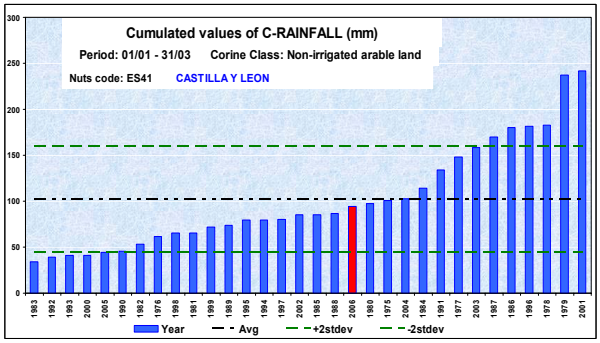
intense precipitation (> 70 mm/day) which allowed a full recovery in terms of cumulated rainfall. There were no major anomalies for cumulated active temperature and the compound effects of rain and thermal levels promises a better yield for durum wheat and barley, possibly with an increase in the order of over 10% on the 5 yrs average (1.11 t/ha for durum wheat and 1.25 t/ha for barley).

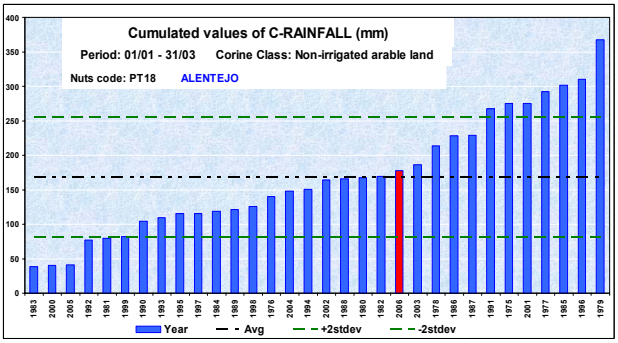






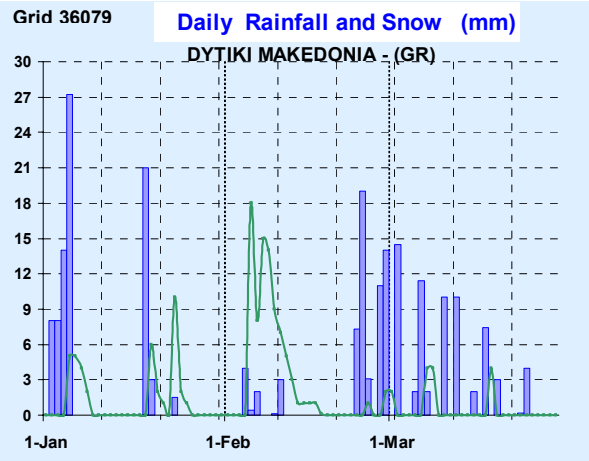


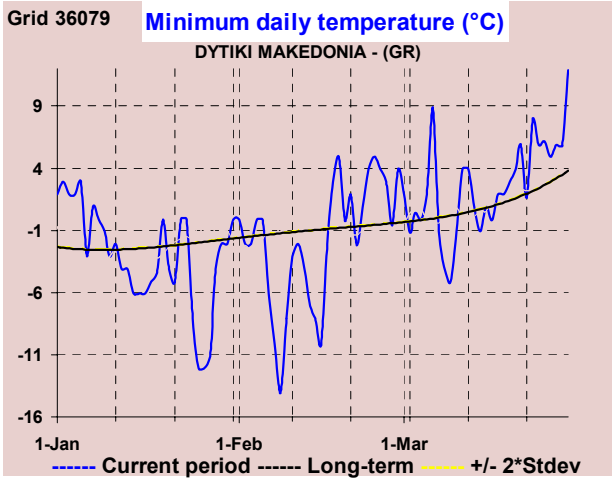


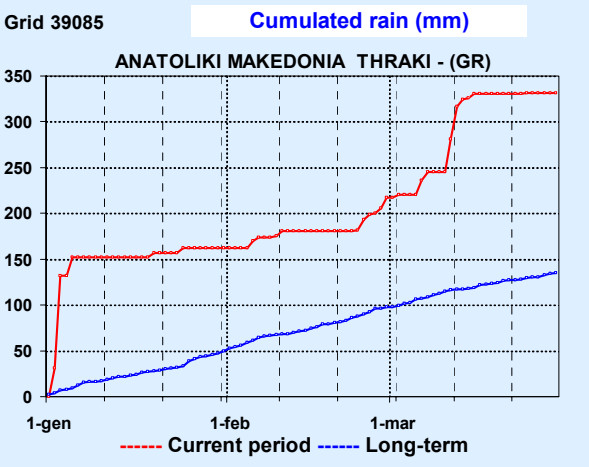


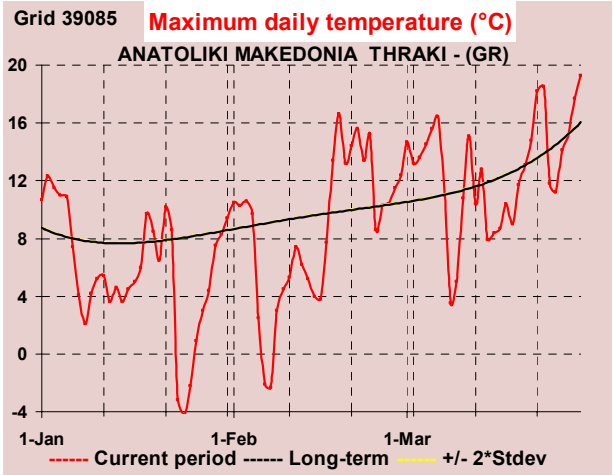
GREECE: Intense rains and cold temperatures during winter but significant improvement in temperatures in late March

Starting from January 2006 the main winter cereal production areas of northern Greece were characterized by persistent and abundant rainfall which continued until the end of March. Active temperatures were on average or below average levels over most of the country and at the end of January some areas of Kentriki Makedonia experienced cold spells which brought temperatures below freezing (< -12°C). It is still too early to give a conclusive forecast on yield potential as the intense rains and low temperature occurred during vernalisation of winter cereals, but given a certain recovery in the thermal levels at the end of March it is possible to be fairly optimistic on the outcome of the season.
Cumulated rain exceeded by 80-110% the long term average in some areas of Anatoliki Makedonia, and intense rain events (more than 80 mm/day) occurred in usually drier areas such as Peloponnesus. Frost events were recorded during January in Peloponnesus and Thessalia and in this period most of the country was covered with snow. The combined effect of these conditions should not have significantly affected the crops in vernalization. In March rainstorms continued in western and southern Greece as well as in the eastern Aegean islands while snow continued to fall in areas of central and northern Greece. At the end of March weather improved throughout the country and temperatures exceeded 20° C in north and southern Greece.



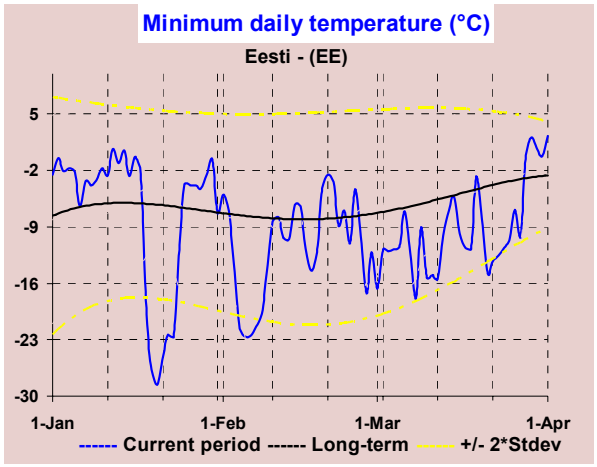


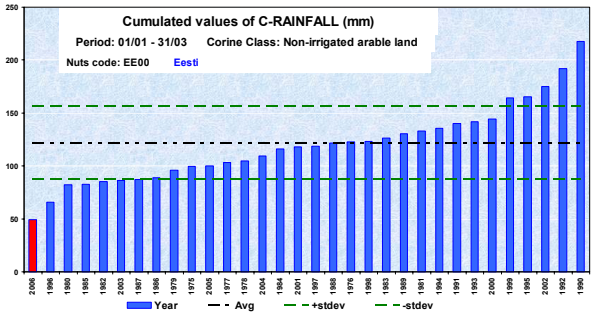


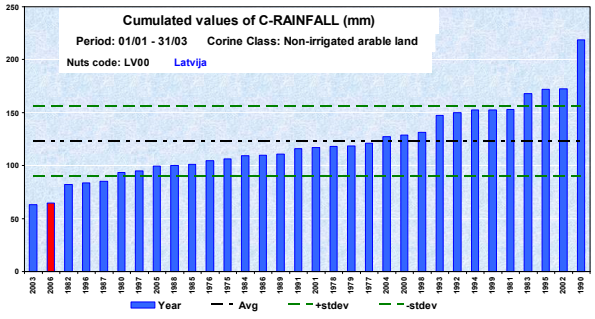


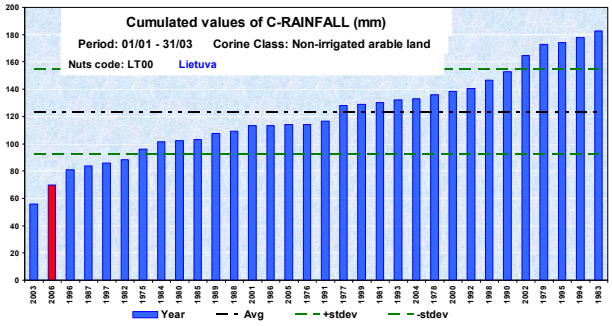
ESTONIA, LATVIA, LITHUANIA: dry and frosty winter

The considered period was extremely dry (-40 to -50% below long term average) for most agricultural areas (the driest year for Estonia and the second after 2003 in Latvia and Lithuania). The next 10 days' cumulated rain forecast for the western areas of these countries is about 70 mm, but for the eastern areas the possibility of a drought at the start of spring remains as a future concern. At the end of the second decade of January a sharp frost wave (-26°C) hit large unprotected areas (3 to 6 cm snow layer). The quantity of winter crops' damage is expected to be extremely high.









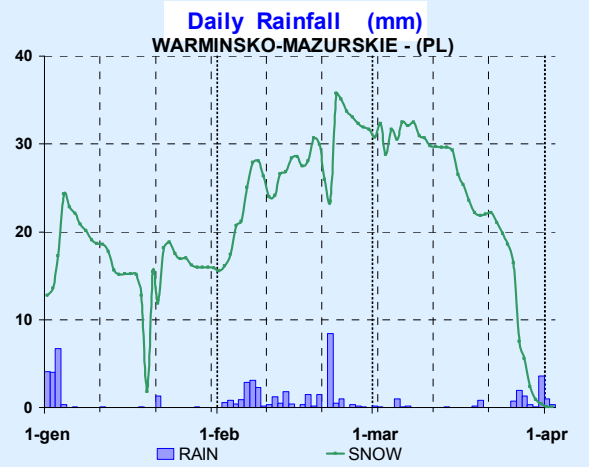
POLAND: frost damages expected

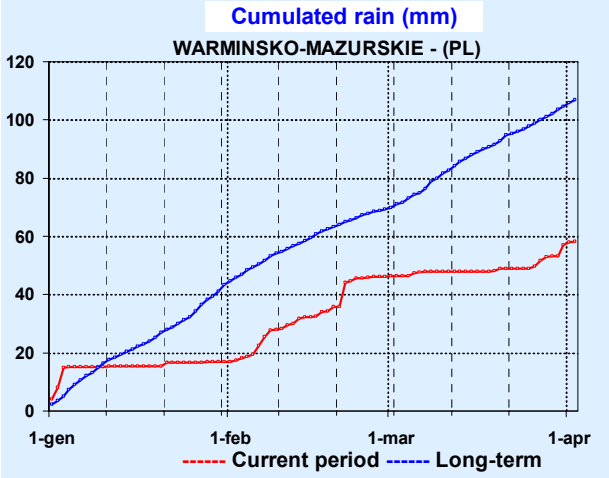
Except for soft wheat (+1.3 % compared to the average), yields are expected to be considerably lower both than the previous year and than the 5-year average. Soft wheat is forecasted to yield 3.9 t/ha (-3.1 % with respect to 2005), winter barley 3.2 t/ha (-16.3 %) and rapeseed 2.3 t/ha (-11.1 %).

A big part of the country is covered by a deep blanket of snow. The temperature above the average recorded around the 10th and the 20th of February could have induced the crops to restart. This is the cause of the frost damages which are expected for the whole country, especially in the south eastern regions. The dry conditions (scarce rainfalls in spite of the abundant snow) experienced by the northern regions should not have created problems because the crop water requirements are almost inexistent.

A pronounced delay in crop development has to be recorded for both wheat and rapeseed.

Especially in the southern areas spring cereals varieties are expected to be sown in delay for unfavourable soil bed conditions.

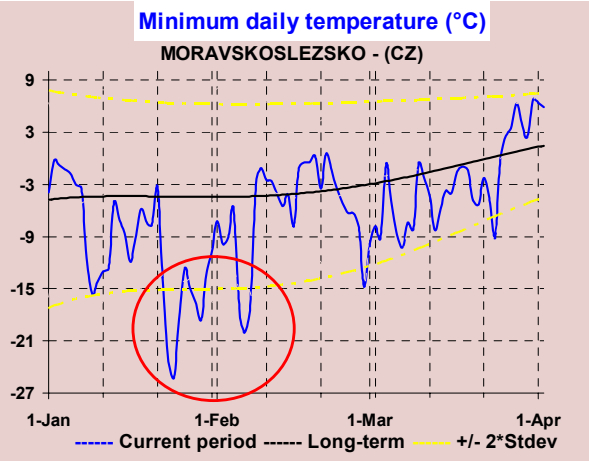


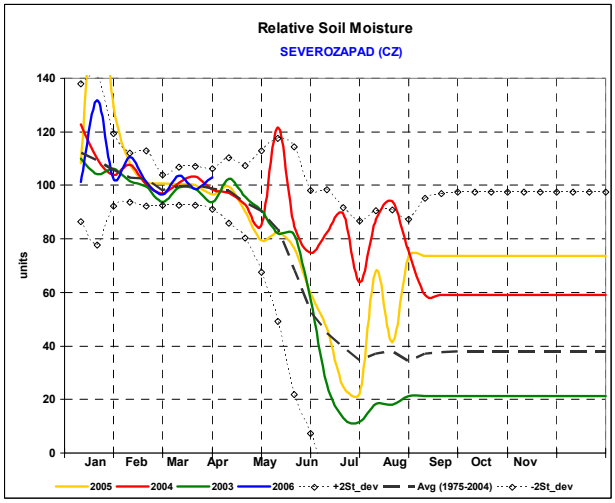


CZECH REPUBLIC: no expected severe frost damages because of the snow covering the main part of the country

The situation is similar to that described for Poland although, in this case, figures are expected to be even lower compared to those recorded for 2005. Forecasted yield is 5.0 t/ha (-9.1 % with respect to 2005) for soft wheat, 3.8 t/ha (-21.9 %) for winter barley and 2.52 t/ha (-19.3%) for rapeseed.

The whole Country experienced temperatures decidedly below the average during the last decade of January and the first of February. However, only light frost damages are expected in the eastern part of the country because of the protective insulation effect of the abundant snow. Almost 3 decades of delay in development are expected both for wheat and for rapeseed. The combined effect of melting snow and abundant rainfall of the last days could create problems related to water excess.



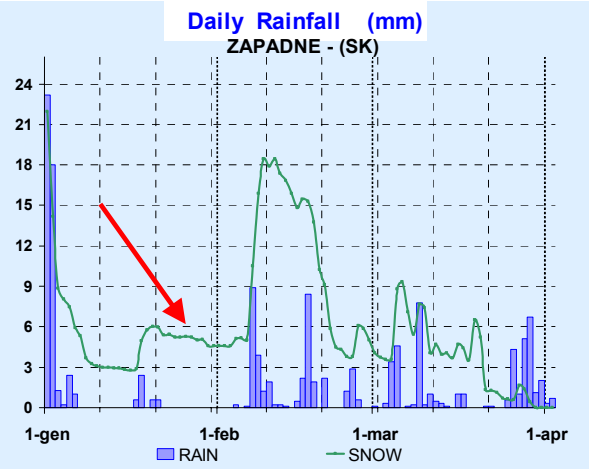


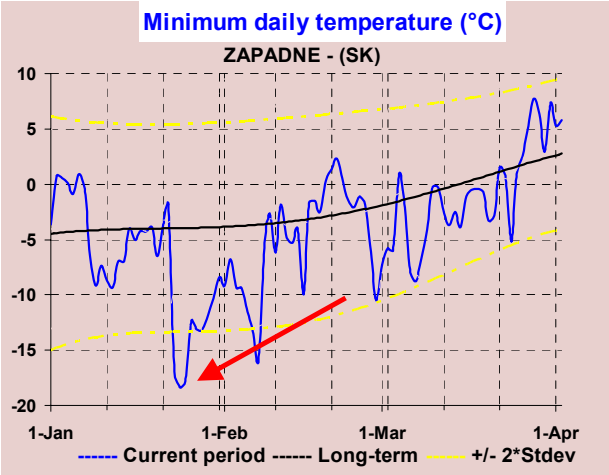
SLOVAK REPUBLIC: not enough snow to protect from frost in the south western areas

Damages caused by frost are explaining the low yields forecasted for all the main crops, especially for soft wheat (3.6 t/ha; -15.8 % compared to 2005) and winter barley (2.8 t/ha; -22.2 %). These figures have to be considered low also with respect to the 5-year average. Rapeseed is forecasted to yield 2.0 t/ha (-12.3 % compared to 2005 but only slightly lower than the average).

Temperatures below the average are recorded for the whole examined period, especially during the last decade of January and the first of February. This is leading to some concerns related to frost risk in the

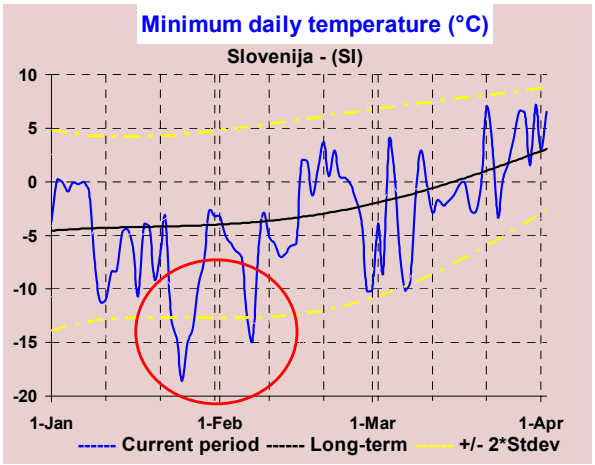
western half of the country (Bratislavsky, Zapadne and south-western Stredne). In some cases, in fact, temperatures reached -20 °C during the night and the blanket of snow was only a few centimetres deep. More serious damages are expected for winter barley, less resistant to frost than wheat.
About a 2-week delay is expected for all the winter crops. Possible delay in spring crops sowings could be caused by the persistence of snow in the east.





SLOVENIA: cold winter

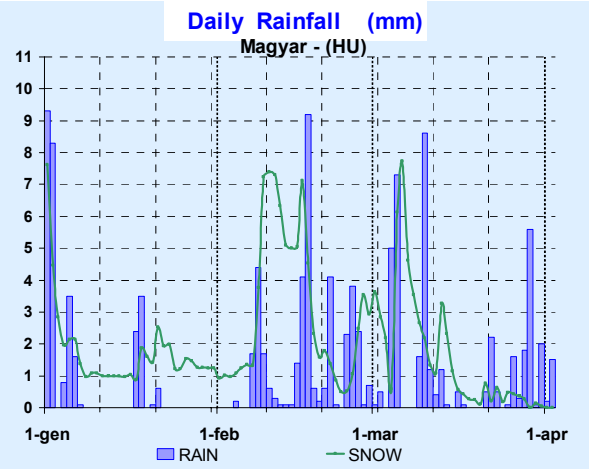
Forecasted yields (4.3 t/ha for soft wheat, 3.6 t/ha for winter barley) are expected to be lower both than those recorded in 2005 (about a 9% decrease for both the crops) and than the average (-3.6 % for soft wheat, -0.9 for winter barley).
The low temperatures recorded since the beginning of the year are slowing winter crops' development (winter wheat is currently entered into the tillering phase). The simulated delay (more than one decade) is low with respect to the countries bordering on the north. Abundant rainfalls during the last decade of February and the first of March may have caused problems related to water excess in the topsoil.

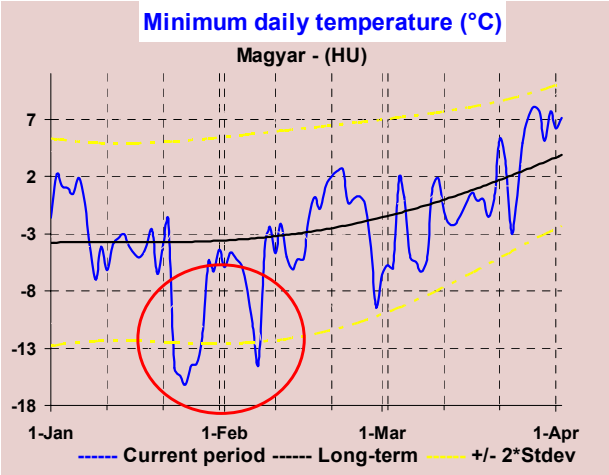


HUNGARY: possible frost damages expected in the north eastern regions

Soft wheat is expected to yield slightly less with respect to 2005 (-0.9 %), although the forecasted 4.4 t/ha is more than 10 % higher than the 5-year average. A good potential is shown by simulated results for rapeseed (2.5 t/ha; +5.8 % compared to 2005, 23.0 % higher than the average) and winter barley (4.1 t/ha; +3.9 % compared to 2005 and 15.6 % higher than the average). The 3.6 t/ha yield forecasted for durum wheat is 16.1 % lower than 2005, this decrease is strongly reduced compared to the average.

Absolute lack of snow or only a light blanket have exposed winter wheat and, especially, winter barley to frost damages between the last decade of February and the first of March. During this period, in fact, temperatures at the crown level got lower than -12 °C for some days, probably causing problems to winter crops, especially to barley. Only a strong delay in development is simulated for rapeseed, not susceptible to frost.

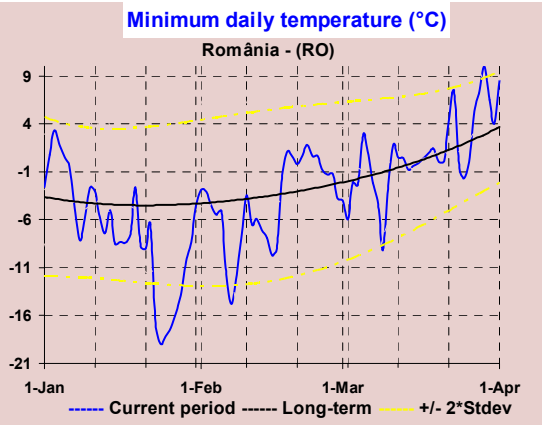


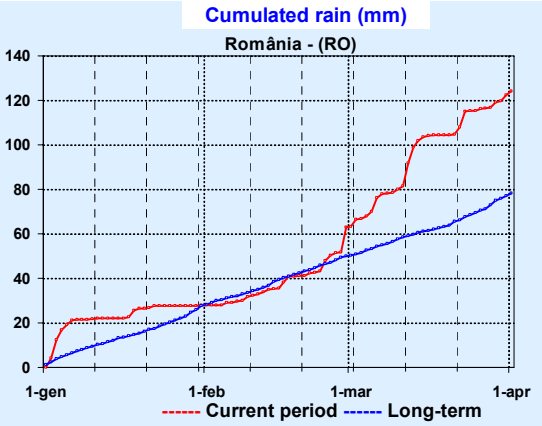


3.2. BLACK SEA AREA

ROMANIA: local frost problem, March wetter than usual

The cumulated rain for March was about 50% than long term average. In the third decade of January the minimum temperature dropped below -19°C. Locally, in the north-western (Transylvania) and south-eastern (Dobrogea) areas the poor snow cover was not able to protect the winter wheat crops (-15°C at 3 cm soil depth). The damages for winter barley and rape seed were more widespread. Development stage of winter cereals was in delay 'til last decade of March when the long term level was reached.
The rainy days forecasted for first half of April may hamper spring field activities to take advantage of the beneficial increasing of temperatures, especially in south-western part.

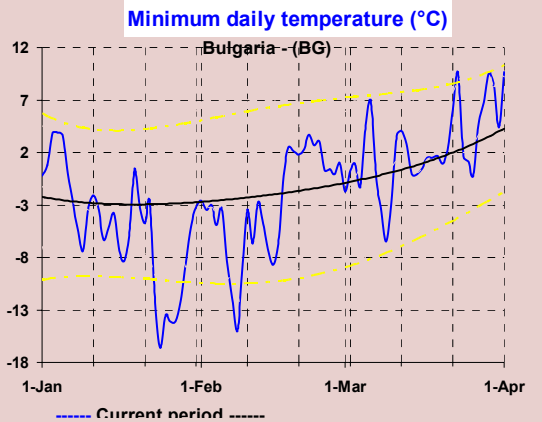


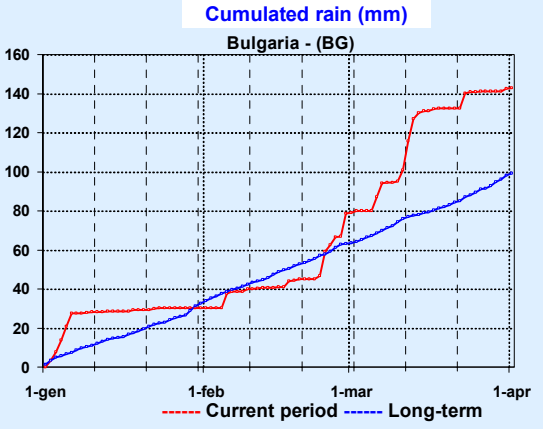


BULGARIA: relatively cold winter but with low crop impact; rainy March

On 24th of January a frost wave was recorded (-16.6°C) for most of the agricultural areas of Bulgaria. The low temperatures remained below -13°C for several days and after a less cold period a new frost event occurred in the first dekade of February. Generally the snow protection was efficient except for some north-eastern and south-western areas where damages were possible especially for winter barley and rape-seed.

Development of winter crops was in delay 'til the last dekade of March. The cumulated rain for March is exceeding the normal level by 40%. Spring cereals sowing in eastern Bulgaria (around Black Sea coast) may be delayed due to rainy weather, but for the rest of the country no special problems were identified.



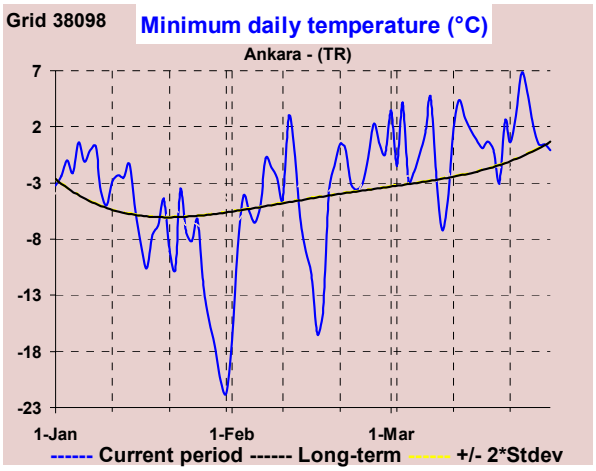


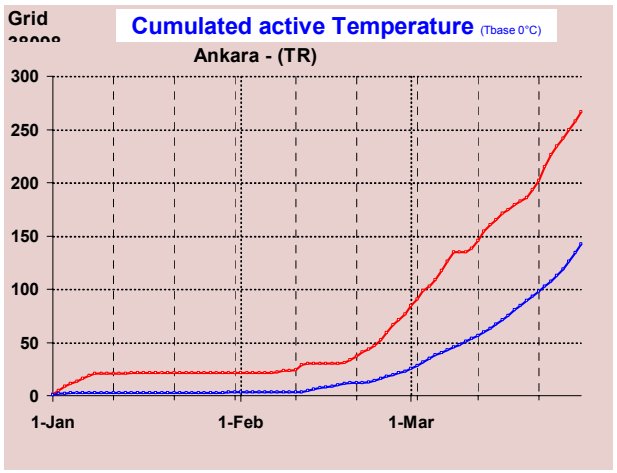
TURKEY: Good precipitation and snow over the cereal producing areas combined with higher than average thermal input

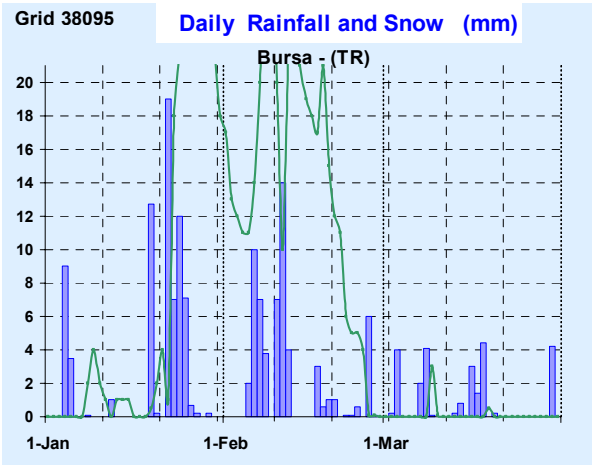
In the cereal producing areas of central Turkey the precipitation levels, which had been around the norm at the beginning of the season, started increasing from late January to present. Snow cover was present over most of the area until the end of February. These conditions coupled with favourable thermal levels should support above average yield for wheat and barley.

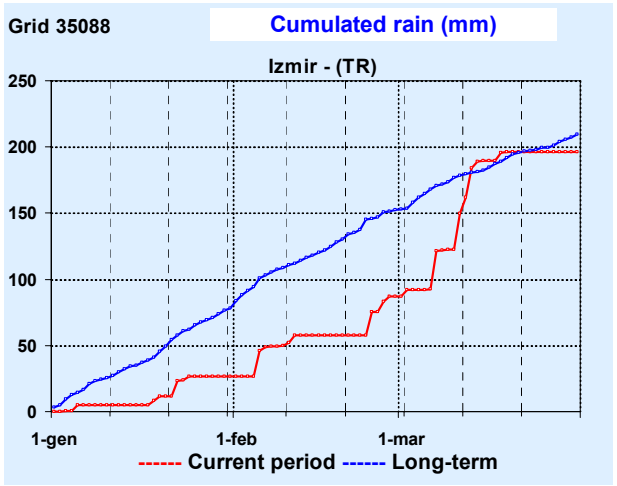
In coincidence with the most intense snowfall, the central highlands of Anatolia suffered from minimum temperatures which reached levels of around – 20° at the end of January. These extremes, however, did not affect the overall thermal input which remained on average or above average levels for most of the period and, most important; the snow cover should have protected cereals from major frost damages.

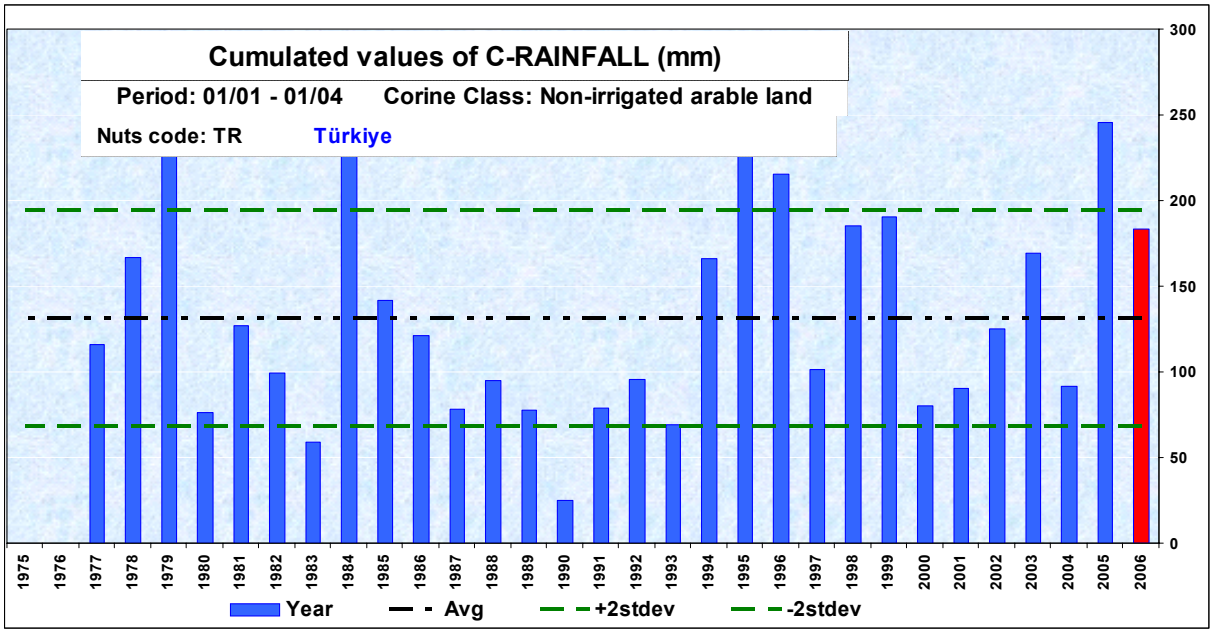
The Aegean coastal areas were drier than normal but temperature levels did not report major anomalies. An opposite situation was reported around the Black Sea with good rainfall and low temperatures.


Grid 38098
Minimum daily temperature (°C)
Ankara - (TR)
7
2
-3
-8
-13
-18
-23
1-Jan
1-Feb
1-Mar
------ Current period ------ Long-term ------ +/- 2*Stdev


Grid
Cumulated active Temperature (Tbase 0°C)
Ankara - (TR)
300
250
200
150
100
50
0
1-Jan
1-Feb
1-Mar


Grid 38095
Daily Rainfall and Snow (mm)
Bursa - (TR)
20
18
16
14
12
10
8
6
4
2
0
1-Jan
1-Feb
1-Mar

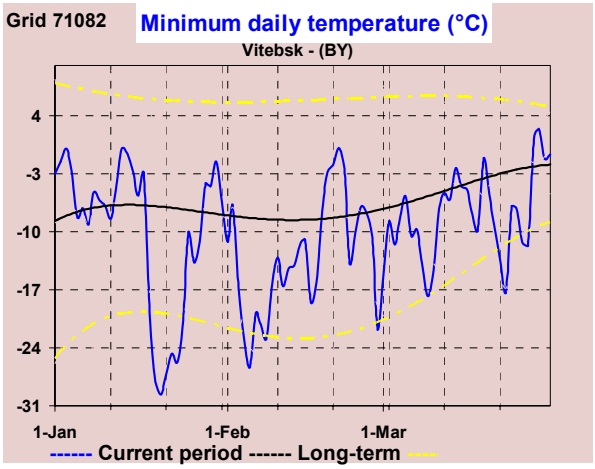

Grid 35088
Cumulated rain (mm)
Izmir - (TR)
250
200
150
100
50
0
1-gen
1-feb
1-mar
------ Current period ------ Long-term

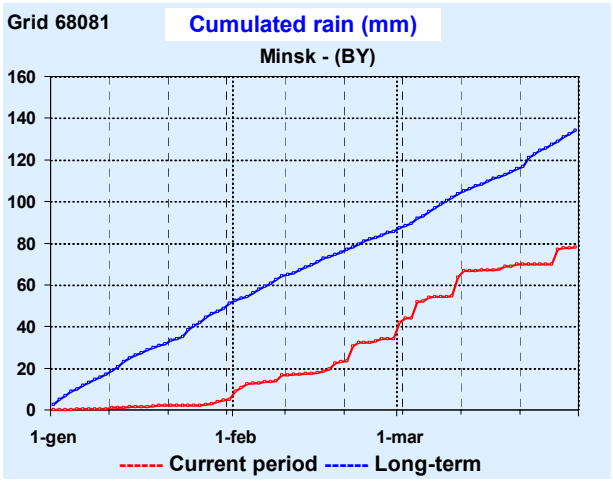

Cumulated values of C-RAINFALL (mm)
Period: 01/01 - 01/04
Corine Class: Non-irrigated arable land
Nuts code: TR
Türkiye
300
250
200
150
100
50
0
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year
Avg
+2stdev
-2stdev

3.3. EASTERN COUNTRIES

BELARUS: frost damages for winter crops, but good conditions for soil tillage for the spring crops

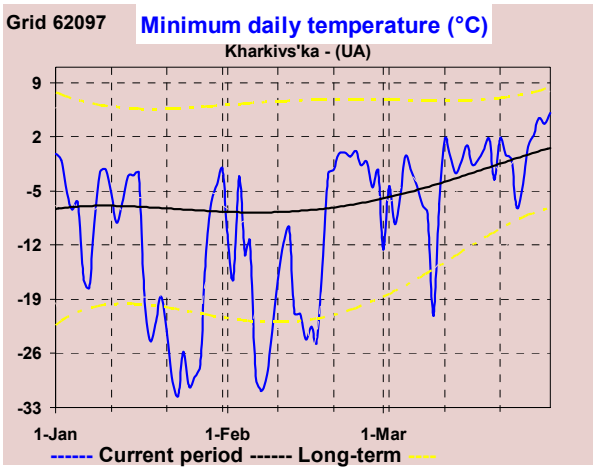
Winter wheat crops from large areas in northern Belarus were highly affected by several frost spells (the minimum temperature at 3 cm soil depth, decreased below -18°C for more than 2 days). For other areas, except western Belarus, significant damages were possible also for more sensitive crops (winter barley and rape seed). In the western Belarus (Gorodno) where the simulated soil temperature (3 cm depth) didn't reach -15°C (less than 5 days with temperatures below -12°C) the damages of winter wheat crops were significantly lower than in the rest of the country.
The precipitation received by north and western Belarus in the first trimester of 2006 was about 40% lower than long term average. Meanwhile the south-eastern Belarus was wetter than usual (locally the cumulated precipitation exceeded the long term average level by 44%) –although even the last half of March was also wetter then usual in this area, the maximum number of rainy days (>5 mm/mm) didn't exceed three, so one may suppose good conditions for soil tillage. The relative rainy period forecasted for the first "dekade" of April (especially in the northern and central areas) may prevent the start in force of the spring sowing campaign before 10 of April.

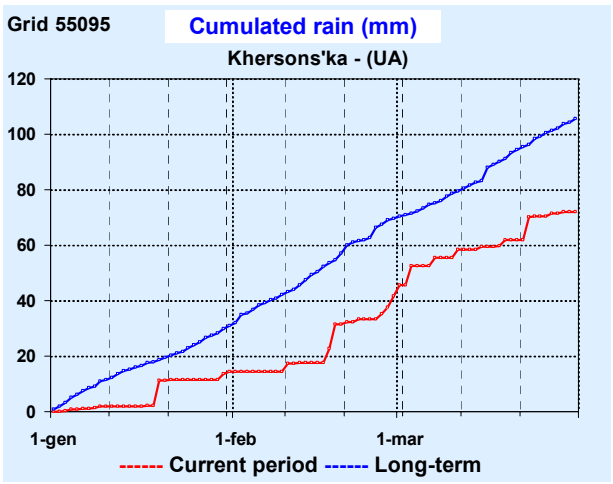


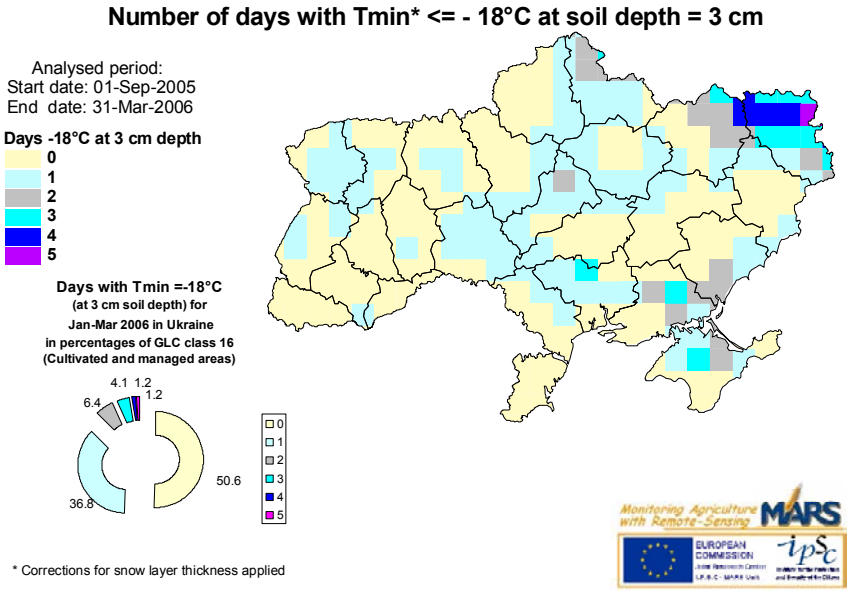


UKRAINE: Higher than usual frost damages

From mid-January until 10th March, four unusual (below 2 standard deviation) frost waves hit most of the Ukraine. The minimum temperatures varied from -35°C in the eastern Ukraine (Luhans'ka) to –24°C in Crimea. The expected damages are inversely proportional to the isolation capacity of the snow layer. Due to the persistent snow cover and high cloudiness a confirmation of extension of these affected areas by RS was possible only for Crimea. Compared with the long term average, the development of winter crops during the considered period was in a clear delay. In some areas from south-eastern Ukraine the cumulated precipitation was below normal (-20%) and the forecasted values for the first dekade of April are suggesting the beginning of a possible spring drought for this area. At the end of March the snow was generally absent (except in the northern third of the country where the snow layer depth varied between 1 and 5 cm) and the average temperature is rising quickly so the conditions for the spring field labours may be considered as acceptable.







RUSSIA: severe winter frost

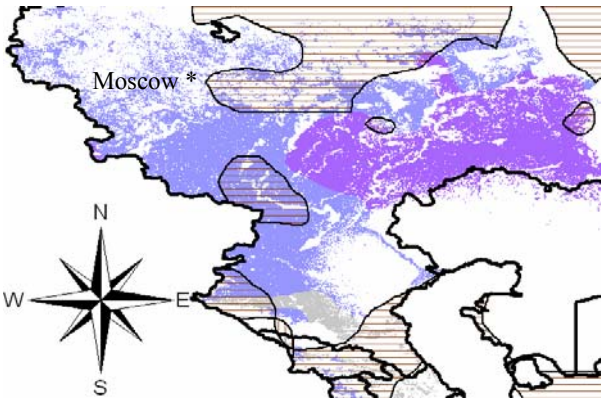
The period under analysis is the dormant period of winter crops in all regions of European Russia.

The winter started slightly later than normal, and the period before it was drier than in previous years. The remote sensing indicators demonstrate the worst status of winter crops before the winter than in the previous year in the southern part of European Russia, where winter crops are dominant. The crop status before the winter in other regions of Russia was better than in the previous year or close to it.

The maximum of the cold air invasion took place in January, when the minimal air temperature in many regions was lower than - 30 degrees. Simultaneously the snow cover depth was not enough for crop protection practically everywhere. The maximal risk of crop damage due to frost was observed for the middle Volga and Urals region (see the figure below). The blue colour in the figure indicates regions with risk of crop damage due to winter frost, violet colour – regions with very high risk of winter crop damage, grey colour – no risk (only regions with winter crops are coloured). Hatching shows regions, where winter conditions of current season were worse than in the previous season).

The remote sensing indicators demonstrate the worse status of winter crops after the winter compared with previous year in the southern part of European Russia. The winter crops are still under snow cover in other regions.

It is likely to be that the percentage of winter crops killed by frost during this winter is higher than in previous years, especially in Volga and Urals regions. In some regions, unfavourable winter conditions could affect nearly 30-50% of winter crops. Thus, it seems that the yield of winter cereals 2006 will be lower practically everywhere. Moreover, in some regions winter crop fields must be re-sowed with spring crops.

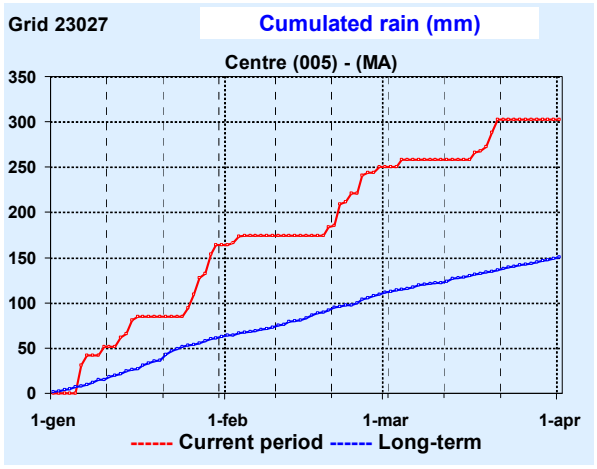


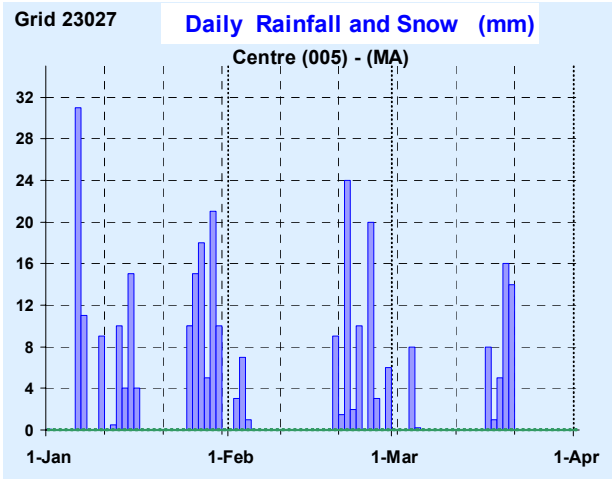
3.4. MAGHREB

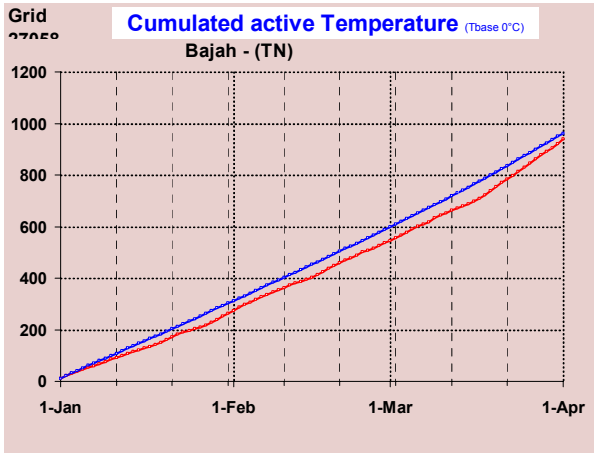
MOROCCO, TUNISIA AND ALGERIA: Low temperatures and regular rainfall

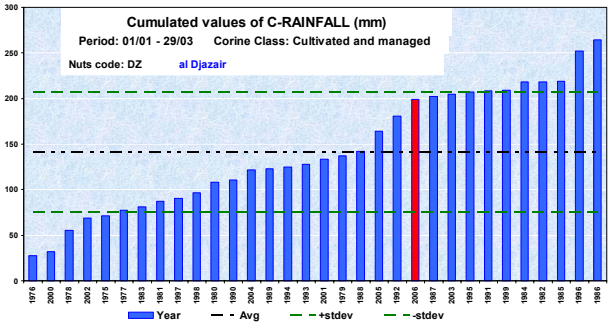
Winter 2006 was marked by higher than average precipitation in the entire Maghreb region from Tunisia to the southern Atlantic coast of Morocco These conditions, coupled with temperatures slightly below the norm, create a positive context for the outcome of winter cereals.
In the main agricultural areas of Tunisia, the season from January to March has been characterized by low temperatures and recurrent rains. Peaks of over 45 mm/day were reported in some areas (Jundubah) but rainfall started declining at the end of March in most of the northern regions This condition has not yet affected the soil moisture supply and yield of winter crops, especially durum wheat should be in line with 2005 (~ 1.8-1.9 t/ha) if no major hazard such as warm and dry periods affect the crops before harvest.

The season had a similar evolution in Algeria and since minimum temperatures fell below +6°C for most of January and February, the developmental rate of cereals was reduced. Precipitation was regular all through the season progressively decreasing towards the end of March.
In Morocco as in the eastern Maghreb countries, the sum of active temperatures was lower than usual while cumulated rainfall exceeded 300 mm by the end of March in many parts of the country. Yields are expected to increase significantly with respect to 2005 and stabilize on the levels of the 5 yrs average for both durum wheat (~1.46 t/ha) and barley (~ 0.8 t/ha).


Grid 23027
Cumulated rain (mm)
Centre (005) - (MA)
350
300
250
200
150
100
50
0
1-gen
1-feb
1-mar
1-apr
------ Current period ------ Long-term

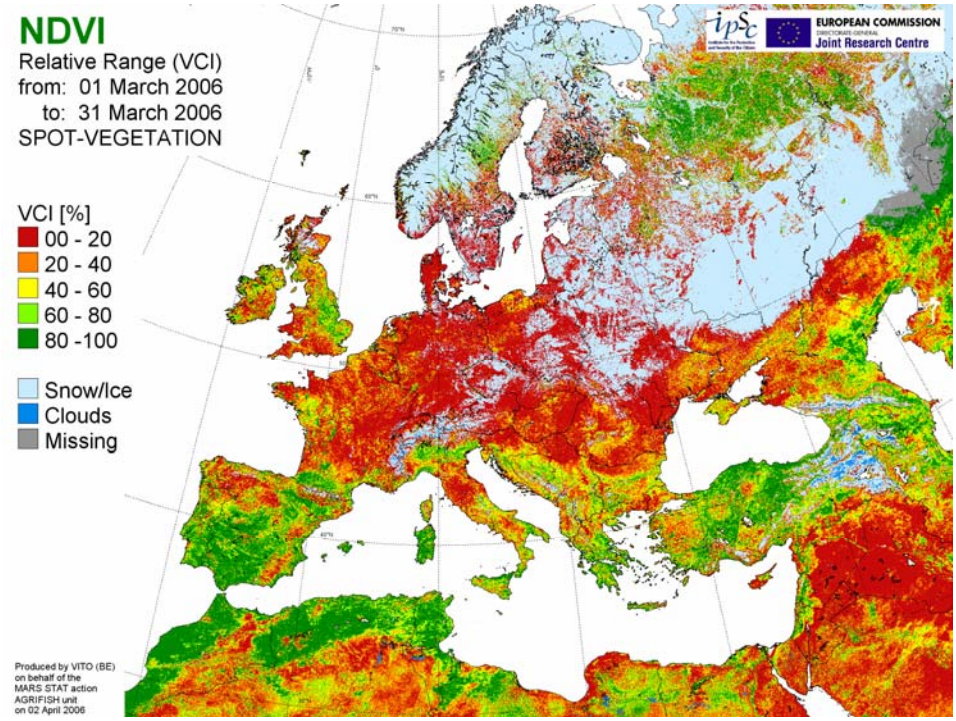

Grid 23027
Daily Rainfall and Snow (mm)
Centre (005) - (MA)
32
28
24
20
16
12
8
4
0
1-Jan
1-Feb
1-Mar
1-Apr


Cumulated active Temperature (Tbase 0°C)
Bajah - (TN)
1200
1000
800
600
400
200
0
1-Jan
1-Feb
1-Mar
1-Apr


Cumulated values of C-RAINFALL (mm)
Period: 01/01 - 29/03
Corine Class: Cultivated and managed
Nuts code: DZ
al Djazair
Year
Avg
+stdev
-stdev

4. SPOT-VEGETATION satellite analysis

Map highlights: Extremely favourable conditions for Maghreb, delayed development in central Europe.



The monthly NDVI image with the relative range reveals hampered vegetation development in central Europe. The current NDVI values belong to the lowest measured values over the last 9 years in Germany, Poland, Slovakia and Czech Republic. Even in the monthly composite large areas in the Baltic States, Poland, Ukraine, Russia and Norway are detected as covered by snow.
Opposite conditions are found for Maghreb, southern Portugal and Spain. Here extremely high NDVI values are occurring, indicating a very good biomass accumulation.

CNDVI profile highlights: Good biomass accumulation in former drought affected areas of Spain and Portugal. Excellent conditions for Morocco and Tunisia.

The two profiles of **Spain** (**Extremadura** and **Andalucía**) show a growing season from November onwards well above the average but below the growing season 2003/2004. The accumulation of biomass is still ongoing and no delay can be detected. In **Alentejo (Portugal)** biomass accumulation started the beginning of November clearly above the average and very close to the growing season 2003/2004 reaching now almost the peak of biomass development and implying good yield expectations. For **Sicilia (Italy)** the growing season according to the NDVI profile is slightly longer, so far fluctuating around the average. In **Puglia (Italy)** the re-growth also started from October, and a biomass boost is to be expected from March onwards. So far the vegetation profile shows a good development. The two profiles for **Morocco** reveal exceptional conditions. In **Tensift** the start of the growing season was delayed but followed by a vegetation boost with a very good accumulation of biomass. Yield expectations at this stage are very good following the NDVI profile. For **North-West** a similar and timely vegetation boost can be observed as well. The profile of **Bansart (Tunisia)** shows a well advanced vegetation cycle with values below the average at the beginning but noticeably approaching the vegetation development peak.