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MARS AGROMETEOROLOGICAL Bulletin

Monitoring Agriculture with Remote Sensing

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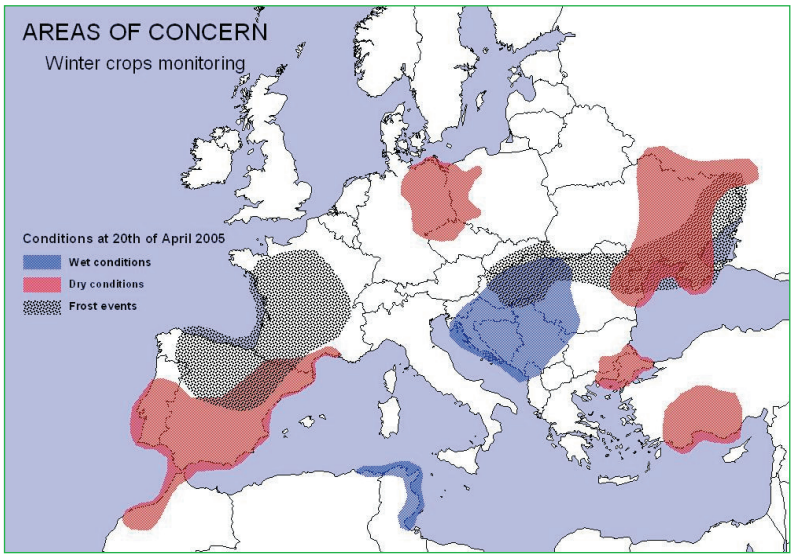
Situation: 1 March to 20 April 2005 , Vol. 13, No 2

A good potential in cereal production is expected, with the exception of the Iberian peninsula



MARS yield forecast at European level: 20 April 2005

Crops	EU-25 yield (t/ha)				
	2004	**2005**	% 05/04	Avg. 5 years	% 05/Avg.
Total cereals	5.5	**5.2**	*4.9*	-4.2	*6.1*
Soft wheat	6.5	**6.1**	*5.8*	-6.6	*4.0*
Durum wheat	3.0	**2.5**	*2.5*	-16.0	*0.7*
Total wheat	5.9	**5.5**	*5.3*	-6.8	*4.2*
Spring barley	4.4	**4.3**	*4.0*	-1.3	*9.2*
Winter barley	5.2	**5.1**	*4.7*	-1.8	*8.3*
Total barley	4.8	**4.7**	*4.3*	-1.6	*8.7*
Grain maize	8.2	**8.3**	*7.8*	0.6	*6.0*
Other cereals (1)	3.6	**3.4**	*3.3*	-4.1	*6.2*
Rapeseed	3.3	**3.2**	*2.9*	-5.3	*9.9*

(1) Sorghum, rye, maslin, oats, triticale, mixed grain other than maslin, millet, buckwheat.
Yield figures are rounded to 100 kg.
Sources:
2004 yields come from Eurostat Cronos
2005 yields come from MARS crop yield forecasting system

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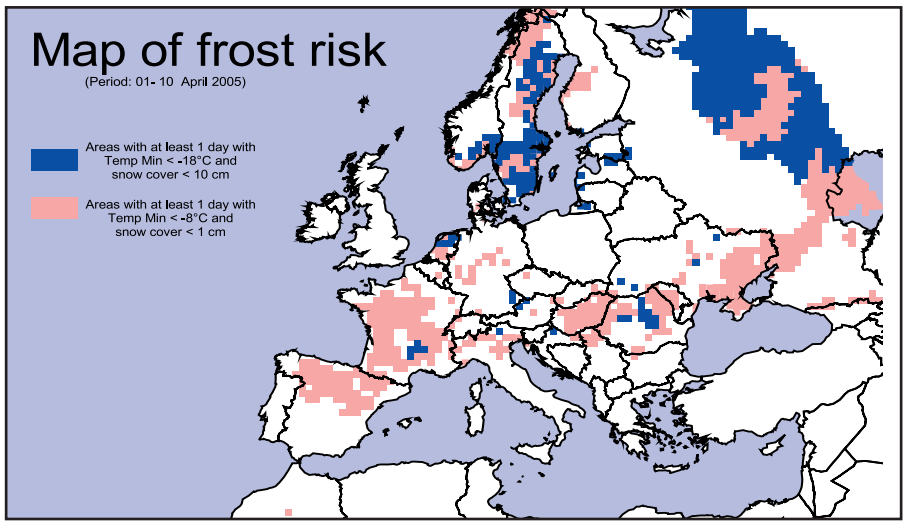
Agrometeorological overview (1 March to 20 April 2005)

Temperatures and evapotranspiration

Accumulation of the active temperatures (Tbase = 0°C) was in the normal range for the most of the area of interest, except northern areas where the sum of active temperatures was higher (around +15% for Ireland, the UK, Benelux, Germany, Denmark, north-eastern Poland, northern Ukraine, large areas of Turkey and more than +25% for Scandinavia, the Baltic States, Belarus, northern Russia and western Ukraine). The southern part of European Russia had a lower



than usual accumulation of active temperatures (about +20%). In March, temperatures below – 15 °C were recorded for the Netherlands, the Scandinavian peninsula, the Baltic area, Belarus, European Russia, northern and central areas of Ukraine, southern Germany, Austria, the western Balkans and Romania. Low temperatures (between –15 and – 10 °C) occurred for practically all areas of interest except Ireland, the UK and most of the Mediterranean basin.

During March, unfavourable combinations of low temperatures with poor snow cover occurred in northern Spain, France, the Netherlands, Hungary, the northern half of Romania, eastern Ukraine and north-eastern Turkey.

Rain and climatic water balance

Generally, this period may be regarded as drier than usual (–25%) for most of Europe, except the northern UK, Norway, the western Balkans and the eastern Black Sea basin, where it was wetter (+25%).

The ongoing dry period from the southern Iberian peninsula continued in this period and the situation became more severe. Long dry periods were recorded too for Germany (especially in eastern parts) and Ukraine, but the soil moisture is still at a sufficient level. The drought conditions from France were alleviated compared to the last dekad of March. No significant impact of rain on sowing activities was estimated for this period, but the emergence of the spring crops will certainly be affected by lower-than-usual soil moisture. Northern Tunisia benefited from some good rains, but in Morocco the weather was drier than usual. Some very intense rains occurred in western Scotland and around the eastern and western rims of the Adriatic Sea.

Highlights EU-25

So far, nearly favourable climatic conditions are keeping a good potential in cereal production. The scores expected are, however, below last year's records.

Total cereal production (excluding rice) is expected to reach more than 275 million tonnes (–4.4% compared to 2004 and + 5.8 % compared to the average) where the contribution of the yield is 5.2 t/ha instead of 5.5 t/ha in 2004 (–4.2%) or 4.9 t/ha as average (+6.1%). Part of this potential is explained by the use of trends on just or to be planted spring and summer varieties (spring barley, grain maize). As regards the contribution of different crops to the aggregated EU value, the biggest variation expected is on durum wheat as a consequence of drought or unfavourably dry conditions in some producing areas in southern Europe (Spain, Portugal and part of France).

Highlights by region of interest

EU-25

France: possible frost damage in March, significant water deficit reducing soil water reservoirs; partial recover of topsoil moisture in April

The **soft wheat** yield is estimated at 7.6 t/ha (–2.1% compared to 2004), **durum wheat** at 4.9 t/ha (–2.0% compared to 2004 but +14.3% compared to the last five-year average), **barley** at 7.0 t/ha, equivalent to the previous year, as well as rapeseed with 3.5 t/ha.

Following the cold period recorded in the last part of February, also during the first dekad of March, the **temperatures** were lower than average, with several consecutive days with minimum values below 0 °C and some extremely low temperatures recorded: –13.1 °C in Bourgogne, –12.8 °C in the centre, –10.4 °C in Auvergne, and –10.3 °C in Provence. Because of insufficient snow cover, crop damages were likely.

In the remaining part of March, the temperatures progressively climbed, even passing the seasonal values as in the last dekad. In April, more normal conditions were recorded. In fact, the cumulated active temperatures at the end of the period present normal values in the majority of the territory, and only in the southern areas is a slight deficit observed (50–60° GDD).

In March, **rainfall** was scarce over the majority of the territory and the soil water content was in general below the seasonal values. In the last dekad of March, and then still in April, significant rain was recorded. Those water supplies balanced the previous deficit. The analyses of the cumulated values from the beginning of the year, however, show a slow but progressive reduction of the **soil water reservoirs** (the lowest in the last four campaigns, with the only exception in the Rhones-Alpes area). As a whole, dur-

Publication issue

The second printed *MARS Bulletin* for the 2004/05 agricultural campaign covers the period 1 March to the second dekad of April agrometeorological conditions.

It makes a synthesis of the major issues pertaining to:
— growing conditions for winter crops;
— sowing conditions for spring crops;
— water and drought stresses;
— frost risks and impact.

Previous related analyses available:
— Conditions at sowing — November 2004 (Vol. 12, No 6)
— Climatic updates December 2004 to March 2005 (Nos 1-6)
— Winter crops conditions in January and February 2005 (Vol.13, No 1)

Contributions

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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 1975–2004.
The CNDVI is an unmixed normalised vegetation index on the base of Corine land cover mainly for arable land or grassland.

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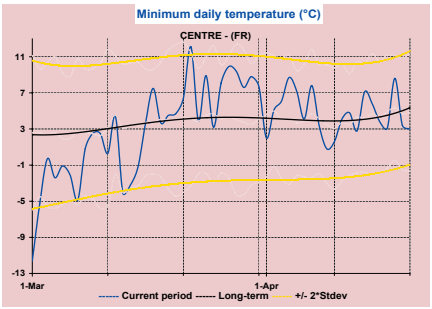
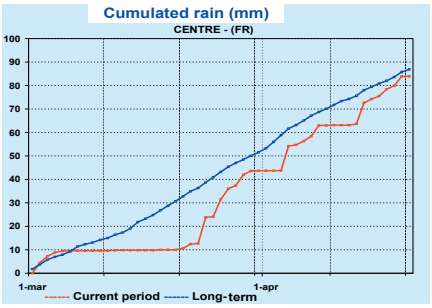
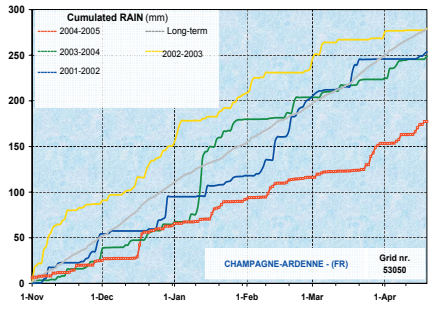
Vol. 13, No 3 – 2005: May analysis. Available early June

ing the considered period, the cumulated rains presented higher values in the central part of the country (more than 100 mm in the Rhone valley, Auvergne, Bourgogne, France-Comte and Aquitaine); slightly below the seasonal values in Normandy (−20 to −30 % compared to the long term), eastern and southern areas (−40 to−50 % in Champagne-Ardenne and Languedoc-Roussillon). In April, the rains were concentrated in a relatively few rainy days, permitting an appropriate access for the spring crop sowing, particularly for maize.







Wheat: In March, the development of winter wheat was influenced by the thermal conditions and presented a delayed stage (tilling — stems elongation), but in April completely recovered (beginning of heading) thanks to more favourable conditions. All of the southern areas (durum wheat), at the end of the first dekad of April showed a development stage slightly delayed compared to the average. Despite the relatively scarce water supplies in March, according to simulations, the **soft wheat** did not suffer from water stress and the soil moisture benefited from the April rainfalls. The **durum wheat** districts presented a worst situation: frost events and dry conditions could affect the crop canopy, determining reduction of active leaves.

Rapeseed: This reached the flowering stage in the whole country and is in advance in the north-western areas. As for winter wheat, the simulated soil moisture available to the plant is not showing a water stress.

Spring barley: The unseasonable cold conditions recorded between February and March were not favourable for the late sowing (normally scheduled at the beginning of March).

Spring wheat: Similar to spring barley, the unfavourable thermal conditions prevented the canonical sowing calendar, obliging postponement to the second half of March, when close to optimal conditions were present.

Sunflower: The sowing could be made under normal conditions. The first part of the crop cycle could benefit from appropriate soil moisture for most of the country.

Sugar beet and maize: The conditions were optimal or sub-optimal for the field work. Early to normal sowing could have been achieved as from the calendar.

Potato: The potato should have also benefited from normal conditions for sowing and the crop growth should continue under optimum conditions.

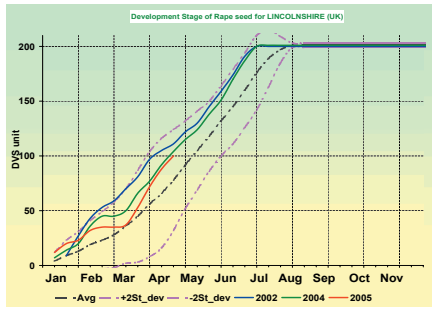
UK and Republic of Ireland: general seasonal conditions

Slightly higher than normal temperatures and seasonal cumulated rain values characterised the period under consideration. As a consequence, **good potential yields are expected,** especially **in Ireland:** for **wheat** 9.5 t/ha (−4.1 % compared to 2004, but + 4.9 % compared to the average of the last five years); **barley** 7.7 t/ha (+7.0 %). **In the UK,** expected crop yield values are: **barley** at 6.3 t/ha (−2.0 % compared to 2004); **wheat** at 7.7 t/ha (−2.5 %) and **rapeseed** at 3.0 t/ha (+5.3 %).

At the beginning of March, the temperatures were under the seasonal values and some frost events were recorded, for example: −4.4 °C in East Anglia, −6.0 °C in west Sussex, −2.9 °C in Lincolnshire. However, frost damages were unlikely.

Then, during the second dekad of March, the general air masses circulation changed and the temperatures climbed rapidly, even above the normal. In April, the temperatures were within the normal range of variation.

The analysis of the simulated crops' behaviour showed that **rapeseed** rather than **wheat** positively responded to the more favourable temperatures, and, in the second part of April, reached the flowering stage, slightly in advance compared to the average and similar to the 2004 and 2003 campaigns.



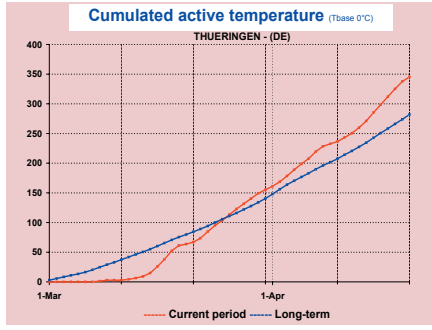
The rainfall was well distributed and in general concentrated in a few significant rainy events. Although the cumulated values were slightly below the seasonal rainfalls, in general the soil moisture remained close to the average for the period.

The agrometeorological conditions reported (mild temperatures and light and not frequent rains) were also **positive for spring and summer crops** in the first stages of development (germination, emergence) and for pastures and grasslands.

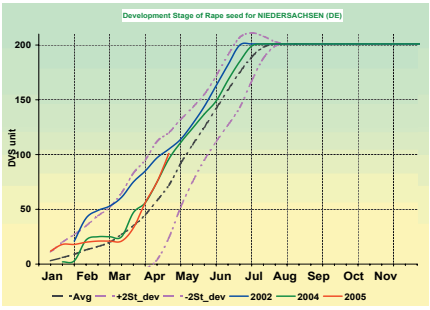
Germany: optimal conditions for spring sowings

Although 2004 yielded higher values, satisfactory yield forecasts are set: 7.6 t/ha for **soft wheat** (+3.0 % as compared to the last five-year average); 3.7 t/ha for **rapeseed** (+ 9.2 %); 5.1 t/ha for **spring barley** (+5.0 %); 7.3 t/ha for **winter barley** (+14 %); 9.2 t/ha for **grain maize** (+5.0 %). The increase in soft wheat, rapeseed and maize areas leads to even better forecasts for production (almost 24 million tonnes for wheat, 5 million for rapeseed and more than 4 million for maize).

In the last 30 days after a cold beginning of March, above-average temperatures were recorded, especially in the southern and central regions. This is leading to satisfactory vegetation index all over the country. Although the temperatures were significantly lower than the average, the presence of a snow layer protected the crops against frost during the first dekad of March. During the same period, below-average rainfalls were recorded on the whole area with the exception of south-western areas (Baden-Württemberg). At the end of March and in the first days of April, dry conditions were experienced in the north-eastern regions (Mecklenburg-Vorpommern, Brandenburg and Sachsen).



Winter wheat: according to current simulations, the crop is starting the stem elongation phase in south-western regions, from Nordrhein-Westfalento Baden-Württemberg; and is at mid-end tilling in Mecklenburg-Vorpommern. Although there has been limited rainfall, soil moisture appears normal or slightly high in the south-western regions.

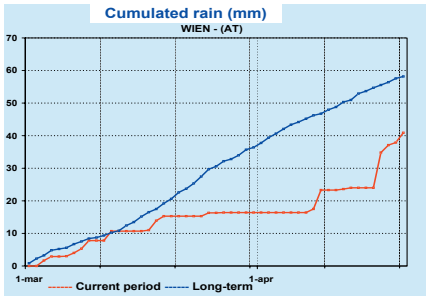


Rapeseed is entering the bud stage all over the eastern part of the country (from Niedersachsen to Baden-Württemberg) with a 10-day advance on the norm, and is slightly in advance in the other regions, where the crop is in the second part of the elongation phase. Soil moisture is average except in the northern zones (where conditions are just below the average).

Spring crops: there are optimal sowing conditions for spring barley, contrary to what has been verified for winter barley. In the south-western region, the spring barley has started the tillering phase with about one dekad advance on the long-term average, and in the other regions it is completing the emergence phase. Although there has been scarce rainfall during the last month, no water problems are expected: the wet winter is enssuring a sufficient water supply.

Austria: a dry north-east and a warm April

The situation for soft wheat is very similar to the one described for Germany: forecasted yield is 5.4 t/ha (+8.0 % on the last five years' average). Rapeseed yield is forecasted at 2.8 t/ha (10 % higher than the last five years' average). Although the 2004 records are still far away, spring barley yield is showing a good potential at 4.5 t/ha (a 10 % increase with respect to the last five years). The winter barley forecasts are at 5.2 t/ha (+3 %), and the forecasted yield for grain maize is at 9.4 t/ha (+3 % on the last five years' average).



The country was particularly dry during the last dekad of March and at the beginning of April, especially in the north-eastern regions (nearly 40 % below the norm), where almost all the arable land is located. Below average temperatures were recorded before mid-March; generally higher than average afterwards. No frost risk has threatened the crops, however, and they are now benefiting from recent mild conditions.

Winter wheat: wheat is completing the tillering phase and the favourable temperatures of the last dekad of March and the first of April are allowing it to completely recover the considerable development delay experienced in mid-March. Although a lack of rain was recorded in the last 40 days, winter reserves allow high soil-water content. In the south-western areas, soil saturation is depicted as a consequence of the recent wet period.

Rapeseed development is following a trend similar to the one described for winter wheat and is at mid-elongation stage; recent warm dekads are leading to an early development. Soil moisture is just above the average. The situation for spring crops is average as it was sown under nearly optimal conditions.

Belgium, the Netherlands and Luxembourg: frost events at the beginning of March followed by milder temperatures and general dry conditions, especially in Belgium

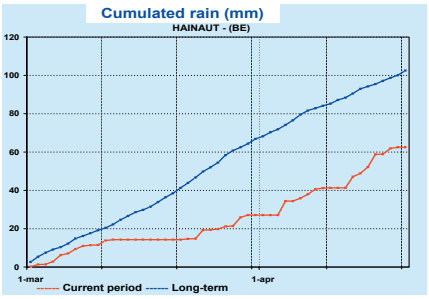
The cereal yields are forecasted at similar values to the previous campaign, respectively in **Belgium**: 8.3 t/ha (–0.6 %) for soft wheat, 8.2 t/ha (–2.0 %) for barley; **Luxembourg**: 6.0 t/ha (–5.3 %) for soft wheat; and for **the Netherlands**: 8.4 t/ha (+1.0 %) for soft wheat, 6.6 t/ha (–2.0 %) for barley.

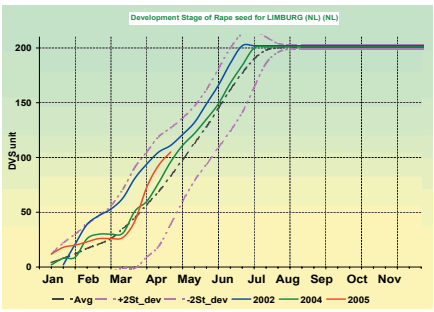
Following a colder than normal second part of February, at the beginning of March, the whole areas experienced clear skies and frost conditions and the minimum temperatures were below the normal range of variation: –12.2 °C in southern Belgium, –13.9 °C in Luxembourg, –11.2 °C in Noord-Brabant (The Netherlands). In general, the snow cover was thin and not always sufficient to protect adequately the active crops' canopy. Locally, light damages were likely. A dramatic change happened in the second half of March with two consecutive dekads during which both minimum and maximum daily temperatures above the average were recorded: in some cases, the maximum passed the threshold of 20 °C. The crops' development was boosted by the more favourable temperatures and, considering the moderate levels of evapotranspiration, the soil moisture content was maintained always within optimal levels in relation to the winter crop consumption.

Rainfall was practically absent in March (only very light rains were reported). In April more rain (both as cumulated values and frequency) was recorded. However, as a whole, the cumulated rains were below the climatic values (–10/20 % compared to the long-term average in the Netherlands, –30/40 % in Belgium and Luxembourg).

Dry days occurred in the second part of March permitting **spring/summer crop sowing under good weather conditions**. Less favourable conditions were present in April due to the rainy events.

Moreover, in the next days the weather forecasts show beneficial significant rains.





Denmark, Sweden and Finland: frost risk in March, normal conditions in Denmark; slightly higher than average temperatures and scarce rain in Sweden and Finland

In Denmark, the expected yields are now at: **soft wheat** 7.2 t/ha (+1.8 % compared to 2004), **barley** 6.0 t/ha (–1.0 %) and **rapeseed** 3.7 t/ha (–2.6 %).

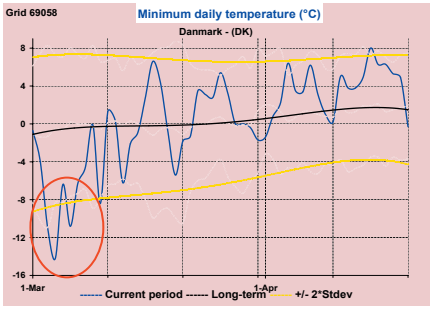
In Sweden, expected yields of **soft wheat** are at 6.1 t/ha (+2.2 % compared to 2004), **barley** 5.4 t/ha (–4.0 %) and **rapeseed** 2.7 t/ha (–2.2 %).

In Finland, yields for **soft wheat** are at 3.5 t/ha (comparable to 2004) and **rapeseed** at 1.2 t/ha (+10.9 %).

As in large areas of the European continent, March began with frost concentrated in a few days but very severe: –14.2 °C in Denmark, –17.1 °C in southern Finland, and –20.2 °C in southern Sweden. The snow cover was inconstant and damages were possible even if slightly probable. In the second part of the month, the temperatures

rapidly climbed to the seasonal average and April was characterised by warmer than average temperatures.

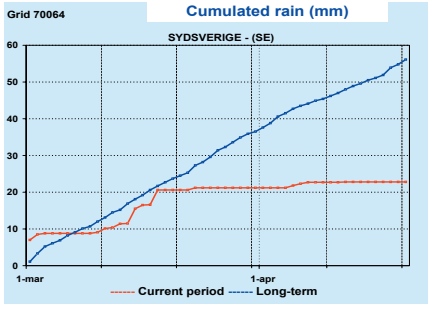
At the end of the considered period, the cumulated active temperatures presented a significant surplus: +40/50° GDD (equivalent to +20/25% compared to LTA) in Denmark, +70/80° GDD (+70/80%) in Sweden and +40/50° GDD (+120/150%) in Finland. In this country, thanks to the warmer conditions, the active temperatures (Tbase = 0°C) started to be accumulated in advance compared to the normal and the dormancy of winter cereals likely finished in advance compared to the canonical period.



Rainfall was quantitatively within the normal range of variation in Denmark (70–90 mm), but, in contrast, was scarce in Finland (10–20 mm, equivalent to 50% compared to average) and in Sweden (30–40 mm, 70% of LTA) even if locally (south-west coast) more abundant rains were recorded. The snow cover in March, however, should have ensured an appropriate water supply.

The simulated crop indicators show a limited effect of temperatures on the winter cereal development, while an accelerated effect is depicted in the development of rapeseed.

The spring sowing activities (usually in the first part of April) matched no limiting conditions and could be conducted without problems.



Italy: snow and a strong drop in temperatures in March, few rains in the north and wet conditions in the centre and south; April rains eased dry conditions in the north

During the 2005 winter, thermal conditions were characterised by a sudden drop in March coupled with diffused snowfalls over most of the country, while rainfall experienced great variability from north to south. The development of winter crops was only partly affected by these conditions as the fall in temperatures took place before the spring development.

A favourable outcome for durum wheat is expected in southern and central Italy; expected yield is 2.9 t/ha, slightly reduced with respect to 2004 (–7.3%), which was, in any case, an exceptional year, but increased by over 16% with respect to the five-year average. More uncertain is the final outcome of winter soft wheat, and barley will have a strong productive concentration in the north of Italy. Here the expected yield is 5.1 t/ha, also slightly reduced with respect to 2004 (–2.5%) but increased with respect to the five-year average (+8%). The dry conditions in the north, following a wet start to the winter, can be considered favourable to early sowings of the spring crops, while the opposite can be said for the central and southern regions.

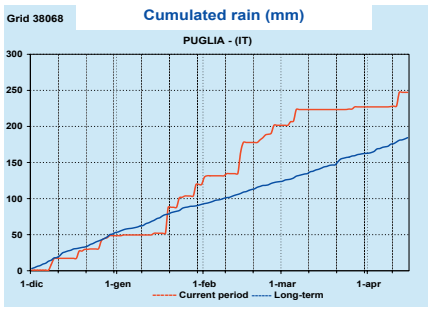
In southern Italy, cumulated rainfall remained on average levels up to mid-February and then started to increase. There were even some cases of snow in western Sicily. In central Italy and Sardinia, rainfall remained above average from December to the present and there were heavy snowfalls on the mainland in February and early March.

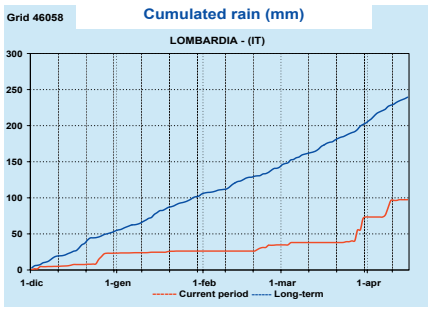
The situation in the north was the opposite of this and the cumulated rainfall remained below average from January to April. Some recovery was observed soon after. Here too there were snowfalls from the end of December to mid-March.

Minimum temperatures kept within average until early February all over the country. The situation changed around mid-February and at the beginning of March, with a strong drop coupled to the snow. This was followed by a recovery which brought minimum temperatures back to normal and even to exceptionally high values in late March. Temperatures went back to the norm at the beginning of April and the maximum temperatures followed this trend.

In southern and central Italy, the development stages of winter crops were slightly delayed by the low temperatures in February and March. The increase that followed was, however, conducive to a boost in the development of cereals. In central Italy, some cold damage was observed on winter cereals but the effects were limited by the delayed development of the crops.

The wet conditions of late March and early April in southern and central Italy can be considered as favourable to the insurgence of pests and diseases. This is not the case in the north of the country where the rise in temperatures was coupled with fairly dry conditions.





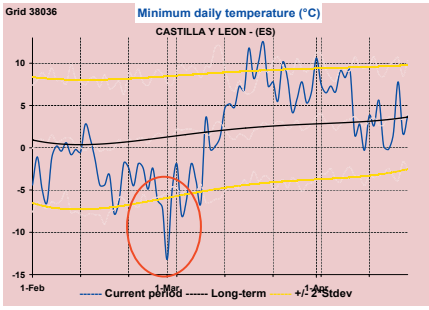
Spain and Portugal: harsh frosts at the beginning of March, persistent drought in Portugal and southern Spain compromising the durum wheat production

In Spain, the **soft wheat** yield is estimated at 2.2 t/ha (–8.3% compared to 2004), durum wheat at 1.9 t/ha (–36.6%), barley at 3.2 t/ha (–5.0%).

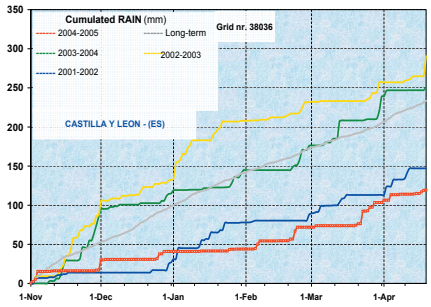
In Portugal, at the moment the yields are estimable for **soft wheat** at 0.8 t/ha (–27.2 % compared to 2004), 0.5 t/ha (–44.7 %) for **durum wheat**, and for **barley** 0.5 t/ha (–53.0% compared to 2004 and –64.0% compared to the last five-year average).

A drastic variation of the **thermal conditions** occurred in March: extremely low temperatures during the first dekad (practically between 27 February and 11 March over the whole territory the lowest minimum temperatures for the last 30 years were recorded), followed by a very rapid increase even above the seasonal values. There were more seasonal temperatures in April.

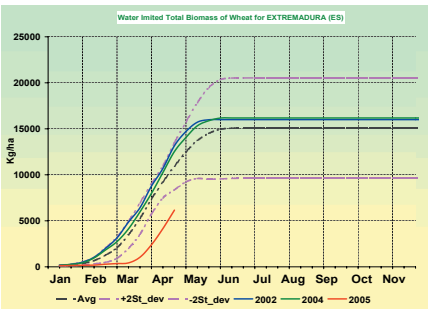
In March, the minimum values recorded were –13.2°C in Castilla y Leon, –13.8°C in Castilla la Mancha, –7.6°C in Andalucia, –7.8°C in Aragon, –4.2°C in Alentejo. Those conditions heavily hit the vegetative organs of the winter crops and, as a consequence, a significant reduction of the leaves was likely. From the second part of March, the more favourable conditions boosted the crop development, with a relative recovery of the crop canopy.



March was the fifth consecutive dry month. Only on the northern coastlines of Spain and northern Portugal were a few rainy days recorded (mainly in the last part of the month) but, however, with a very limited amount of water supply (50–60 mm). In all of the other areas, the rains were practically absent. From the beginning of the current winter campaign, the water deficit is estimable around 50–60 %. In the first half of April, in the northern peninsula, 60–70 mm of rain was recorded and 10–20 mm in the areas from Castilla y Leon to Comunidad Valenciana. At the end of April, in the Alentejo region, the rain deficit exceeded 80 %: from the beginning of the year only 35–40 mm of rain was recorded compared to 190 mm as cumulated average of the period. As the dry season in southern Iberian areas is approaching, the described agrometeorological conditions appears particularly unfavourable in the **durum wheat** districts, which will probably suffer significant reduction of the final yields.



The sowing activities for **spring/summer crops** (spring barley, maize, sugar beet, etc.) matched suboptimal conditions due to the persistent drought, and irrigation interventions were necessary from the beginning of the crop cycle. Unfortunately, according to the weather forecasts report, in the next days too, no rain supplies are foreseen in the areas most affected by drought.



Greece: high rainfall in the north-eastern areas and a normal situation for the remainder of the winter crop production areas

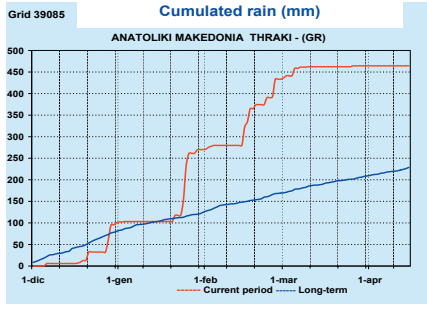
The favourable climatic conditions in the main production areas of northern Greece favourably affected the expected yield of durum wheat which reaches 2 t/ha, just 0.5 % below the 2004 levels but over 2.5 % above the five-year average. Given the wet and warm season, attention will have to be given to the possible insurgence of pests and diseases.

The cumulated rainfall was more within the norm in the soft wheat production areas which, however, experienced the cold spells of February and March. The expected yield is in this case 2.7 t/ha, with an almost 14 % decrease with respect to 2004 but with –1 % compared to the five-year average.

The metrological season proceeded along the norm during the 2005 winter in most of the main agricultural areas of northern Greece (Makedonia). In the north-east (Anatoliki Makedonia), close to the Bosporus, intense precipitation, including snow, brought the cumulated rainfall to exceptionally high values.

While in the rest of the agricultural north the minimum temperatures reported some low peaks in late February and late March, in correspondence with snow events, Anatoliki Makedonia skipped the March lows and started experiencing an early spring.

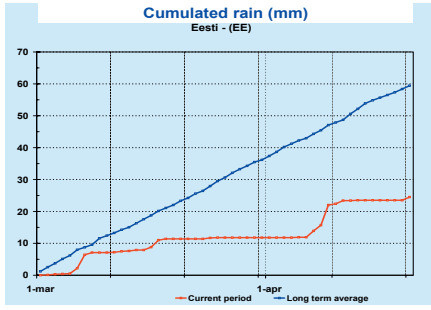
The situation was quite different in the central portions of Greece where the winter was rather dry and the cumulated rainfall levels kept well below average. Temperatures progressed along the norm and here too there were cold spells in mid-February and mid-March, associated with snowfalls. The season is proceeding towards warmer levels and, given the dry winter and very little spring rains, one would expect late sowing for spring crops. This may, however, be compensated by the large diffusion of irrigation practices in the area.



Estonia, Latvia, Lithuania: warmer and drier, favourable conditions for sowing of spring barley

Forecasted yields for soft wheat are 2.2 t/ha (–8 % as compared to the previous year) for Estonia, 3.7 t/ha (–9 %) for Latvia and 3.0 t/ha (2 %) for Lithuania. For rapeseed, the estimations are 1.7 t/ha (+25 %) in Estonia, 1.8 t/ha (–3 %) for Latvia and 1.6 t/ha (–18 %) for Lithuania. Barley yield in Estonia is expected at 2.0 t/ha (–11 %) and for Latvia and Lithuania the figures are 2.0 t/ha (–9 %) and respectively 3.0 t/ha (+4 %).

For the whole Baltic area, accumulation of active temperatures was higher than usual. Average snow layer in this area decreased below 2 cm after the end of March but no dangerous frost was noticed after that. The precipitation level was lower than usual (–25 %) for Estonia, western parts of Latvia and Lithuania (–15 %) and close to normal for the eastern areas of these countries. Rain during the sowing period of spring barley did not exceed 10 mm; generally the conditions may be regarded as favourable for this activity. Development of winter wheat is close to normal.



Poland: frost problems in north-western Poland

The early yield forecasts are 3.9 t/ha (9.1 % as compared to the previous year) for soft wheat, 3.2 t/ha (9 %) for total barley, 2.6 t/ha (8 %) for sugar beet, 2.6 t/ha (–8 %) for rapeseed and 6.0 t/ha for grain maize (+4 %).

Accumulation of active temperatures was higher in northern and eastern areas of the country and close to normal for the rest of the country. Temperatures around –7 °C combined with a poor snow layer (< 1 cm) occurred after several days with deadening temperatures in the second dekad of March in the north-western areas.

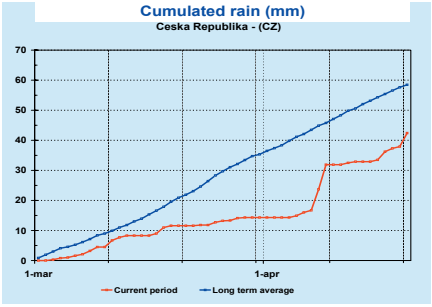
Development of winter wheat is close to normal. The sowing of sugar beet and spring barley occurred in relatively dry conditions.

Czech Republic: warm and dry

The yield forecast is 5.2 t/ha (–12 % as compared to the previous year) for soft wheat, 4.2 t/ha (–12 %) for barley, 4.2 t/ha (–16 %) for rapeseed and 6.2 t/ha (–2 %) for grain maize.

The western half of the country was warmer than the long-term average and the considered period was drier than usual (–25 %). The development and leaf area index of the winter

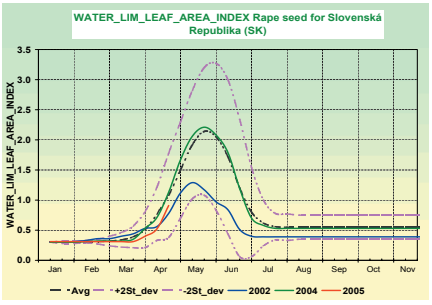
wheat were close to normal; for rapeseed the evolution of these parameters is anticipated. The sowing dekad for spring barley was relatively dry (maximum rain was below 3 mm).



Slovakia: dry spring

The yield forecast is 3.4 t/ha (–28 % as compared to the previous year record) for soft wheat, 3.2 t/ha (–21 %) for winter barley, 1.9 t/ha (–32 %) for rapeseed and 5.0 t/ha (–16 %) for grain maize.

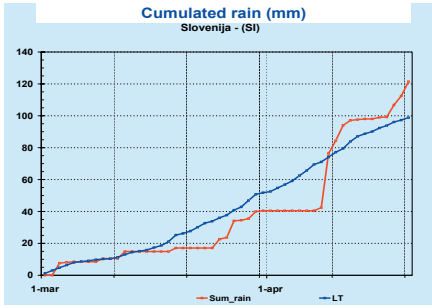
Thermal conditions were close to normal, excepting a small warmer area in northern Slovakia. The cumulated precipitation remained low for most of the considered period but, in the end, some rains increased the value up to the long-term level. The simulated parameters for winter wheat and winter barley are close to normal, but the simulated leaf area for rapeseed is below the long-term average although the development stage is slightly in advance.



Slovenia: wet, good conditions for sugar beet

The yield forecast is 4.6 t/ha (+1 % as compared to the previous year) for soft wheat, 4.0 t/ha (+1 %) for barley and 7.1 t/ha (–9 %) for grain maize.

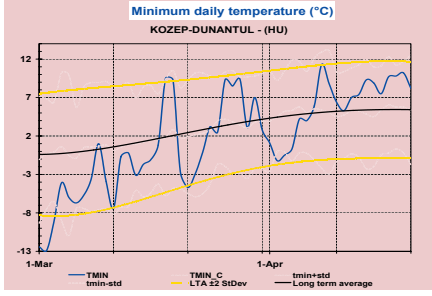
From the beginning of April, the accumulation of active temperatures recovered the previous delay and entered in the normal range. Due to the rain received at the end of the first dekad of April, the cumulated precipitation level climbed above the long-term average (+20 %). The dekad for maize sowing was relatively rainy but, in the middle, there were several drier days. Sowing of sugar beet was performed under dry conditions and the dekads after sowing were rich in precipitations. Development of winter wheat was slightly in delay but the leaf area index is close to normal.



Hungary: late moderate frost risks

The yield forecast is 3.8 t/ha (–26 % as compared to the previous year record) for soft wheat, 3.6 t/ha (–19 %) for durum wheat, 1.7 t/ha (–25 %) for rapeseed, 3.2 t/ha (–25 %) for barley and 5.9 t/ha (–10 %) for grain maize.

Thermal resources available for plant development were in the normal range. Northern Hungary was drier than usual whilst the southern half of the country was wetter. At the end of the first dekad of March, for large areas some low temperatures occurred (about –7 °C and less) at a moment when the depth of the protective snow layer was around 1 cm. A situation like this may affect, in this period, some sensitive crops such as winter barley. The small delay in winter wheat development was recovered at the end of the considered period, but the leaf area index is below the long-term average.

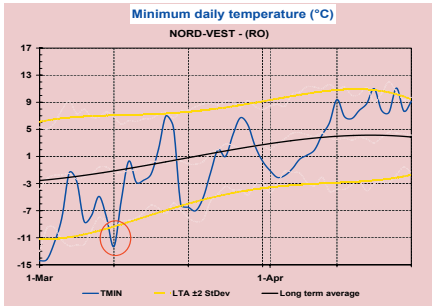


Central European countries

Romania: moderate frost risks in west, dry in east

Winter wheat yield is forecasted at 2.4 t/ha (–30 % as compared to the previous year record) and the yield forecasting for barley is 2.4 t/ha (–38 %).

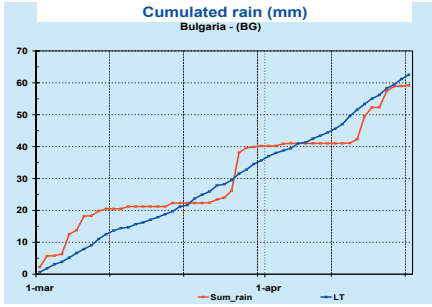
For most agricultural areas, the active thermal resources were at normal levels for this period, but some areas along the Danube were cooler than usual (–10 %). Northern and western Romania were wetter than usual whilst the eastern part was drier than usual. For all areas it was possible to find dry 'windows' for sowing of the spring crops. Development of winter wheat was close to normal but the simulated leaf area index was below the long-term average. Simulations for barley are close to normal.



Bulgaria: normal conditions

The yield forecast is 3.0 t/ha (–15 % as compared to the previous year record) for wheat and 3.0 t/ha (–17 %) for barley.

Accumulation of active temperatures was in the normal range. The precipitation regime was wetter in the west (+20 %), close to normal near the northern border and drier than the long-term average for the rest of the country, but globally, for all agricultural areas, the cumulated precipitation at the end of the considered period was close to normal. The simulated development stage of winter wheat was close to normal but the simulated leaf area index was below the long-term average.



Turkey: drought in most of the country, worsening in the centre and south but recovering in the northern and western areas

The winter 2005 climate in Turkey was characterised by a diffuse drought in the central and south-eastern portions of the country. This situation grew increasingly worse heading into spring.

The minimum and maximum temperatures in these areas showed strong variations at the end of winter, with low peaks in late February and absolute highs in early March. This oscillation continues up to the present, in coincidence with snow.

In the major winter wheat and barley production areas of the country, the cold inland climate had a delaying effect on the development calendar. Consequently it is still too early to express a conclusive judgment on the productive outcome, but it does not appear to be promising.

The Black Sea areas, however, saw a recovery from drought in late January and, from

that point on, the cumulated rainfall exceeded the average and kept a sufficient water supply until the beginning of April. These favourable conditions were supported by minimum temperatures within the average and a sufficient level of GDD (base 10 °C). Though not main producing areas, yields are expected to be favourable here.

The western and south-western areas (along the Mediterranean) saw a recovery from drought, however, delayed to late March and April, supported in this by diffuse snowfalls.

Eastern countries

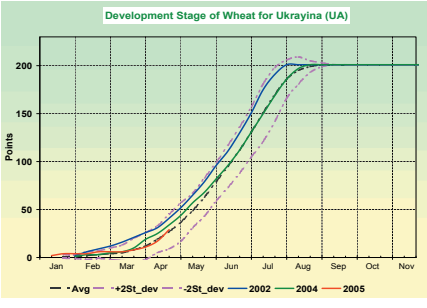
Belarus: warm spring

Accumulation of active temperatures was higher than usual (>+25 %) and the precipitation regime was normal, excepting the eastern part of the country where a wetter area was bordered by a drier area. For the considered period, no significant frost event was detected. Development stages of wheat and barley are close to the long-term average.

Ukraine: drier than usual

The yield forecast is 2.7 t/ha (–27 % as compared to the previous year record) for wheat and 2.1 t/ha (–15 %) for barley.

Accumulation of active temperatures was lower than the long-term average in Crimea (–20 %). Meanwhile in the north and western Ukraine, the conditions were warmer than usual (+25 %).



The frost (minimum temperature below –12 °C) and the snow layer thinner than 3 cm from eastern Ukraine affected the winter crops from that area, but these winter events are usual for the considered area.

The largest part of Ukraine was drier than usual (–25 %), except the north-west part of the country where the conditions were close to normal. It is considered that the soil moisture replenished by the snow melting is still sufficient and the precipitation regime of May will be crucial both for winter and spring crops.

Simulated development of winter wheat is close to normal conditions but the leaf area index is below normal. A general rough estimation is that a normal yield level is still possible but the chances for an exceptional good year for winter crops are decreasing with each dekad.

Russia: normal conditions for winter crops and delay in sowing of spring crops

The period under analysis is the period of the start of winter crop growth after the winter, and time for early spring crop sowing.

March 2005 was colder than normal. The air minimal temperature in the northern part of European Russia some days was lower than –15 °C, and in the southern part was near –5 to –10 °C. But the winter crops were protected from frost by the snow cover. The snow cover had disappeared in the southern regions of Russia by the middle of March, and in the central Chernozemic region at the beginning of April. In the near Volga and Urals regions, snow cover still remained on the ground in the middle of April.

The amount of precipitation was higher during March by more than 30 % than in the previous year and more than normal practically everywhere. Only in the central Chernozemic and north-western regions was the amount of precipitation lower than normal. The main part of precipitation was in the form of snow.

Such cool and wet weather was not dangerous for winter crops. But, due to abnormal winter conditions, winter crops are likely to be weak after snow melting. Remote sensing indicators show that the winter crop status after snow cover melting was worse than in the previous year in southern regions of Russia. But the situation with winter crops can easily be improved by early nurturing of them by fertilisers. The analysis of the weather conditions during the winter shows that, in the current season, the frost damage of winter crops was at a low level in practically all regions of Russia.

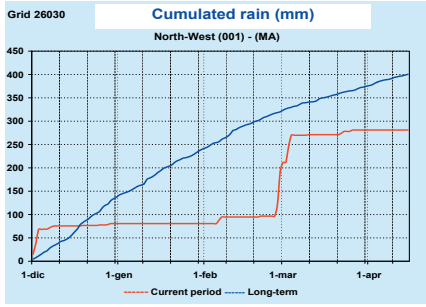
Low air temperatures and large amounts of precipitation in the southern regions of Russia, and long snow cover duration in the central regions should lead to delays in early spring crop sowing. Improvement of the weather at the beginning of April demonstrates that the delay should not be more than two weeks. But such a delay can slightly affect the spring crop acreage in the current season.

Maghreb: favourable conditions in Tunisia and Algeria and ensuing drought on the Atlantic coast of Morocco

Morocco

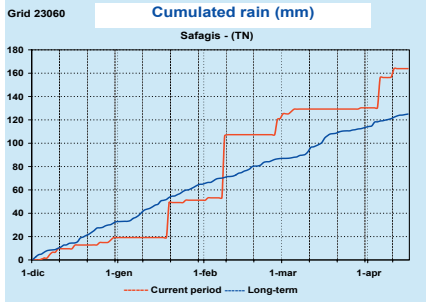
The 2005 season in Morocco is showing a diffused and persistent drought which strongly affects the winter crops production areas (essentially wheat) in the north-west and the Atlas mountains. A low yield is to be expected.

The low temperatures of late January were in coincidence with the early stages of development and should not have damaged the crops. Minimum temperatures saw a rise in late March and early April, but this may be able to further worsen the situation, considering the deficit in water supply.



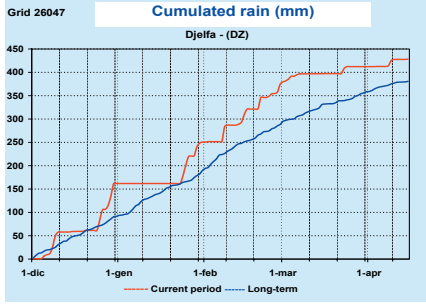
Tunisia

The climate in the winter crop production areas of Tunisia was favourable throughout the development season. In the interior regions of the north and on the Mediterranean coast, the cumulated rainfall, after a shortage at the start of the season, recovered around mid-February. Minimum temperatures kept within an average fluctuation with some absolute high peaks in late January and early April. These conditions should boost the productive outcome of winter wheat.



Algeria

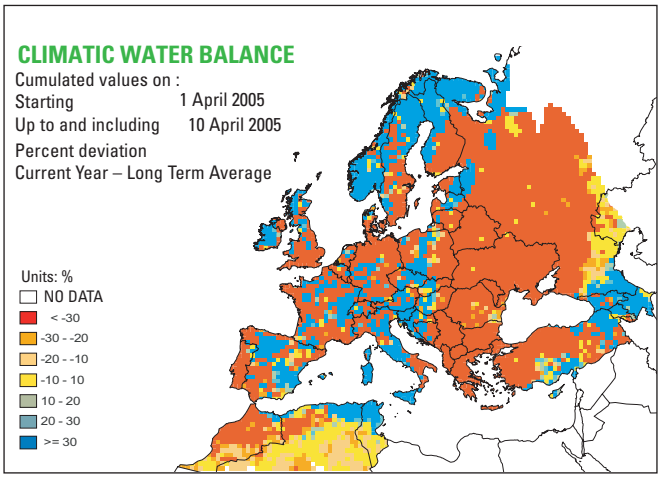
The 2005 winter climatic conditions in Algeria can be considered favourable to winter crops in the production areas on the coast. Cumulated rainfall was above average along the development period. Minimum temperatures saw some low peaks in early February and a rise in March that, given the water supply, can be considered as conducive to a good crop.



Crop maps — 20 April 2005

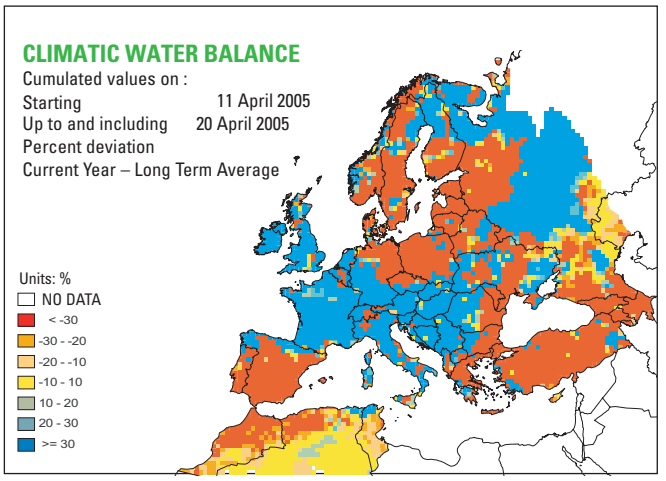
CLIMATIC WATER BALANCE

Cumulated values on :
Starting 1 April 2005
Up to and including 10 April 2005
Percent deviation
Current Year – Long Term Average



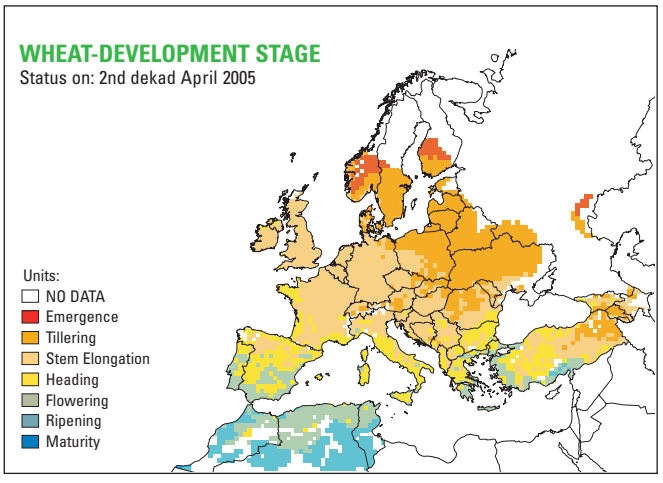
CLIMATIC WATER BALANCE

Cumulated values on :
Starting 11 April 2005
Up to and including 20 April 2005
Percent deviation
Current Year – Long Term Average



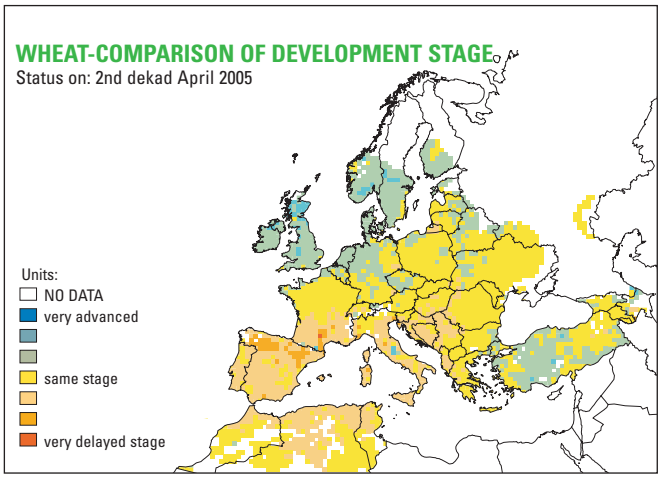
WHEAT-DEVELOPMENT STAGE

Status on: 2nd dekad April 2005



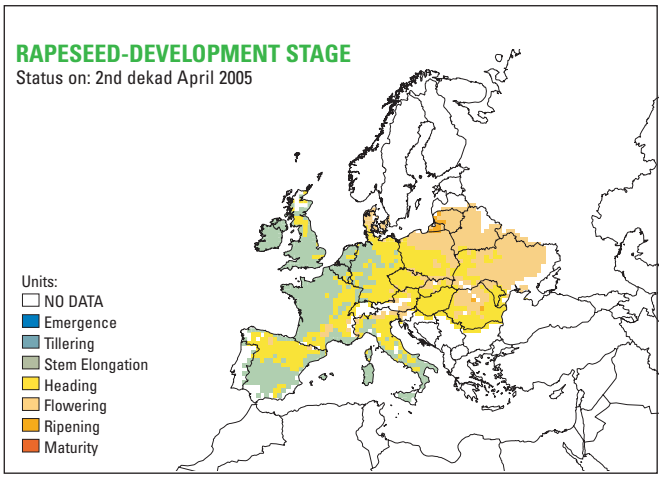
WHEAT-COMPARISON OF DEVELOPMENT STAGE

Status on: 2nd dekad April 2005



RAPESEED-DEVELOPMENT STAGE

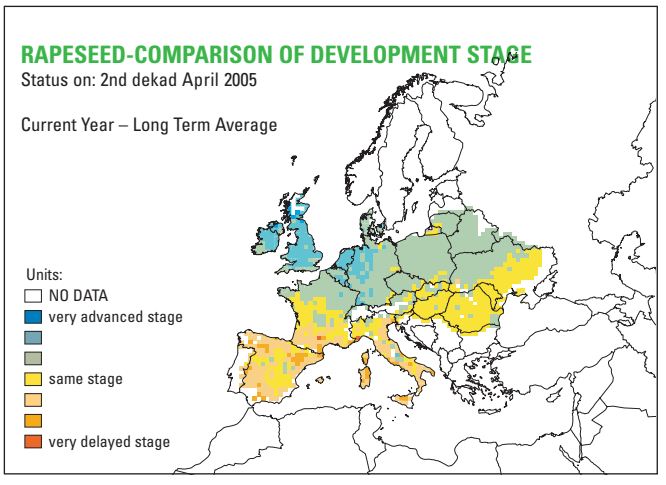
Status on: 2nd dekad April 2005



RAPESEED-COMPARISON OF DEVELOPMENT STAGE

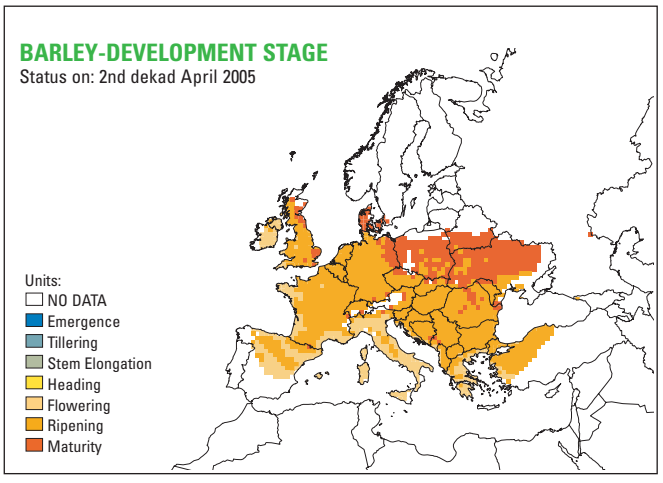
Status on: 2nd dekad April 2005

Current Year – Long Term Average



BARLEY-DEVELOPMENT STAGE

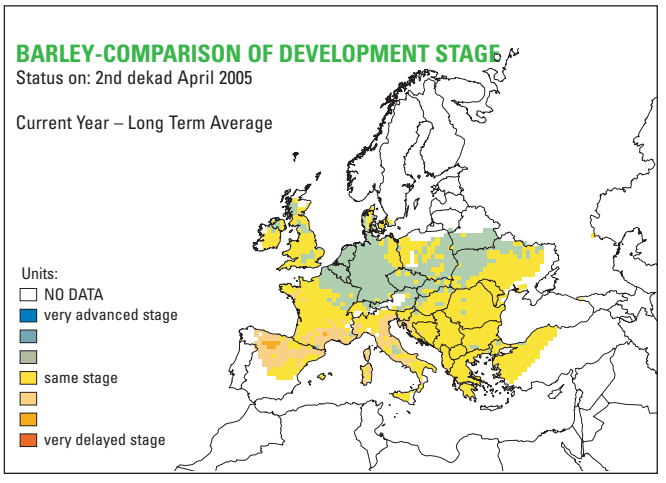
Status on: 2nd dekad April 2005



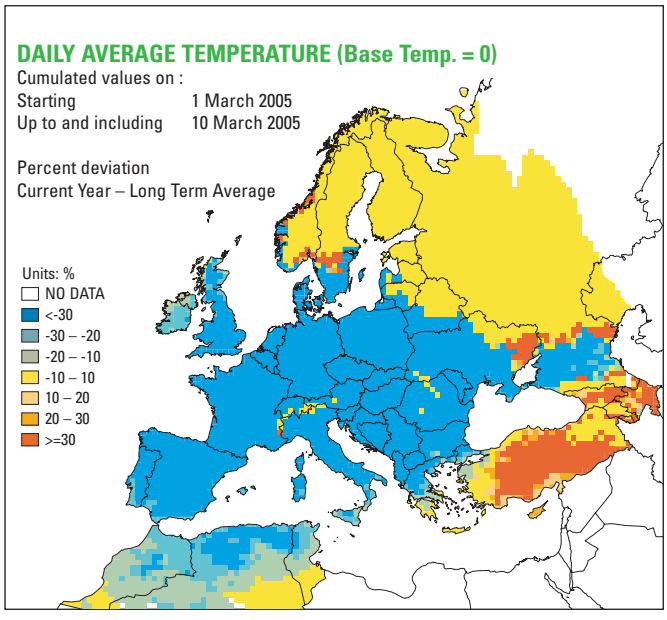
BARLEY-COMPARISON OF DEVELOPMENT STAGE

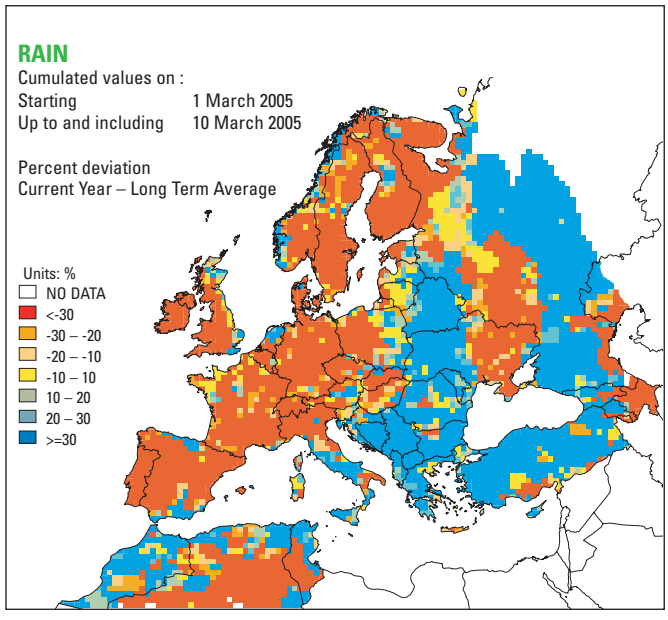
Status on: 2nd dekad April 2005

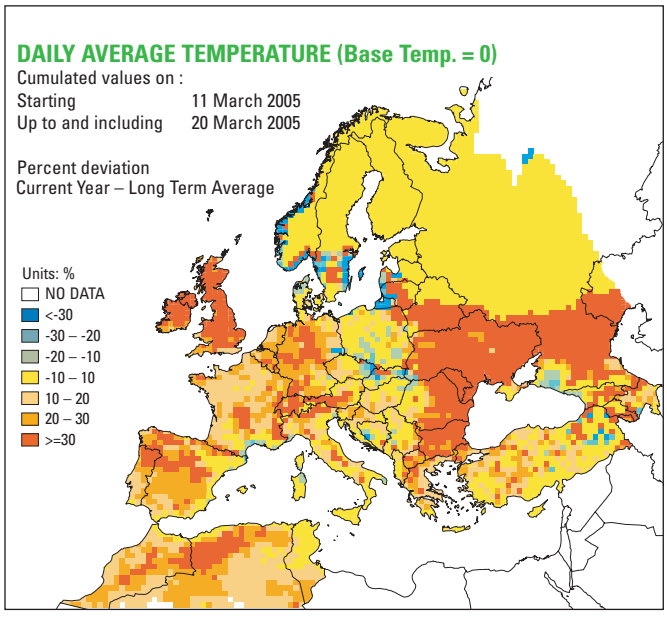
Current Year – Long Term Average

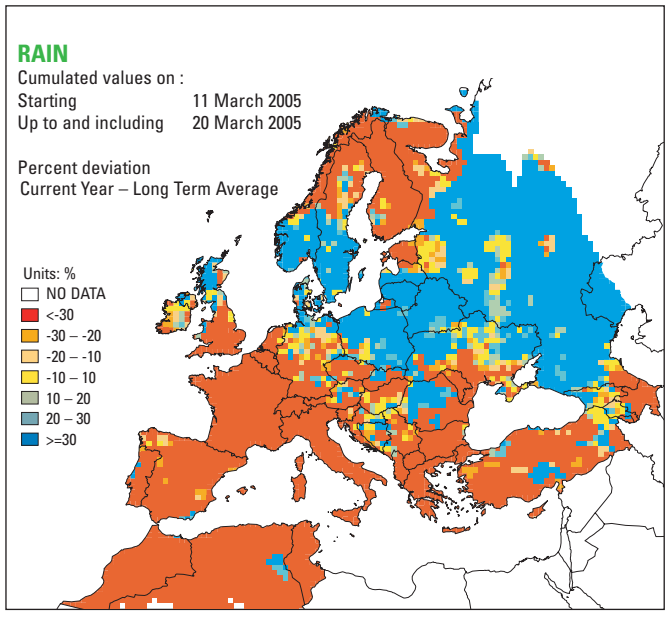


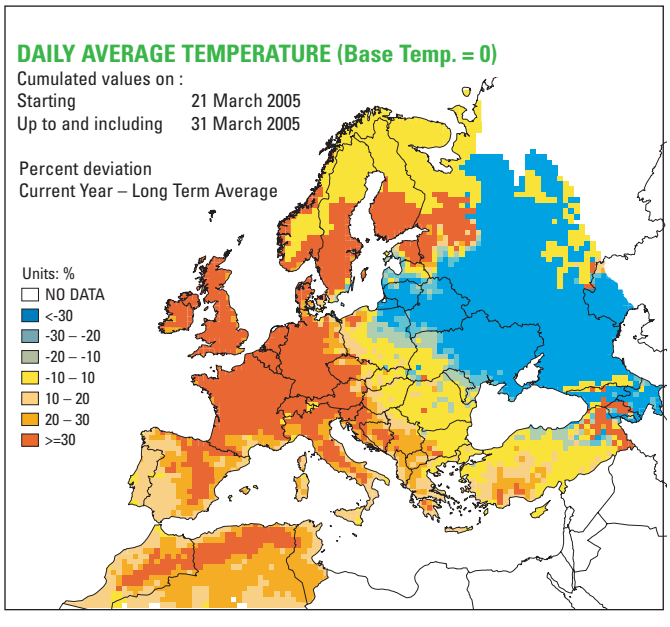
Ten-day rain and temperature maps — 1 March to 31 March 2005

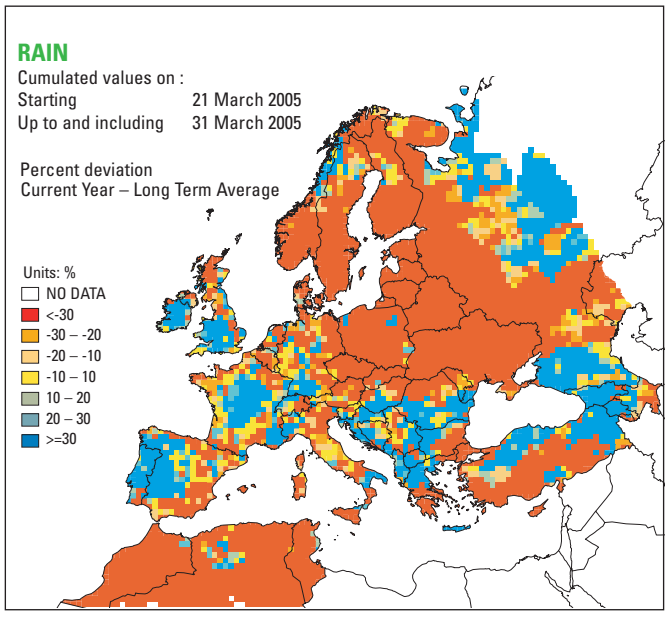










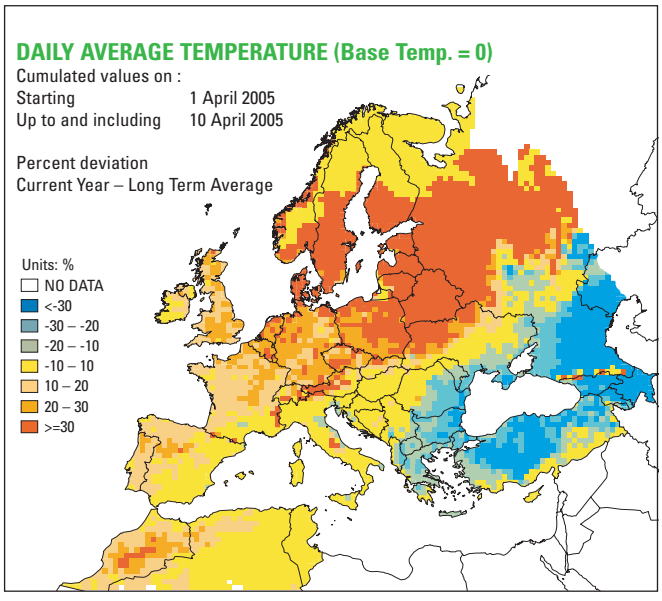


Ten-day rain and temperature maps — 1 April to 20 April 2005

DAILY AVERAGE TEMPERATURE (Base Temp. = 0)

Cumulated values on :
Starting 1 April 2005
Up to and including 10 April 2005

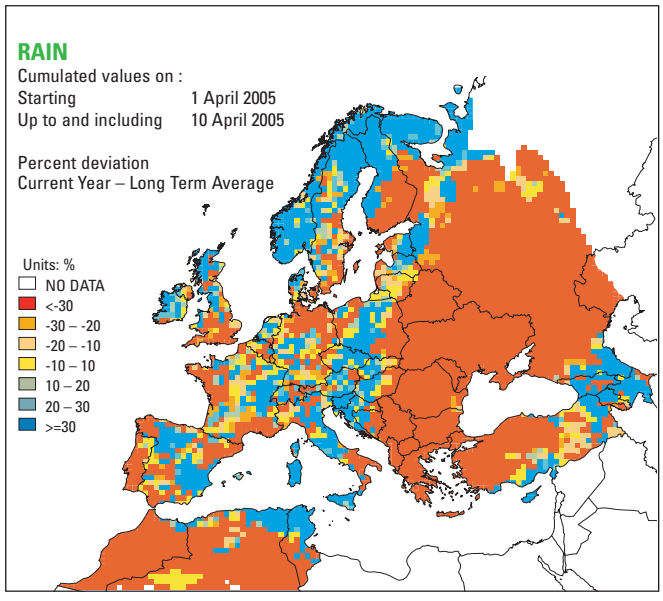
Percent deviation
Current Year – Long Term Average



RAIN

Cumulated values on :
Starting 1 April 2005
Up to and including 10 April 2005

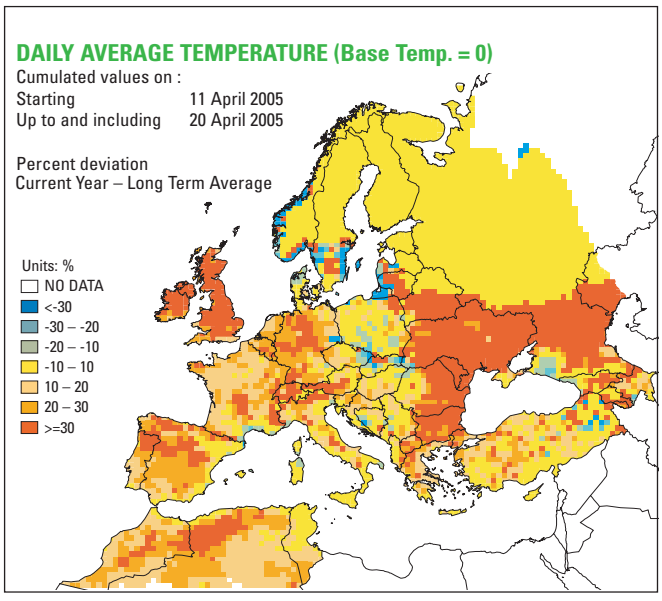
Percent deviation
Current Year – Long Term Average



DAILY AVERAGE TEMPERATURE (Base Temp. = 0)

Cumulated values on :
Starting 11 April 2005
Up to and including 20 April 2005

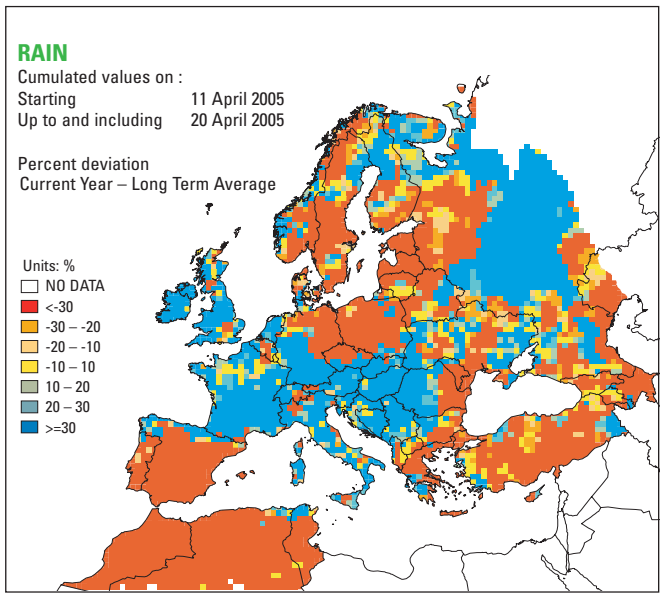
Percent deviation
Current Year – Long Term Average



RAIN

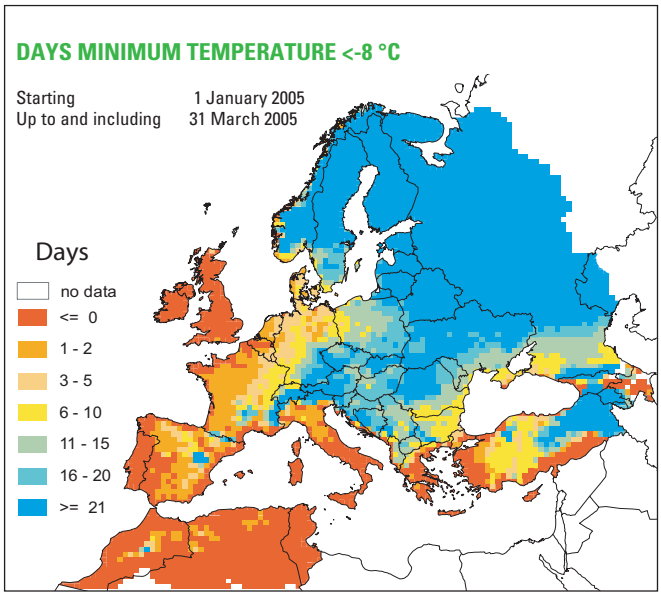
Cumulated values on :
Starting 11 April 2005
Up to and including 20 April 2005

Percent deviation
Current Year – Long Term Average



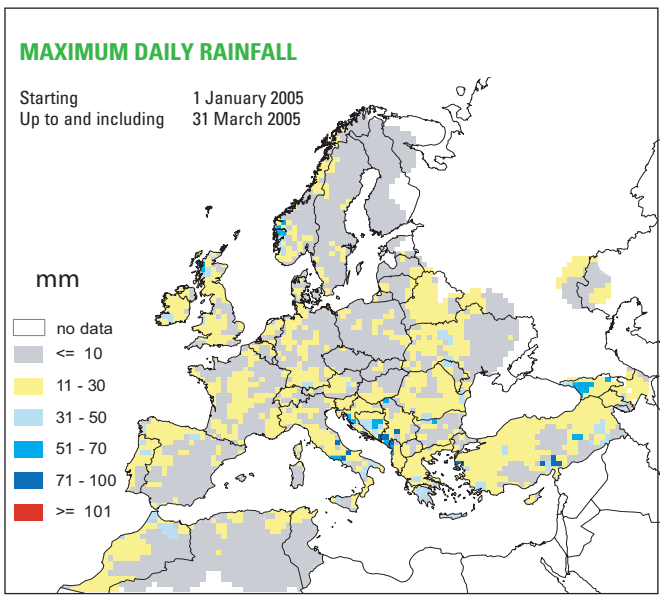
DAYS MINIMUM TEMPERATURE <-8 °C

Starting 1 January 2005
Up to and including 31 March 2005

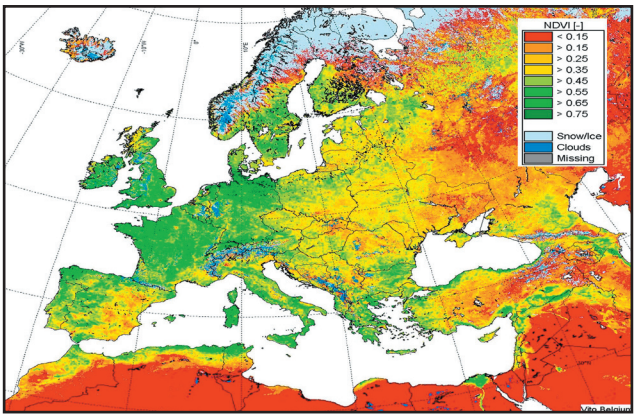


MAXIMUM DAILY RAINFALL

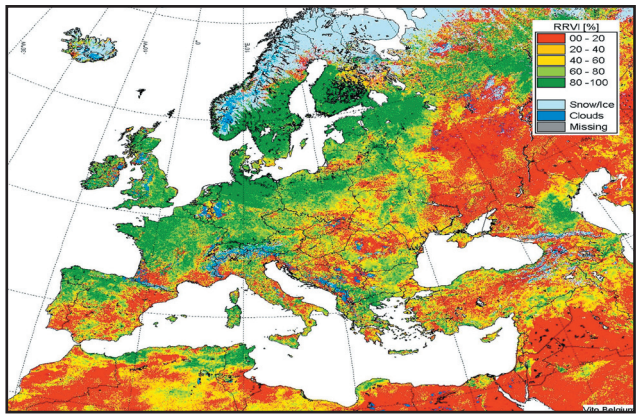
Starting 1 January 2005
Up to and including 31 March 2005



Spot-vegetation satellite analysis



Normalized Diff. Vegetation Index, current values, 2nd dek April 2005



Relative Range Vegetation Index, current values, 2nd dek April 2005

Map highlights

There is favourable vegetation development for most of Europe, except southern Portugal and Spain due to dry conditions.

The NDVI map represents the second dekad of April and reflects the good vegetative growth for most of central Europe. Low values can be observed for areas where vegetation biomass is less active (i.e. still resting as in eastern Europe or stressed or in senescence as in the Iberian peninsula and Turkey). An anticipated senescence phase, due to drought stress, started in Portugal and western Morocco and is expressed by low vegetation index values. These and other stressed areas are also evident in the RRVI map, where anomalous/extreme situations are depicted in red.

CNDVI time series profile highlights

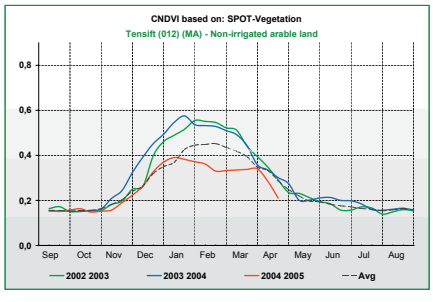
The most advanced vegetation cycle is reflected within the profile of **Tensift (Morocco).** The biomass production is well below the average, probably due to the persistent drought within this part of the country, and a low yield is to be expected. Values are now decreasing due to the senescence phase meeting the previous year graphs.

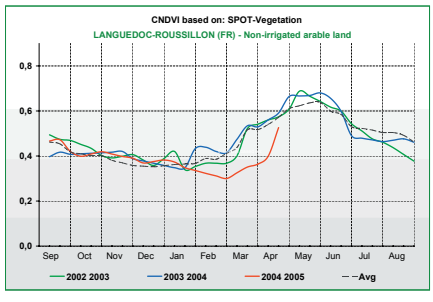
A comparable picture can be found for **Alentejo (Portugal)** with a less advanced vegetation cycle. Instead of the normal peak in biomass development the situation remained rather static. The lower biomass production as a consequence of missing water supply is now clearly visible compared to the graph from the last analysis.

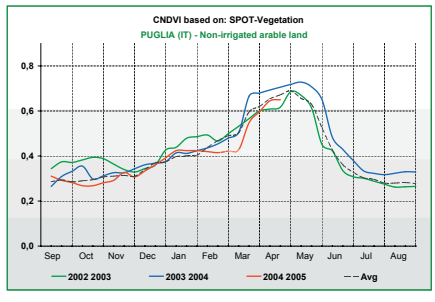
The profile of **Languedoc-Roussilion (France)** is the last example illustrating the situation around the Mediterranean basin within the regions suffering from sufficient water supply. The vegetation development is hampered but a strong rise can be observed for the last dekads, where the weather conditions too have been more favorable and revealing the potential to meet the average values.

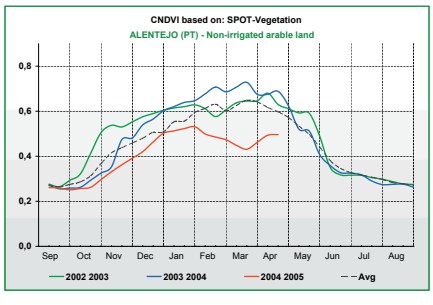
The profile of **Puglia (Italy)** shows a normal vegetation cycle with a crop still in its vegetative growth and values oscillating around the average. A slightly more advanced vegetation cycle can be observed for Sicily (Italy), and here the boost in vegetation development is less definitive with values below the average before entering into the senescence phase.

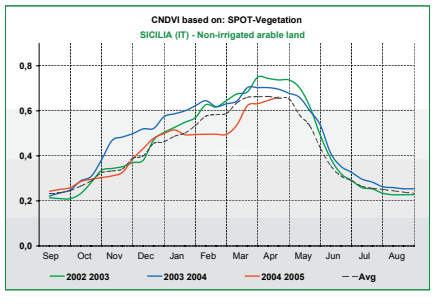
Good and favorable growing conditions can be interpreted from the profile for **Mecklenburg-Vorpommern (Germany),** where the biomass-gaining is in the most dynamic phase with a steep increase having not yet reached the maximum and a high crop potential.

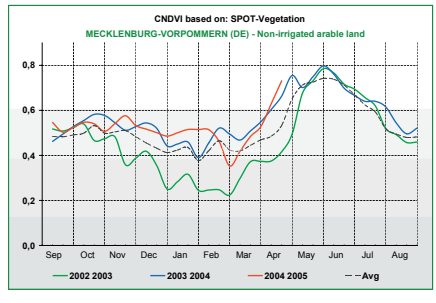












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