EUROPEAN COMMISSION
DIRECTORATE GENERAL JRC
JOINT RESEARCH CENTRE
Institute for the Protection and Security of the Citizens
MARS Unit

M A R S BULLETIN

Vol 12 – Climatic Update 1

November-December 2003 conditions

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MARS Bulletin[1] - Climatic Update

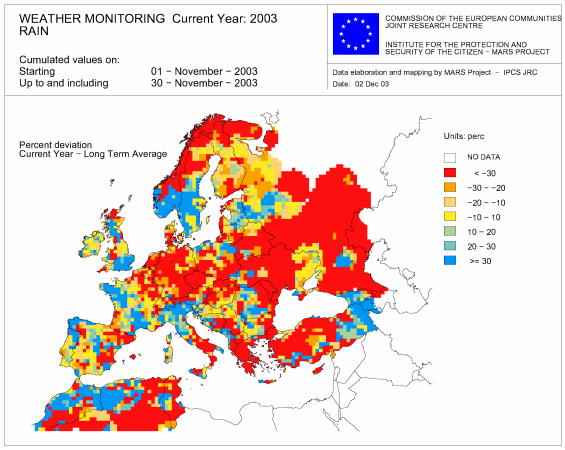
1. Highlights November and December 2003.

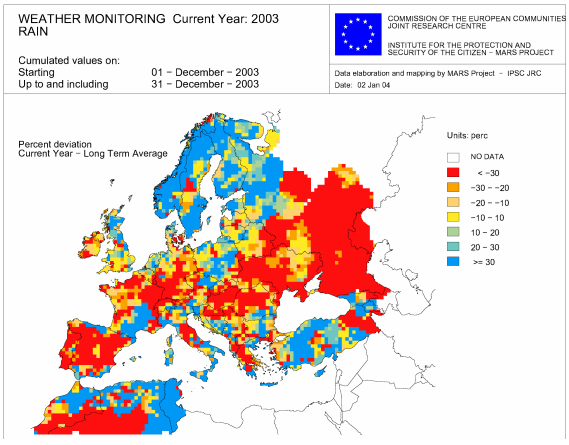
As a whole the conditions for late seed bed preparation, sowing activities, crop establishment and emergence for winter cereals were sufficient to optimal as a consequence of the mild temperatures in November and the relatively dry spell (however, not optimally distributed) during the period. The frost risks were basically not present or very low especially as compared to the situation in December 2002. Moisture excess affected southern France (centered on southern Rhone basin) causing possible damages for soil saturation.

2. Climatic Overview

Rain.

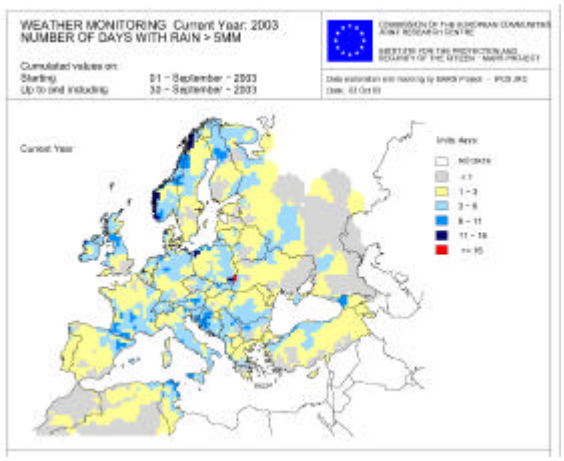
Following a generally wetter October; there was a relatively reduced amount of rainfall in November and December compared to the norm. In particular, the Central and Western countries (excluding Poland), Russia, Germany, North-Eastern France, the Iberian Peninsula, Central Italy and Greece experienced a significantly reduced water supply.
Some exceptional and abundant rainfall occurred both in November and December in Sweden, Southern England, the Rhone Valley, Northern Italy, Sicily, Morocco and Tunisia. In these Southern areas the rainfall probably delayed the sowing of the winter cereals but at the same time refilled the soil reservoirs and gave good potential for durum wheat yield.
On the contrary, in the other areas (in particular Southern Rhone valley, Northern Italy and Sweden) the total amount of rainfall in the period reached more than 100% compared to long term values. The excessive soil water conditions could cause local damage due to soil saturation.
Normal conditions were present on England, Eire, Belgium, Netherlands, Austria, Turkey, Baltic Countries and Denmark.

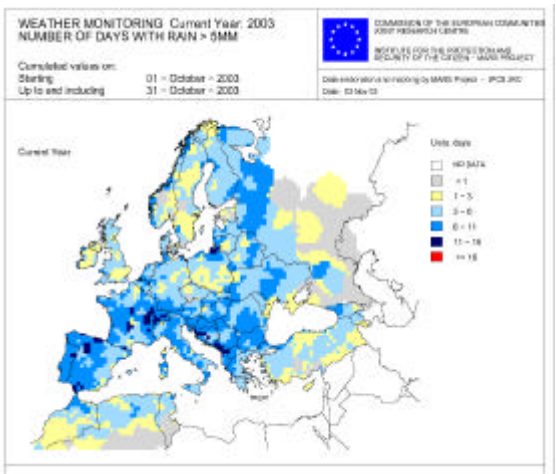


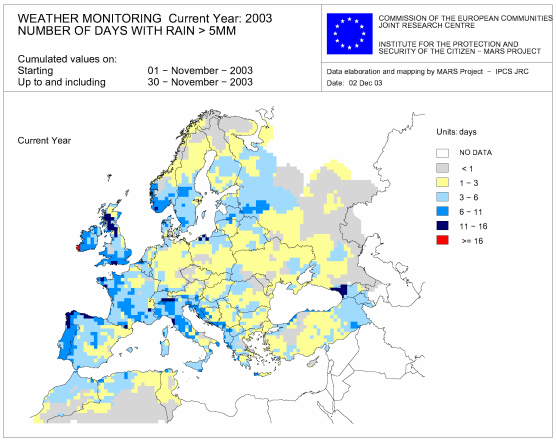


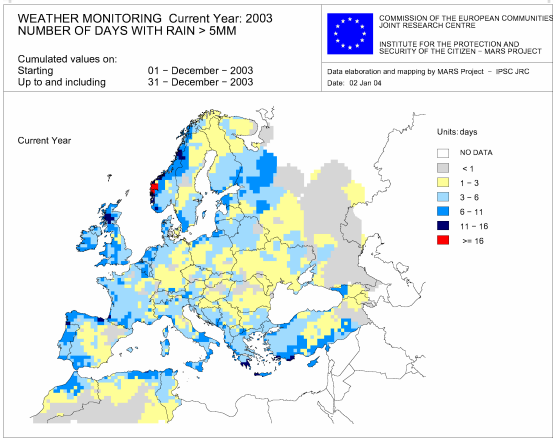
[1] This is an update of climatic conditions during November-December 2003 with an emphasis on frost impact. Contributions from: F. Micale, G.Genovese, C. Lazar, S. Orlandi MARS stat/MARS Unit, JRC. Data production: Alterra, (NL), Meteoconsult (NL), VITO (B) and MARS Unit, JRC. For further information contact the editorial staff at mars-stat@jrc.it.

The rainfalls were mainly concentrated in two dekads between November and December in France, Spain, Portugal, Italy, Morocco and Algeria. In the last part of December more rain was recorded in Northern European Countries, Baltic States, Poland, Balkans, Turkey, Southern Italy, and Tunisia.
The temporal distribution of the rainfall was in general positive for the fields' activities. Only in limited areas (Northern Spain and Portugal, Southern Italy, Southern Greece, Northern Poland) the number of rainy days (with accumulated daily rain values of more than 5mm) could represent a limiting factor like optimal seed-bed preparation where the crops were not yet sown.

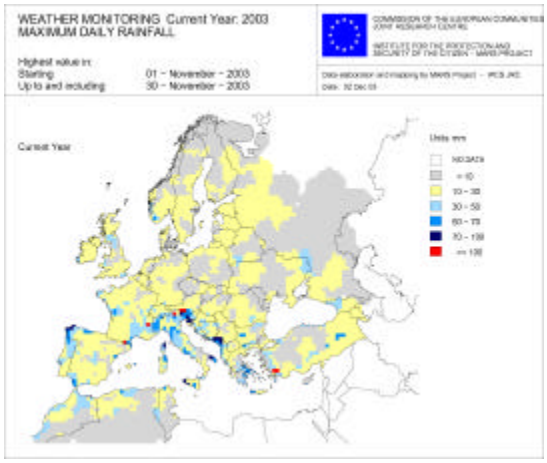


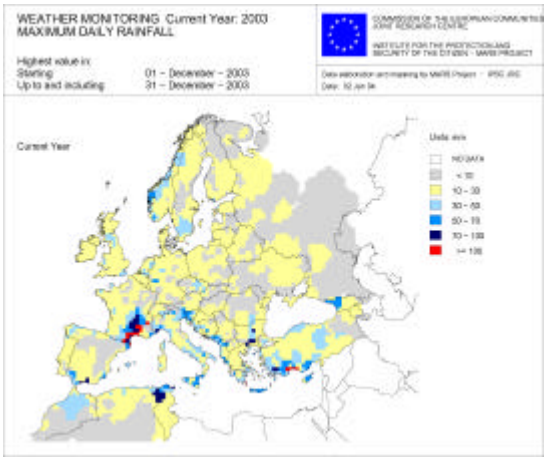




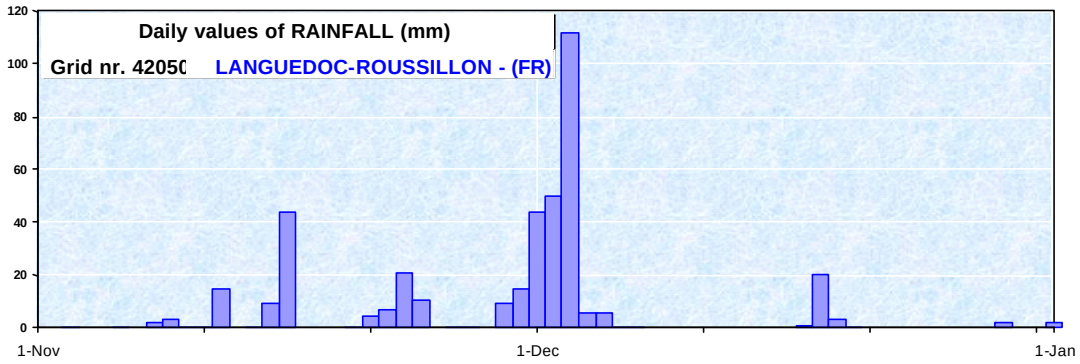


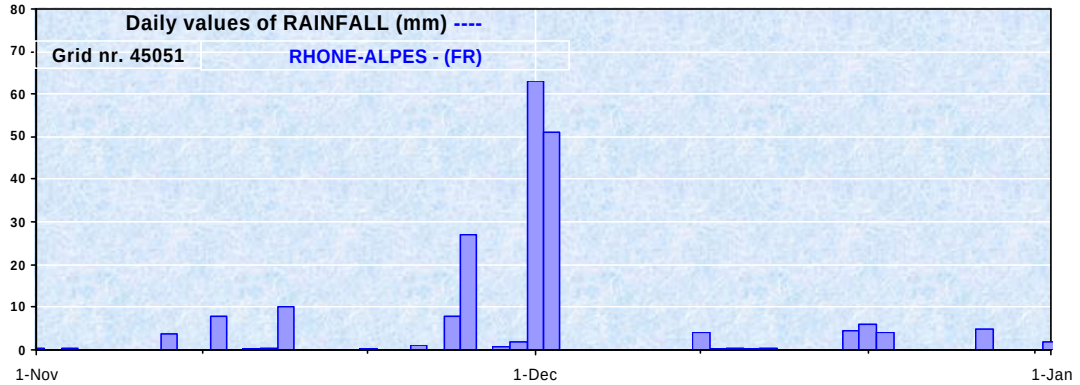
The following maps show the maximum rain received in one day and indicate the intensity of the phenomena.





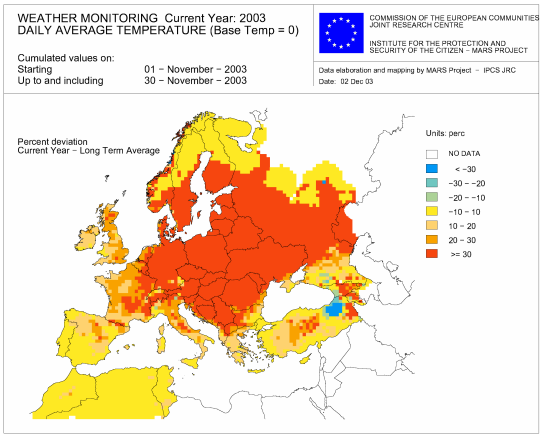
From these maps it is evident that intense showers occurred mainly in Northern Italy and southern France in the last dekad of November and again in the first of December in the Rhone Valley (where more than 200mm of rain fell in three days) causing possible local floods and stresses on the active crops due to the soil saturation.

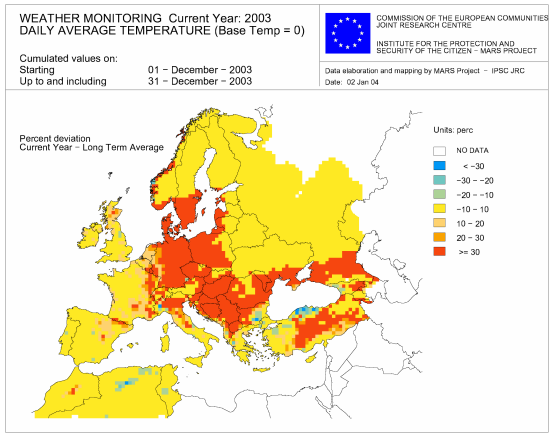




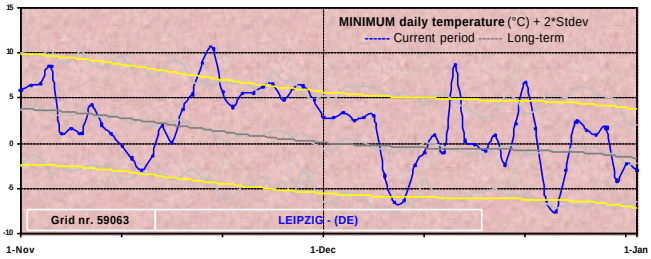
Temperature, snow cover and frost risk

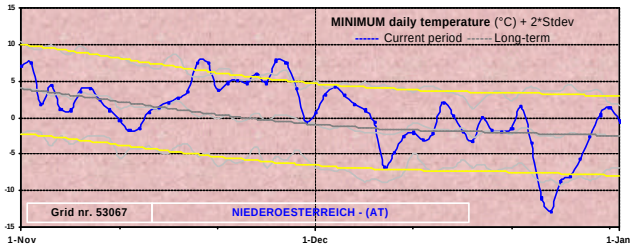
The analysis of average temperature during the whole period showed higher than average values in all of the Central and Eastern European countries and Turkey. In the other countries the temperatures were close to normal or slightly above. Particularly warm conditions were recorded in Germany, Denmark, Southern Sweden, Poland, Czech Republic, Hungary, Romania, Southern Ukraine and Balkans.

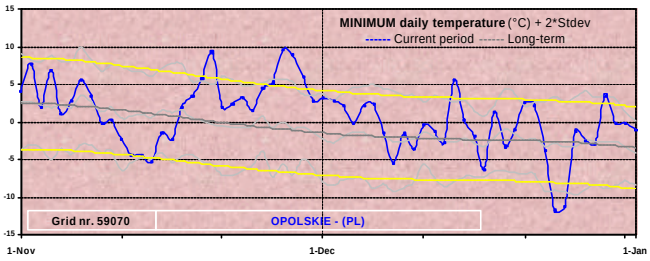


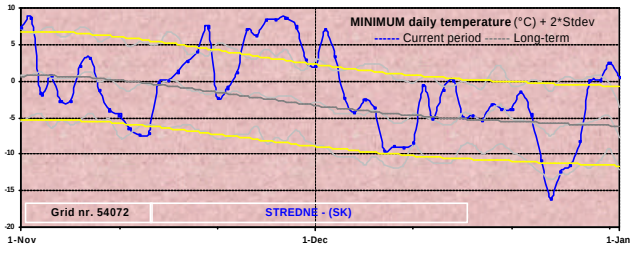


November was significantly warm compared to the climatic values, especially during the second half, when in particular the minimum daily values were 5°/8°C above the average. Due to the presence of changing air mass fluxes, December presented a fluctuating course: very cold days following by warmer than average days. Negative picks in some case exceeded -10°C.

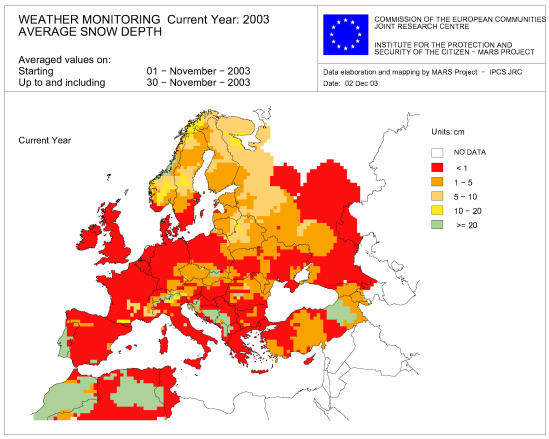


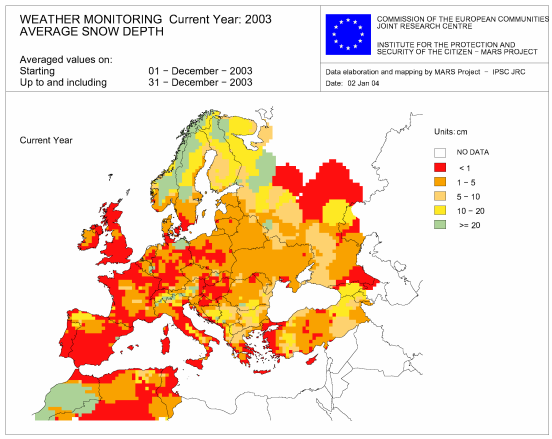




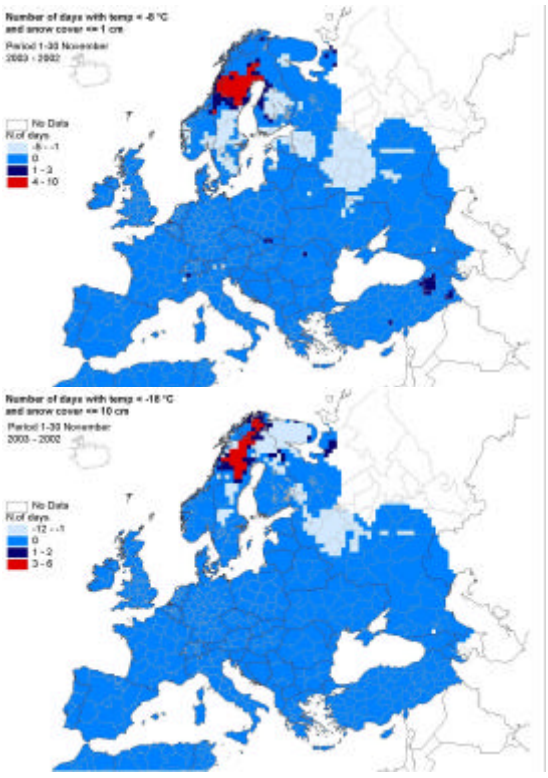


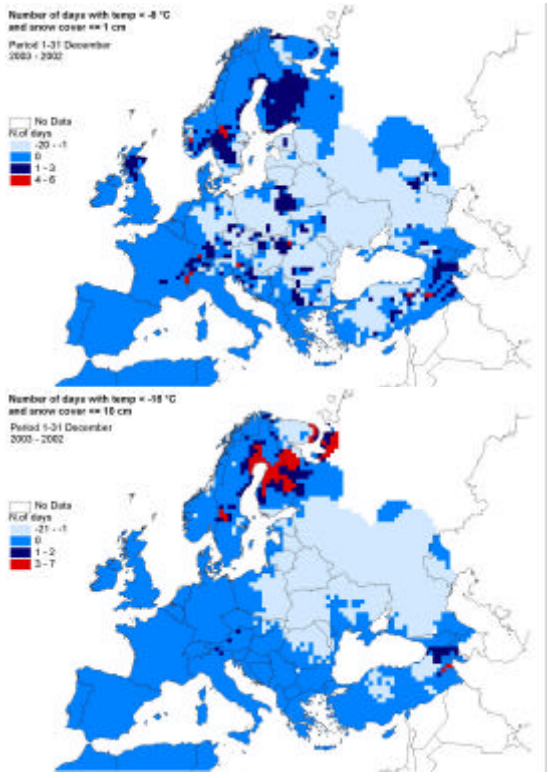
Even if the warm temperatures in November were favourable to germination and accelerated the beginning stage of the crops' cycles before wintering, the impacts of low temperatures were well attenuated by the snow cover, which was in general sufficient to protect the crops present in the fields, as shown in the following maps.



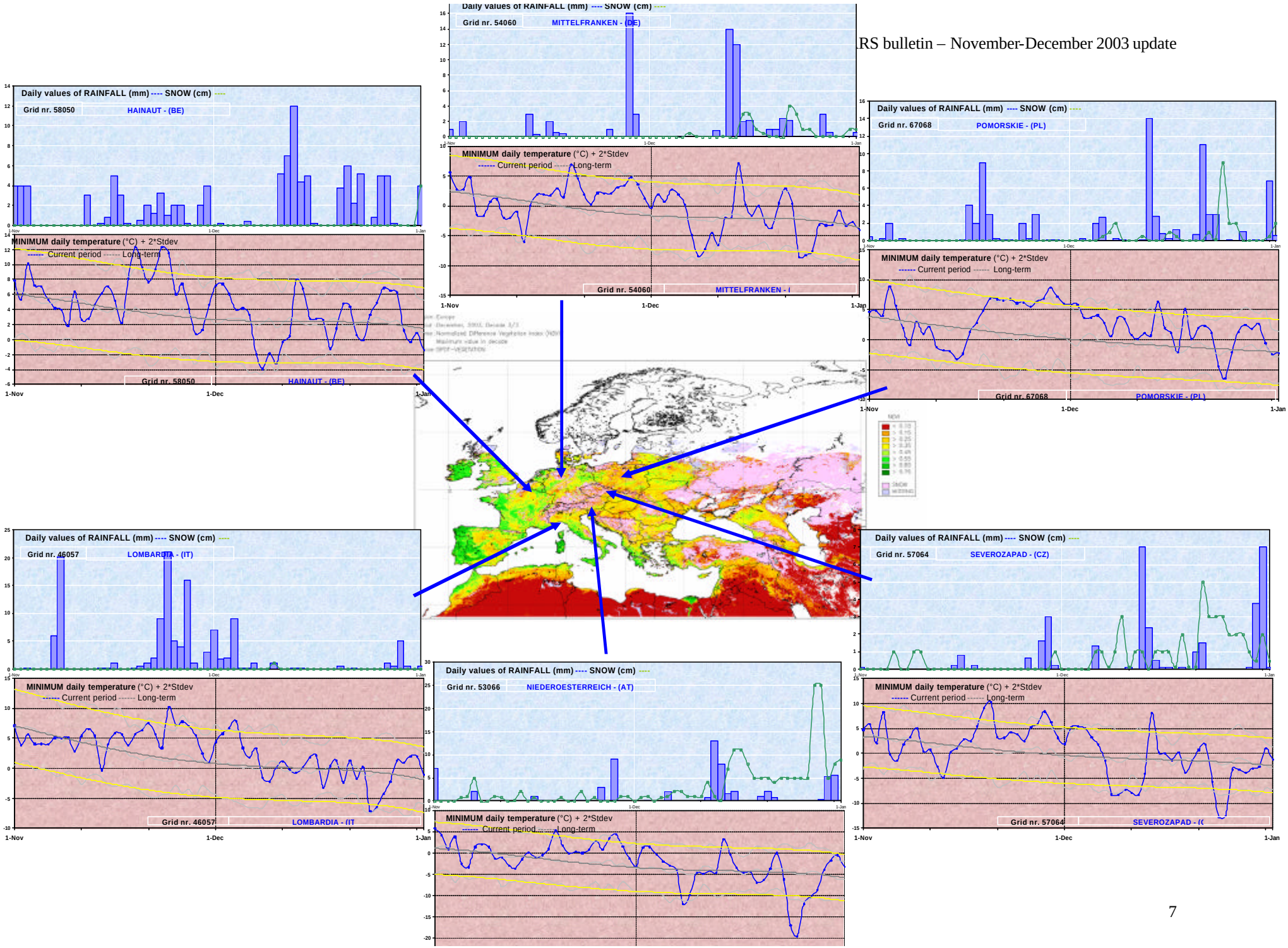


From the analysis of a comparison made with the same period during the previous campaign, it is quite evident that for both months and considering the frost risk conditions, the November-December 2003 situation is much better for the majority of the winter crops: the maps depict less numbers of days of frost risk in 2003 (negative values) and the higher number of days are in general located in areas with reduced interest for agricultural production.





In the following page are presented some examples of graphs of daily data of rain, snow and minimum temperatures recorded in some locations in Europe. The background map shows the snow cover (in pink) as presented at the end of December from satellite images.


Daily values of RAINFALL (mm) ---- SNOW (cm)
Grid nr. 58050 HAINAUT - (BE)
MINIMUM daily temperature (°C) + 2*Stdev
Current period ------ Long-term
Grid nr. 58050 HAINAUT - (BE)
Daily values of RAINFALL (mm) ---- SNOW (cm)
Grid nr. 54060 MITTELFRANKEN - (DE)
MINIMUM daily temperature (°C) + 2*Stdev
Current period ------ Long-term
Grid nr. 54060 MITTELFRANKEN - (
Daily values of RAINFALL (mm) ---- SNOW (cm)
Grid nr. 67068 POMORSKIE - (PL)
MINIMUM daily temperature (°C) + 2*Stdev
Current period ------ Long-term
Grid nr. 67068 POMORSKIE - (PL)
Daily values of RAINFALL (mm) ---- SNOW (cm)
Grid nr. 46057 LOMBARDIA - (IT)
MINIMUM daily temperature (°C) + 2*Stdev
Current period ------ Long-term
Grid nr. 46057 LOMBARDIA - (IT
Daily values of RAINFALL (mm) ---- SNOW (cm)
Grid nr. 53066 NIEDEROESTERREICH - (AT)
MINIMUM daily temperature (°C) + 2*Stdev
Current period ------ Long-term
Daily values of RAINFALL (mm) ---- SNOW (cm)
Grid nr. 57064 SEVEROZAPAD - (CZ)
MINIMUM daily temperature (°C) + 2*Stdev
Current period ------ Long-term
Grid nr. 57064 SEVEROZAPAD - ((
1-Nov
1-Dec
1-Jan

3. 2003/2004 winter crops sowing campaign

After a relatively favourable dry September for cereal sowings in Northern countries and for field preparation in the south (excluding Portugal), October brought some more rain and lower temperatures, which slowed down the crops' development, where already placed, and positively replenished the top soil moisture before sowings in Southern areas.

General speaking it is possible to presume that the **Winter wheat** found favourable conditions at sowing in Northern Europe; dry for Great Britain and Ireland; wet for Western France, Portugal and Spain. Also for **Durum wheat** the beginning of autumn was favourable both for field preparation and for soil water supply.

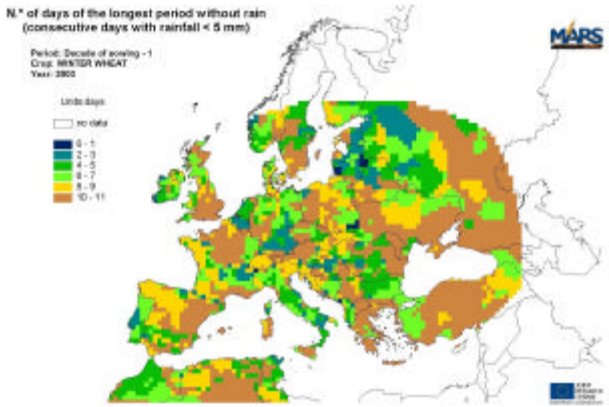
On the contrary, the **Winter barley**, being sown later than wheat, found dry conditions in Great Britain and Ireland whilst generally wet sowing on the Continent, due to the moisture received in October and the decrease in temperature particularly in France and Central Europe

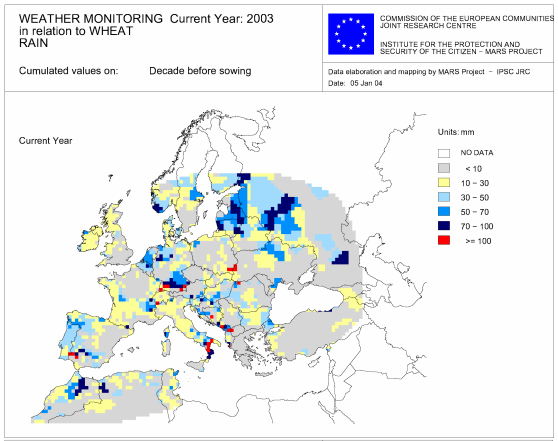
The sowing of barley crops in Eastern Europe occurred under normal conditions, but for some limited areas (5-15%) in the centre of Romania and Western Bulgaria the rainy weather may have delayed the sowing of the winter wheat and indirectly postponed the emergence of this crop.

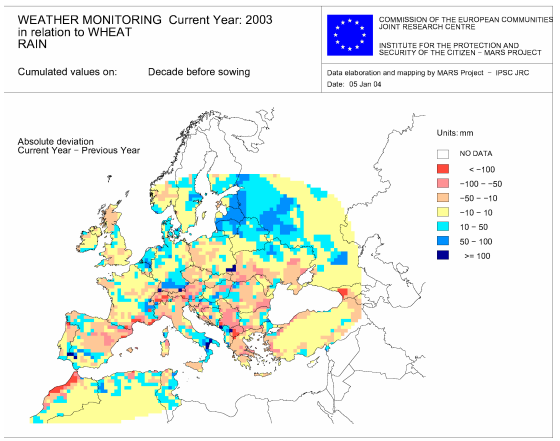
November – December conditions

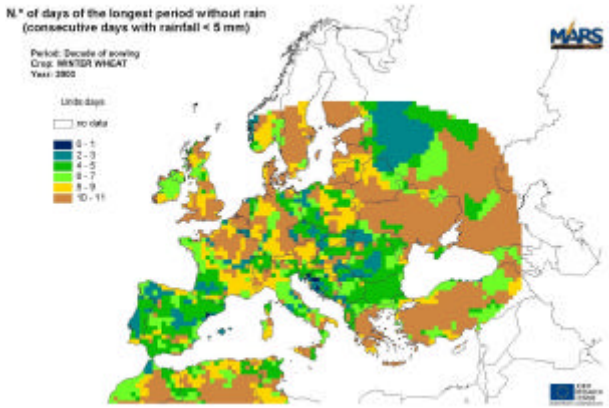
During November sowings activities were still expected in Southern Countries (Southern Italy, Southern Spain, Northern Africa especially for durum wheat) and a tail of late winter barley sowings (shifted for adverse climatic conditions) in more northern latitudes (central Spain, westrern and central France, Bulgaria).
Considering milder than average temperatures recorded in November, the latest sowings at mid latitudes were conducted in optimal conditions. In the Southern areas (namely Spain, Portugal, Central Italy, Morocco and Tunisia) the relatively frequent rain, improved the soil water reservoirs but probably disturbed the sowing activities, prolonging the period of sowing up to the end of November, beginning of December likely for Durum wheat in Southern Europe.
Western parts of Czech Republic and Hungary for which the relative soil water content at sowing was quite low, received less precipitations than usual for the last two months of the year.

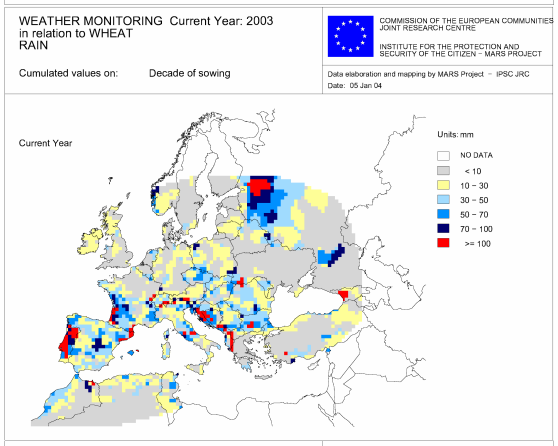
WINTER WHEAT

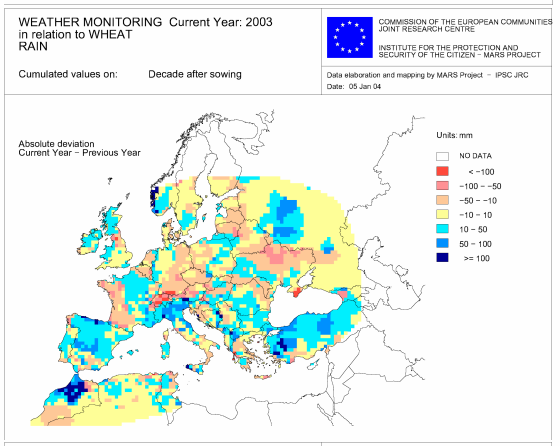


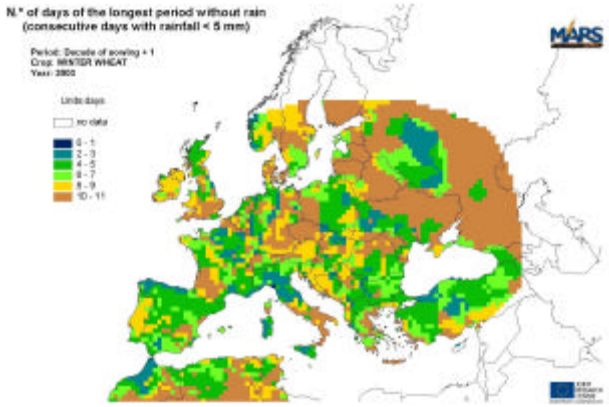


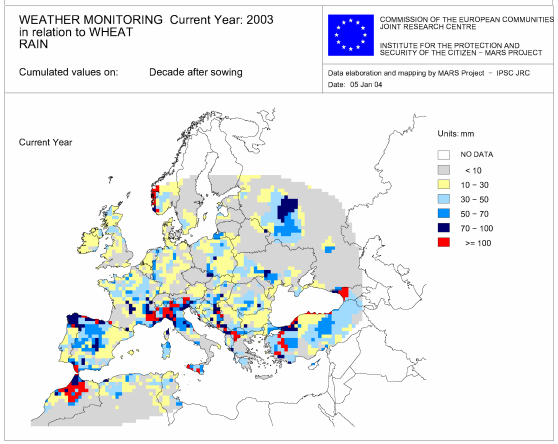


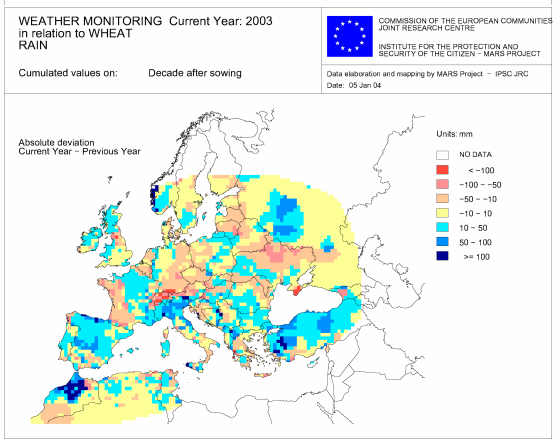












WINTER BARLEY