European Commission

Period covered: 1 November - 12 December

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Crop Monitoring in Europe

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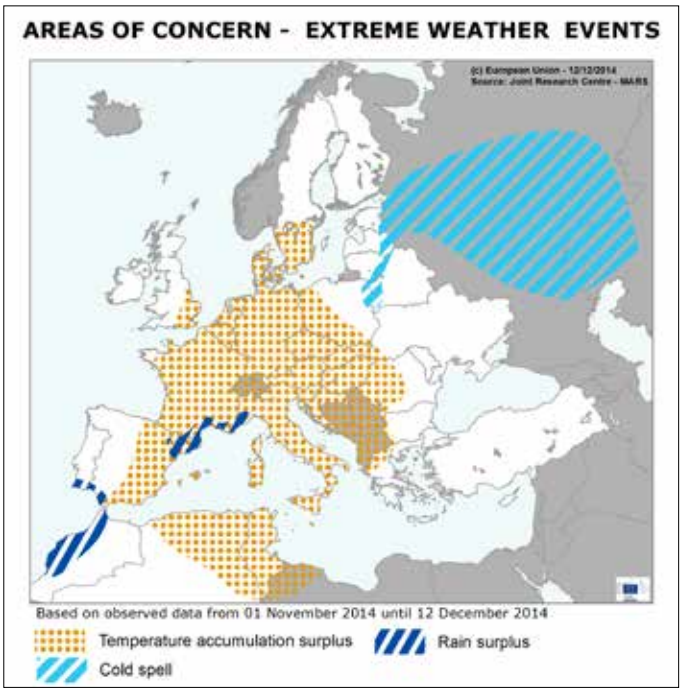
Weakly hardened crops in western and central Europe

During the period of review, the western half of Europe was typically warmer-than-usual, while Belarus, Ukraine and Russia experienced below average daily temperatures and freezing weather conditions from late November onwards. The precipitation considerably exceeded the average in southern Europe and western Maghreb, but a broad region between Germany and the Ural Mountains remained dry.

The decreasing temperatures of late autumn and early winter in eastern Europe initiated the hardening of winter cereals. During this process, the freezing point of plant cellular liquids decreases, thus increasing the tolerance of winter crops to low-temperatures, which is crucial to survive harsh winter conditions. Our model simulation results indicate that the hardening of winter wheat progressed significantly in the eastern half of Europe.

However the mild and warm autumn in western and central Europe allowed winter cereals to gain strength before the winter, but hampered the hardening process. Winter wheat is not hardened at all (all western and southern regions) or just slightly hardened (e.g, Germany, Czech Republic, western Poland). The current situation is delicate, however, considering the weakly hardened crops in Europe's western and central regions. If a cold air intrusion accompanied by shallow snow cover occurs frost kill events are very likely. Yet currently no severe cold spell is forecast.



1. Agro-meteorological overview (1 November – 09 December)

During the period of review, the western half of Europe was generally warmer than usual, while Belarus, Ukraine and Russia experienced below-average daily temperatures and freezing weather conditions from late November. Precipitation levels considerably exceeded the average in southern Europe and the western Maghreb, but a broad region between Germany and the Ural Mountains remained dry.

Observed temperatures

During November and early December, Europe was split into two different climatological regions. The temperatures mostly exceeded the average in the Mediterranean region and central and western Europe, while the eastern part of Europe was colder than usual. The positive thermal anomaly in central and western Europe typically exceeded +2°C for the daily mean temperature, but reached +4 to +6°C in the central Mediterranean regions, Scandinavia and in the region of the Carpathian Basin. The cumulated active temperatures (Tbase=0°C) indicate a huge surplus (>100 GDD) in Italy, the western Balkans and some smaller spots of central Europe. A positive deviation of more than 60 GDD was recorded from eastern Spain to western Romania, including France, Germany, Benelux, and Denmark, as well as in Tunisia and eastern Algeria.

A severe cool spell set in towards the end of November in the Baltic States, the eastern half of Poland, Romania, Ukraine and Russia. Temperatures remained below the average by 2°C to 8°C in eastern Europe. The freezing weather intensified in the first dekad of December, with observed daily minimum temperatures of -15°C in Ukraine and -20°C to -35°C in eastern Russia, at least 10°C lower than usual for this period of the year.

Observed rainfall

Precipitation was abundant for the period as a whole in the Mediterranean Basin and along the Atlantic coast, but drier-than-usual conditions were observed in large parts of eastern Europe. Rainfall was scarce or absent (<20 mm) in eastern Germany, western Poland, eastern Belarus, north-eastern Ukraine and large areas of southern and central Russia. Due to the precipitation deficiency, limited snow cover was available in western Russia and Ukraine.

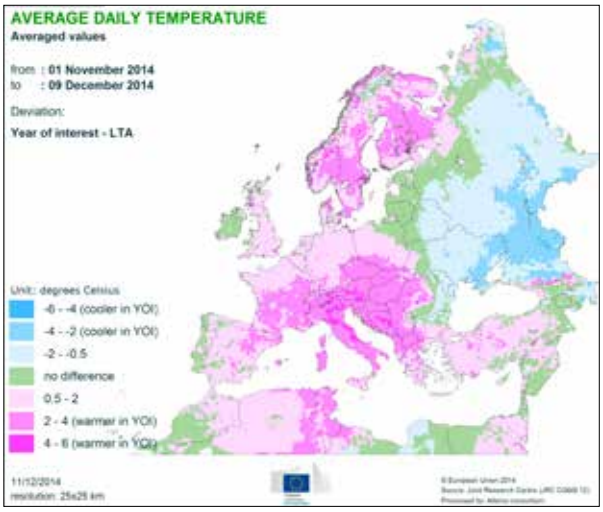
By contrast, rainfall events were excessive (>300 mm) and locally devastating (e.g. causing floods and water logging) in southern France, Italy and along the western coastline of the Balkan and Iberian Peninsulas. In several places of the Mediterranean Basin, these abundant rainfall events were persistent, intense, and concentrated over the first two dekads of November. The western shores of Ireland, Scotland, Turkey and Morocco also received high levels of precipitation.

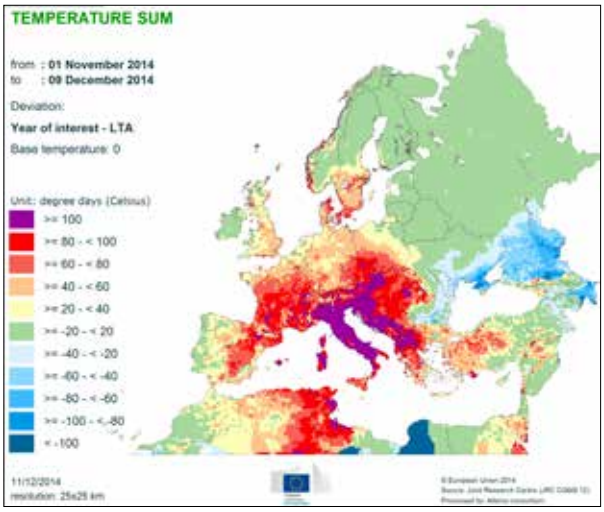
Cumulated rainfall was plentiful, but only slightly more than the average in the eastern British Isles, central and western France, Spain (especially in the eastern half), southern Sweden, Finland, Romania, Bulgaria, and Algeria.

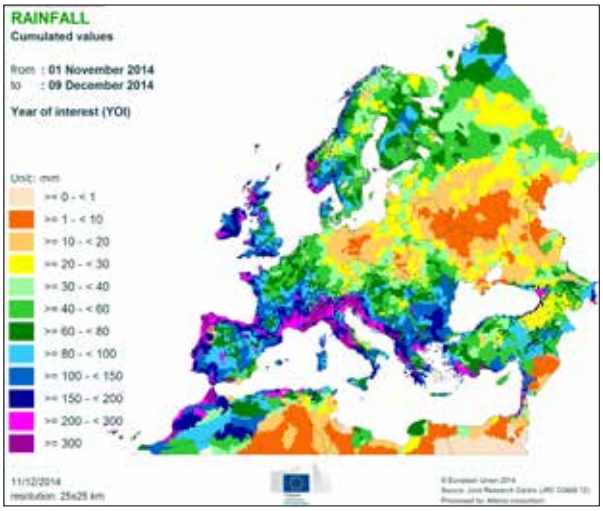
Winter frost kill

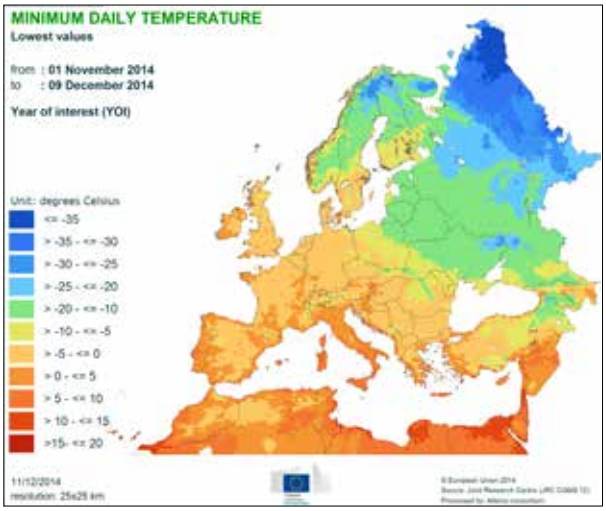
The decreasing temperatures of late autumn and early winter in eastern Europe initiated the hardening of winter cereals. During this process, the freezing point of plant cellular liquids decreases, thus increasing the tolerance of winter crops to low temperatures, which is crucial in order to survive harsh winter conditions. Our model simulation results indicate that the hardening of winter wheat progressed significantly in the eastern half of Europe during November. During the first dekad of December, winter wheat partially hardened in eastern Poland, eastern Romania, the Baltic States, Finland, Belarus, Ukraine and in the southern Okrug of Russia. Only minor hardening was reached in some parts of Ukraine and in the Central district of Russia. Frost damages are expected in those regions due to the unsatisfactory hardening of winter wheat coupled with extreme low temperatures (Tmin < -18°C) during the cold spell and the fact that there was little or no snow cover.

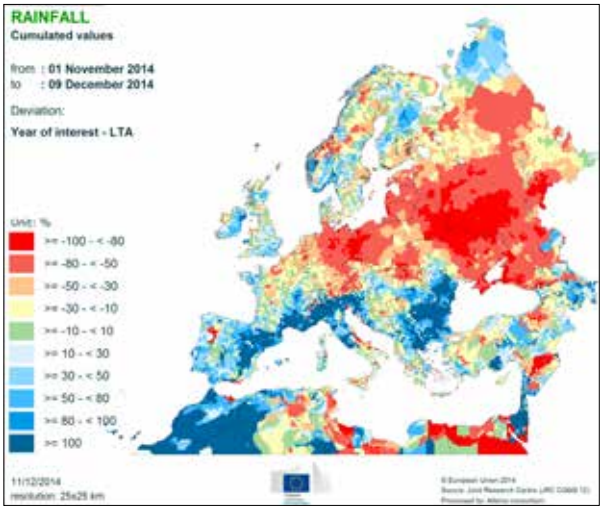
The mild and warm late autumn in western and central Europe favoured the strengthening of winter cereals before the winter months, but hampered the hardening process. Winter wheat has not hardened at all (all western and southern regions) or is only slightly hardened (e.g. Germany, Czech Republic, western Poland). The current situation is delicate, however, given the poorly hardened crops in Europe's western and central regions. Frost-kill events are very likely in the event of a cold air intrusion accompanied by shallow snow cover.

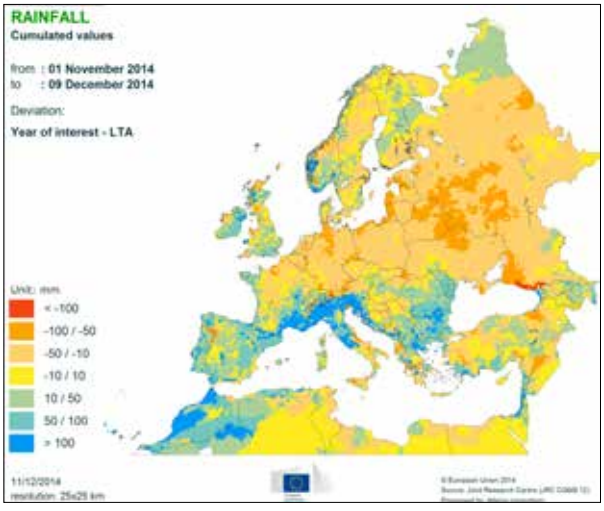

AVERAGE DAILY TEMPERATURE
Averaged values
from : 01 November 2014
to : 09 December 2014
Deviation:
Year of interest - LTA
Unit: degrees Celsius
-6 - -4 (cooler in YOI)
-4 - -2 (cooler in YOI)
-2 - -0.5
no difference
0.5 - 2
2 - 4 (warmer in YOI)
4 - 6 (warmer in YOI)
11/12/2014
resolution: 25x25 km


TEMPERATURE SUM
from : 01 November 2014
to : 09 December 2014
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: degree days (Celsius)
>= 100
>= 80 - < 100
>= 60 - < 80
>= 40 - < 60
>= 20 - < 40
>= -20 - < 20
>= -40 - < -20
>= -60 - < -40
>= -80 - < -60
>= -100 - <-80
< -100
11/12/2014
resolution: 25x25 km


RAINFALL
Cumulated values
from : 01 November 2014
to : 09 December 2014
Year of interest (YOI)
Unit: mm
>= 0 - < 1
>= 1 - < 10
>= 10 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150 - < 200
>= 200 - < 300
>= 300
11/12/2014
resolution: 25x25 km


MINIMUM DAILY TEMPERATURE
Lowest values
from : 01 November 2014
to : 09 December 2014
Year of interest (YOI)
Unit: degrees Celsius
<= -35
> -35 - <= -30
> -30 - <= -25
> -25 - <= -20
> -20 - <= -10
> -10 - <= -5
> -5 - <= 0
> 0 - <= 5
> 5 - <= 10
> 10 - <= 15
>15- <= 20
11/12/2014
resolution: 25x25 km


RAINFALL
Cumulated values
from : 01 November 2014
to : 09 December 2014
Deviation:
Year of interest - LTA
Unit: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
11/12/2014
resolution: 25x25 km


RAINFALL
Cumulated values
from : 01 November 2014
to : 09 December 2014
Deviation:
Year of interest - LTA
Unit: mm
< -100
-100 / -50
-50 / -10
-10 / 10
10 / 50
50 / 100
> 100
11/12/2014
resolution: 25x25 km

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2014 MARS Bulletins

Date	Publication	Reference
27 Jan	Agromet. analysis	Vol. 22 No. 1
24 Feb	Agromet analysis	Vol. 22 No. 2
24 Mar	Agromet analysis and yield forecast	Vol. 22 No. 3
14 Apr	Agromet analysis, remote sensing and yield forecast	Vol. 22 No. 4
12 May	Agromet analysis, remote sensing, yield forecast and pasture analysis	Vol. 22 No. 5
23 Jun	Agromet analysis, remote sensing, yield forecast and pasture update	Vol. 22 No. 6
21 Jul	Agromet analysis, remote sensing, yield forecast, pasture update and rice analysis	Vol. 22 No. 7
25 Aug	Agromet analysis, yield forecast and pasture update	Vol. 22 No. 8
22 Sep	Agromet analysis, remote sensing, yield forecast and pasture update	Vol. 22 No. 9
27 Oct	Agromet analysis, remote sensing, yield forecast, pasture analysis and rice analysis	Vol. 22 No. 10
24 Nov	Agromet analysis and yield forecast, sowing conditions	Vol. 22 No. 11
15 Dec	Agromet analysis	Vol. 22 No. 12

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Technical note:
The long term average (LTA) used within this Bulletin as a reference is based on an archive of data covering 1975-2013.

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