

# Crop Monitoring in Europe

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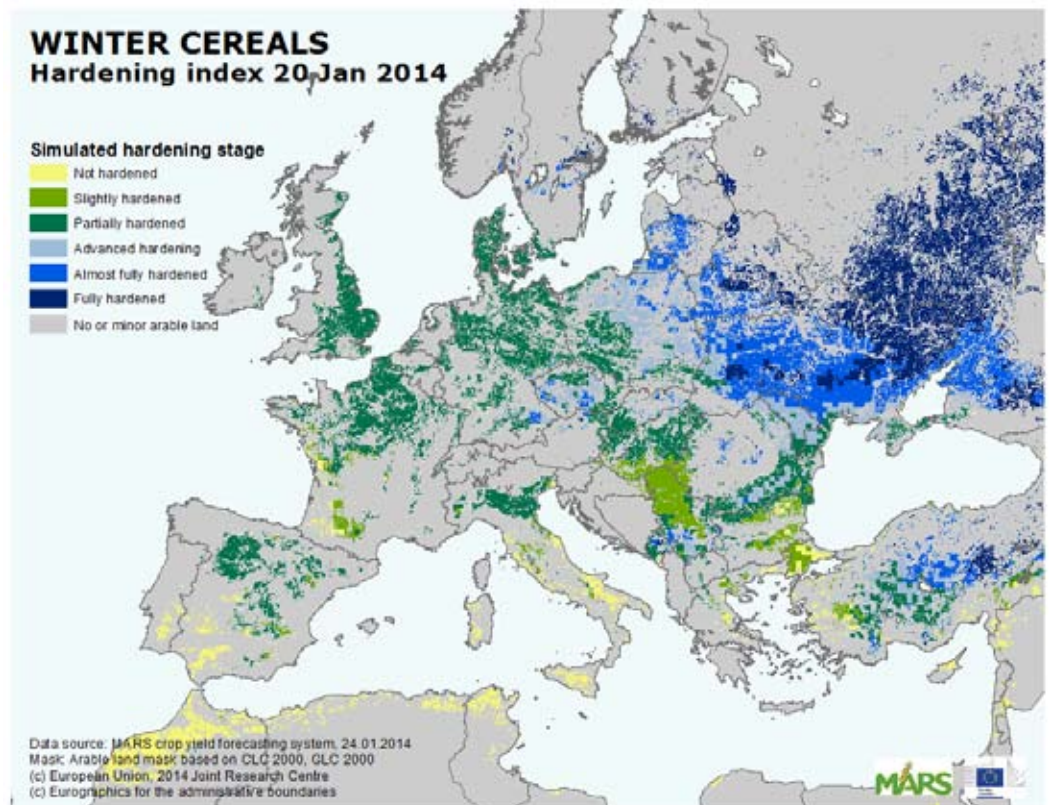
### Hardening of winter cereals significantly delayed in western and central Europe

The hardening of winter cereals is significantly delayed in western and central Europe. Hardening is a bio-physiological process, assessed with computer simulation models, whereby plants gain low-temperature tolerance that allows them to survive the freezing conditions of winter. Since mid-December, most of Europe experienced an exceptionally mild period with a 2 to 7°C positive thermal anomaly, slowing down or delaying the hardening process from Ireland to Poland.

A decrease in frost tolerance has even been observed in southern France, Hungary, Serbia, Bulgaria and some other areas of the Balkan Peninsula where a large part of the crops is only slightly hardened. Little or no low-temperature tolerance has been reached in the coastal region of the Mediterranean Sea.

On the other hand, weather conditions in Russia, most of Ukraine and Belarus were sufficiently cold to allow for the full or almost full hardening of winter crops.

The weather forecast until the beginning of February indicates a significant temperature decrease in central and eastern Europe. Consequently, winter cereals are likely to complete the hardening process in the Baltic countries, Belarus, southern Ukraine and most of Poland and the Czech Republic. Frost tolerance is also expected to increase significantly in eastern regions of Germany as well as in Austria, Hungary, Romania and countries of the Balkan Peninsula.



No frost kill has been simulated in Europe so far, thanks to the warmer-than-usual weather conditions. Model calculations based on the weather forecast for the next 10 days also predict no significant frost damage. The current situation is delicate, however, considering the weakly hardened crops in Europe's central regions. If the cold air intrusion is more severe than expected and accompanied by shallow snow cover, frost kill events could occur in eastern Germany, Poland, the Czech Republic, the Baltic countries, Hungary, Romania and Bulgaria, depending on the local conditions.

# 1. Agro-meteorological overview (1 December - 20 January)

*The review period, comprising the first part of winter, has been characterised by warmer-than-usual weather conditions in most of Europe and drier-than-usual conditions in the regions between Germany and Turkey.*

## Observed temperatures

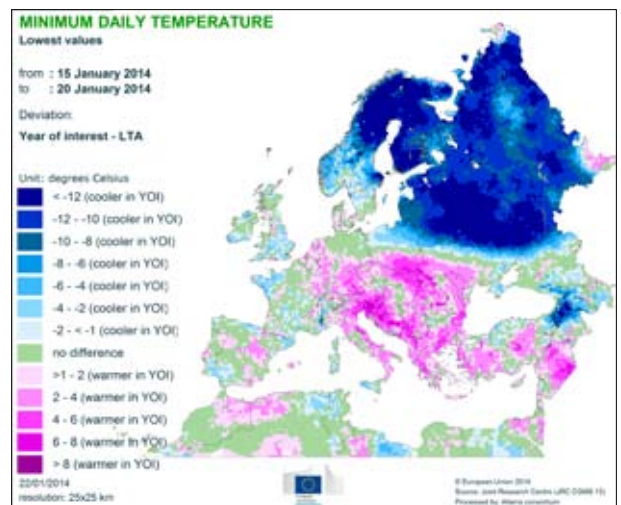
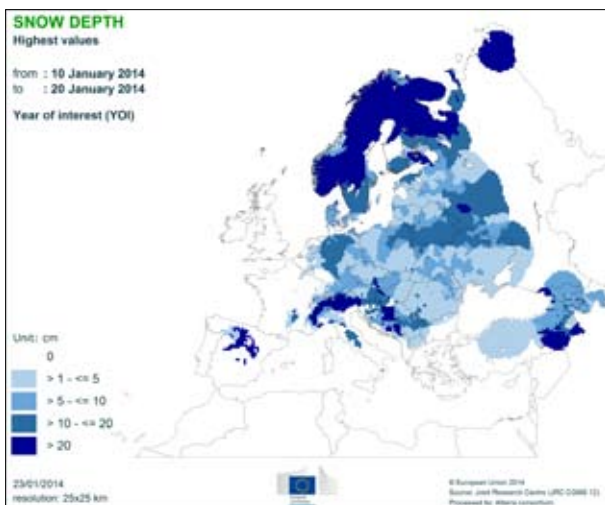
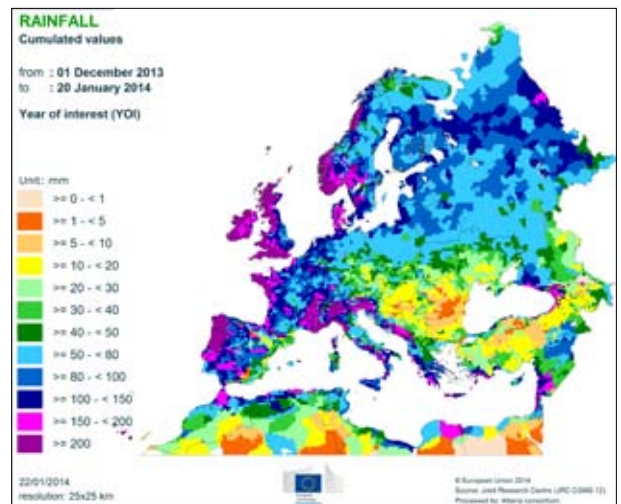
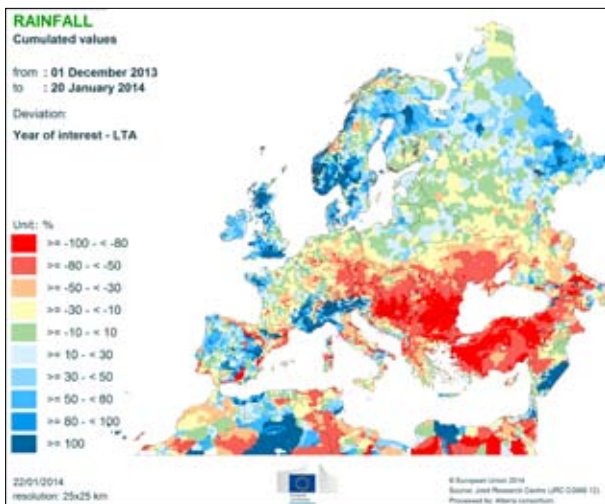
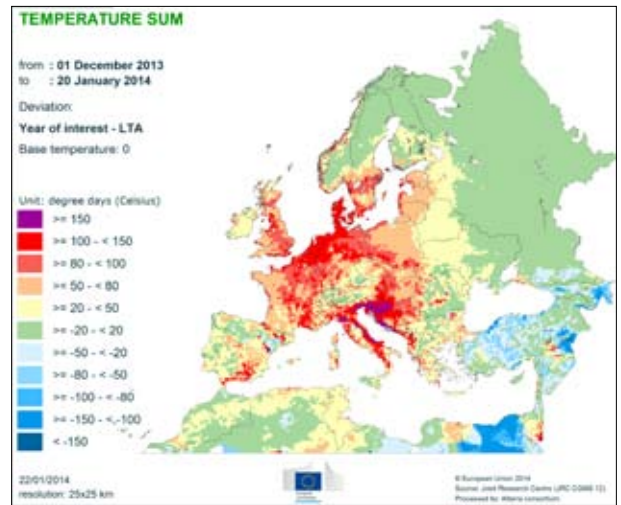
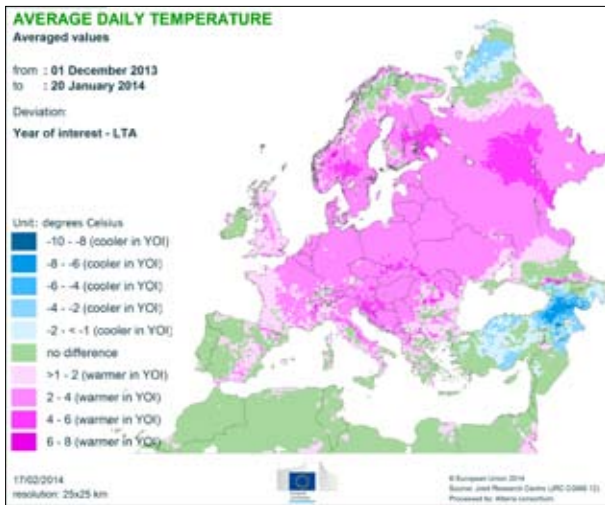
Considering the entire period of review, from 1 December to 20 January, the weather conditions were warmer than usual across Europe, with the exception of Turkey where negative thermal anomalies were recorded, and Ireland, parts of the Iberian Peninsula and the southern Mediterranean region, where thermal conditions were normal. During the first half of December, negative average temperature anomalies in the range of -2 to -4°C were observed in France, the Iberian Peninsula, Romania, Turkey and the regions around the Black Sea, while near-average temperatures prevailed in the rest of Europe. During this period, the mean daily minimum temperature was below the long-term average in large parts of Europe. The most important frost event occurred in eastern Europe, around 11 December, with minimum temperatures as low as -15°C in Russia, Belarus, eastern Ukraine and Turkey. The second half of December was characterised by warmer-than-usual thermal conditions over northern and central Europe, with average temperatures as much as 6 to 8°C above average in Finland, northern Russia and the Baltic countries. Positive thermal anomalies, in the range of 4 to 6°C, continued until 15 January across Europe, hampering the hardening of winter cereals. After 15 January, temperatures

dropped below the long-term average by more than 10°C over northern Europe. Minimum temperatures below -20°C occurred in parts of northern Poland, the Baltic countries, northern Ukraine, Russia, Finland and Sweden. However, milder conditions continued over the main agricultural production areas in the rest of Europe. The positive thermal anomaly was especially explicit in central and south-eastern European countries such as Hungary, Romania, Bulgaria and Croatia, where mean temperatures of up to 8°C above average were recorded. In some of these areas, these warm weather conditions caused the start of de-hardening of winter crops. The cumulated active temperatures (Tbase=0°C) during the period of analysis were above the average throughout Europe, with the exception of Turkey.

## Observed rainfall

During December, drier-than-usual conditions were observed in large parts of eastern and south-eastern Europe, with cumulated rainfall more than 80% below average in some of these areas. Rainfall was scarce or absent (<5 mm) during this period in Romania, Hungary, southern Ukraine and Bulgaria. Below-average rainfall was also observed in central Italy, southern Germany and the Czech Republic. By contrast, cumulated rainfall was slightly above average in north-western Italy, the Scandinavian Peninsula, the United Kingdom and south-eastern France. From 1 to 20 January, wetter-than-usual conditions continued in south-eastern France, northern Italy, the southern part of the United Kingdom and the southern part of the Scandinavian Peninsula, with cumulated rainfall above 100 mm. Above-average rainfall was also recorded during this period in the eastern part of the Iberian Peninsula, north-eastern France, along the Adriatic coast of the Balkan Peninsula and north-eastern Europe. Drier-than-usual conditions continued in Romania, Bulgaria, Hungary, Greece, Croatia and Turkey. Below-average rainfall, in the range of -30 to -50%, was also observed in Germany, the Czech Republic, Austria and southern Ukraine. During December, snow covered northern Europe and large parts of

eastern and central Europe. Due to the mild weather of the first dekad of January, the snow cover melted and disappeared in most of central Europe, the Baltic countries and some areas of eastern Europe, but, after 10 January, it largely recovered in northern and north-eastern Europe.



## 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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