European Commission

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Period covered: 1 January-15 February 2017
Issued: 20 February 2017

JRC MARS Bulletin
Crop monitoring in Europe
February 2017

Winter finishing with no major constraints

Frost damages remain limited

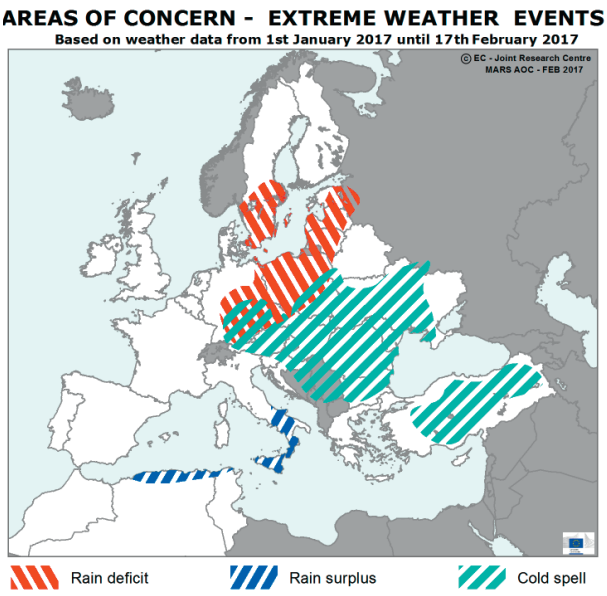
A persistent rain deficit is recorded in a large area of central and north-eastern Europe, extending from Germany to Finland. Large parts of southern Germany, southern Sweden, the Czech Republic and the Baltic countries have received less than 10 mm of precipitation during the analysis period. Rain would be welcomed in these regions to restore soil water reserves and groundwater as spring approaches. So far, these dry conditions do not generally present an immediate concern for crops.

Abundant precipitation, with cumulated values above 120 mm, was recorded in the north-western part of the Iberian Peninsula, southern Italy, the Balkans, western Turkey and north-western Africa. In southern Italy, northern Algeria and Tunisia, precipitation accumulates exceeding 200 mm were recorded during the period of analysis.

A cold spell persisted throughout January in central and eastern Europe, with several days with minimum temperatures around – 15 °C and reaching values below – 20 °C in many areas. Central Turkey was affected by a cold spell at the beginning of February.

Frost-kill damages remain limited. Occurrences are indicated by our model in parts of Sweden, Denmark, Germany, Hungary, Romania, Spain, Turkey and southern Russia. Our model simulations indicate no or only slight hardening of winter cereals in the Atlantic and Mediterranean regions of Europe. Winter crops in the region from north-eastern France to southern Sweden are slightly or partially hardened. Advanced to full hardening is maintained in other parts of central and eastern Europe.

On the basis of the weather forecast, no further frost-kill events are expected before 22 February.



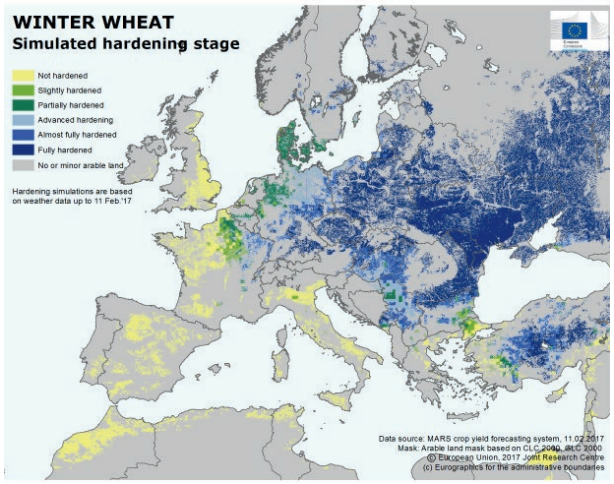
1 Winter hardening and frost-kill analysis

2 Agro-meteorological overview

3 Atlas

Joint Research Centre

1. Winter hardening and frost-kill analysis



Hardening is the biophysiological process whereby the cellular starch of winter cereals is transformed into glucose, thereby raising the freezing point of the cellular liquids and increasing the low-temperature tolerance of the plants.

Winter cereals are not or only slightly hardened in the Atlantic and Mediterranean regions of Europe, as indicated by our model simulations. In these regions, frost events below – 10 °C or – 12 °C can be harmful for winter wheat.

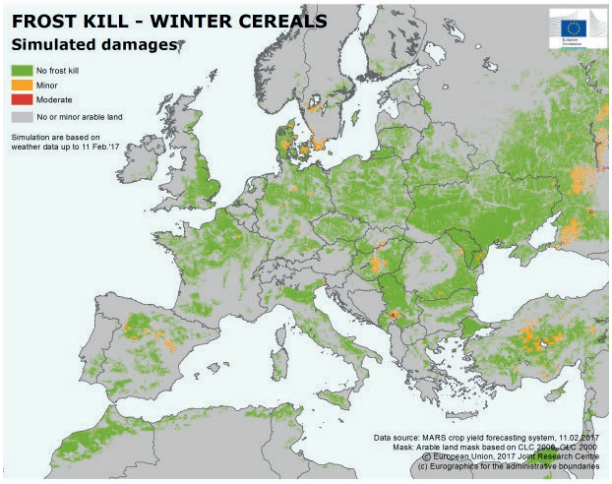
During late January and early February, frost tolerance increased in the region between eastern France and western Poland. Nevertheless, winter crops are only slightly or partially hardened in north-eastern France, north-western Germany, Denmark and southern Sweden.

In the Carpathian Basin and the central and northern parts of the Balkan Peninsula, the low-temperature tolerance has started to weaken (dehardening) during the milder-than-usual first dekad of February, but hardening is generally still advanced or almost full.

Full hardening is maintained in other parts of central and eastern Europe as well as in the cold inland regions of Turkey.

Our frost-kill model suggests that frost-kill damages have occurred in parts of Sweden, Denmark, Germany, Hungary, Romania, Turkey and southern Russia. Exceptionally cold weather between 18 and 20 January may have caused limited frost damage in wheat stands, even in Spain (Castilla y León and Aragón regions).

On the basis of the latest medium-range weather forecast, no further frost-kill damages are expected before 22 February. However, the situation is delicate in central and north-eastern Ukraine. In these regions, the winter crops are protected by snow, but the persistent thick snow cover (in several places sealed by ice crusts) can cause respiration problems for the underlying crops and increase the probability of snow mould. This could cause significant damage if the snow cover lasts until after the end of February.



2. Agro-meteorological overview

Meteorological review (1 January – 15 February 2017)

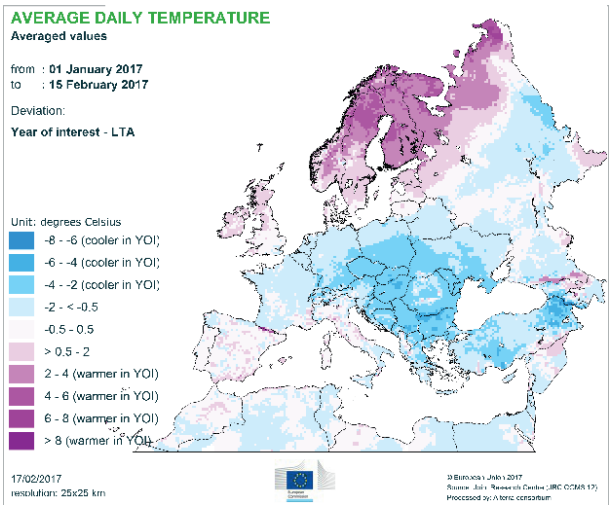
Colder-than-usual weather conditions have characterised eastern and south-eastern Europe and large parts of Turkey, with average daily temperature anomalies mainly between – 2 °C and – 4 °C for the period as a whole. In these regions, minimum temperatures mainly reached values of between – 10 °C and – 20 °C and fell below – 20 °C in large areas. Cold spells (longer than 3 days) with minimum temperatures below – 18 °C were locally observed in south-eastern Europe. In the Castilla y León and Castilla-La Mancha regions of Spain, an anomalous cold spell of 5 to 6 days (locally up to 10 days) with minimum temperatures of less than – 8 °C was also observed.

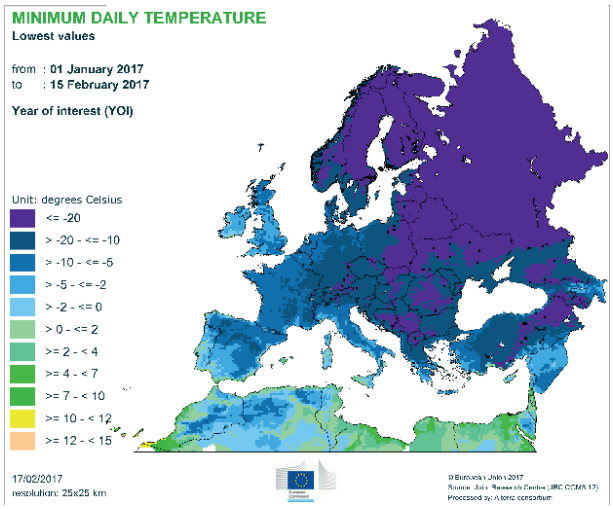
Warmer-than-usual weather conditions were observed in the Scandinavian Peninsula and north-western Russia, with daily temperature anomalies mainly between 2 °C and 6 °C.

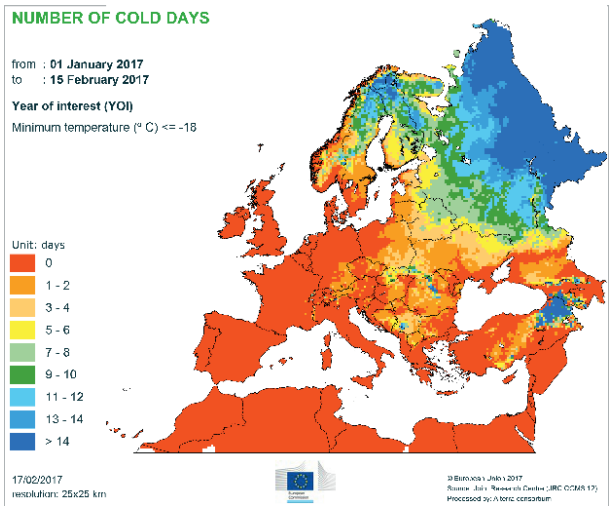
Drier-than-usual conditions continued in a large area of central and north-eastern Europe, extending from Germany to Finland. In this area, less than 40 mm of cumulated precipitation was recorded, concentrated in a few days at the beginning of the period analysed.

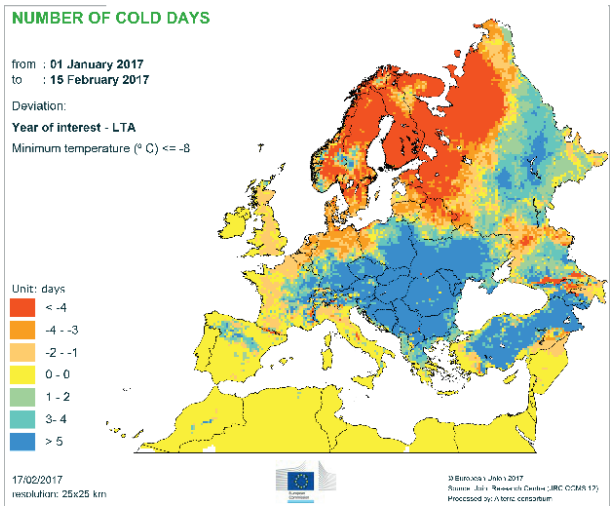
Abundant precipitation, with cumulated values above 120 mm, was recorded in the north-western part of the Iberian Peninsula, Italy, the Balkans, western Turkey and north-western Africa.

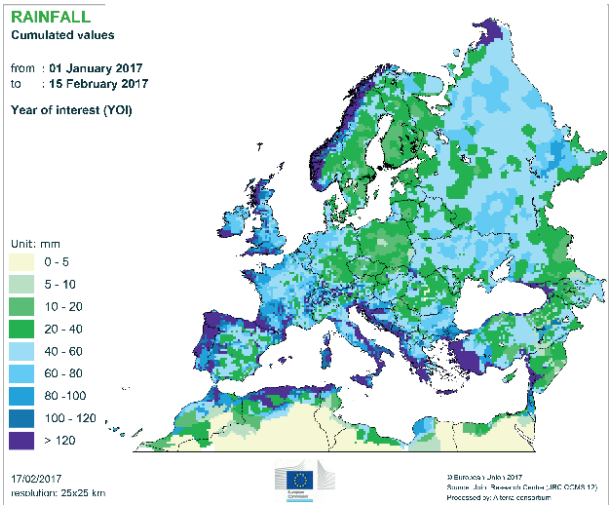
A snow layer has covered large areas in northern, eastern and south-eastern Europe and Turkey.

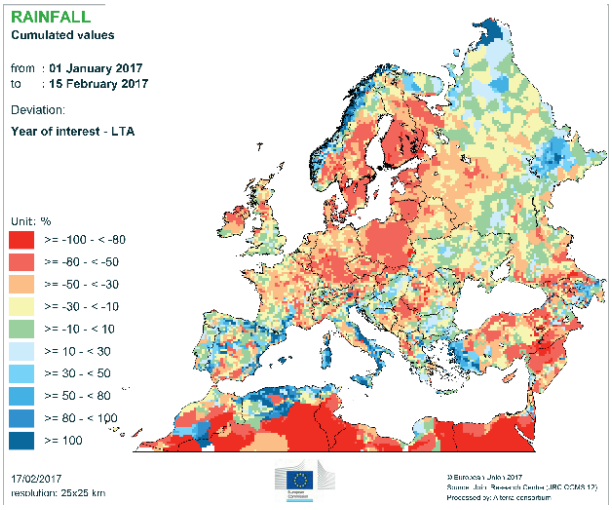


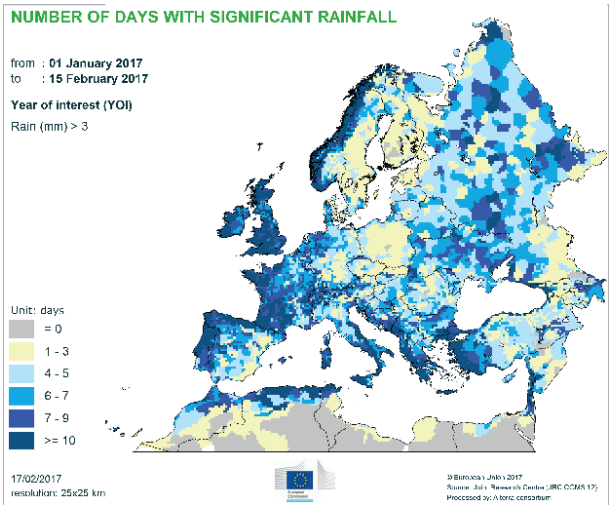


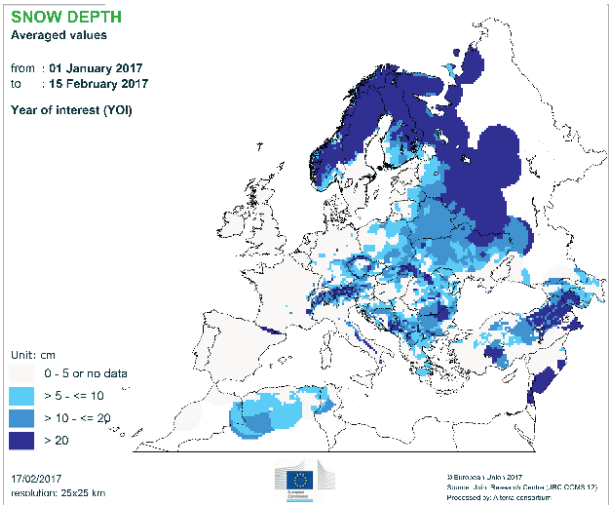





RAINFALL
Cumulated values
from : 01 January 2017
to : 15 February 2017
Year of interest (YOI)
Unit: mm
0 - 5
5 - 10
10 - 20
20 - 40
40 - 60
60 - 80
80 -100
100 - 120
> 120
17/02/2017
resolution: 25x25 km

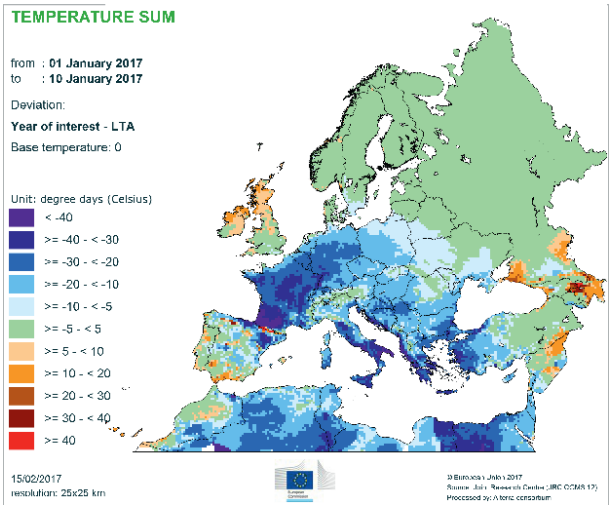

RAINFALL
Cumulated values
from : 01 January 2017
to : 15 February 2017
Deviation:
Year of interest - LTA
Unit: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
17/02/2017
resolution: 25x25 km

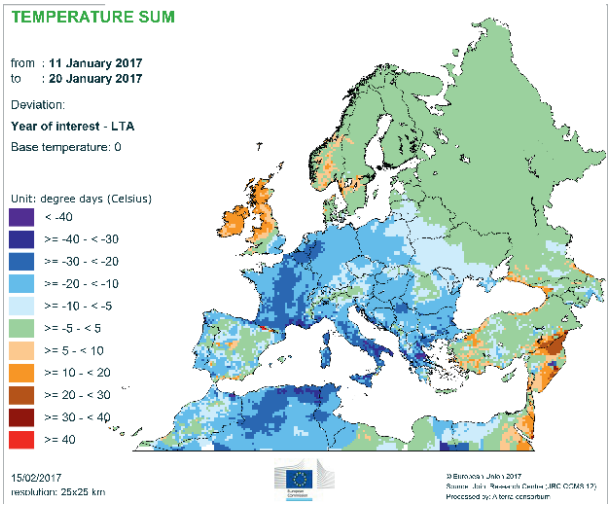

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from : 01 January 2017
to : 15 February 2017
Year of interest (YOI)
Rain (mm) > 3
Unit: days
= 0
1 - 3
4 - 5
6 - 7
7 - 9
>= 10
17/02/2017
resolution: 25x25 km

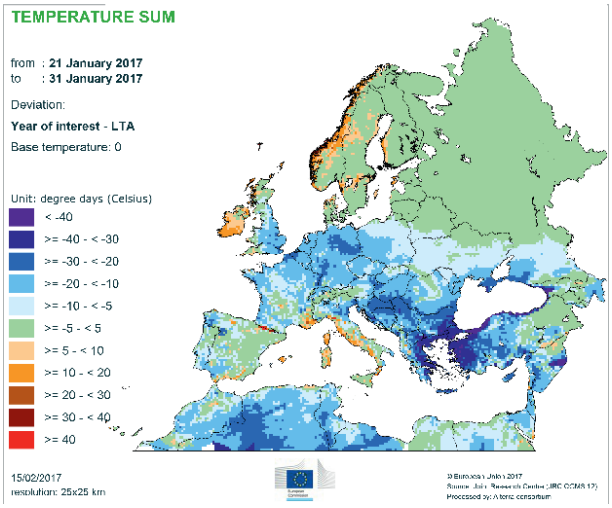

SNOW DEPTH
Averaged values
from : 01 January 2017
to : 15 February 2017
Year of interest (YOI)
Unit: cm
0 - 5 or no data
> 5 - <= 10
> 10 - <= 20
> 20
17/02/2017
resolution: 25x25 km

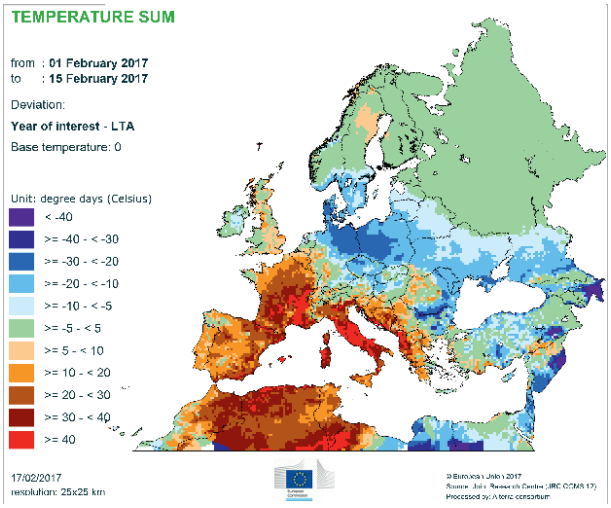
3. Atlas

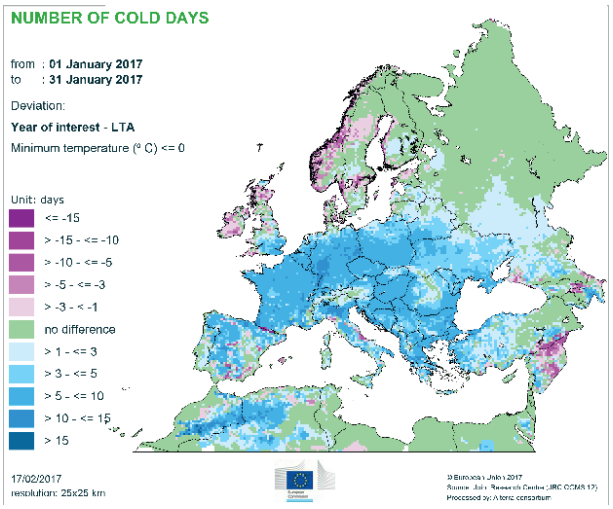
Temperature regime

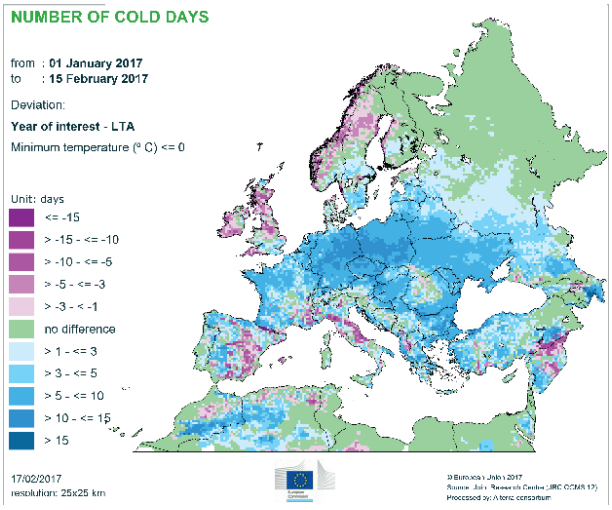




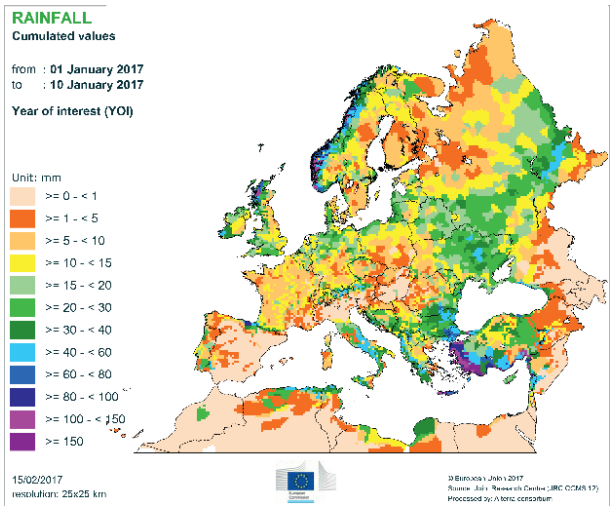


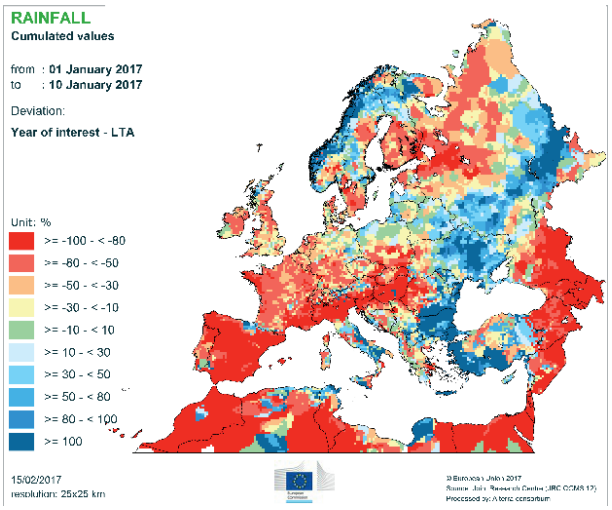


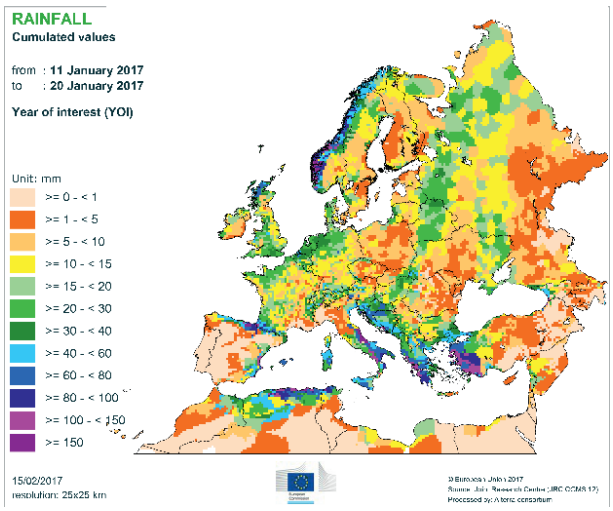


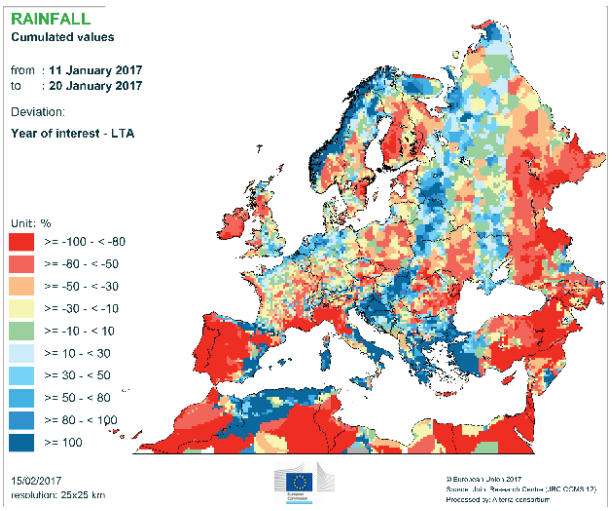


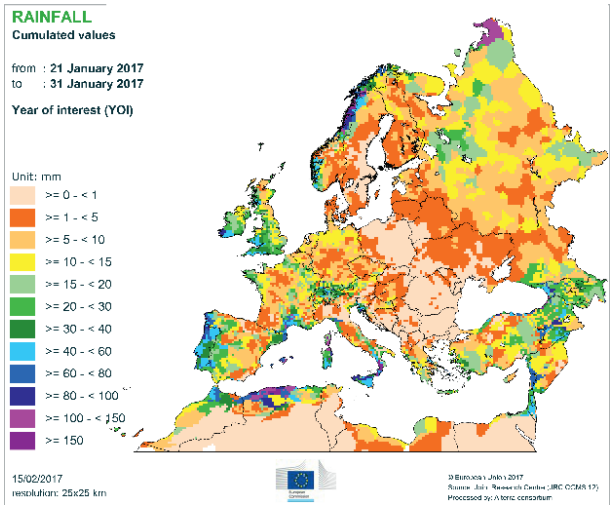
Precipitation regime

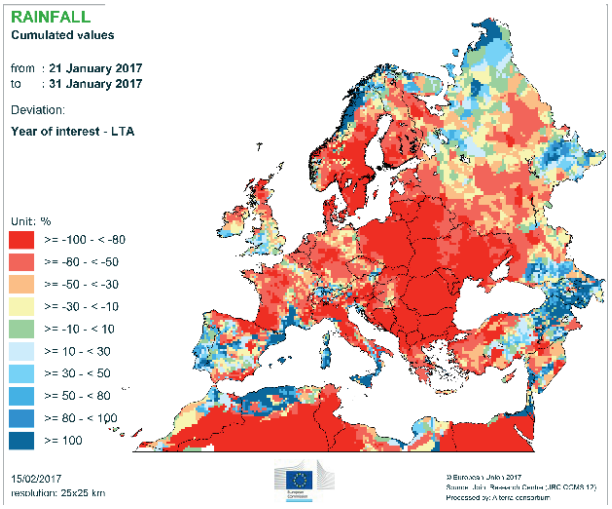


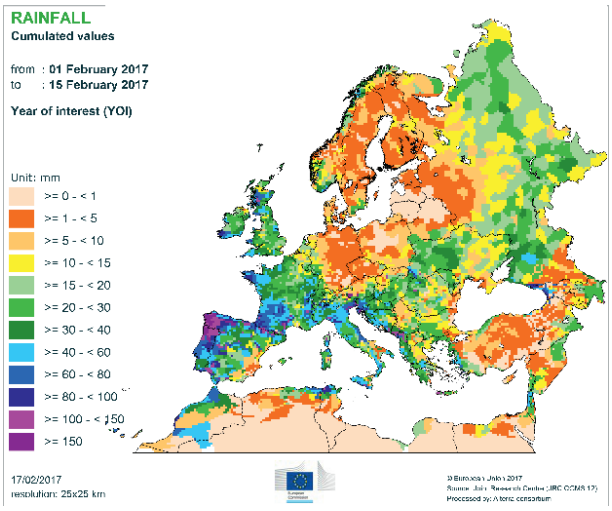


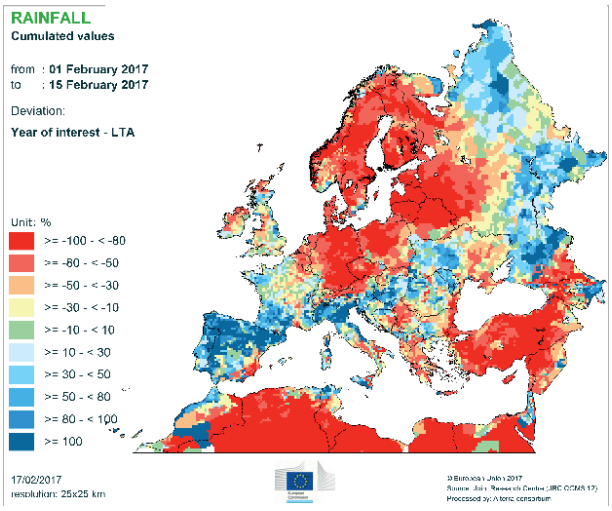


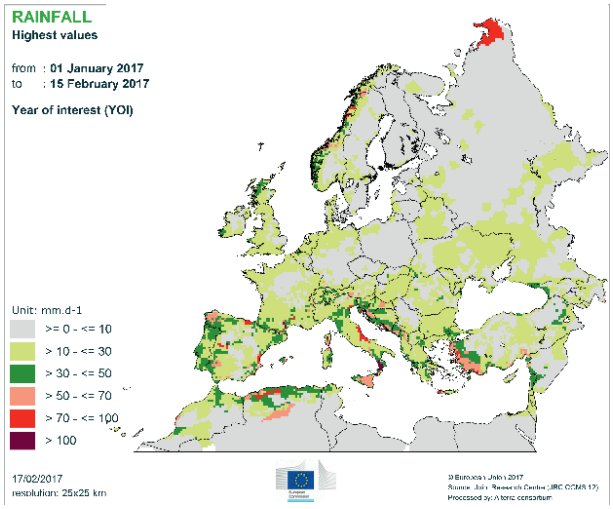


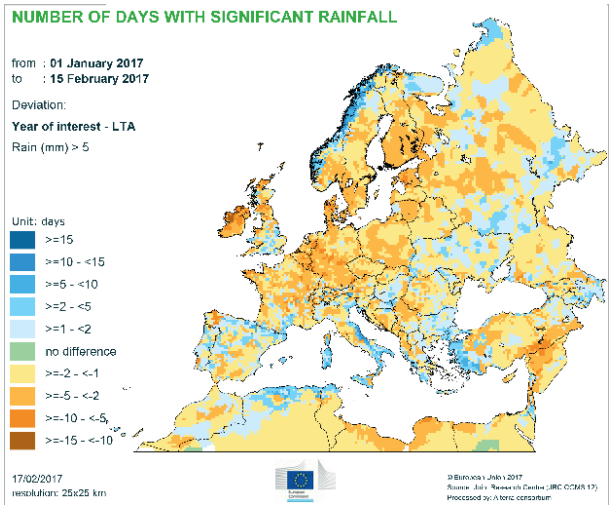





RAINFALL
Cumulated values
from : 01 February 2017
to : 15 February 2017
Year of interest (YOI)
Unit: mm
>= 0 - < 1
>= 1 - < 5
>= 5 - < 10
>= 10 - < 15
>= 15 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
17/02/2017
resolution: 25x25 km


RAINFALL
Cumulated values
from : 01 February 2017
to : 15 February 2017
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
17/02/2017
resolution: 25x25 km


RAINFALL
Highest values
from : 01 January 2017
to : 15 February 2017
Year of interest (YOI)
Unit: mm.d-1
>= 0 - <= 10
> 10 - <= 30
> 30 - <= 50
> 50 - <= 70
> 70 - <= 100
> 100
17/02/2017
resolution: 25x25 km


NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from : 01 January 2017
to : 15 February 2017
Deviation:
Year of interest - LTA
Rain (mm) > 5
Unit: days
>=15
>=10 - <15
>=5 - <10
>=2 - <5
>=1 - <2
no difference
>=-2 - <-1
>=-5 - <-2
>=-10 - <-5
>=-15 - <-10
17/02/2017
resolution: 25x25 km

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JRC MARS Bulletins 2017

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

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*MARS stands for Monitoring Agricultural Resources

Technical note:
The long-term average (LTA) used within this bulletin as a reference is based on an archive of data covering 1975–2015.

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