



European Commission

# JRC MARS Bulletin Crop monitoring in Europe

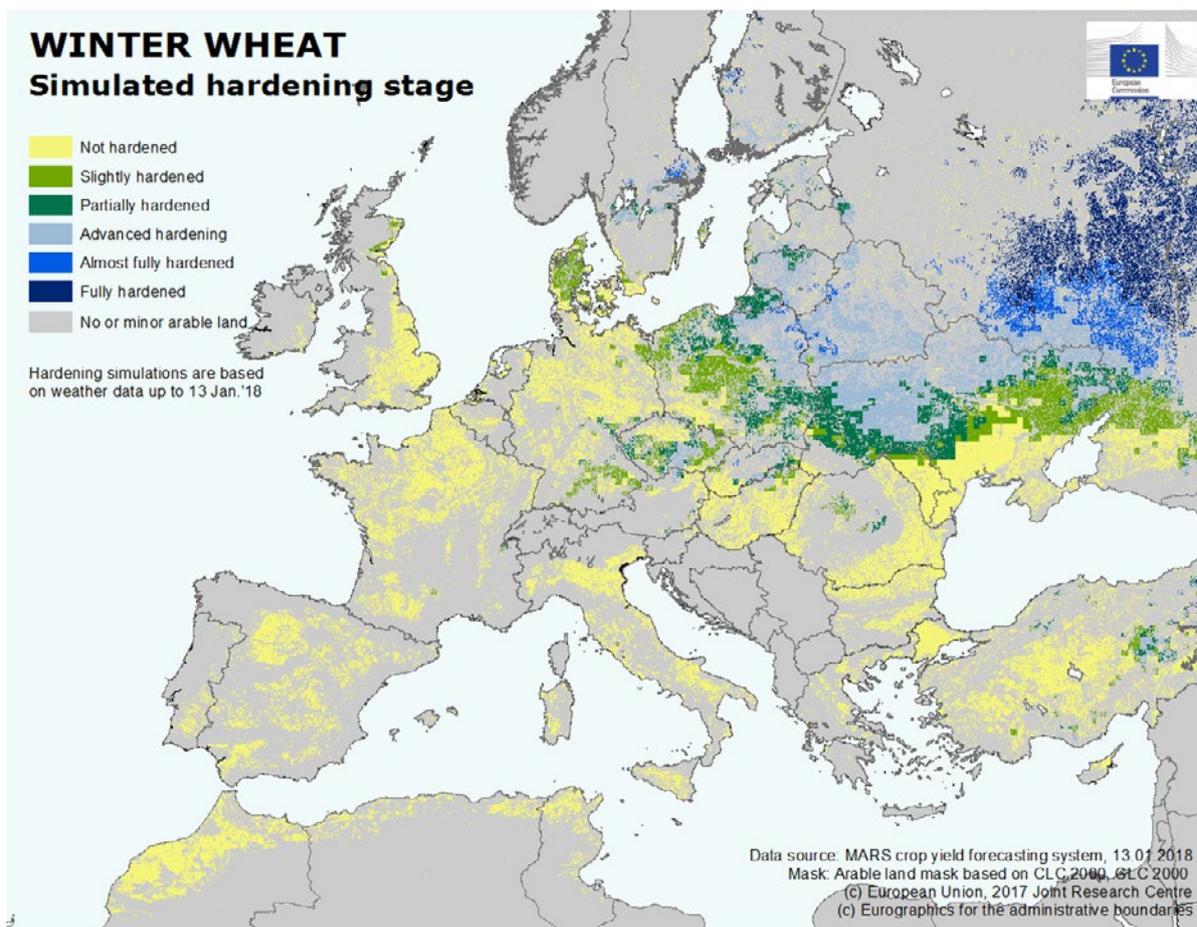
## January 2018

### Very mild winter so far

#### Continued delayed hardening of winter cereals

The low-temperature acclimatisation of winter wheat remains delayed and weaker than usual in large regions of western, southern and central Europe because of the mild temperatures so far. Winter hardening is particularly delayed in a large zone north and west of the Black Sea, extending into

Hungary, where weather conditions were among the warmest on our records for this period. Frost damage has been minor so far and, in accordance with the latest weather forecast, no further frost-kill damage is expected between now and the end of January.



**1**  
Winter hardening and frost kill analysis

**2**  
Agrometeorological overview

**3**  
Atlas

# 1. Winter hardening and frost kill analysis

Hardening is a bio-physiological process of winter cereals, which transforms the cellular starch into glucose, thereby raising the freezing point of the cellular liquids and increasing the low-temperature tolerance of the plants. Unhardened or weakly hardened crops can suffer frost-kill damage in the event of sudden freezing-air intrusion.

**Hardening is more advanced in northern and eastern Europe.** According to our latest frost-kill model simulations, the hardening process is more advanced in northern and eastern Europe. In some parts of Scandinavia, eastern Turkey and northern and eastern regions of European Russia, it has been sufficiently cold to allow full or almost full hardening of winter crops.

**Partial or advanced frost tolerance** is typical in Finland, most of Sweden (except along the southern coastline), eastern

and northern Poland, eastern Slovakia and south-eastern regions of the Czech Republic, as well as in the northern half of Ukraine, eastern Turkey and western Russia along the Ukrainian border.

**Winter cereals are not hardened or only slightly hardened** in all other parts of Europe, according to our model simulations

**Frost damage has been relatively minor so far.** Slight or moderate frost-kill damage is likely to have occurred in some parts of the Volga and southern okrugs of Russia, as well as locally in Turkey, before mid January.

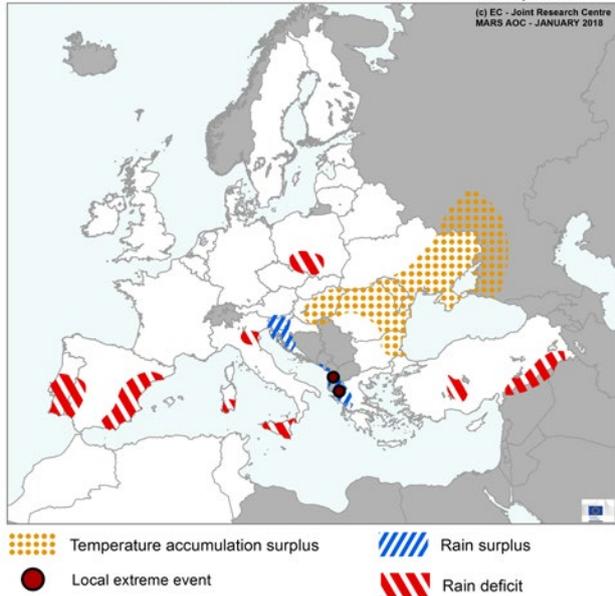
**On the basis of the latest weather forecast,** our model results suggest no additional frost-kill damage until late January.

## 2. Agrometeorological overview

### Meteorological review (1 December 2017 to 15 January 2018)

#### AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on weather data from 1 December 2017 until 27 January 2018



**Warmer-than-usual in most of Europe.** Even though variable temperature conditions occurred, the period as a whole was characterised by warmer-than-usual conditions in most of Europe. The first two dekads of December were slightly colder than usual in western Europe, whereas a warm anomaly continued to prevail in eastern Europe. The remaining period (until 15 January) presented warmer-than-seasonal conditions in most parts of Europe.

**The most pronounced warm anomalies** occurred in eastern and north-eastern Europe, where seasonal air temperatures were exceeded by between 2 °C and 6 °C. Weather conditions

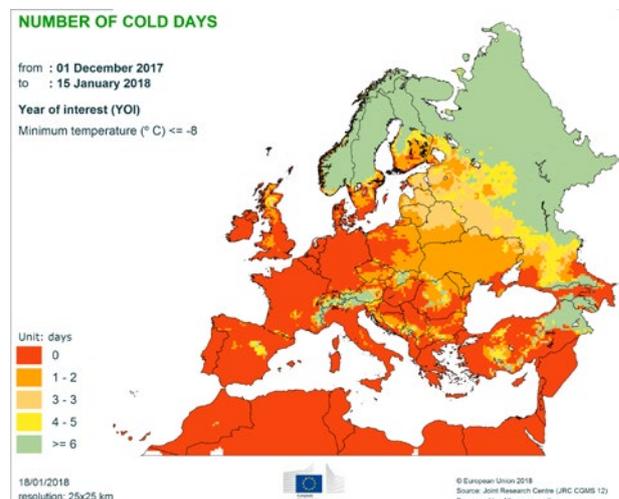
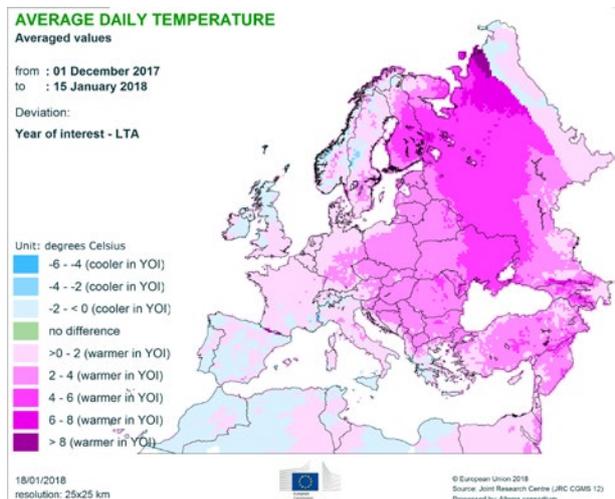
were among the warmest on our records (since 1975) for this period in a large zone north and west of the Black Sea, extending into Hungary.

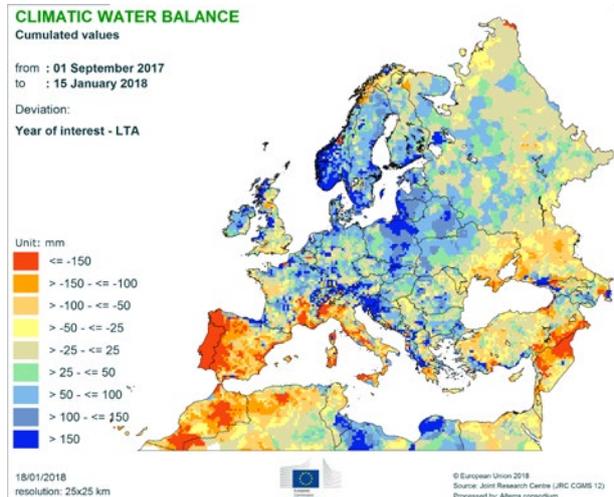
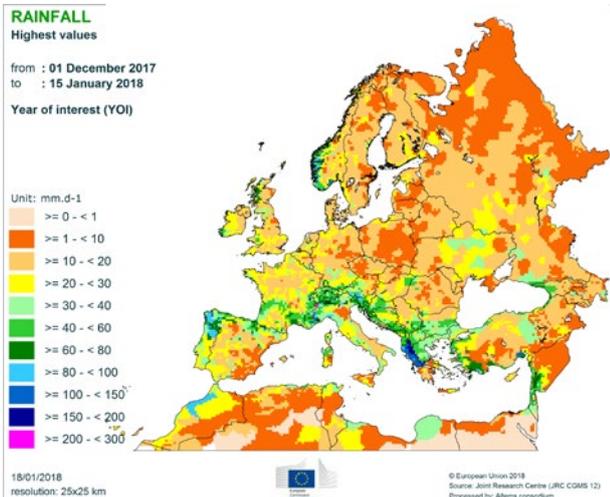
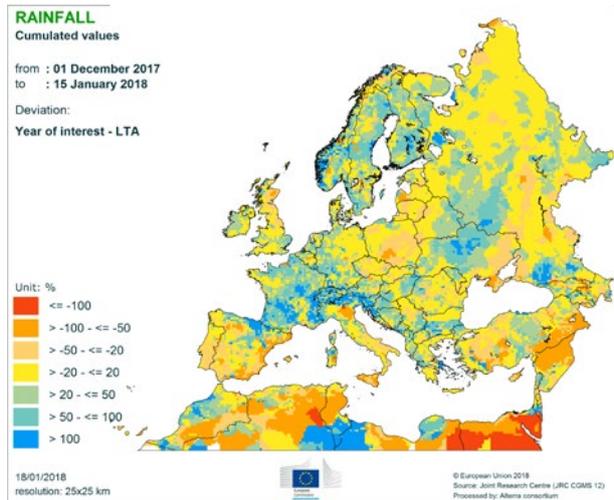
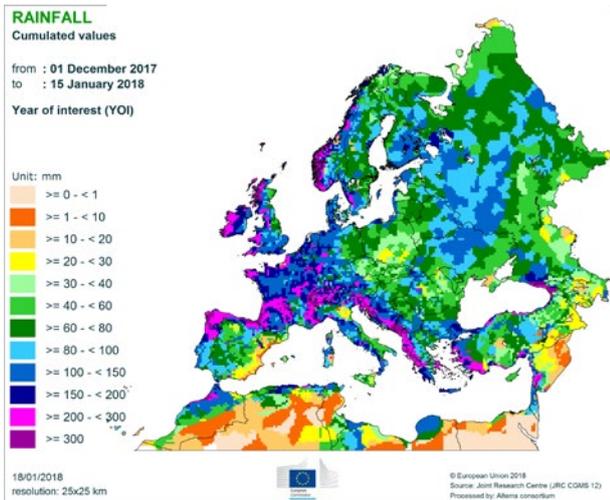
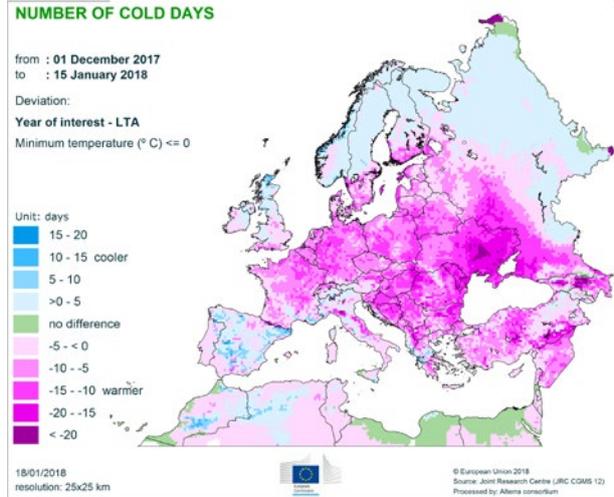
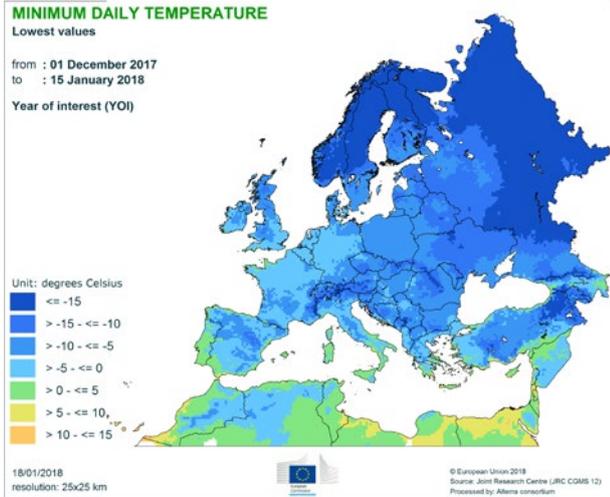
Large parts of central, south-eastern and eastern Europe saw between 10 and 20 **fewer cold days** (with minimum daily temperatures below 0 °C) than normal. Cold days with a daily minimum temperature below - 8 °C were limited mainly to eastern and north-eastern Europe.

**Wetter-than-usual** weather conditions were experienced in northern Spain, France, the Alpine region, western Germany, the western Balkans, Hungary, Ukraine, Belarus, the central part of European Russia and Scandinavia. Cumulative precipitation in these regions exceeded the long-term average by more than 50 %. Abundant precipitation, with cumulative values at least double the seasonal values, occurred in the Pyrenees, eastern Adriatic areas, central Ukraine and south-western Scandinavia, and regionally in southern France. Of these, rainfall surplus in the eastern Adriatic region has been particularly high since early autumn.

**Intensive precipitation events** with cumulative daily rainfall exceeding 100 mm were observed in southern Albania and western Greece, and more locally in the south-western Alpine region and the north-western Iberian peninsula.

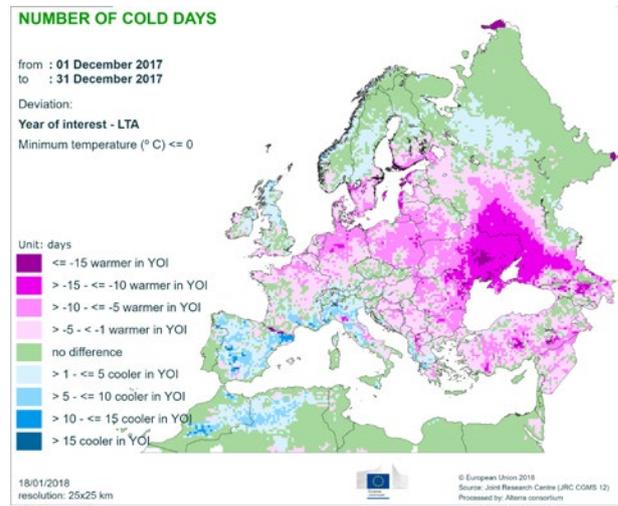
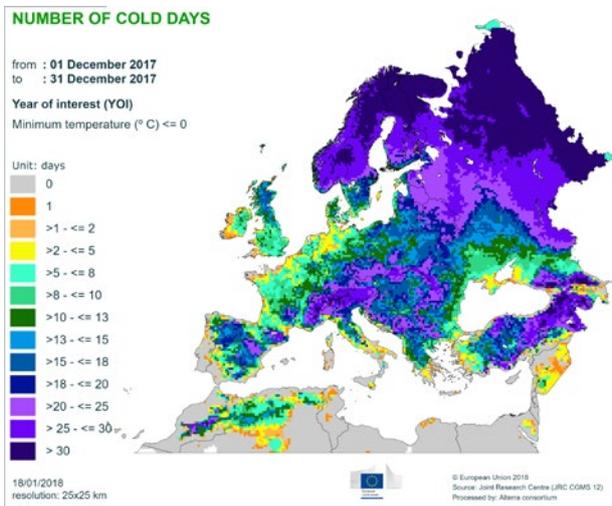
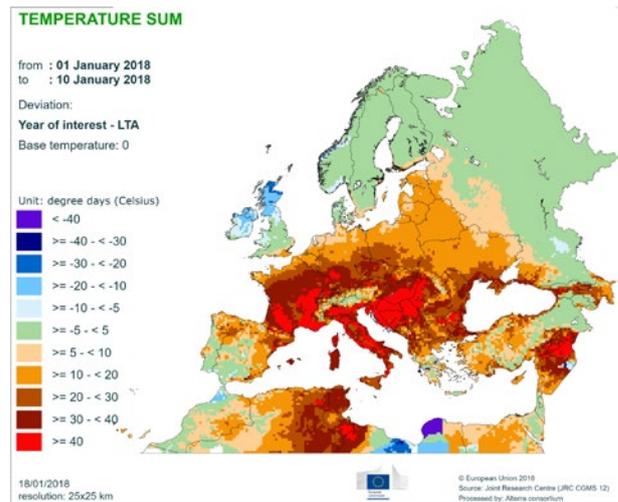
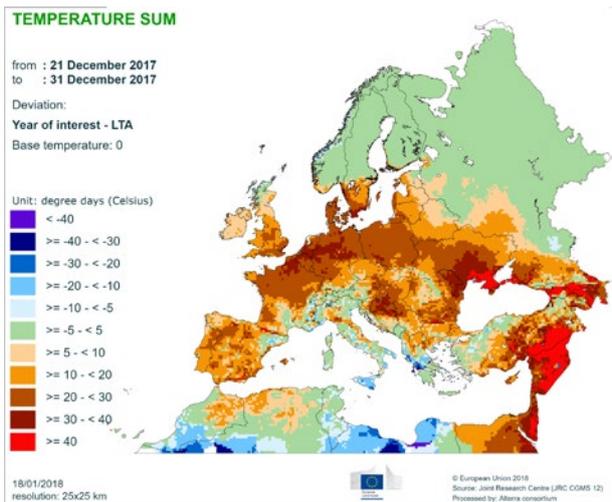
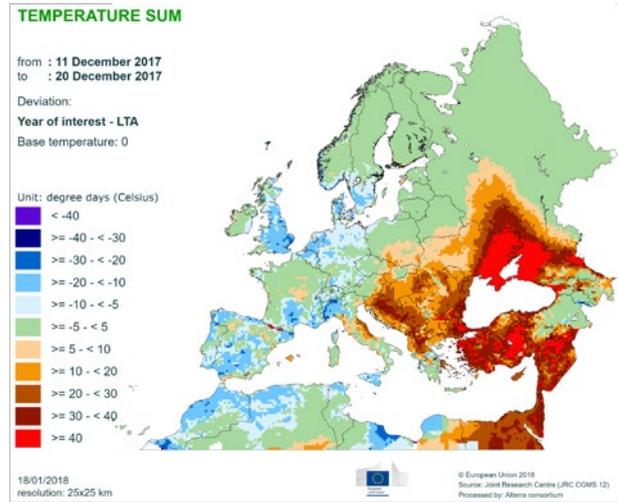
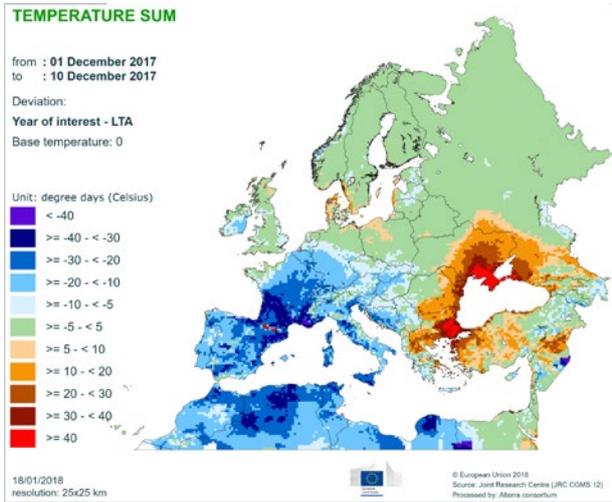
**Drier-than-usual** conditions occurred in southern Portugal, the Mediterranean coastal areas of Spain, the Po valley in northern Italy, Sicily, southern Poland, eastern Ukraine and parts of Turkey. Most of these areas recorded fewer than 40 mm of precipitation during the analysis period. A substantially negative climatic water balance anomaly has prevailed since the beginning of autumn in the Iberian peninsula, the Maghreb, south-eastern France, Italy, Turkey and the northern Black Sea region.

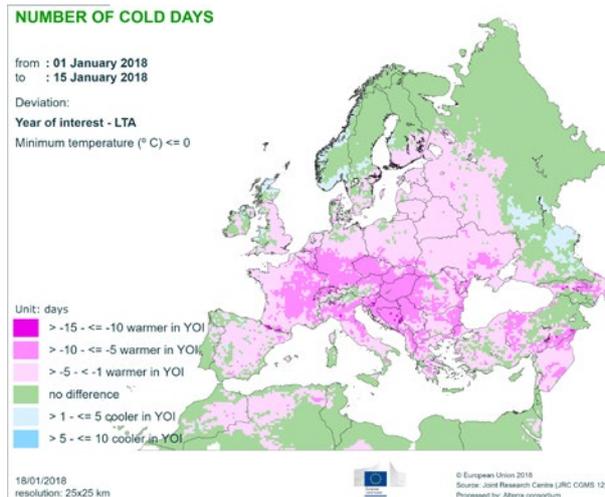
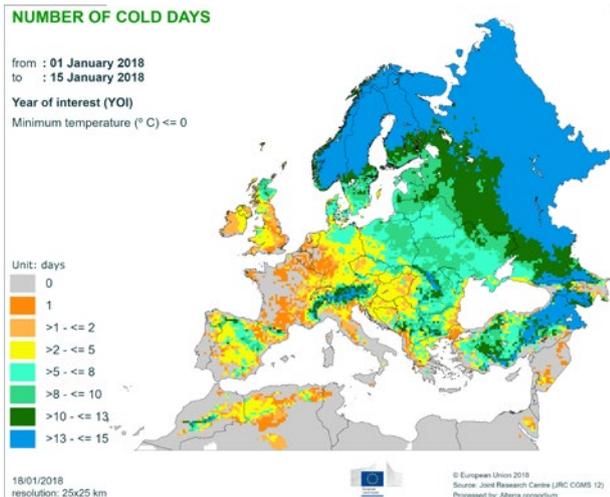




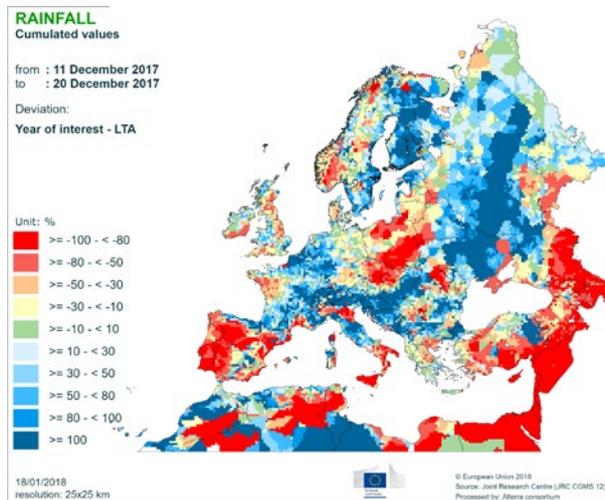
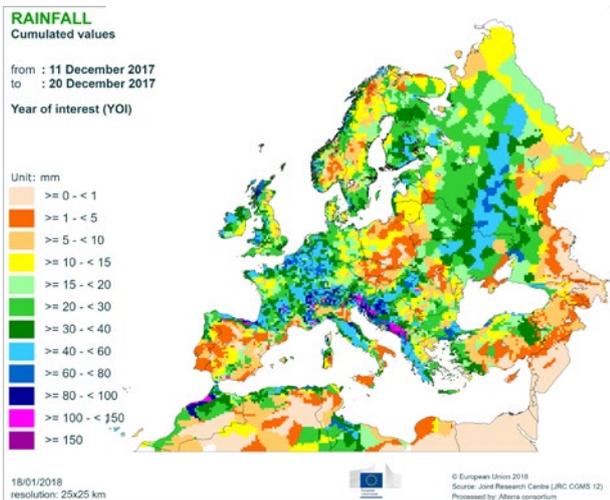
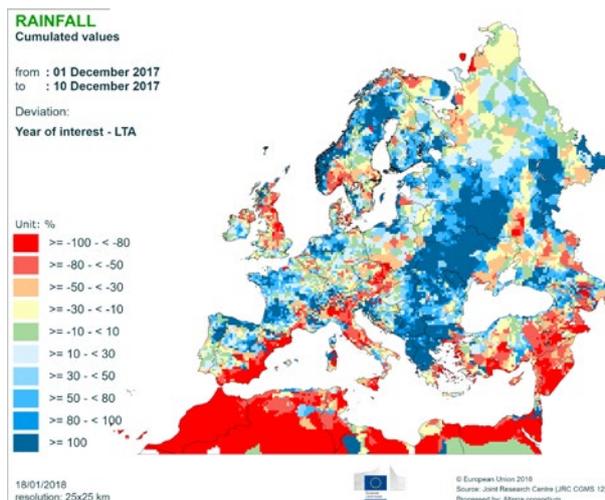
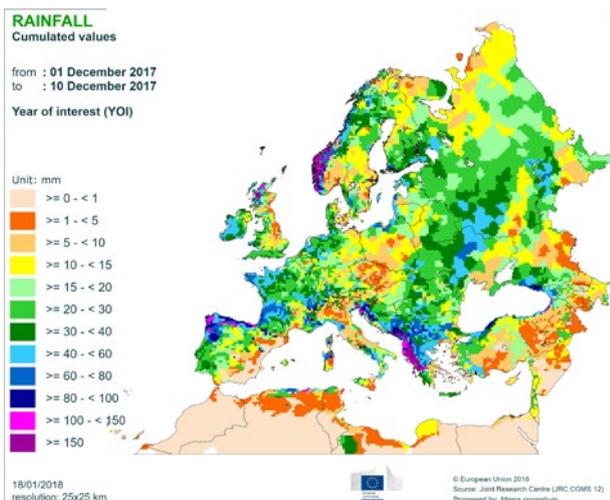
### 3. Atlas

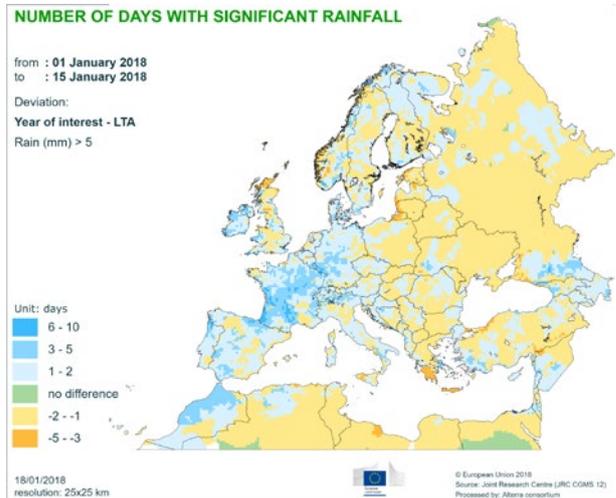
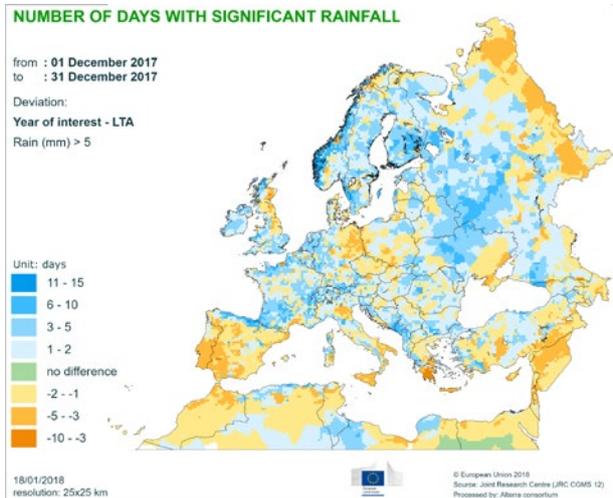
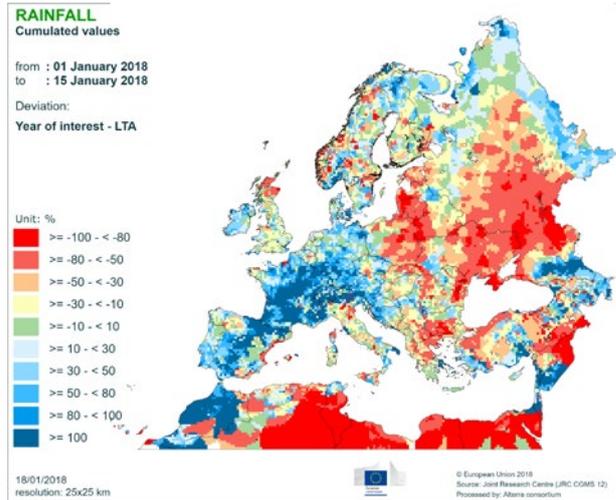
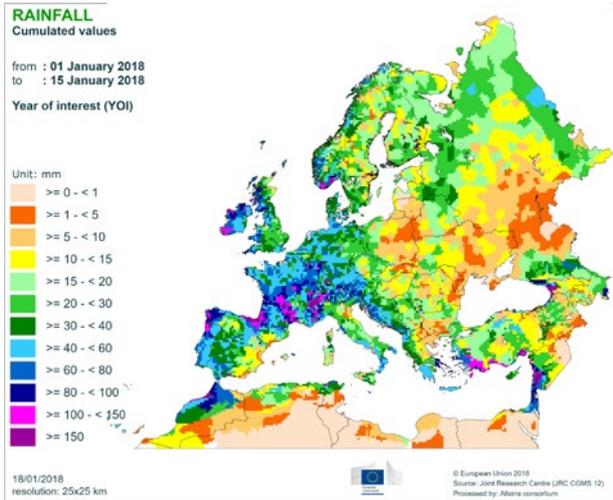
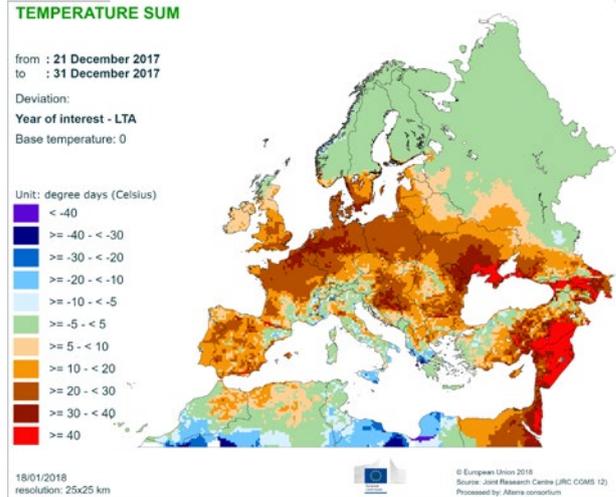
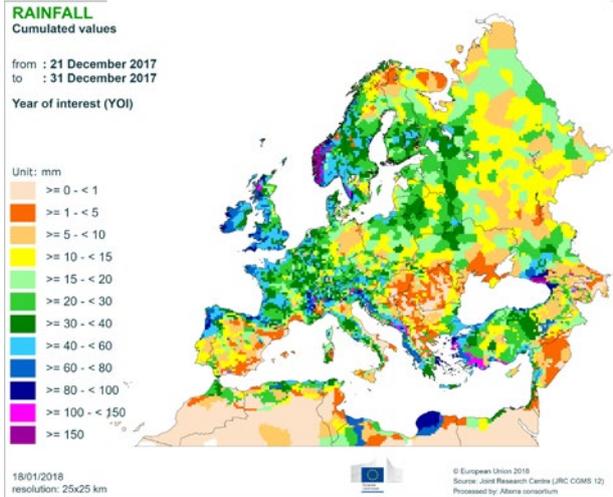
#### Temperature regime





## Precipitation regime





## JRC MARS Bulletins 2018

| Date   | Publication   | Reference     |
|--------|---|---------------|
| 22 Jan | Agromet analysis  | Vol. 26 No 1  |
| 19 Feb | Agromet analysis  | Vol. 26 No 2  |
| 19 Mar | Agromet analysis, yield forecast  | Vol. 26 No 3  |
| 16 Apr | Agromet analysis, remote sensing, yield forecast, sowing conditions, pasture analysis                 | Vol. 26 No 4  |
| 22 May | Agromet analysis, remote sensing, yield forecast, sowing update, pasture analysis,                    | Vol. 26 No 5  |
| 18 Jun | Agromet analysis, remote sensing, yield forecast, pasture update, rice analysis                       | Vol. 26 No 6  |
| 23 Jul | Agromet analysis, remote sensing, yield forecast, harvesting conditions, pasture update               | Vol. 26 No 7  |
| 27 Aug | Agromet analysis, remote sensing, yield forecast, pasture update, harvesting update                   | Vol. 26 No 8  |
| 17 Sep | Agromet analysis, remote sensing, yield forecast, harvesting update                                   | Vol. 26 No 9  |
| 22 Oct | Agromet analysis, remote sensing, yield forecast, rice analysis, harvesting update, sowing conditions | Vol. 26 No 10 |
| 26 Nov | Agromet analysis and yield forecast, harvesting update, sowing updates                                | Vol. 26 No 11 |
| 17 Dec | Agromet analysis  | Vol. 26 No 12 |

The current **JRC MARS Bulletin — Crop monitoring in Europe** is a JRC–European Commission publication from MARS4CAST (JRC Unit D5 — Directorate for Sustainable Resources)

JRC MARS Bulletins are available at:  
<https://ec.europa.eu/jrc/en/mars/Bulletins>  
<http://agri4cast.jrc.ec.europa.eu/>

### Analysis and reports

A. Bussay, A. Ceglar, S. Garcia Condado, L. Seguini, A. Toreti

### Reporting support

Prepress projects, I. Biavetti

### Editors

B. Baruth, M. Van den Berg, S. Niemeyer

### Data production

MARS4CAST (JRC Unit D5), ALTEERRA (NL), MeteoGroup (NL), VITO (BE) and CMCC (IT)

### Contact

JRC D5/MARS4CAST  
[JRCMARSBULLETIN@ec.europa.eu](mailto:JRCMARSBULLETIN@ec.europa.eu)

\*MARS stands for Monitoring Agricultural Resources

### Legal notice:

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

### Disclaimer:

The geographic borders are purely a graphical representation and are only intended to be indicative. The boundaries do not necessarily reflect the official Commission position.

### Technical note:

The long-term average (LTA) used within this bulletin as a reference is based on an archive of data covering 1975–2016.

Mission statement: As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.