



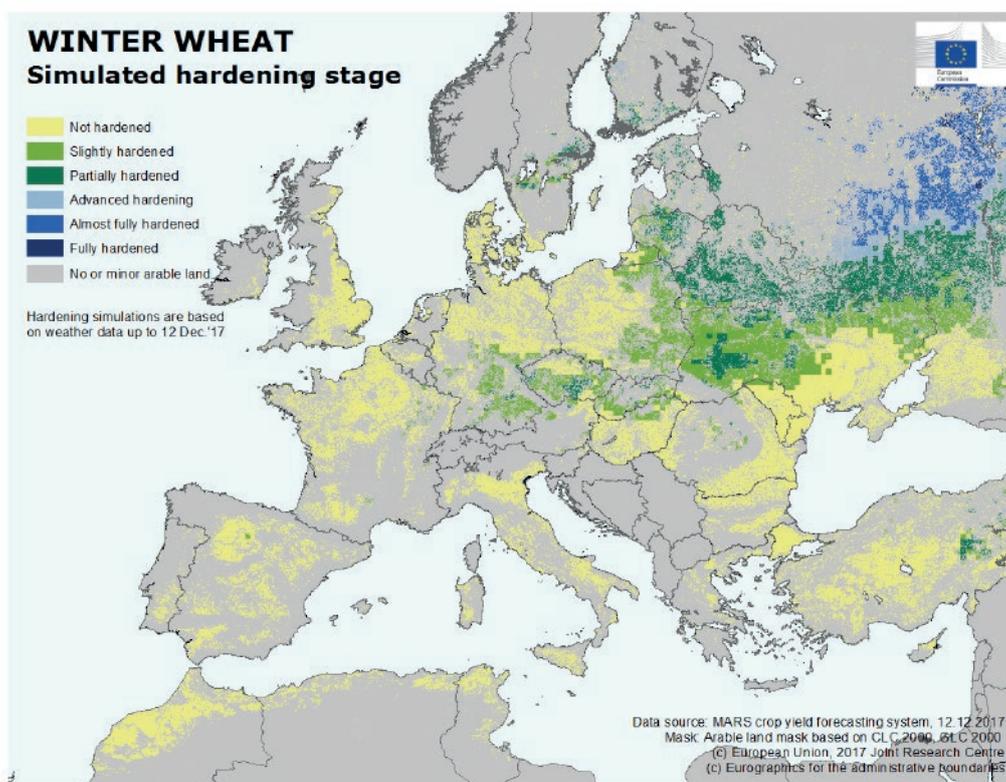
JRC MARS Bulletin

Crop monitoring in Europe

December 2017

Hardening of winter cereals is delayed

Hardly any frost kill so far, due to the absence of damaging low temperatures



Hardening is the bio-physiological process whereby winter cereals become tolerant of low temperatures, which allows them to withstand the freezing conditions that occur during their winter dormancy period. Our model simulations indicate no or weak frost tolerance in most of the EU, except for some parts of Finland, Sweden and the Baltic states, and in a few spots in southern Germany, the Czech Republic, Slovakia and eastern Poland, where

the winter crops are in a partial or advanced hardening state. In a wide area around the North, Baltic and Black Seas hardening is delayed, as the process began only in late November. In addition, in several regions de-hardening has also occurred because of the warmer-than-usual weather conditions. The situation improved in the first half of December, but the hardening of winter cereals is still considerably delayed.

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Atlas

The current situation is delicate, as a cold air intrusion could cause considerable frost-kill damage in the areas that do not have an adequate depth of snow cover and have winter crops with low frost tolerance.

In Belarus, northern and western Ukraine, winter wheat is only partially hardened. Further eastwards, such as in the northern parts of the *Central Okrug* and most of the *Near Volga Okrug* in Russia, winter cereals have reached advanced hardening or have almost achieved maximal frost tolerance. At the same time, winter wheat is still

only partially or slightly hardened in western and central Turkey and southern regions of Russia, as well as in central and southern Ukraine.

Due to the absence of damaging low temperatures, frost kill has been very limited so far. Local frost-kill events have been simulated in some spots in southern Russia. Taking into consideration the latest weather forecast, an increase in hardening is probable in central, northern and eastern regions of Europe. No frost kill is expected over the coming days.

1. Agro-meteorological overview

Meteorological review (1 November–12 December)

Above-seasonal temperatures characterised the eastern half of Europe from 1 November until 12 December. The second dekad of November and the first dekad of December were particularly mild, presenting thermal anomalies of 2–7 °C above the long-term average in the territories east of the Finland–Bulgaria meridian. In the first and last dekad of November, prevailing temperatures in Morocco were 1–5 °C warmer than usual.

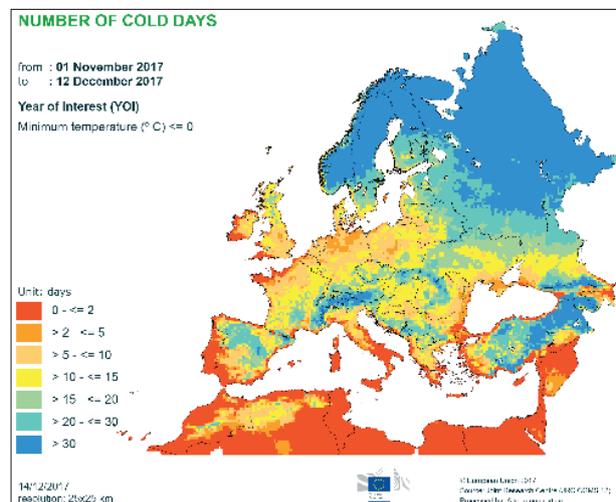
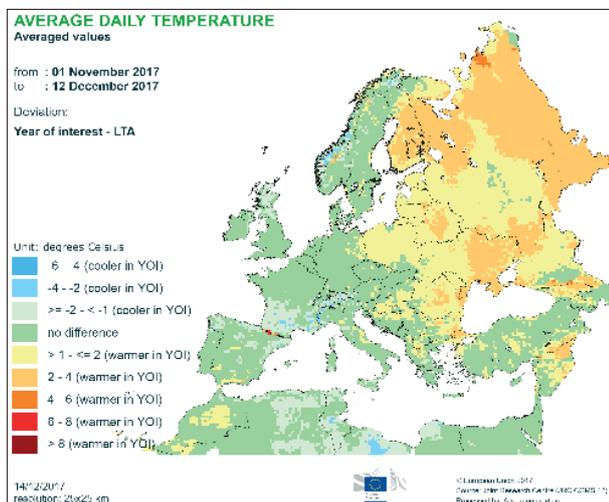
Unusually cold weather conditions prevailed during the second dekad of November in the eastern Maghreb region (Algeria, Tunisia and Libya), resulting in temperatures 1–4 °C lower than usual. In the first dekad of December, air temperatures of 1–4 °C below average were recorded in France, Italy, the Alpine region, the Iberian peninsula and along the south-western coastline of the Mediterranean Sea.

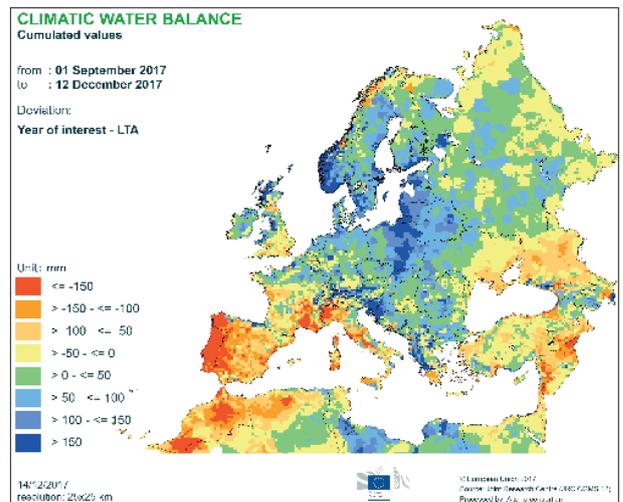
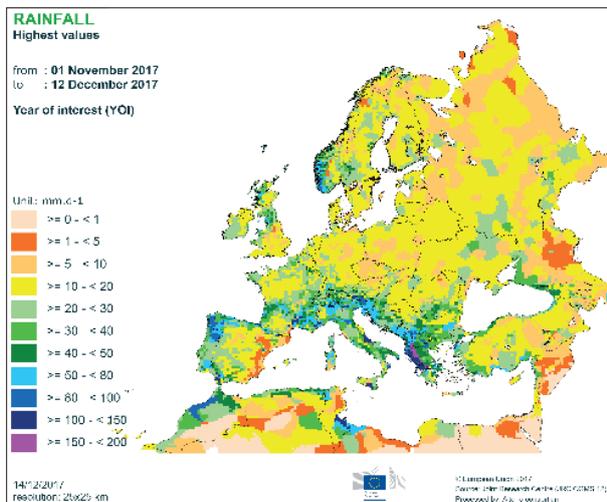
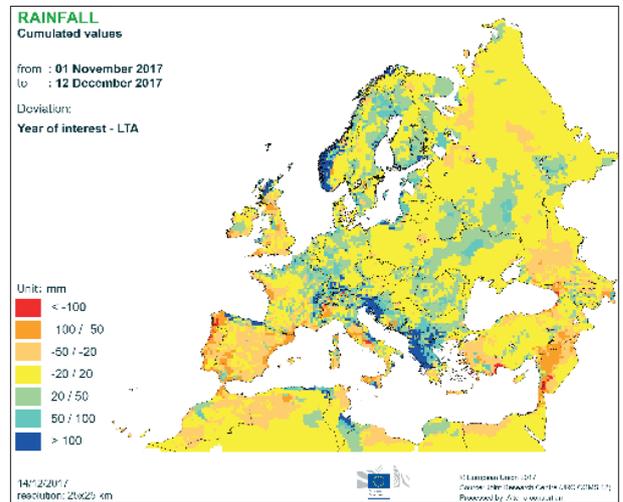
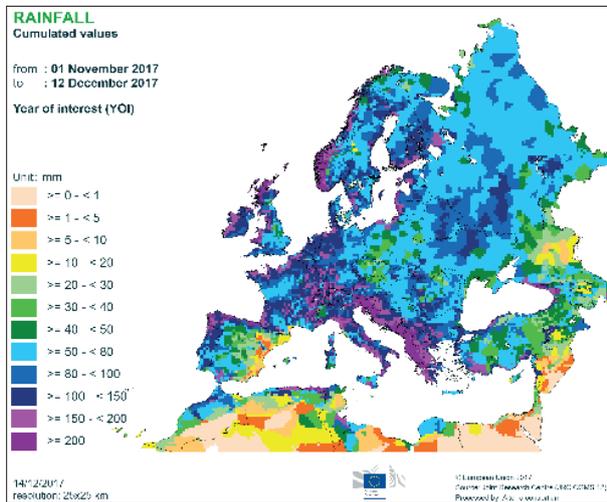
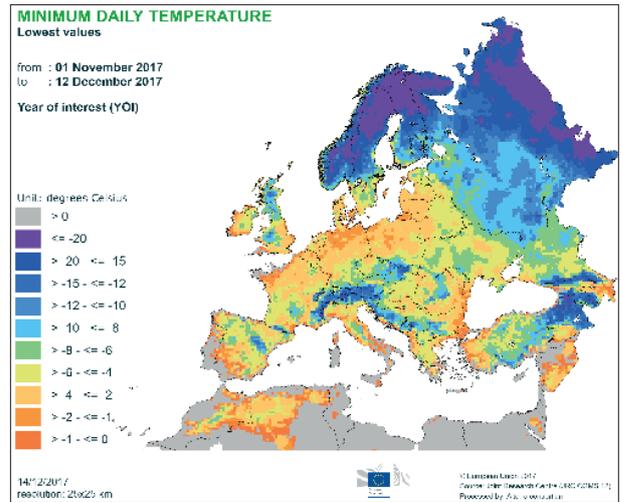
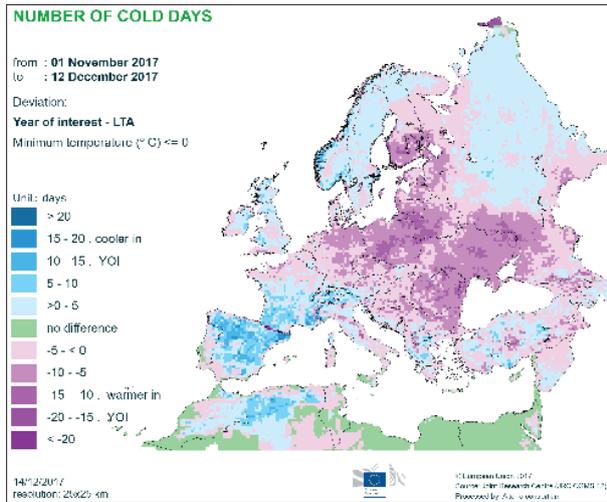
Frost events ($T_{min} < 0$ °C) were infrequent, and there were only four to fourteen days of frost in the central areas of the continent between Germany and western Russia. At the same time, considerably increased incidence of frost was observed in southern France and Spain.

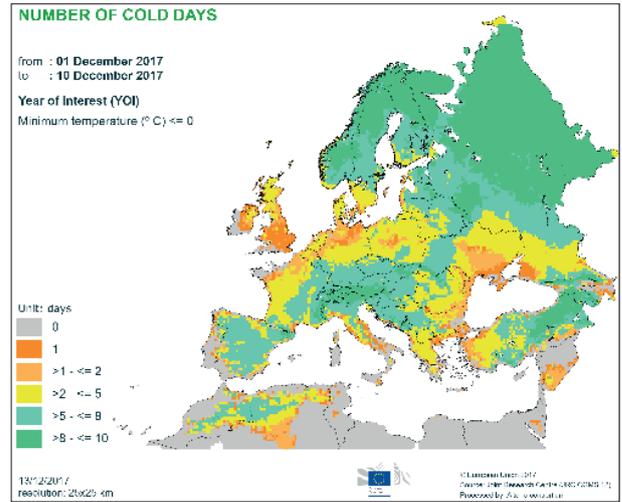
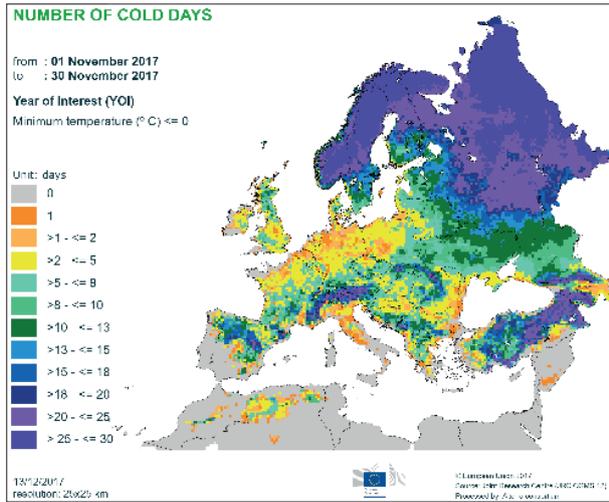
Wetter-than-usual weather conditions were experienced in northern and eastern France, the majority of Germany, the Alpine region, western Scotland and most of Scandinavia, Slovakia, Romania, the southern and north-western parts of the Balkan peninsula, and central and western Ukraine, much as in the *Central Okrug* of Russia.

Intensive precipitation events with cumulative daily rainfall exceeding 100 mm were observed locally in northern and central Italy, Sicily, south-eastern France, the south-western coastline of the Balkan peninsula, southern Tunisia and some spots in the Alpine region and the Iberian peninsula. Torrential rainfall events may have caused local flooding and waterlogging.

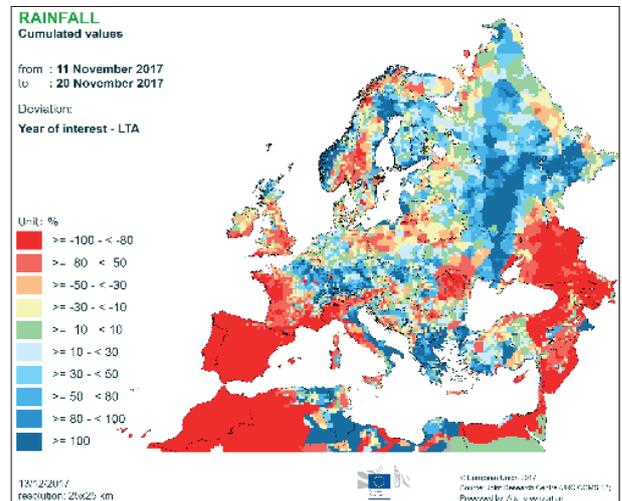
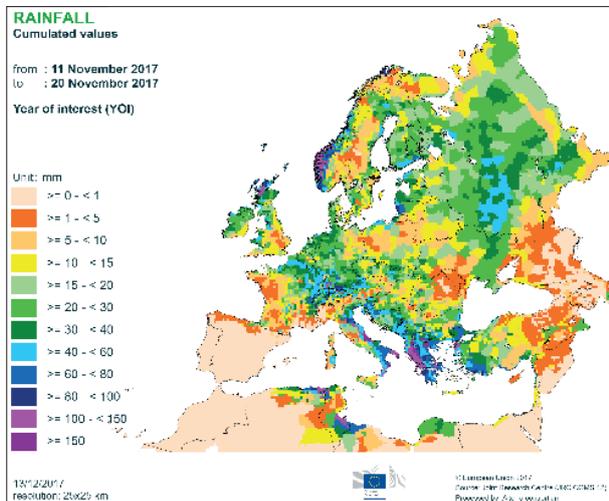
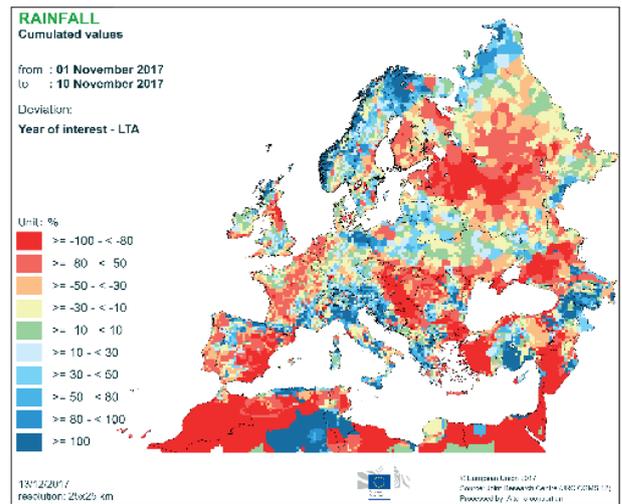
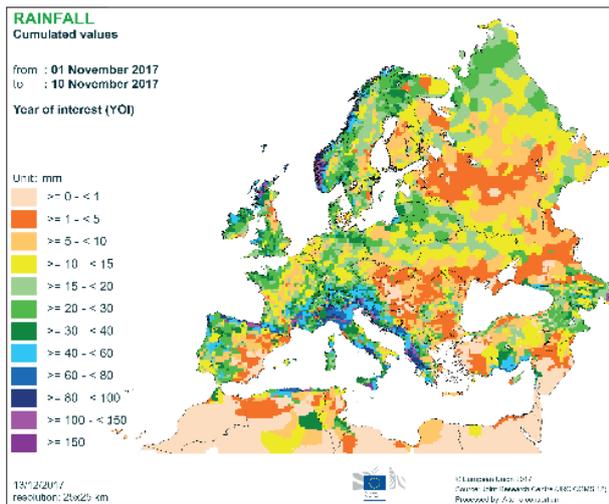
Drier-than-usual conditions occurred in southern and western France, some regions of Ireland, England, the majority of the Iberian peninsula, the western side of Italy, southern Russia, western Turkey, Morocco, western Algeria and the eastern Mediterranean region. The cumulative climatic water balance since 1 September (beginning of autumn) indicates a significant (> 100 mm) water deficit in southern France, Spain, Portugal, north-western Italy, the western Maghreb and some regions of Turkey and southern Russia.



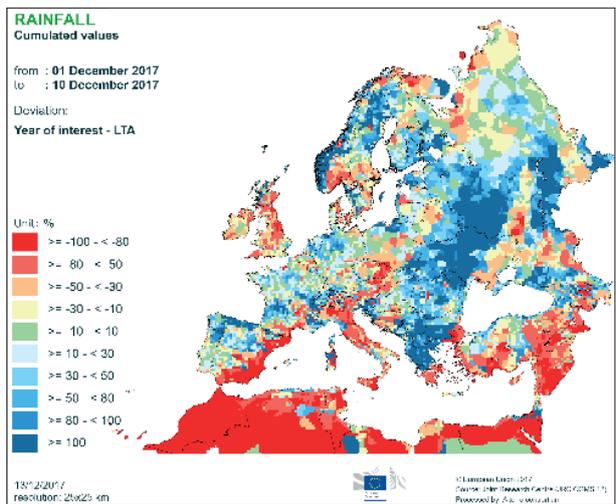
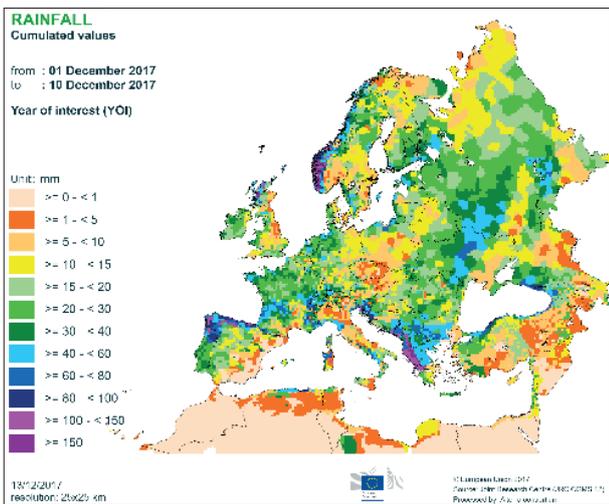
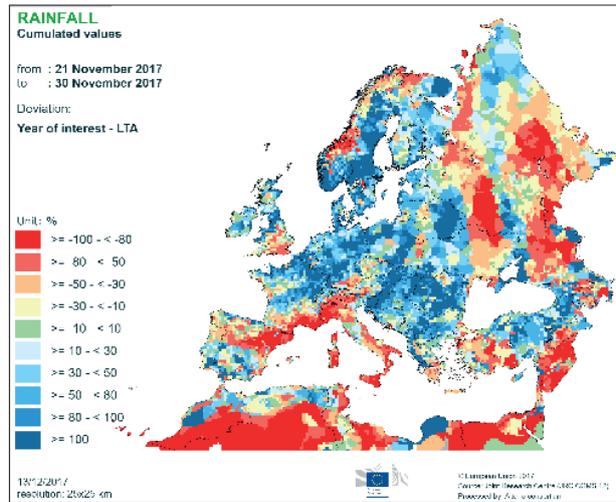
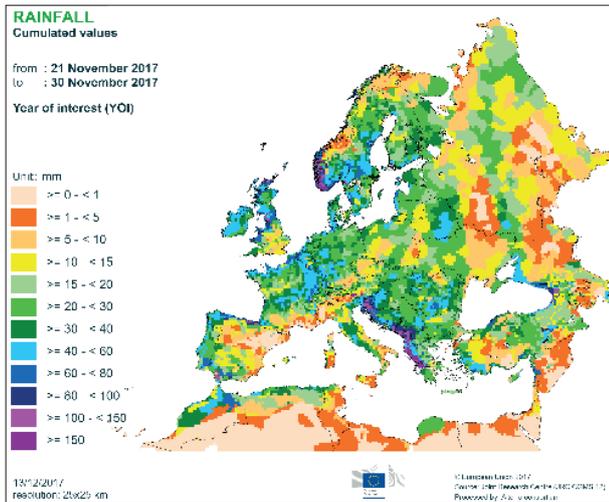




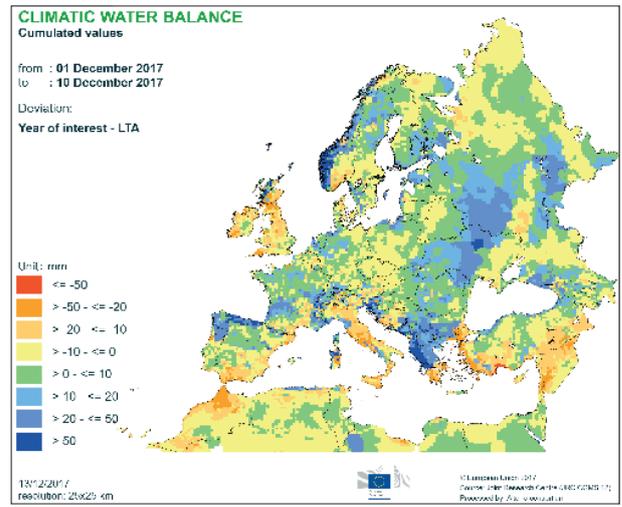
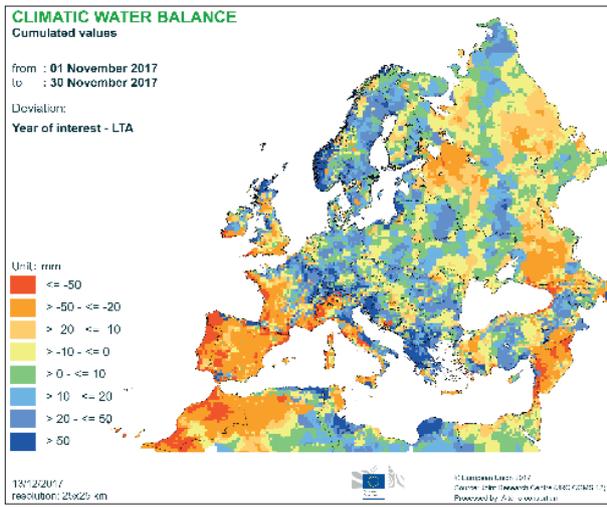
Precipitation



Temperature regime



Climatic water balance



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 and pasture update	Vol. 25 No 8
18 Sep	Agromet analysis, remote sensing, rice analysis and yield forecast	Vol. 25 No 9
23 Oct	Agromet analysis, remote sensing, sowing conditions and yield forecast	Vol. 25 No 10
27 Nov	Agromet analysis, sowing conditions, sugar beet review and yield forecast	Vol. 25 No 11
18 Dec	Agromet analysis	Vol. 25 No 12

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*MARS stands for Monitoring Agricultural Resources

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