European Commission

Joint Research Centre

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JRC MARS Bulletin

Crop monitoring in Europe

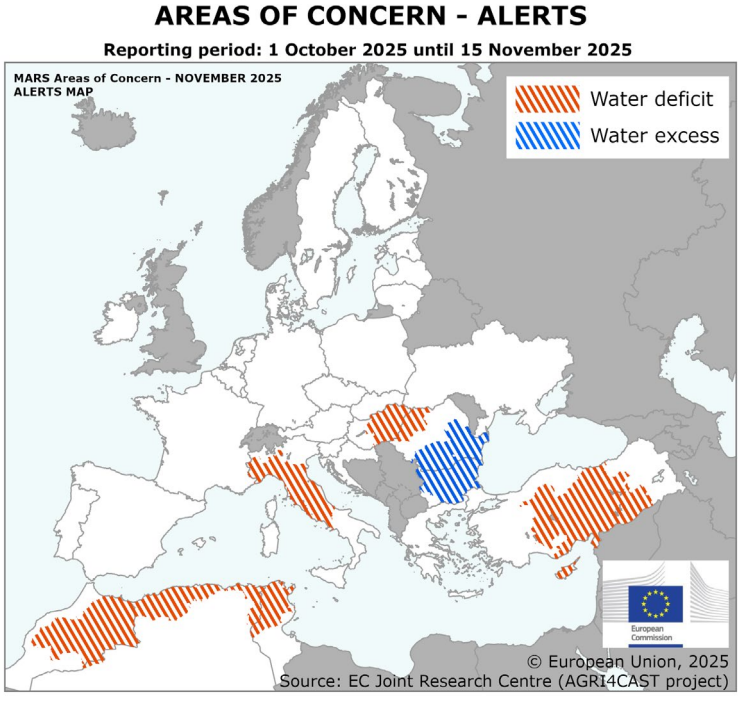
Winter crops generally well established

Local sowing delays due to dry or overly wet conditions

While the 2025 harvest season is ending, with only sugar beet still being collected, the 2026 winter crop season has begun across Europe. Sowing is progressing well in most regions, and the establishment of winter cereals and rapeseed is generally favourable.

Dry conditions are slowing sowing in central Italy, eastern Hungary and western Romania. Excessive rainfall in southern Romania and northern Bulgaria has caused major delays. Outside the EU, Türkiye and the Maghreb continue to face severe rainfall deficits, leading to a suboptimal start to the season.

With a mild autumn in the past few weeks, winter hardening is noticeably less advanced than at this time last year. With lower temperatures arriving, the limited hardening, in some areas combined with delayed development, increases vulnerability to frost damage.



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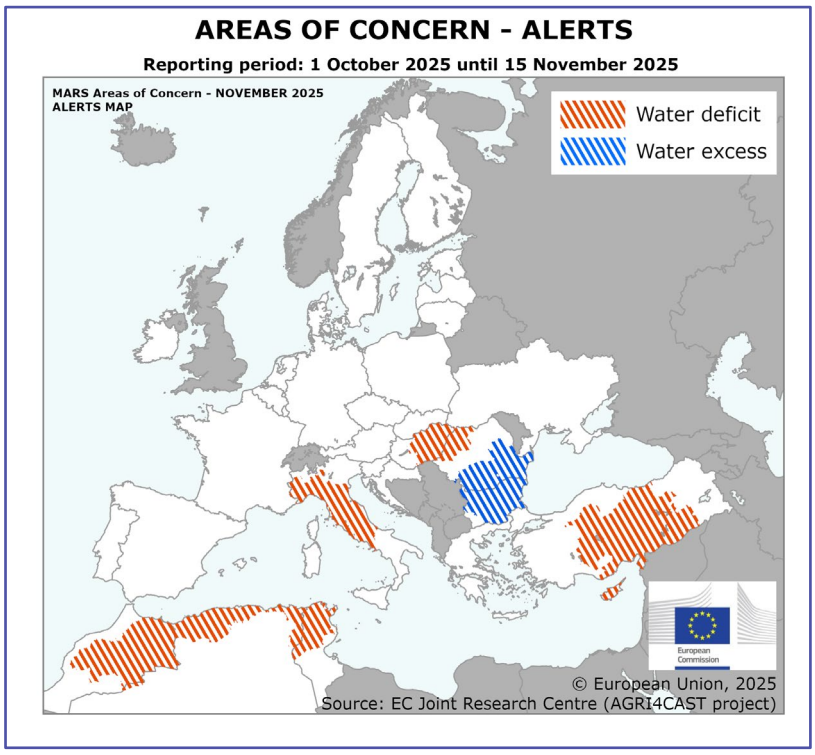
Covers the period from 1 October until 15 November

Areas of concern

Weather conditions across most of the Europe have been predominantly favourable. However, minor concerns exist in areas where below-average or abundant rainfall occurred.



Locally dry conditions in southern and eastern Europe and neighbouring countries

- **Central and western Italy:** Rainfall totals were 25–50 % below average, particularly in central regions. These deficits may cause localised delays in winter crop sowing, but no major concerns have been reported so far.
- **Eastern Hungary and western Romania:** 50 % less than the normal precipitation was received. Soil moisture remains hardly sufficient for good early crop development, and additional rainfall will be desirable to avoid crop deterioration before dormancy.
- **Türkiye** and **Cyprus:** The drought persisting from last season has not yet eased, and most agricultural areas have received very limited precipitation. The start of the sowing campaign has been delayed, but the optimal sowing window remains open.
- **Maghreb:** Sowing was delayed due to the lack of rainfall. It is now in full swing, but very low topsoil moisture levels may have hampered the emergence of the sown crops.

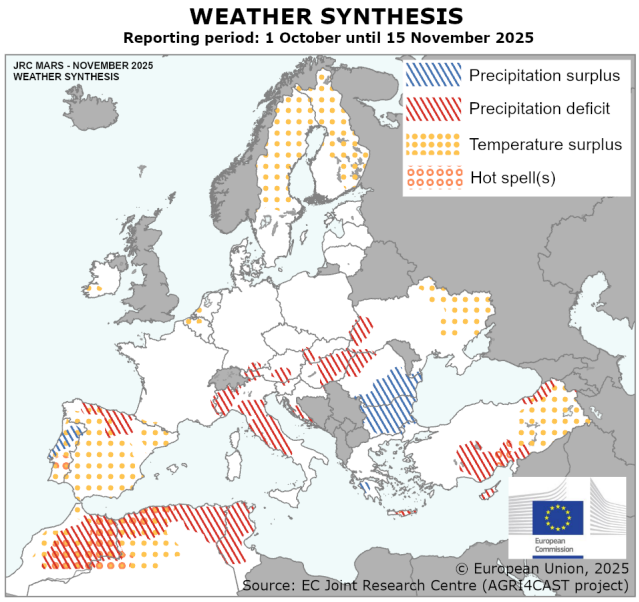
Overly wet conditions in eastern Europe

- **Southern Romania and northern Bulgaria:** Heavy rainfall in early October led to excessively wet soils, disrupting sowing operations and limiting field accessibility. Although drier conditions since mid October have allowed some progress, sowing remains significantly delayed and the optimal sowing window will soon close.

1. Agrometeorological overview

1.1 Meteorological review (1 October – 15 November)

Above-average temperatures characterised most of Europe, particularly Fennoscandia and the south-western Mediterranean. A blocking pattern over the North Atlantic led to an influx of moist air in parts of Europe, resulting in unusually wet conditions in early October, especially in the south-east.



The weather synthesis map summarises the most distinct anomalies during the reporting period compared with the 1991–2024 long-term average (LTA). Precipitation deficit and surplus are absolute and relative deviations from the LTA. Temperature surplus and deficit indicate a substantial deviation in accumulated temperature from the LTA. Cold spells indicate where temperatures were below – 2 °C and the 10th percentile within a window of five consecutive days, while hot spells indicate where temperatures reached 30 °C and the 90th percentile within a window of five consecutive days.

A **precipitation surplus** was observed in Bulgaria, southern Romania and southern Greece (*Dytiki Elláda*) in the first half of October, and in northern Portugal from late October to the first half of November. Total rainfall during the reporting period in these regions, and in south-western Ireland, was between 150 mm and 250 mm (locally more), exceeding the LTA by more than 90 mm.

A **precipitation deficit** was observed in western North Africa, northern Spain, most of central and north-western Italy, southern Croatia, parts of Austria and southernmost Germany, westernmost Slovakia, most of Hungary, north-western Romania, westernmost Ukraine, parts of southern and north-eastern Türkiye, Cyprus and Greece (*Kriti)*. Total rainfall in most of these regions was 90 mm or more below the LTA, with up to 10 dry days more than usual.

A **temperature surplus** characterised the south-eastern Mediterranean, parts of north-western Belgium, the south-western Netherlands, south-western Ireland, and eastern regions of Ukraine and Türkiye. Average daily temperatures in these regions exceeded the LTA by up to 2 °C, and by up to 3 °C in central and northern Sweden and Finland. In Fennoscandia between 10 and 15 fewer freezing days than usual were observed.

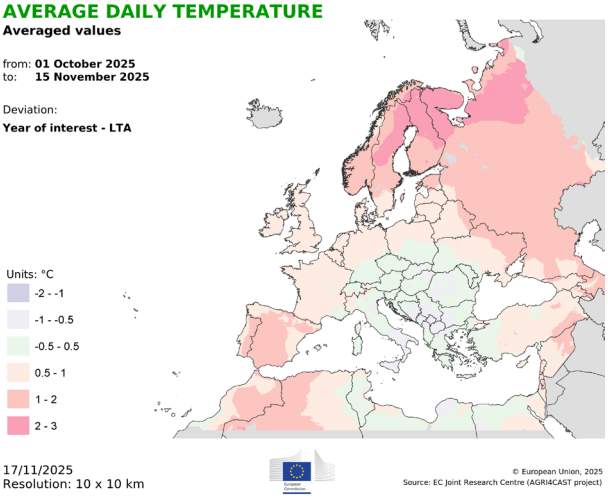
Hot spells were observed regionally in southern Portugal, eastern Morocco, north-western coastal Algeria and southernmost central Türkiye. Maximum daily temperatures in these regions exceeded 30 °C on up to 30 days.

AVERAGE DAILY TEMPERATURE

Averaged values

from: **01 October 2025**
to: **15 November 2025**

Deviation:
Year of interest - LTA

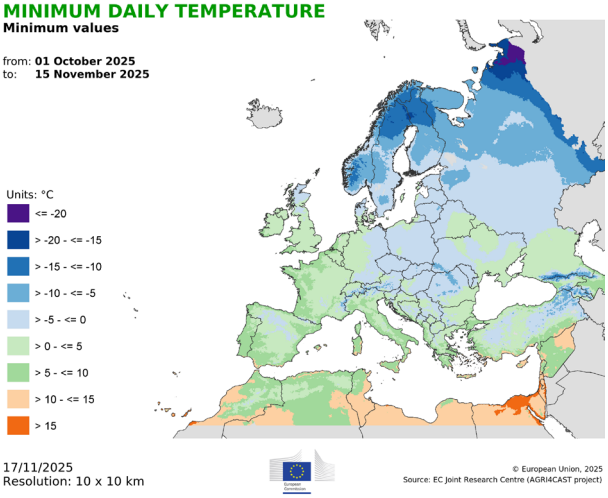


17/11/2025
Resolution: 10 x 10 km

MINIMUM DAILY TEMPERATURE

Minimum values

from: **01 October 2025**
to: **15 November 2025**

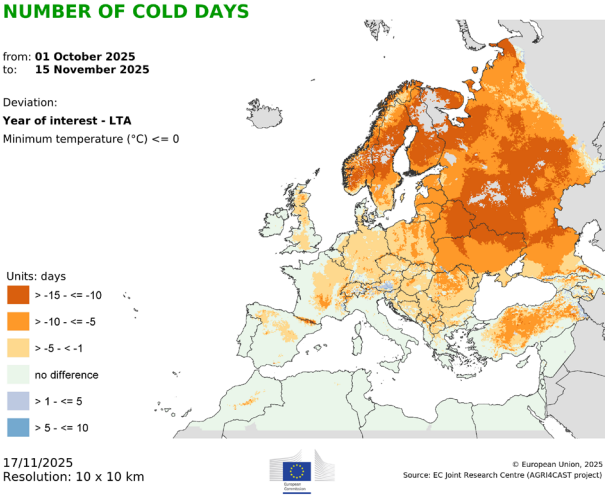


17/11/2025
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 October 2025**
to: **15 November 2025**

Deviation:
Year of interest - LTA
Minimum temperature (°C) <= 0

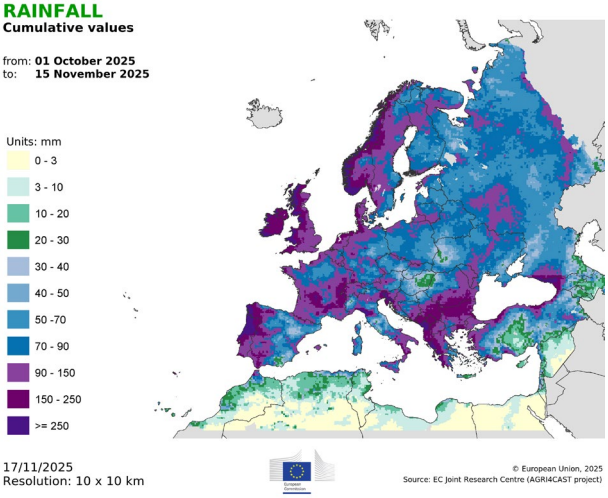


17/11/2025
Resolution: 10 x 10 km

RAINFALL

Cumulative values

from: **01 October 2025**
to: **15 November 2025**



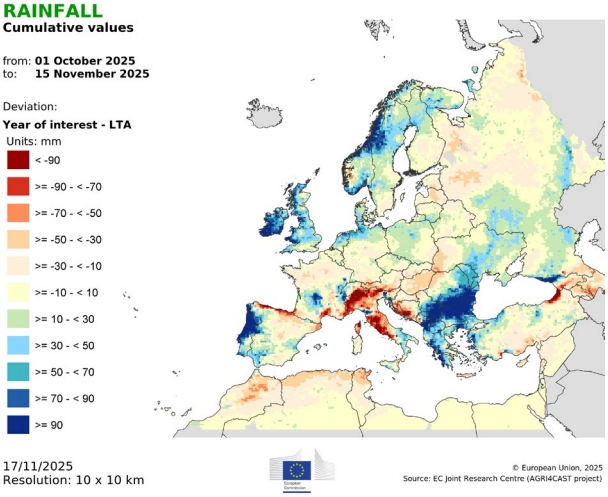
17/11/2025
Resolution: 10 x 10 km

RAINFALL

Cumulative values

from: **01 October 2025**
to: **15 November 2025**

Deviation:
Year of interest - LTA
Units: mm

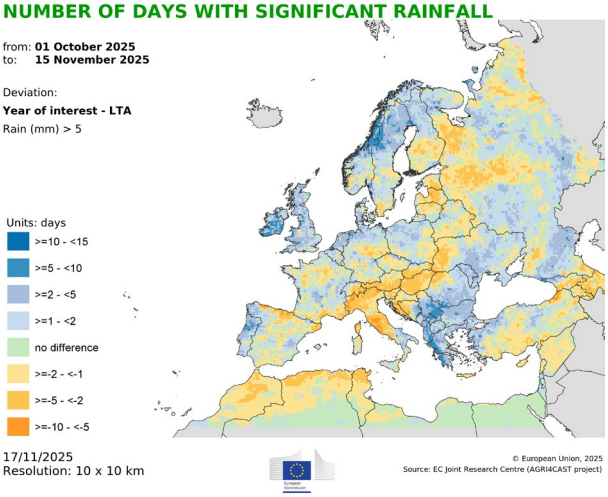


17/11/2025
Resolution: 10 x 10 km

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL

from: **01 October 2025**
to: **15 November 2025**

Deviation:
Year of interest - LTA
Rain (mm) > 5



17/11/2025
Resolution: 10 x 10 km

1.2 Weather forecast (20–29 November)

Cold Arctic air masses will bring below-average temperatures in most of Europe, while unseasonably warm conditions are forecast in the east and south-east. A deep low-pressure system is bringing unsettled weather in parts of the central Mediterranean.

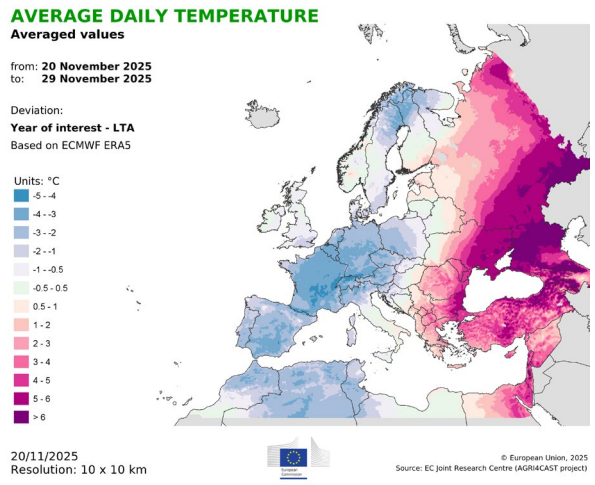
Colder-than-usual conditions (up to 3 °C below the LTA) are forecast in most of central, western and south-western Europe and the Maghreb, with distinct negative anomalies (up to 5 °C below the LTA) north of the Alps, in France and in southern Spain. Freezing temperatures are forecast for up to 9–10 days across large parts of central and northern/north-eastern Europe.

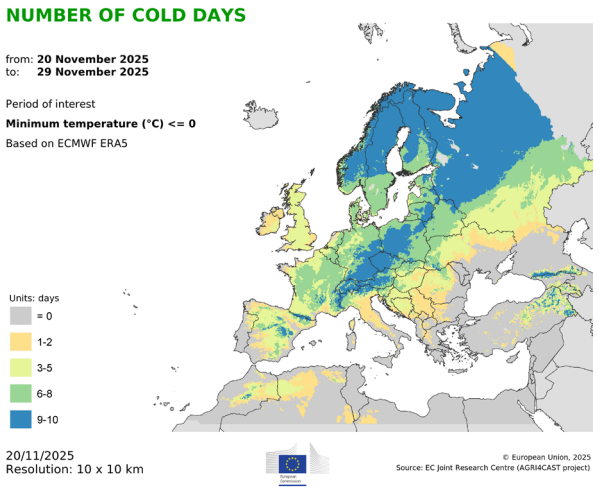
Warmer than-usual conditions are forecast in south-eastern Europe, Türkiye and European Russia, with up to 6 °C (locally more) above the LTA in eastern Ukraine and parts of the broader Black Sea region.

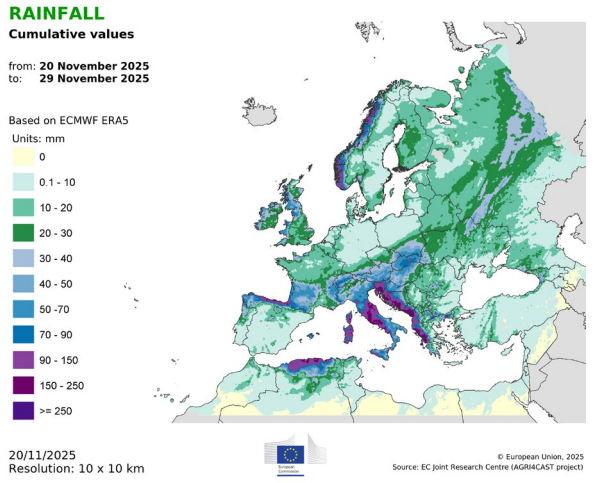
Wet conditions (precipitation of 30–90 mm) are forecast in northern Spain, southern France, the Alps and the central Mediterranean basin, north-eastwards to Slovakia and Hungary.

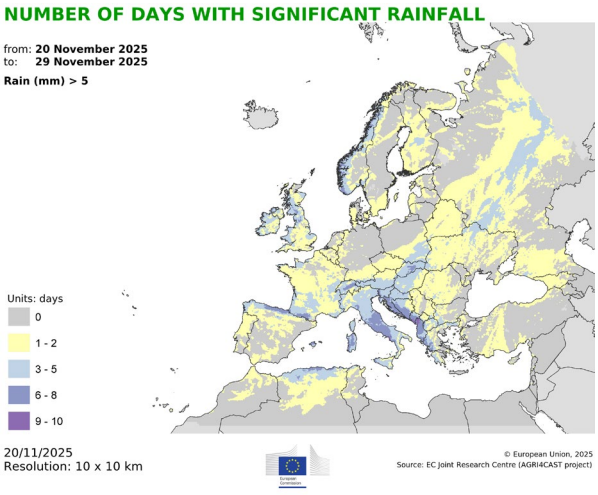
Very wet conditions (precipitation above 90 mm and locally up to 250 mm and more) are forecast along the Bay of Biscay and in northern Algeria, central Mediterranean and the western Balkans. In these regions, more than six rainy days (> 5 mm) are forecast.

The **long-range weather forecast** (December to February) points to a moderate likelihood of warm conditions across most of Europe, exceeding the 24-year climatological median by up to 1 °C (2 °C in northern Europe), and a moderate likelihood of wet conditions for the Mediterranean region in December, and for south-eastern Europe and Scandinavia in January and February.



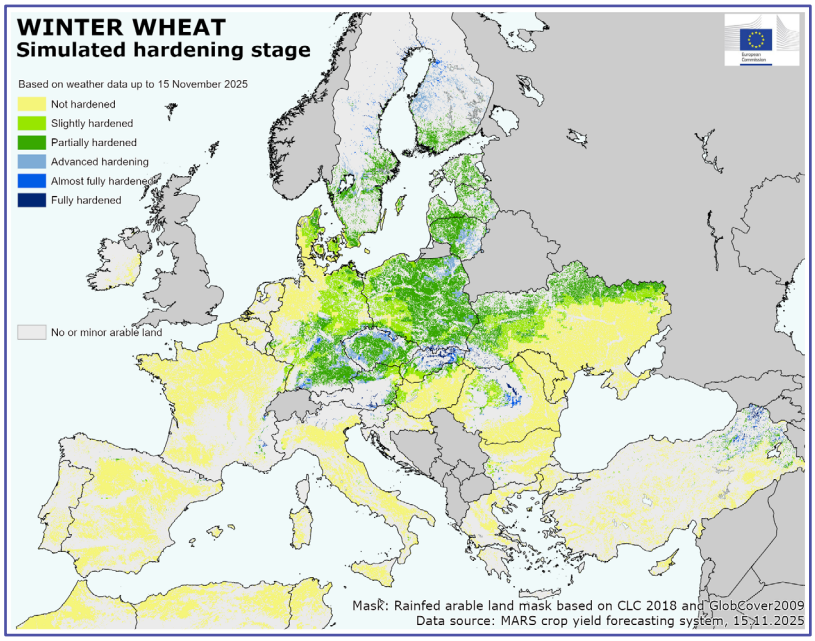






2. Winter hardening and frost kill

Hardening is the bio-physiological process whereby winter cereals gain low-temperature tolerance to withstand freezing conditions that occur during the winter dormancy period.



Our models exhibit noticeably less advanced hardening in large parts of western, central and south-eastern Europe by mid November 2025, while northern and north-eastern Europe show patterns comparable to, or slightly more advanced than, those observed in 2024.

France, the Benelux countries and Ireland remain mostly unhardened, whereas in 2024 these regions already showed broader zones of partial hardening. In Germany, Denmark, Poland, Czechia, Slovakia and Austria, the November 2025 map displays larger areas still in the slightly or partially hardened stages, whereas in 2024 the hardening extended farther south and west. The difference is particularly pronounced in northern Germany, Denmark and south-western Poland, where 2025 shows predominantly slightly hardened crops, compared with partially or even advanced hardening states in 2024.

A significant contrast appears in Hungary, Croatia, south-eastern Europe and southern Ukraine. In 2024, winter crops reached partial to advanced hardening by mid November, whereas in 2025 these regions largely remain not or slightly hardened, with advanced hardening limited to mountainous regions. This suggests a slower onset of cold conditions and potentially higher vulnerability to frost events.

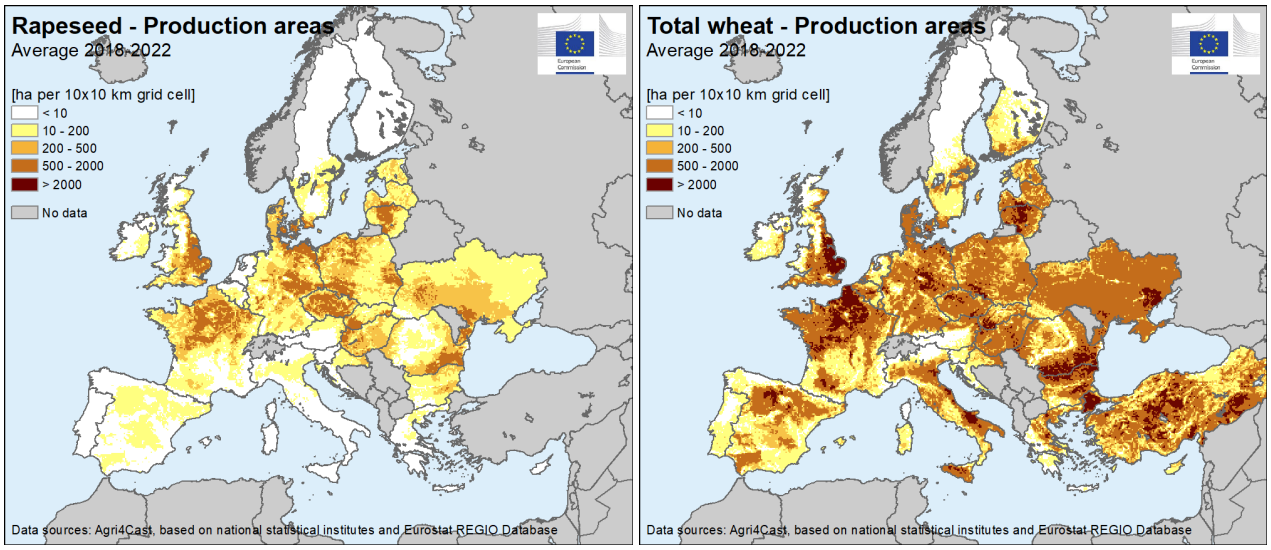
In northern and north-eastern Europe, the situation is more balanced this year, with partial to advanced hardening of crops in Sweden, Finland, the Baltic states, eastern Poland and even northern Ukraine, reflecting conditions comparable to those in 2024.

As is typical, southern Europe countries remain not or only slightly hardened.

It is important to note that our model does not account for late sowing, which may lead to an overestimation of frost tolerance in underdeveloped stands. This is particularly relevant this year for parts of Romania, Bulgaria, Moldova and Ukraine, where delayed crop development may increase vulnerability during potential future cold spells.

Currently, our models do not indicate any frost-related damage, but less-hardened areas need to be closely monitored in view of the temperature drop that is forecast for parts of central Europe in the second half of November.

3. Conditions for sowing, emergence and crop establishment



Rapeseed - sowings completed, early crop growth supported by favourable conditions

In northern Europe (**Finland**, **Sweden** and the **Baltic countries**) and across western to eastern regions (**France**, **Germany**, **Austria**, **Poland**, **Czechia** and **Slovakia**), rapeseed crops are developing well, supported by adequate rainfall and generally mild temperatures. This has resulted in uniformly established stands, currently ranging from the five-leaf stage to the formation of side shoots, depending on sowing dates. In north-western Europe (**France**, **Belgium**, **Denmark** and north-western **Germany**), crop hardening slightly delayed by the unusually warm first half of November. However, the colder conditions observed in the last days of the review period, and those forecast for the second half of November, should allow a smooth transition into dormancy. In **Ireland**, the sown area has increased to approximately 17 000 ha, representing an increase of 30 % compared with the previous season, with well-developed stands despite recent wet conditions.

In **Hungary**, crops are developing well. While recent rains have helped improve topsoil moisture in the central and eastern regions of the Great Plains, deeper soil layers remain dry, which could impede future crop development unless significant rainfall occurs. In **Romania**, dry soils in September followed by abundant rains made sowing difficult in the southern regions, leading to high heterogeneity in crop development, from emergence to advanced rosette, and poor uniformity in late-sown fields; soils remain dry along the eastern border. In **Bulgaria**, sowing is complete and the area may increase this year.

In southern Europe, **Italy** reports good early crop development, supported by light but adequate precipitation. In **Spain**, rainfall at the end of October arrived too late for rainfed regions of *Castilla y León* and *Castilla-La Mancha*. Many farmers may have skipped rapeseed sowing in favour of spring sunflowers, and the final area sown is therefore likely to be lower than last year. In **Croatia**, around 25 000 ha has been sown, representing an increase of about 30 % compared with last year. Establishment has been generally favourable, although the *Panonska Hrvatska* region continues to face soil moisture deficits.

Winter cereals - sowing completed in most of Europe, delays persisting in the south-east

The sowing campaign is generally complete in most of Europe, with crops already emerged and heading to winter dormancy under good conditions.

In **France**, both sowing and early growth were supported by favourable weather and soil conditions. In **Germany** and **Poland**, a relatively mild autumn contributed to good establishment of cereals. In the **Benelux countries**, sowing is almost complete, with early-sown soft wheat in leaf development and winter barley already tillering. Aphid pressure has declined in recent weeks due to cool and wet conditions, although these same conditions have increased the risk of slug damage.

In **Austria**, **Czechia** and **Slovakia**, the sowing campaign is complete. Seedlings emerged by mid November and are already partially hardened. Similar conditions are observed in **Slovenia** and **Croatia**. The area sown with winter cereals increased by more than 5 % in Croatia compared with last year, although the eastern regions are still suffering from rainfall deficit and suboptimal soil conditions.

In **Ireland**, the sowing campaign started around the beginning of October, and it was completed swiftly, with good establishment rates. Crop growth is uniform, but the weather turned very wet and rainy in November, with increased risk of diseases. The area sown with winter barley increased by 5 % compared with last year. In **Sweden**, the sowing campaign was completed in October and crop growth has been regular since then. Fairly good conditions for emerged winter cereals are also observed in **Denmark** and the **Baltic states**.

In **Spain** and **Portugal**, the sowing campaign was initially delayed due to dry soils but is now progressing smoothly following a wet October that restored adequate soil moisture. The campaign is about halfway complete and remains within the optimal sowing window. However, the intense rainfall recorded in the final days of the review period probably halted field operations in the western part of the peninsula. The sowing of durum wheat, which typically starts in mid November, is under way. In **Italy**, the soft wheat sowing campaign is ahead of that for winter barley, and both are progressing well within the optimal sowing window. The durum wheat sowing campaign has just started. The persistent rainfall deficit in the central regions is a concern for the early-sown soft wheat.

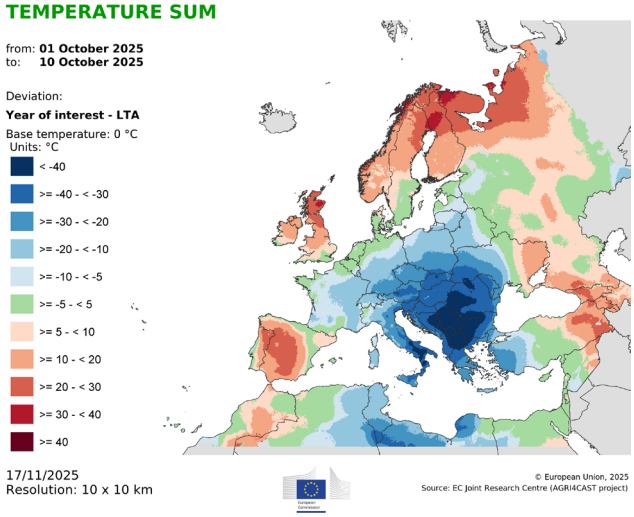
In **Hungary**, the sowing campaign is almost complete, but soil moisture levels have not fully recovered from the summer drought in central and eastern regions. Due to torrential rains at the beginning of November, the sowing campaign was hampered in southern **Romania** and **Bulgaria** when slightly more than half of the fields had been sown, and it is now delayed. Only the early-sown crops have established and emerged uniformly.

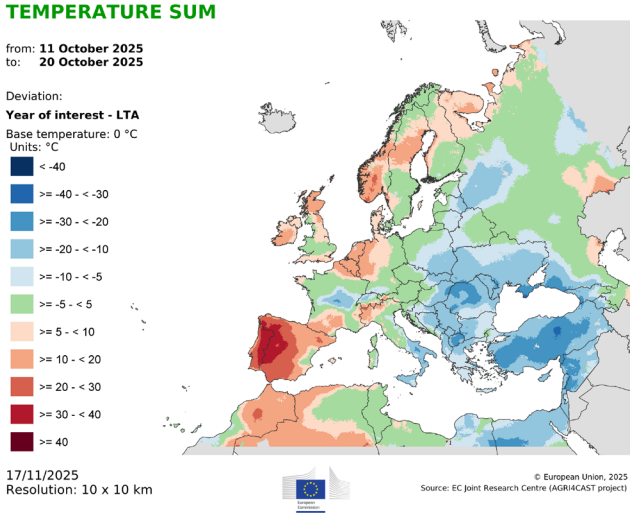
In **Greece**, sowing and emergence is progressing well under favourable conditions, with some fields yet to be sown. In **Cyprus**, the sowing of winter barley is delayed, and it is progressing slowly due to a persistent lack of rainfall.

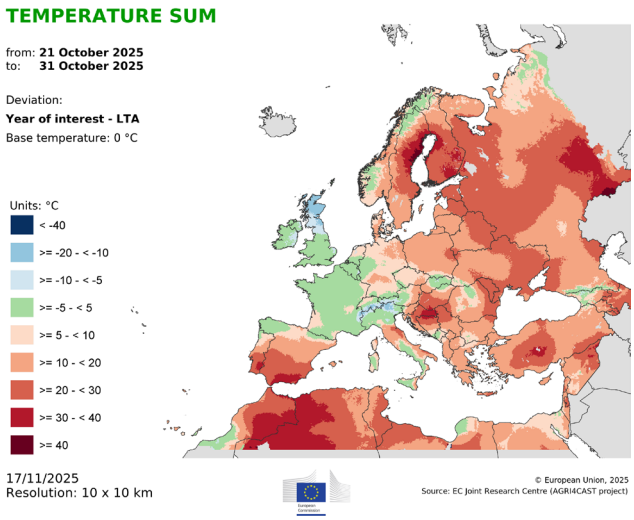
In **Ukraine**, sowing is nearly complete after a late start, which delayed emergence, especially in the eastern regions. In **Türkiye**, sowing usually occurs in November; however, soil conditions remain very dry this year and the campaign is only about to start. In the eastern **Maghreb** region, the campaign has just started and is progressing smoothly under fair soil moisture conditions. Conversely, high temperatures and a rainfall deficit are delaying the start of the campaign in **Morocco** and western **Algeria**.

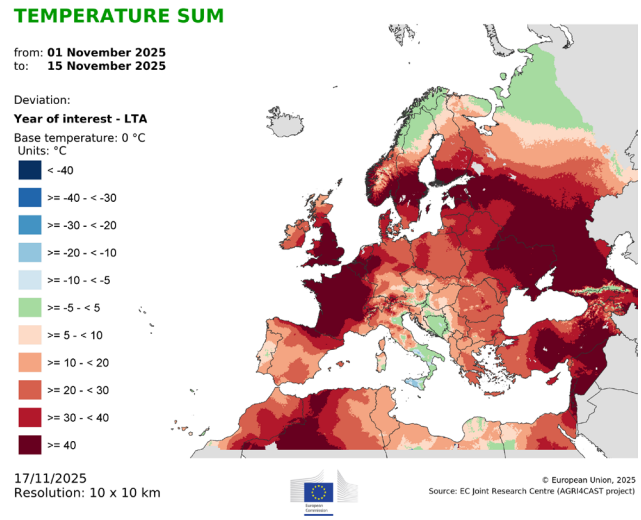
4. Atlas

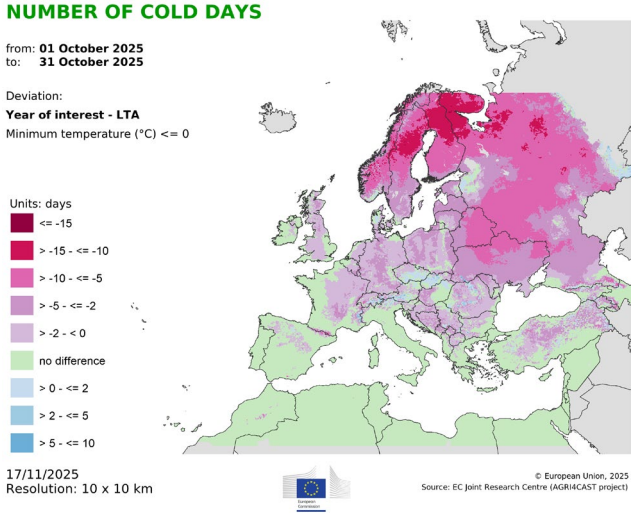
Temperature regime

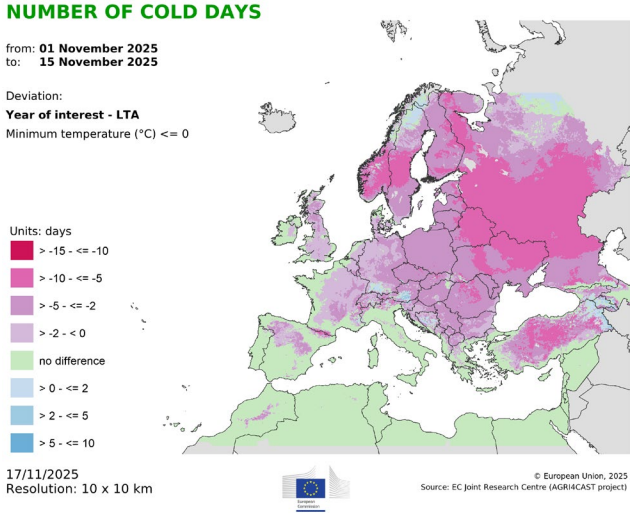












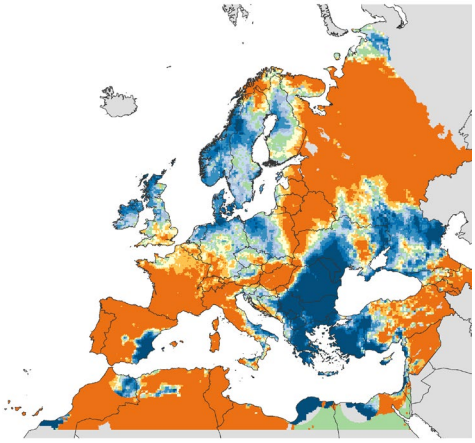
Precipitation

RAINFALL
Cumulative values

from: **01 October 2025**
to: **10 October 2025**

Deviation:
Year of interest - LTA

Units: %
- >= -100 - < -50
- >= -50 - < -30
- >= -30 - < -10
- >= -10 - < 10
- >= 10 - < 30
- >= 30 - < 50
- >= 50 - < 100
- >= 100 - < 150
- >= 150

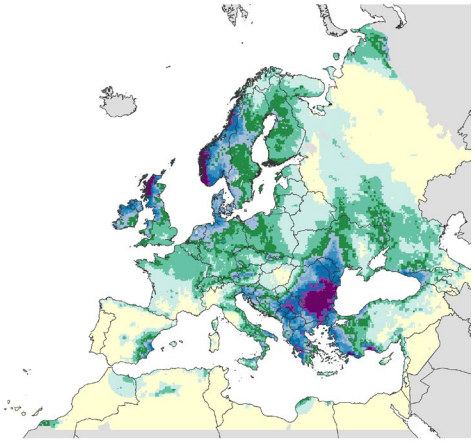


17/11/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 October 2025**
to: **10 October 2025**

Units: mm
- 0 - 3
- 3 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 -70
- 70 - 90
- 90 - 110
- > 110



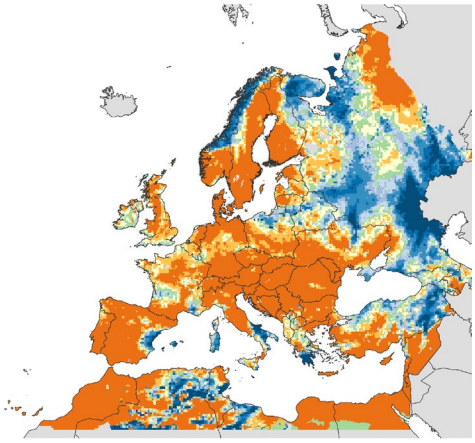
17/11/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **11 October 2025**
to: **20 October 2025**

Deviation:
Year of interest - LTA

Units: %
- >= -100 - < -50
- >= -50 - < -30
- >= -30 - < -10
- >= -10 - < 10
- >= 10 - < 30
- >= 30 - < 50
- >= 50 - < 100
- >= 100 - < 150
- >= 150

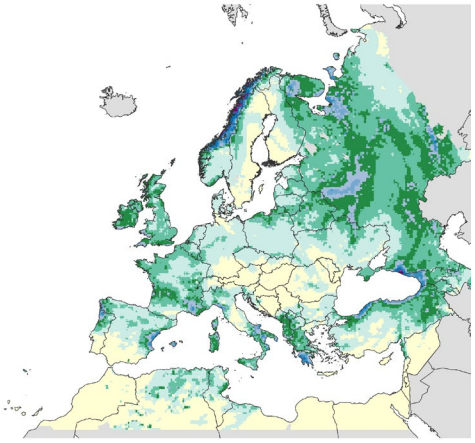


17/11/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **11 October 2025**
to: **20 October 2025**

Units: mm
- 0 - 3
- 3 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 -70
- 70 - 90
- 90 - 110
- > 110



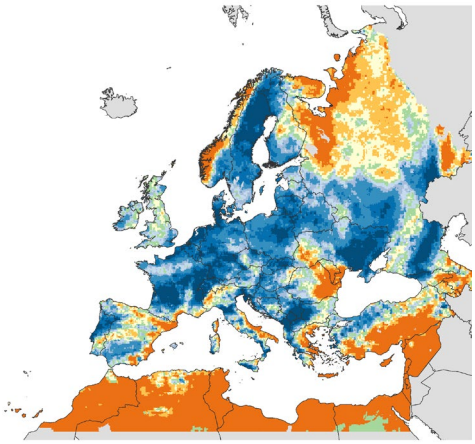
17/11/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **21 October 2025**
to: **31 October 2025**

Deviation:
Year of interest - LTA

Units: %
- >= -100 - < -50
- >= -50 - < -30
- >= -30 - < -10
- >= -10 - < 10
- >= 10 - < 30
- >= 30 - < 50
- >= 50 - < 100
- >= 100 - < 150
- >= 150

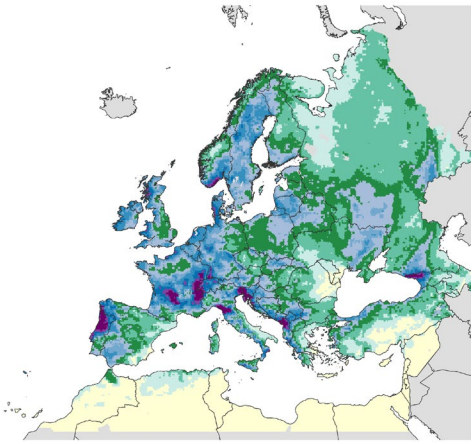


17/11/2025
Resolution: 10 x 10 km

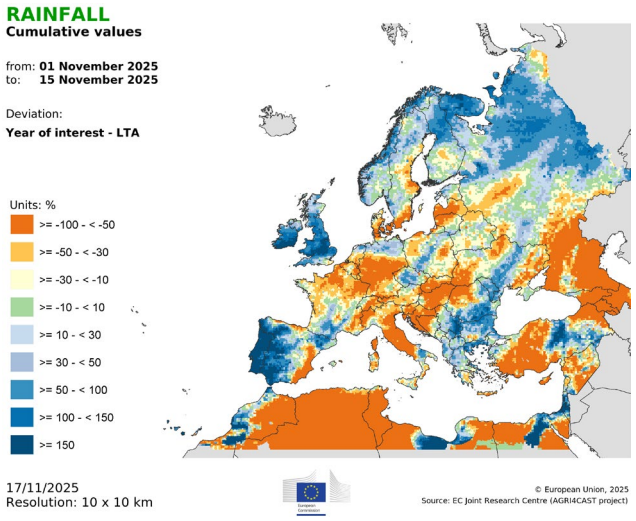
RAINFALL
Cumulative values

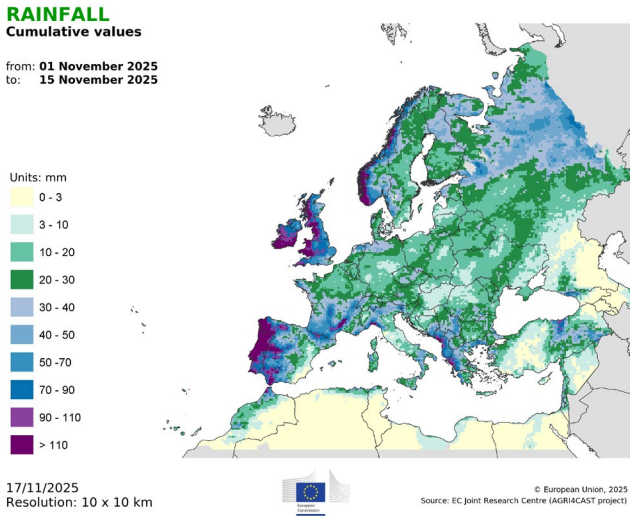
from: **21 October 2025**
to: **31 October 2025**

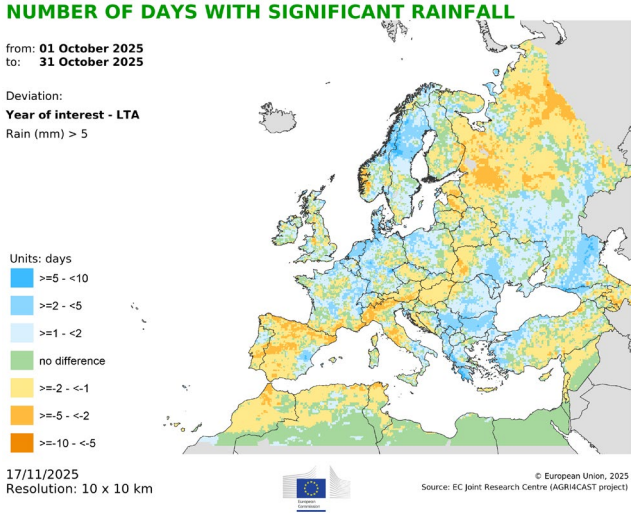
Units: mm
- 0 - 3
- 3 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 -70
- 70 - 90
- 90 - 110
- > 110

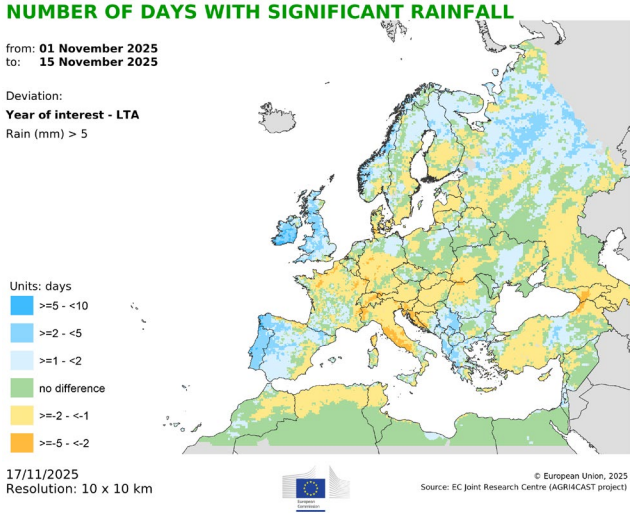


17/11/2025
Resolution: 10 x 10 km

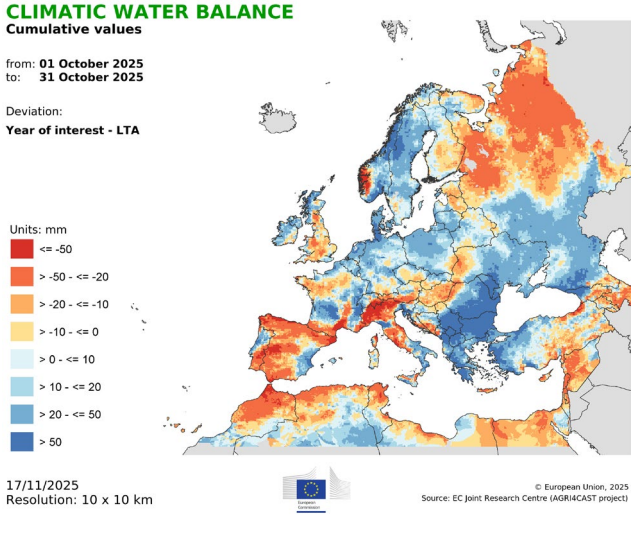


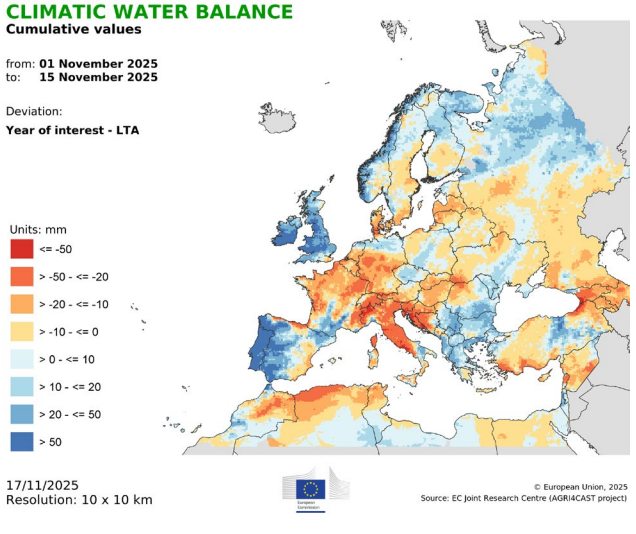






Climatic water balance





JRC MARS Bulletin 2025

Date	Publication	Reference
24 FEB	Agro-meteo incl. frost-kill analysis, extended Maghreb section	Vol. 33 No 1
24 MAR	Agro-meteo incl. frost-kill & country analysis, yield forecasts	Vol. 33 No 2
22 APR	Agro-meteo & country analysis, yield forecasts, sowing conditions, remote sensing & grassland update, extended Türkiye section	Vol. 33 No 3
26 MAY	Agro-meteo & country analysis, yield forecasts, sowing conditions, remote sensing & grassland update, extended Maghreb section	Vol. 33 No 4
23 JUN	Agro-meteo & country analysis, yield forecasts, remote sensing & grassland update, rice analysis	Vol. 33 No 5
21 JUL	Agro-meteo & country analysis, yield forecasts, remote sensing & grassland update	Vol. 33 No 6
25 AUG	Agro-meteo & country analysis, yield forecasts, remote sensing & grassland update	Vol. 33 No 7
22 SEP	Agro-meteo & country analysis, yield forecasts, remote sensing & grassland update, rice analysis, extended Türkiye section	Vol. 33 No 8
27 OCT	Agro-meteo & country analysis, yield forecasts, remote sensing & grassland update, sowing conditions	Vol. 33 No 9
24 NOV	Agro-meteo analysis incl. frost-kill analysis, sowing conditions	Vol. 33 No 10

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The long-term average (LTA) used within this Bulletin as a reference is calculated based on weather data from 1991-2024. The medium-term average (MTA) used within this Bulletin as a reference is calculated based on weather data from 2015-2024.

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