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European Commission

JRC MARS Bulletin

Crop monitoring in Europe

February 2025

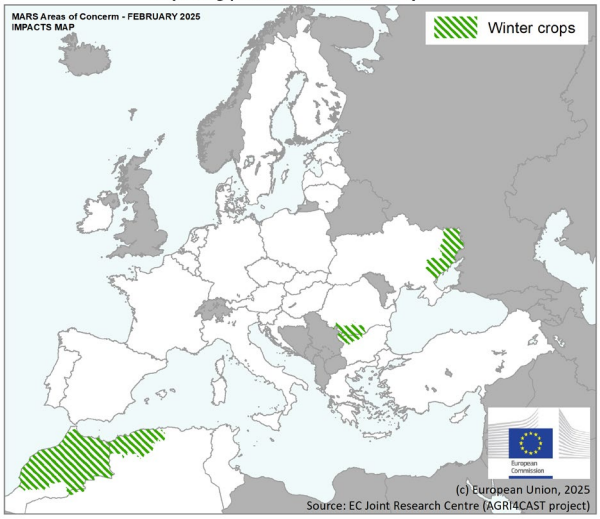
EU winter crops mostly in fair condition

Drought thwarted yield expectations in western and central Maghreb, again

Winter crops in most parts of the European Union are in fair to good condition. Irreversible losses to yield potentials, have occurred in some parts, but more seriously in neighbouring countries, particularly eastern Ukraine, Morocco and Algeria. An extensive overview of crop conditions in the Maghreb is given in a specific section of this edition.

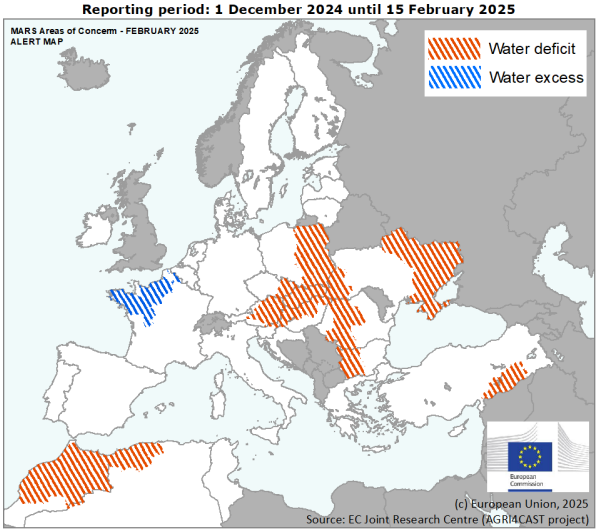
AREAS OF CONCERN - IMPACTS

Reporting period: until 15 Februrary 2025



AREAS OF CONCERN - ALERTS

Reporting period: 1 December 2024 until 15 February 2025



In France, heavy rainfall affected north-western regions in January. Although the volume of rain was not exceptional when considering the reporting period as a whole, combined with the already high soil moisture levels and relatively low temperatures, it created unfavourable conditions for crop development.

A distinct rainfall deficit is observed in large parts of central and eastern Europe. Winter crops in western Romania and Bulgaria have suffered from limited water availability since the start of the season, leading to possible area reduction and resowing in spring. A concern in all these regions is that little or no snow coverage is present, thus exposing winter crops to an increased risk of frost kill in the case of an intense cold spell, as is forecast immediately after the reporting period.

In eastern Ukraine, the ongoing precipitation deficit has prevented any crop recovery from the poor conditions during emergence. The lack of snow cover and the expected colder-than-usual conditions raise additional concerns.

In Türkiye, a water deficit has been affecting south-eastern crop regions since late December. The lack of precipitation may affect those fields that are not irrigated and raise concerns about the sustainability of the water reservoirs throughout the season.

Contents:

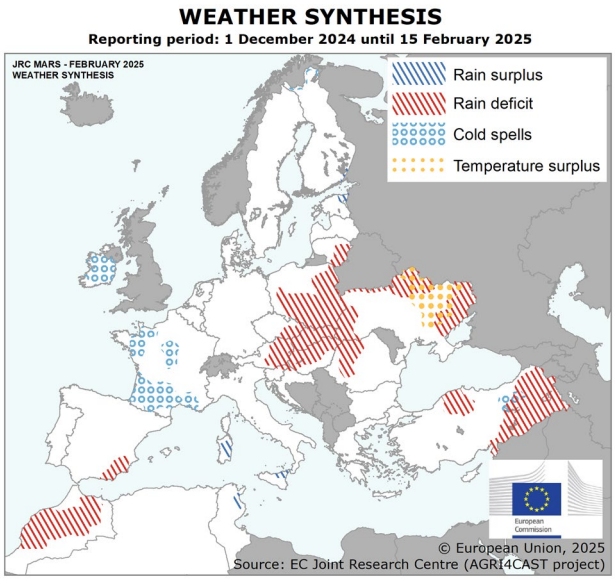
Covers the period from 1 December until 15 February

Joint Research Centre

1. Agrometeorological overview

1.1 Meteorological review (1 December 2024 –15 February 2025)

While drier-than-usual and somewhat warmer-than-usual conditions characterised many central, eastern and Mediterranean regions, slightly colder- and wetter-than-usual conditions prevailed in several western regions.



The weather synthesis map summarises – for the countries covered in the Bulletin – the most distinct anomalies during the reporting period compared with the 1991–2024 long-term average (LTA) for the same period. Temperature and rainfall surplus and deficit are unusual absolute and relative deviations from the LTA, considering the entire reporting period. Cold spells are 5-day periods with temperatures below the 10th percentile for the years since 1991. The weather indicator maps provide further context for each event.

A distinct rainfall deficit was observed in eastern Lithuania, most of Poland, eastern Czechia, Slovakia, most of Austria and Hungary, and western Romania, as well as in the eastern, western and northernmost regions of Ukraine, parts of central and eastern Türkiye, southern Spain (*Región de Murcia*) and most of Morocco. Cumulative rainfall in most of these regions was up to 30 mm (corresponding to between 50 % and 100 % below the LTA). In several of these regions, the reporting period ranked among the three driest in our records since 1991, with only up to 3 days with rainfall above the 5-mm daily rainfall threshold.

A marked rainfall surplus was observed in southern Italy (*Sardegna* and parts of *Sicilia*) and northern Tunisia, as well as in northern Estonia and south-easternmost Finland. Cumulative rainfall in many of these regions exceeded the LTA by up to 150 %. In the Italian regions, more than 15 days with rainfall above the 5-mm daily rainfall threshold were observed, accumulating over 250 mm of rainfall.

A remarkable temperature surplus was observed in the eastern regions of Ukraine, where average daily temperatures exceeded the LTA by up to 4 °C and the reporting period ranked among the three warmest since 1991.

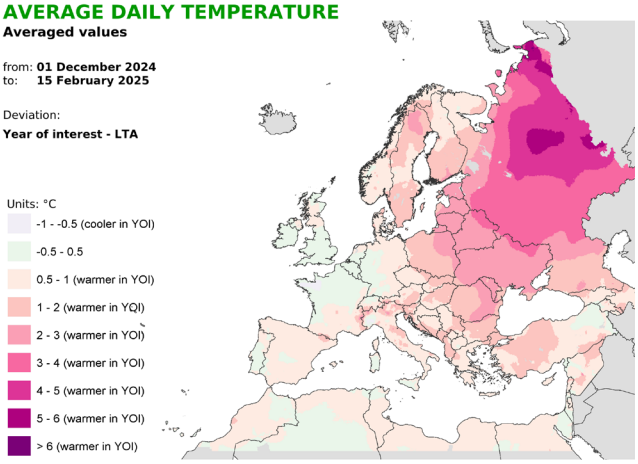
Cold spells were observed in Ireland, parts of France and regionally in eastern Türkiye. In these regions, average daily temperatures were up to 1 °C below the LTA, while cold spells with minimum daily temperatures between – 5 °C and – 10 °C (in eastern Türkiye down to – 15 °C) occurred during the reporting period.

AVERAGE DAILY TEMPERATURE

Averaged values

from: **01 December 2024**
to: **15 February 2025**

Deviation:
Year of interest - LTA

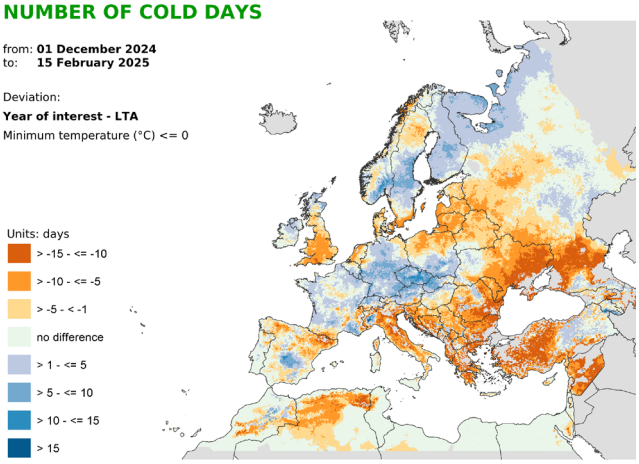


17/02/2025
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 December 2024**
to: **15 February 2025**

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

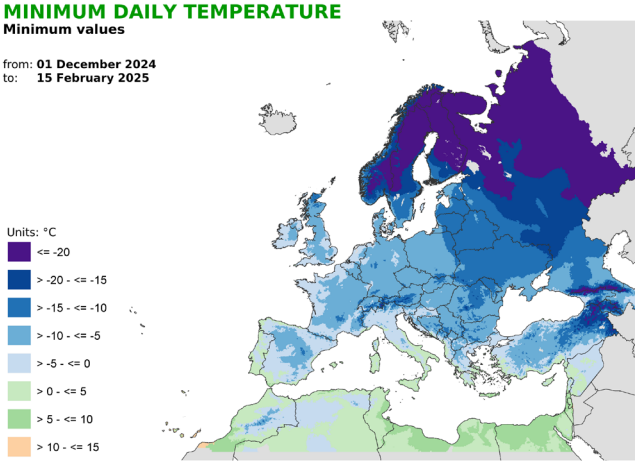


17/02/2025
Resolution: 10 x 10 km

MINIMUM DAILY TEMPERATURE

Minimum values

from: **01 December 2024**
to: **15 February 2025**



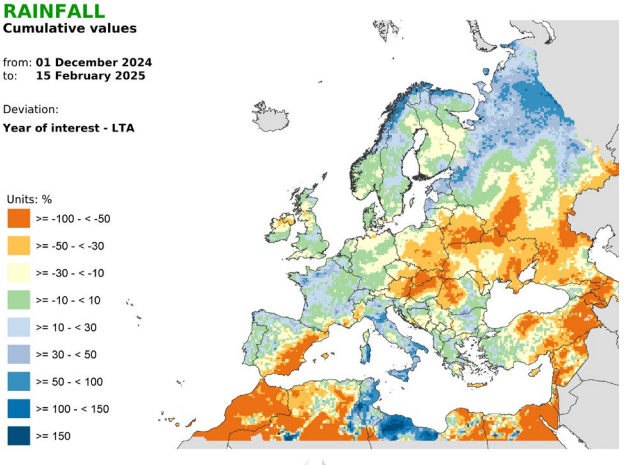
17/02/2025
Resolution: 10 x 10 km

RAINFALL

Cumulative values

from: **01 December 2024**
to: **15 February 2025**

Deviation:
Year of interest - LTA



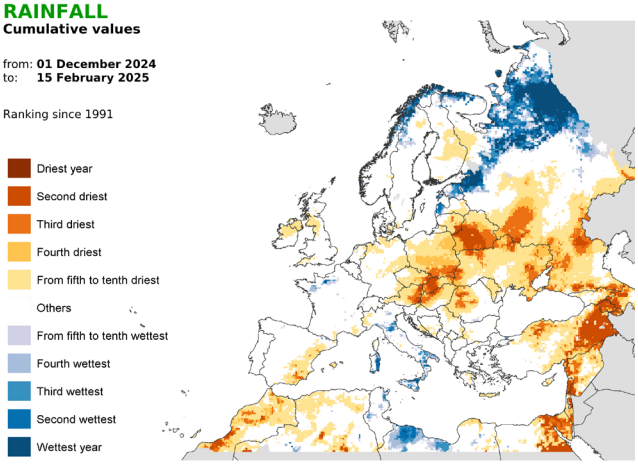
17/02/2025
Resolution: 10 x 10 km

RAINFALL

Cumulative values

from: **01 December 2024**
to: **15 February 2025**

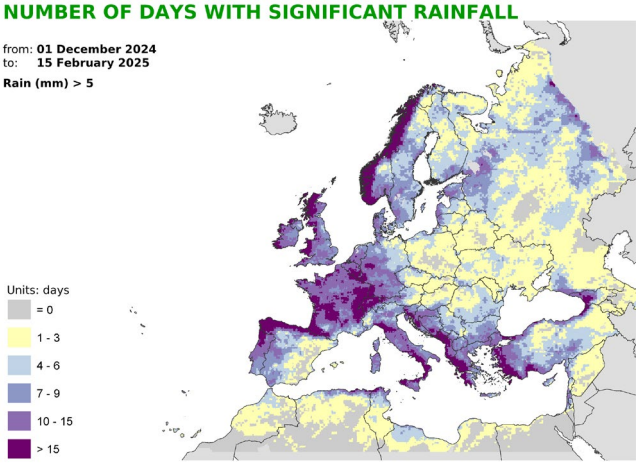
Ranking since 1991



17/02/2025
Resolution: 10 x 10 km

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL

from: **01 December 2024**
to: **15 February 2025**
Rain (mm) > 5



17/02/2025
Resolution: 10 x 10 km

1.2 Weather forecast (19-28 February)

Colder-than-usual and dry conditions are forecast for most of the Black Sea region, whereas warmer and moist air will bring rain to the north-western regions.

Warmer-than-usual conditions (up to 3 °C above the LTA) are forecast for most of western and central Europe, Scandinavia and central Italy. More distinct positive temperature anomalies (up to more than 6 °C above the LTA) are forecast for northern Scandinavia.

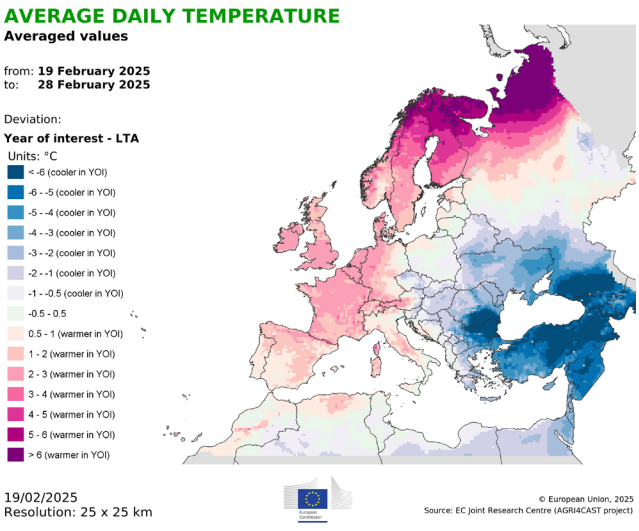
Colder-than-usual conditions, with average daily temperatures up to 3 °C below the LTA, are forecast for parts of Czechia and Slovakia, Hungary, the eastern Balkan peninsula, Greece, northern Romania and Ukraine.

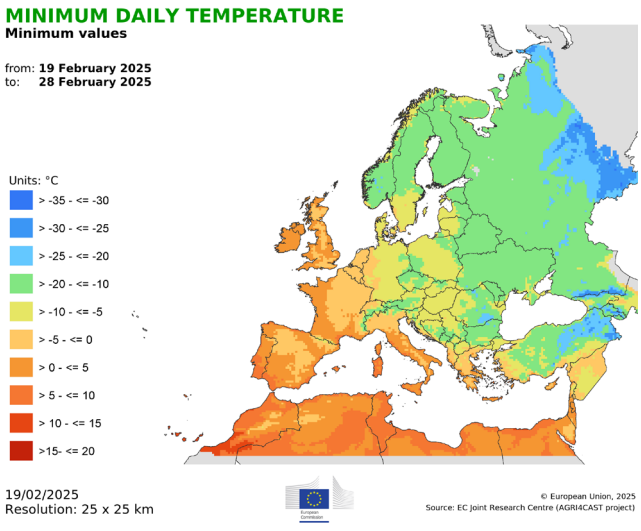
Much colder-than-usual conditions (up to more than 6 °C below the LTA) are forecast for southern Romania, Bulgaria and most of Türkiye, where minimum daily temperatures will drop below – 20 °C.

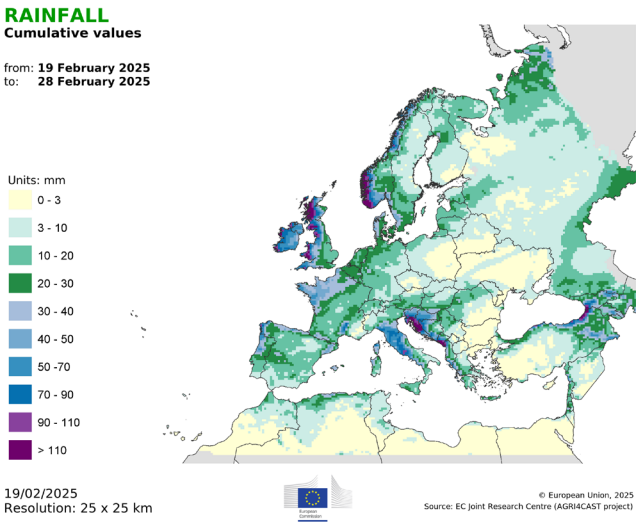
Wet conditions (precipitation above 10 mm and up to 70 mm) are forecast for most of Europe and north-west Africa. **Very wet conditions** (precipitation above 70 mm) are forecast for western Ireland, with between 7 and 9 days of precipitation above the 5-mm threshold, as well as for central Italy, western Slovenia and Croatia, and the eastern coast of the Black Sea (up to 6 days).

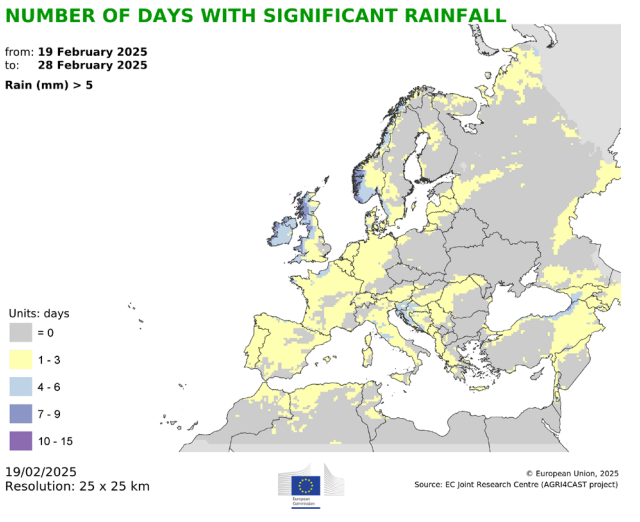
Dry conditions (total precipitation below 3 mm) are forecast for parts of south-eastern France (*Provence-Alpes-Côte d'Azur*), parts of southern Finland, parts of Czechia, south-eastern Poland, most of Ukraine, south-western Romania, Bulgaria, eastern Greece and most of southern and central Türkiye.

The long-range weather forecast (not shown here) points to a moderate likelihood of warm conditions, exceeding the 24-year climatological median by up to 1 °C across Europe in March–April, and even up to 2 °C in the eastern European regions in March. Precipitation is forecast, albeit with great uncertainty, to be up to 50 mm below average in parts of France in March–April.

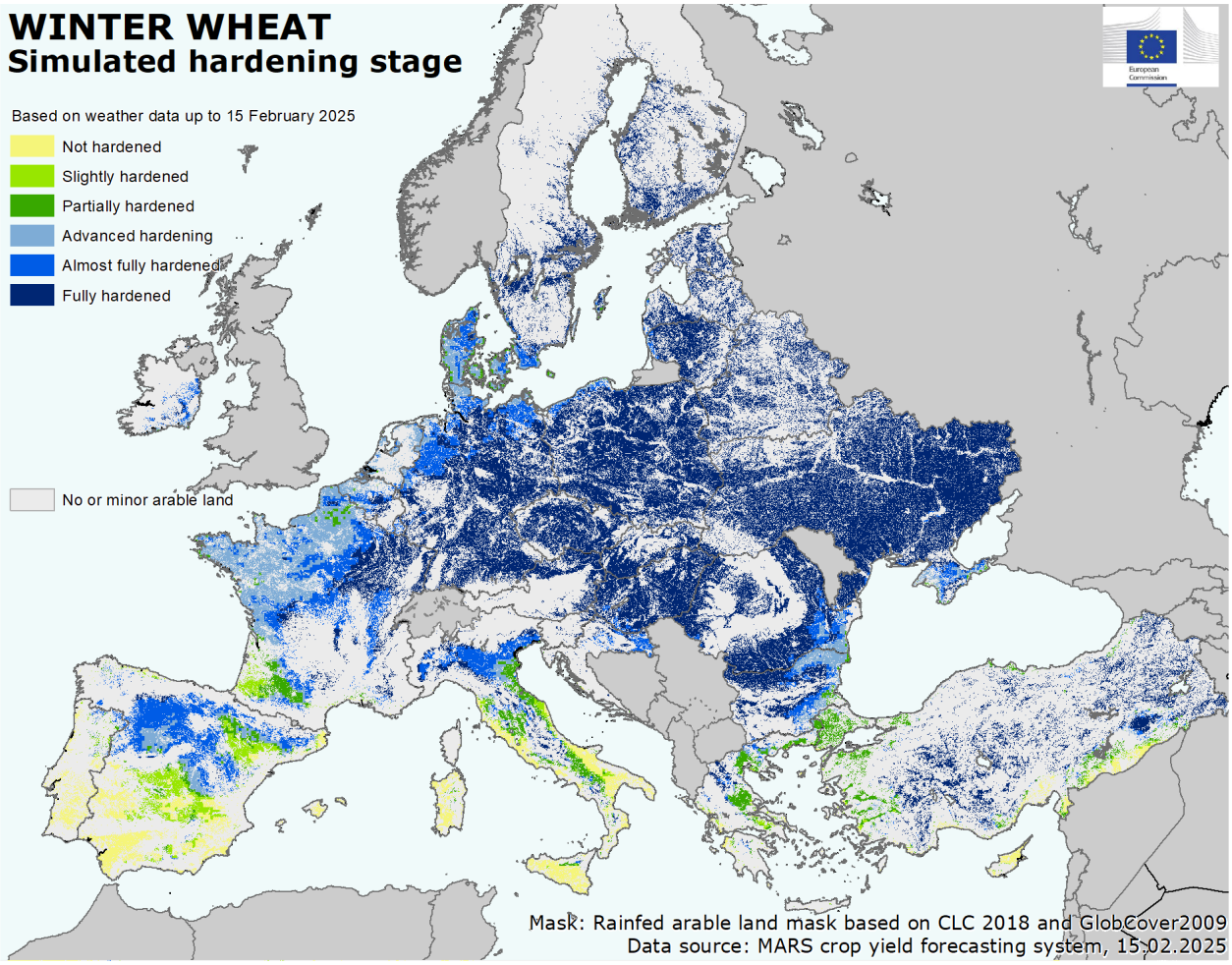








2. Winter hardening and frost kill



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

According to our models, the hardening progress of winter wheat is more advanced than it was at this time last year, with (almost) fully hardened winter cereals in most of Europe. Partial or advanced hardening has been reached in western France, the Benelux countries, Denmark, some parts of central and southern Italy, and the surroundings of the Aegean Sea and Black Sea. In most coastal regions bordering the Mediterranean Sea, winter crops are not or are only slightly hardened, as usual.

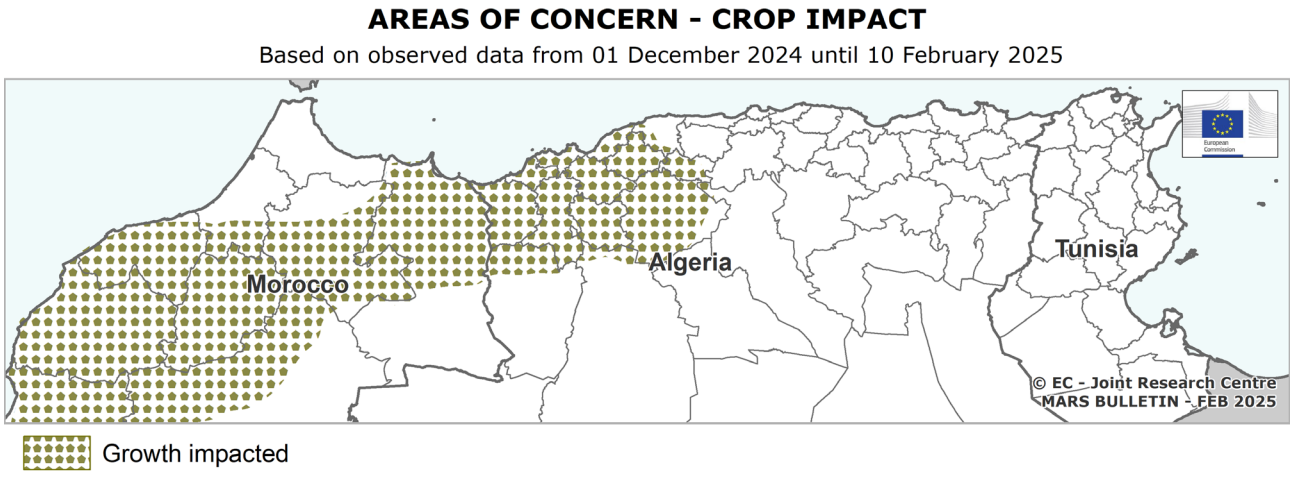
It is worth mentioning that our model does not consider the effect of late sowing and could hence overestimate the build-up of frost tolerance for late-sown or underdeveloped winter crops. This is of particular concern in eastern Ukraine, Bulgaria and Romania. Despite minimum temperatures episodically reaching – 20 °C in northern Europe and – 15 °C in Ukraine, Romania and eastern Türkiye, no significant frost-kill events were detected by our models during the reporting period. Minor damage may have occurred in Finland, Sweden and eastern Türkiye.

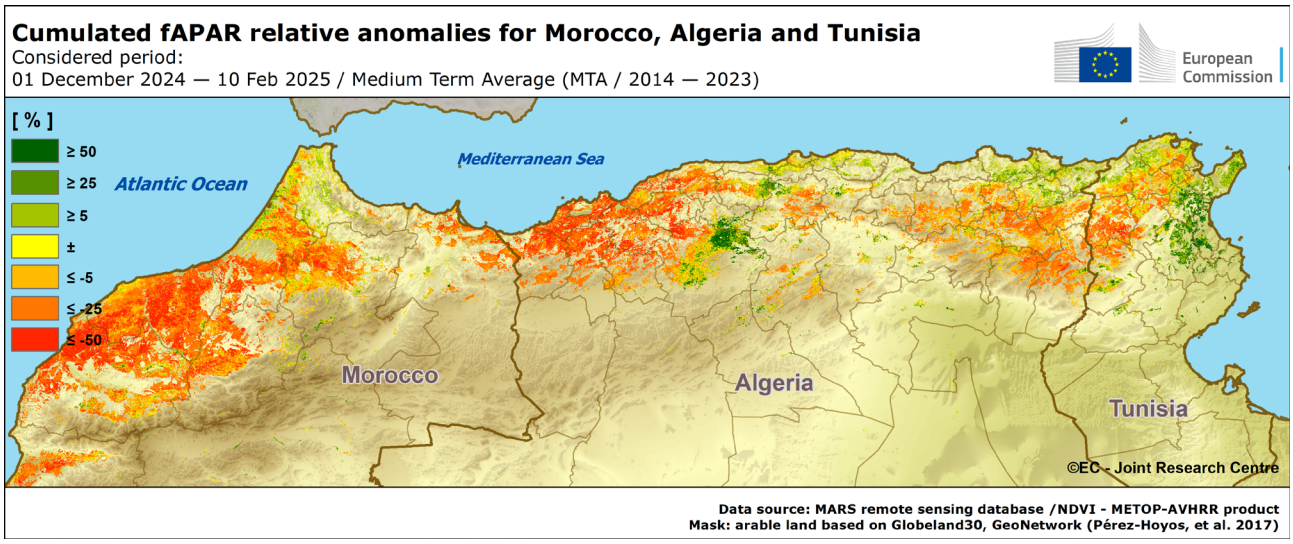
However, the weather forecast signals an abrupt drop in temperatures in northern, eastern and central Europe for the second half of February. Minimum temperatures in these regions are expected to reach – 20 °C, which might bring substantial damage to winter crops – especially in those areas in central and eastern Europe with little or no snow cover.

3. Maghreb

3.1 Cereals affected by drought in western and central Maghreb

A severe water deficit has been affecting North Africa since November 2024, with an increasing gradient towards the west, from Tunisia to Morocco. Significant rainfall in the second half of January partially offset the water deficit along the Mediterranean coast in eastern Algeria and Tunisia. Conversely, in Marrakech and some agricultural areas of Casablanca, the review period ranked as the third driest since 1991. This information has been confirmed by a recent statement from the Moroccan Ministry of Agriculture ([1]). This marks the sixth consecutive winter crop season with a severe water deficit in Morocco. Temperatures were aligned with the LTA, except during the last dekad of January, when they reached 5 °C above the LTA.





The maps display – for arable land – the relative differences between the fraction of absorbed photosynthetically active radiation (fAPAR), computed from remote sensing imagery from 1 December 2024 to 10 February 2025, and the medium-term average (MTA) (2014–2023) for the same period. Positive anomalies (in green) reflect above-average canopy density or early crop development, while negative anomalies (in red) reflect below-average canopy density or late crop development.

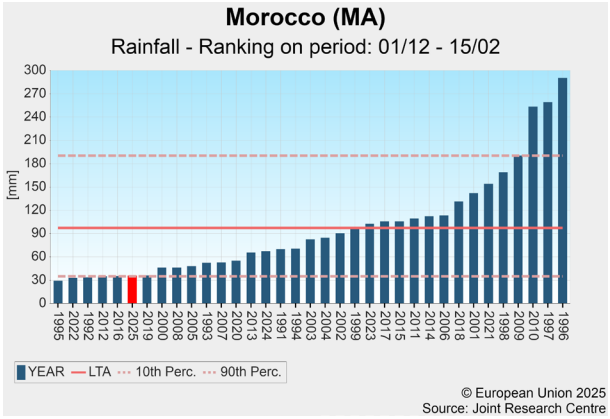
([1]) https://fesnews.media/297819/2025/02/07/.

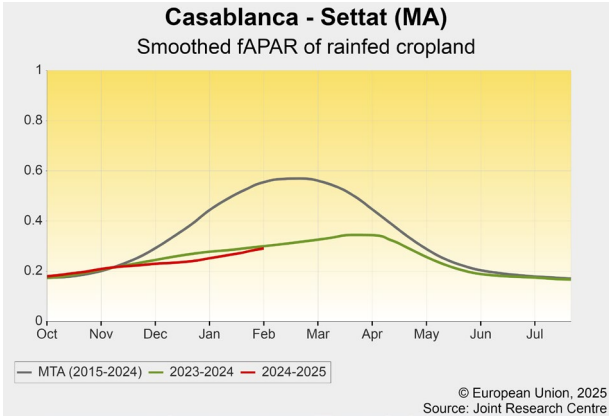
Morocco (MA)

Satellite indicators clearly reflect the delay in sowing due to the autumn drought, followed by weak emergence and vegetative phases. The constraining growing conditions have probably led to a decrease in the country's sown area. A prolonged negative anomaly in crop biomass accumulation is observed across the country due to the drought, which sets limiting conditions for initial growth and the subsequent development phases.

Autumn drought conditions have historically been precursors to low yields in Morocco. The overall scenario can be considered similar to that of the previous year's season.

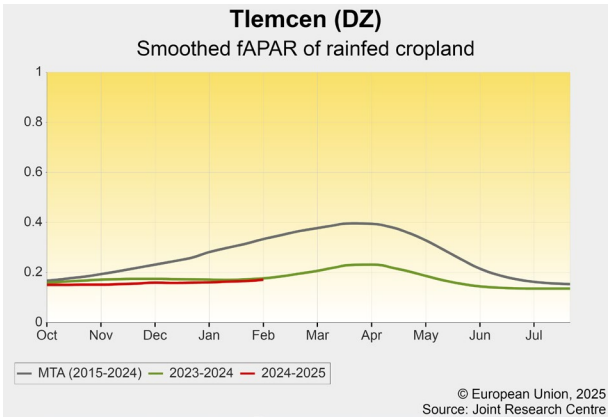
Overall, yield prospects at the national level are well below the medium-term average, with minimal expectation of recovery even if substantial rainfall occurs in the coming weeks, since damage to crops seems to be irreversible in most of the producing regions.

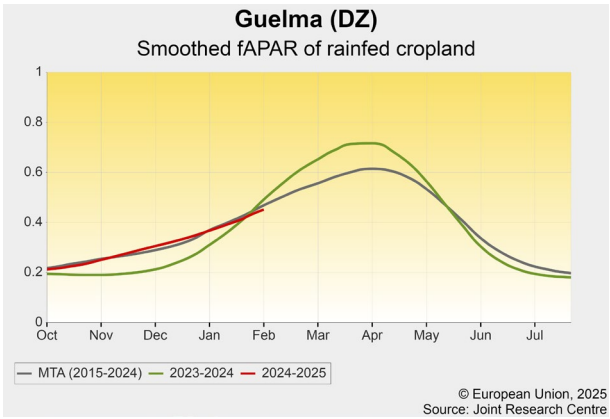




Algeria (DZ)

The sowing campaign was delayed in the north-west of the country due to drought conditions, while it was in line with an average season in the rest of the country. Persistent dry conditions led to well-below-average crop biomass accumulation in the agricultural areas in the north-west of the country (e.g. *Tlemcen* and *Sidi Bel Abbès*). Here, rain is urgently needed to avoid crop failure. In the central coastal regions of the country (e.g. *Guelma*), despite a moderate rainfall deficit of 10–15 % compared with the LTA, biomass accumulation in most cereal production areas is around average. In the north-eastern regions of *Constantine*, *Oum El Bouaghi* and *Souk Ahras*, below-average soil moisture conditions are causing constrained crop growth. These conditions can still be recovered from and are of minor importance compared with those in the north-west. However, additional rainfall is needed soon to sustain crop growth. Taking account of the spatial patterns of the production areas of both crops, our yield forecasts for Algeria are below the 5-year average for wheat and above average for barley.



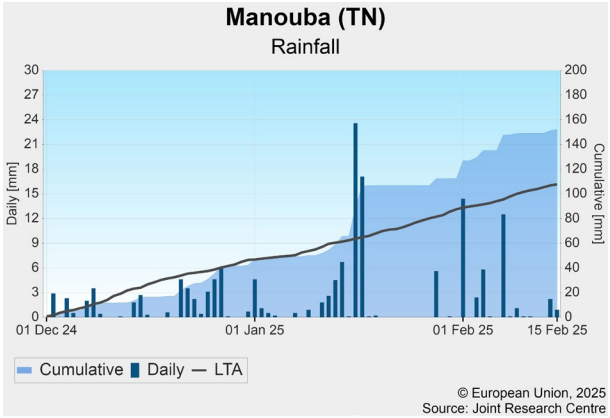


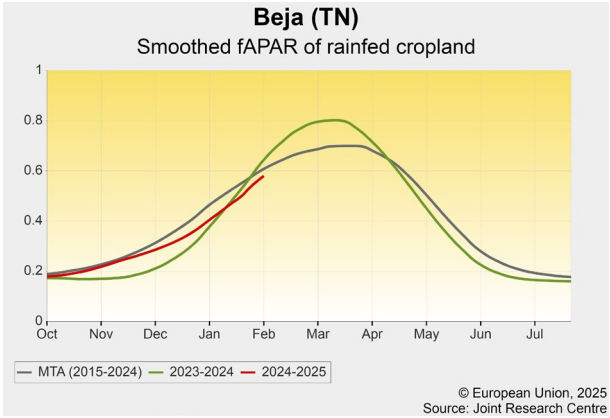
Tunisia (TN)

Weather conditions have been much more favourable in Tunisia's main crop-producing regions than in the drought-affected western and central regions of Maghreb.

The start of the agronomical season in the western regions of *Jendouba* and *Beja* appears to have been delayed by nearly 10 days compared with an average season, which is probably because farmers decided to wait for precipitation, which occurred in mid January.

In the middle of the phenological vegetative stage, crop biomass accumulation conditions appear to range from average to moderately above average. Our yield forecasts are 3 % and 5 % above the 5-year average for wheat and barley, respectively.





Maghreb yield forecasts – February 2025 Bulletin

Wheat

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2024	2025	%25/5yrs	%25/24	Avg 5yrs	2024	MARS 2025 forecasts	%25/5yrs	%25/24	Avg 5yrs	2024	2025	%25/5yrs	%25/24
DZ	1 501	1 389	**1 389**	– 7	+ 0	1.53	1.52	**1.45**	– 5	– 5	2 292	2 113	**2 009**	– 12	– 5
MA	2 598	2 434	**2 434**	– 6	+ 0	1.63	1.71	**1.17**	– 28	– 31	4 227	4 162	**2 853**	– 33	– 31
TN	550	517	**517**	– 6	+ 0	2.04	2.05	**2.10**	+ 3	+ 3	1 120	1 059	**1 087**	– 3	+ 3

Barley

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2024	2025	%25/5yrs	%25/24	Avg 5yrs	2024	MARS 2025 forecasts	%25/5yrs	%25/24	Avg 5yrs	2024	2025	%25/5yrs	%25/24
DZ	1 035	1 025	**1 025**	– 1	+ 0	1.13	1.17	**1.07**	– 6	– 9	1 173	1 199	**1 097**	– 7	– 9
MA	1 218	800	**800**	– 34	+ 0	1.03	1.09	**0.71**	– 31	– 35	1 254	872	**568**	– 55	– 35
TN	392	303	**303**	– 23	+ 0	1.09	1.57	**1.14**	+ 5	– 27	427	475	**345**	– 19	– 27

Soft wheat

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2024	2025	%25/5yrs	%25/24	Avg 5yrs	2024	MARS 2025 forecasts	%25/5yrs	%25/24	Avg 5yrs	2024	2025	%25/5yrs	%25/24
DZ	265	241	**241**	– 9	+ 0	1.38	1.38	**1.24**	– 10	– 10	367	331	**298**	– 19	– 10
MA	1 704	1 603	**1 603**	– 6	+ 0	1.72	1.86	**1.23**	– 29	– 34	2 937	2 982	**1 972**	– 33	– 34
TN	62	61	**61**	– 2	+ 0	1.69	1.69	**1.74**	+ 3	+ 3	104	102	**106**	+ 1	+ 3

Durum wheat

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2024	2025	%25/5yrs	%25/24	Avg 5yrs	2024	MARS 2025 forecasts	%25/5yrs	%25/24	Avg 5yrs	2024	2025	%25/5yrs	%25/24
DZ	1 236	1 148	**1 148**	– 7	+ 0	1.56	1.55	**1.49**	– 4	– 4	1 925	1 782	**1 711**	– 11	– 4
MA	894	831	**831**	– 7	+ 0	1.44	1.42	**1.06**	– 27	– 25	1 290	1 180	**881**	– 32	– 25
TN	488	457	**457**	– 6	+ 0	2.08	2.09	**2.15**	+ 3	+ 3	1 016	956	**982**	– 3	+ 3

NB: Yields are forecast for crops with more than 10000 ha per country.

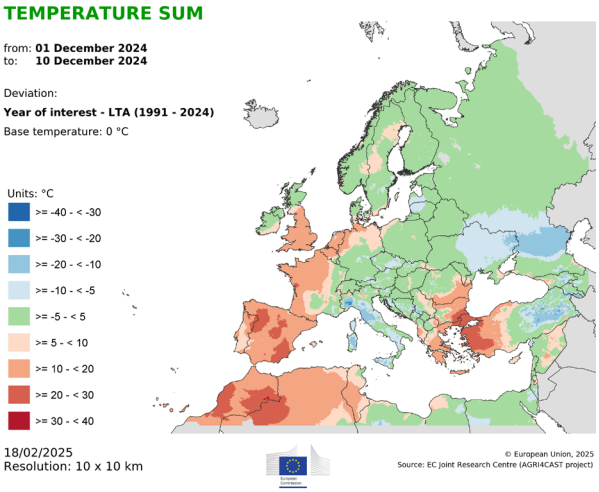
Sources: 2020-2025 data come from FAO, INRA Maroc, ONICL Maroc, Ministère de l'Agriculture, de la Pêche Maritime du Développement Rural et des Eaux et Forêts Maroc, Ministère de l'agriculture des ressources hydrauliques et de la pêche Tunisie, MED-Amin baseline DB, DSASI-MADR Algeria.

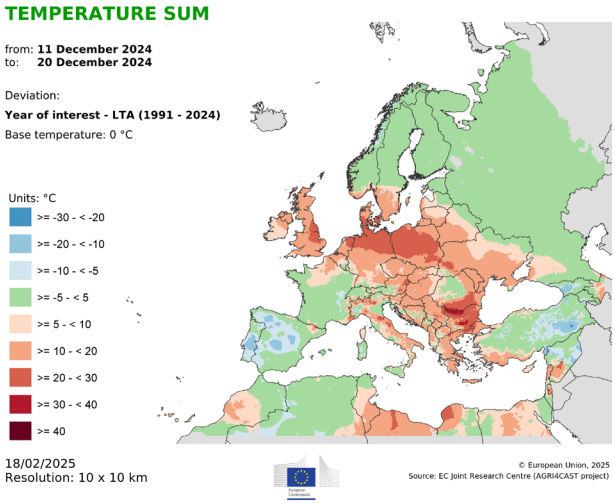
2025 yields come from MARS Crop Yield Forecasting System (output up to 10.02.2025).

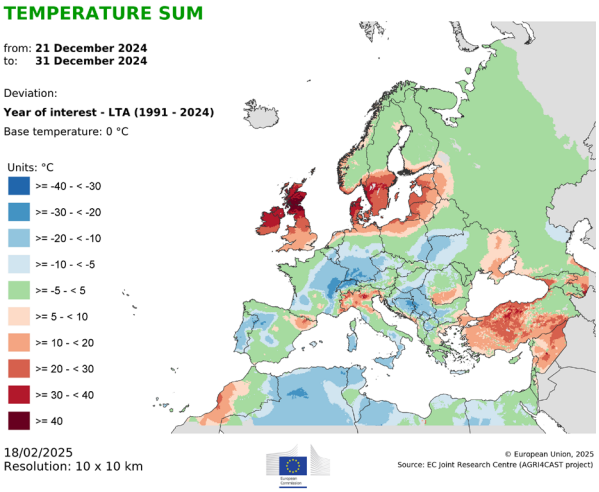
The column header '%25/5yrs' stands for the 2025 change with respect to the 5-year average (%). Similarly, '%25/24' stands for the 2025 change with respect to 2024 (%).

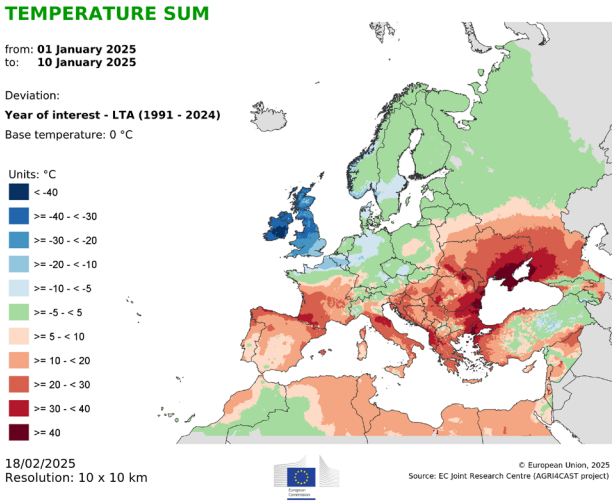
4. Atlas

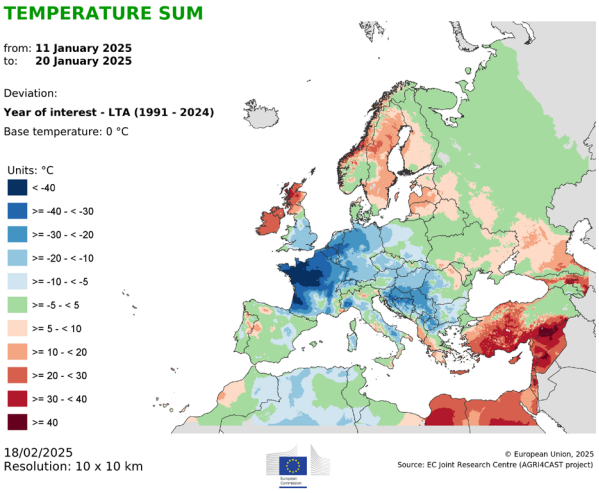
Temperature regime

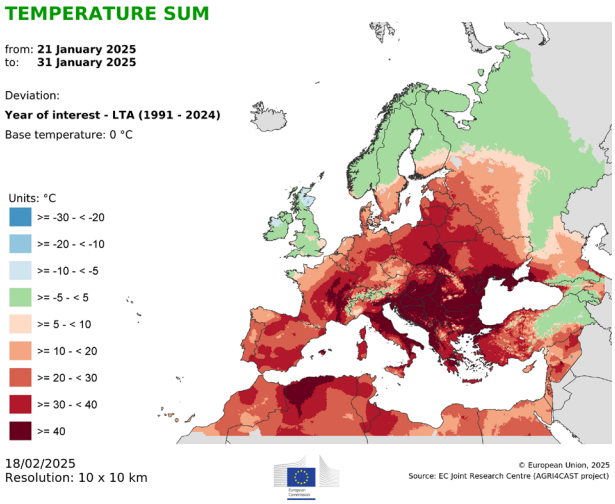








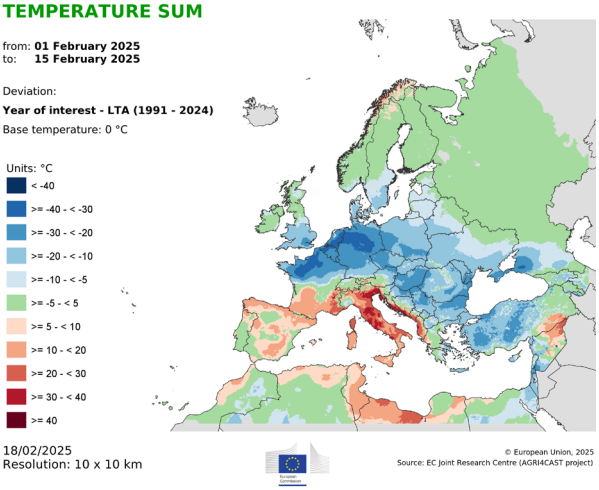




TEMPERATURE SUM

from: **01 February 2025**
to: **15 February 2025**

Deviation:
Year of interest - LTA (1991 - 2024)
Base temperature: 0 °C

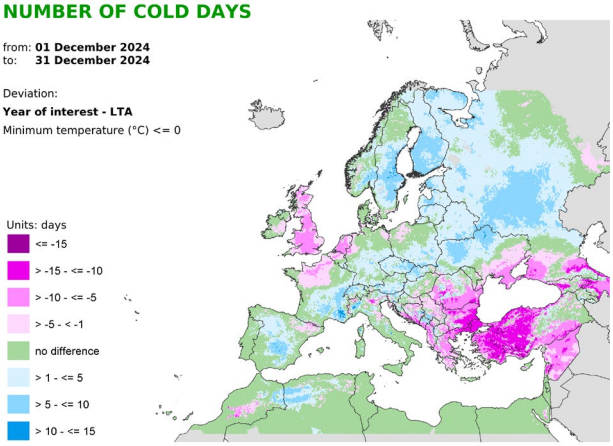


18/02/2025
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 December 2024**
to: **31 December 2024**

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

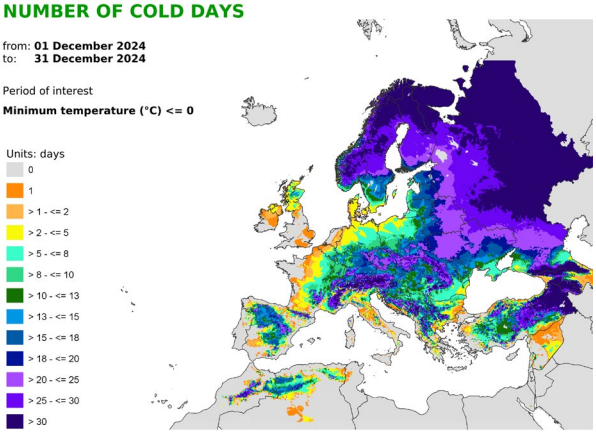


17/02/2025
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 December 2024**
to: **31 December 2024**

Period of interest
Minimum temperature (°C) <= 0

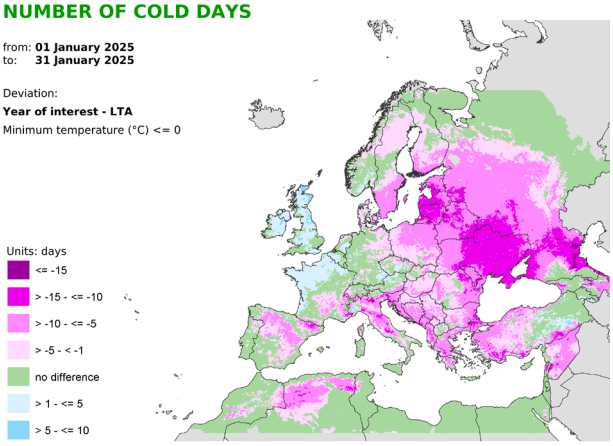


17/02/2025
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 January 2025**
to: **31 January 2025**

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

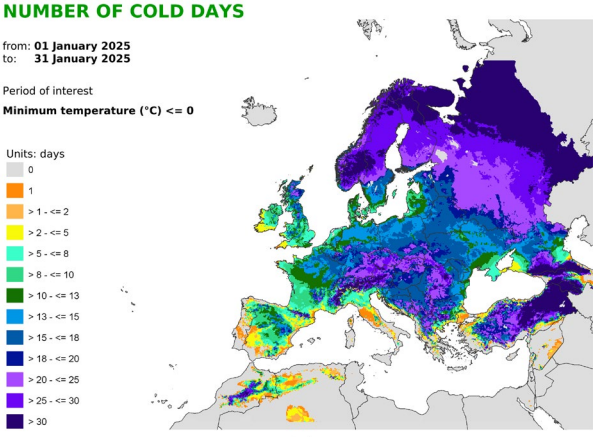


17/02/2025
Resolution: 10 x 10 km

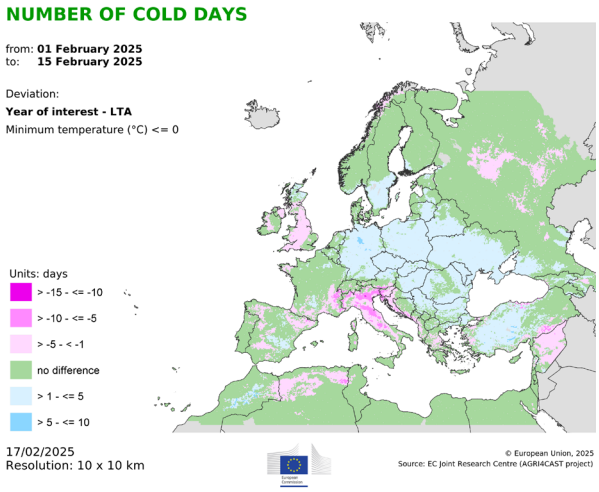
NUMBER OF COLD DAYS

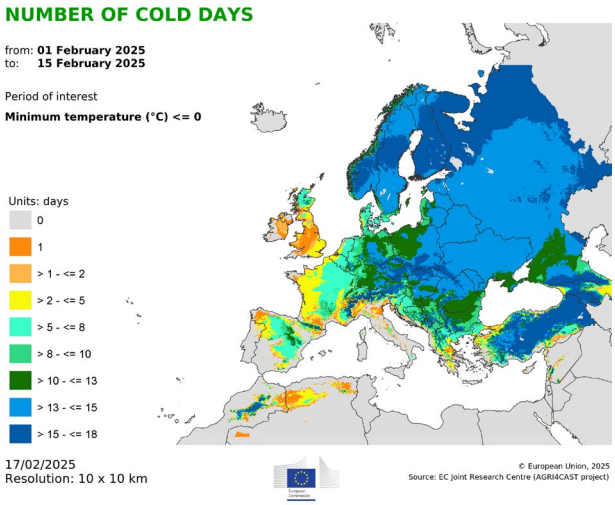
from: **01 January 2025**
to: **31 January 2025**

Period of interest
Minimum temperature (°C) <= 0

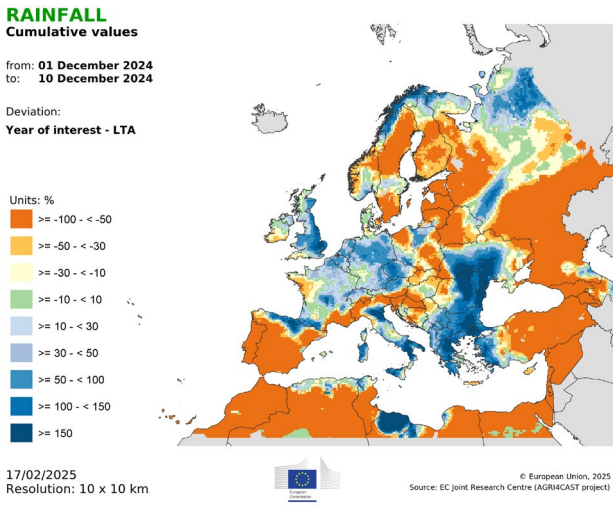


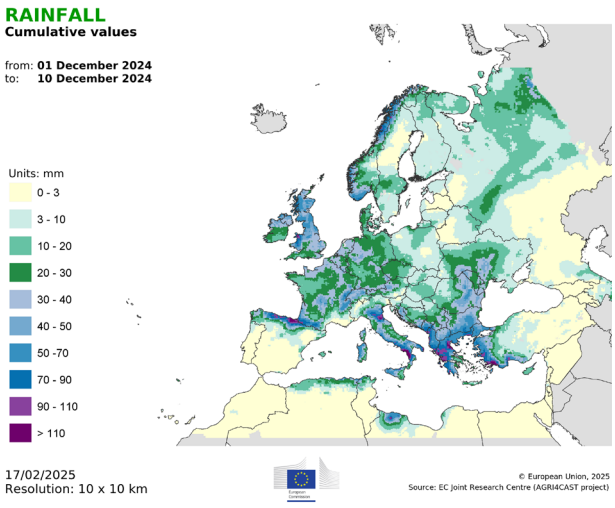
17/02/2025
Resolution: 10 x 10 km

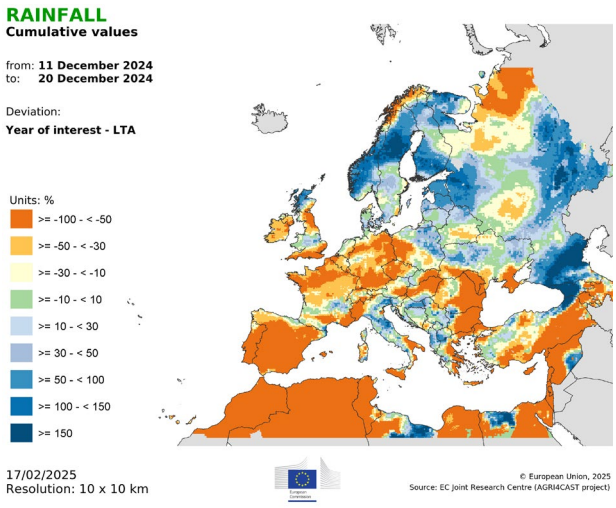


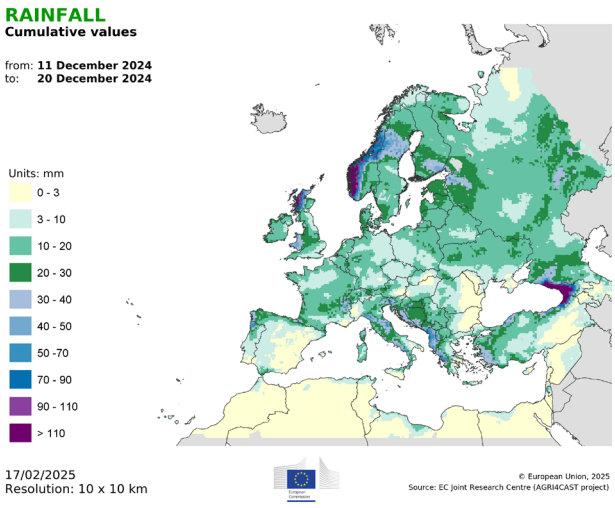


Precipitation







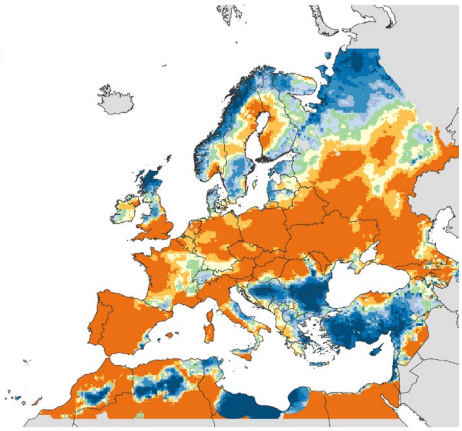


RAINFALL
Cumulative values

from: **21 December 2024**
to: **31 December 2024**

Deviation:
Year of interest - LTA

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

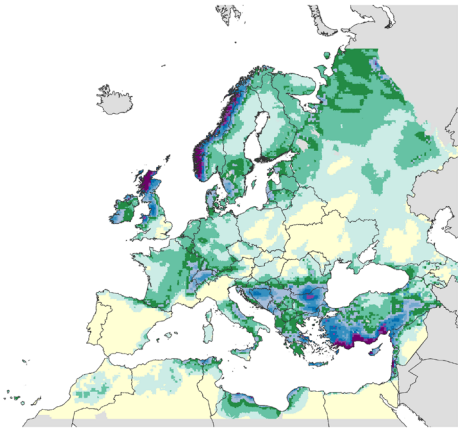


17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **21 December 2024**
to: **31 December 2024**

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



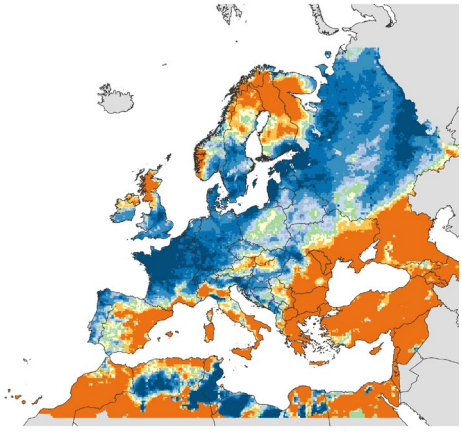
17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 January 2025**
to: **10 January 2025**

Deviation:
Year of interest - LTA

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

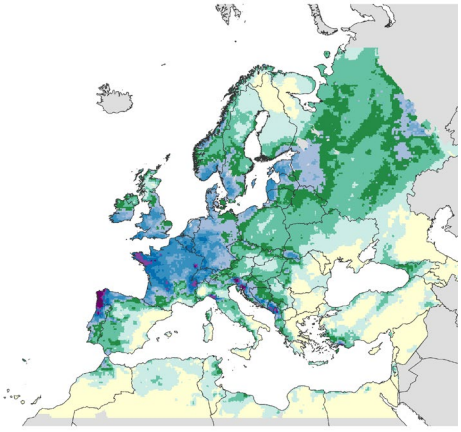


17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 January 2025**
to: **10 January 2025**

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



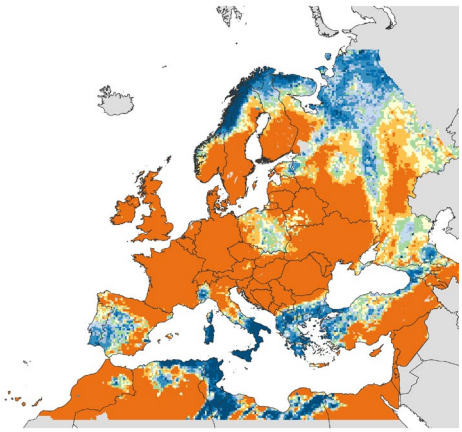
17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **11 January 2025**
to: **20 January 2025**

Deviation:
Year of interest - LTA

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

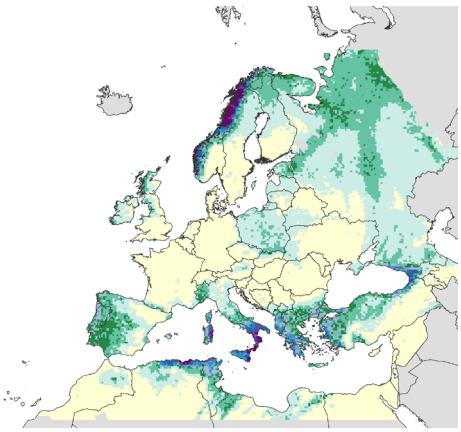


17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **11 January 2025**
to: **20 January 2025**

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



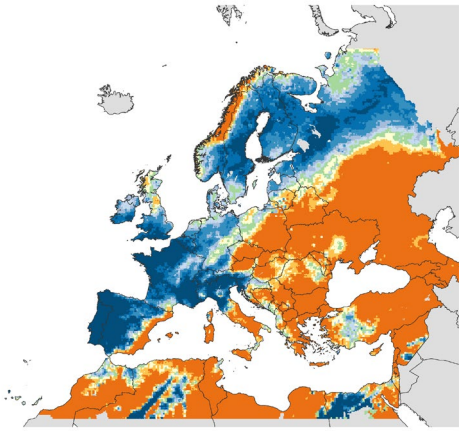
17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **21 January 2025**
to: **31 January 2025**

Deviation:
Year of interest - LTA

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

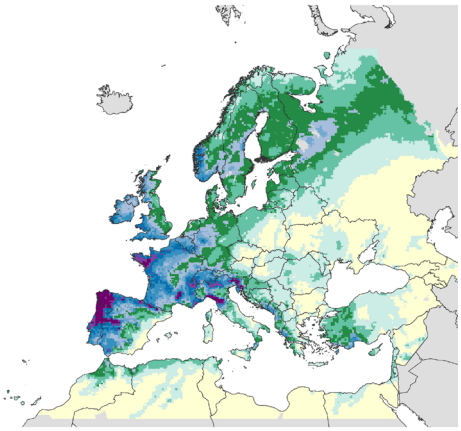


17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **21 January 2025**
to: **31 January 2025**

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



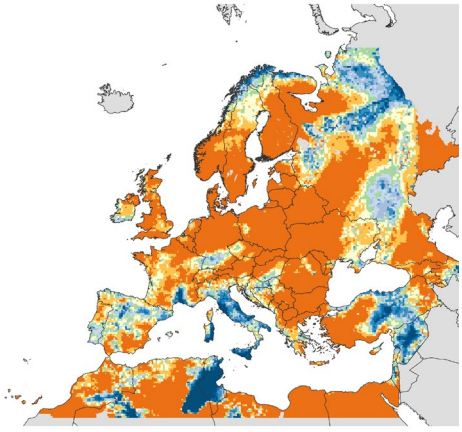
17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 February 2025**
to: **15 February 2025**

Deviation:
Year of interest - LTA

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

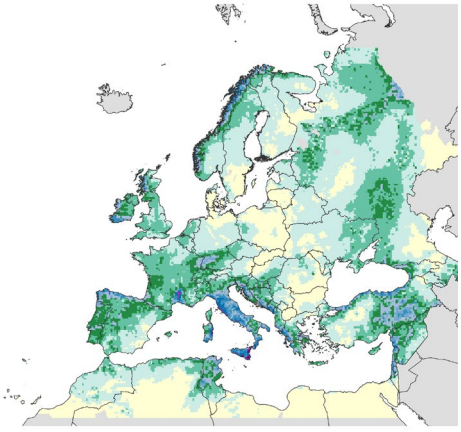


17/02/2025
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 February 2025**
to: **15 February 2025**

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



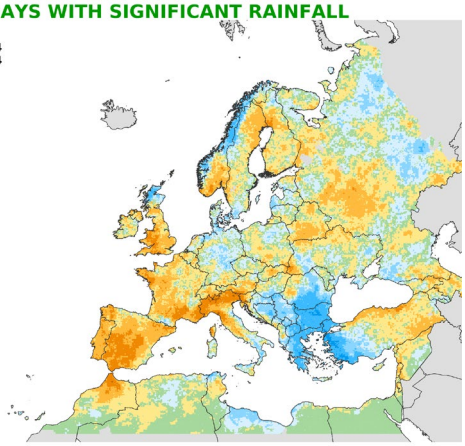
17/02/2025
Resolution: 10 x 10 km

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL

from: **01 December 2024**
to: **31 December 2024**

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

Units: days
- 11 - 15
- 6 - 10
- 3 - 5
- 1 - 2
- no difference
- -2 - -1
- -5 - -3
- -10 - -6
- -15 - -11



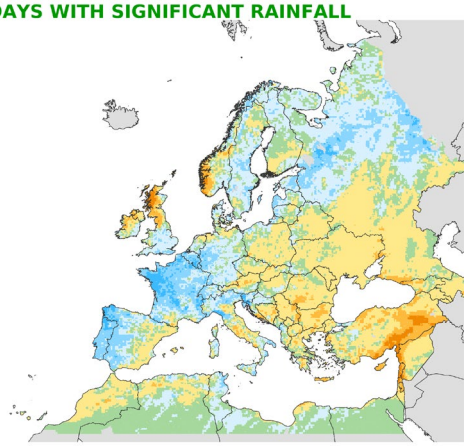
17/02/2025
Resolution: 10 x 10 km

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL

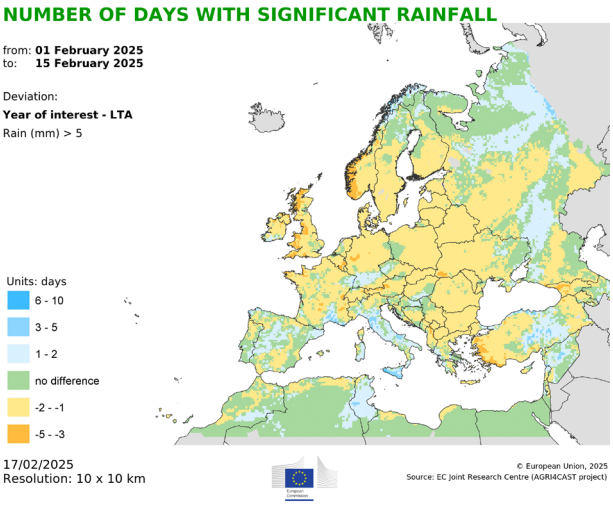
from: **01 January 2025**
to: **31 January 2025**

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

Units: days
- 11 - 15
- 6 - 10
- 3 - 5
- 1 - 2
- no difference
- -2 - -1
- -5 - -3
- -10 - -6



17/02/2025
Resolution: 10 x 10 km


NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from: 01 February 2025
to: 15 February 2025
Deviation:
Year of interest - LTA
Rain (mm) > 5
Units: days
6 - 10
3 - 5
1 - 2
no difference
-2 - -1
-5 - -3
17/02/2025
Resolution: 10 x 10 km
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JRC MARS Bulletin 2025

Date	Publication	Reference
24 Feb	Agromet analysis	Vol. 33 No 1
24 Mar	Agromet analysis, yield forecast	Vol. 33 No 2
22 Apr	Agromet analysis, remote sensing, pasture analysis, sowing conditions, yield forecast	Vol. 33 No 3
26 May	Agromet analysis, remote sensing, pasture analysis, sowing update, yield forecast	Vol. 33 No 4
23 Jun	Agromet analysis, remote sensing, pasture analysis, rice analysis, yield forecast	Vol. 33 No 5
21 Jul	Agromet analysis, remote sensing, pasture analysis, harvesting conditions, yield forecast	Vol. 33 No 6
25 Aug	Agromet analysis, remote sensing, pasture update, harvesting update, yield forecast	Vol. 33 No 7
22 Sep	Agromet analysis, remote sensing, pasture analysis, rice analysis, harvesting update, yield forecast	Vol. 33 No 8
27 Oct	Agromet analysis, pasture update, sowing conditions, harvesting update, yield forecast	Vol. 33 No 9
24 Nov	Agromet analysis, sowing update, harvesting update	Vol. 33 No 10

Mission statement

The Joint Research Centre provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society.

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Analysis and reports

Biavetti, I., Bussay, A., Cerrani, I., Claverie, M., De Palma, P., Fumagalli, D., Henin, R.,, Luque Reyes, J., Manfron, G., Morel, J., Niemeyer, S., Nisini, L., Panarello, L., Rossi, M., Seguini, L., Tarnavsky, E., Thiemig, V., Todoroff, P., van den Berg, M., Zucchini, A.

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Technical note

The long-term average (LTA) used within this Bulletin as a reference is calculated on the basis of weather data from 1991-2024.

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