

JRC MARS Bulletin

Crop monitoring in Europe

January 2022

Winter crops in fair to good condition

Frost tolerance remains weakly developed

Relatively mild winter weather in most parts of Europe was favourable for winter crops, and no significant frost damage is expected to have occurred. However, the build-up of frost tolerance remains generally weak, which is of particular concern for the Black Sea region.

Winter crops in most parts of Europe benefited from slightly warmer-than-usual temperatures and seasonal to above-seasonal precipitation during the review period. These conditions allowed stands that were lagging behind in development to partially catch up, and currently, winter crops are generally in fair to good (or very good) condition. Information collected from several sources confirms a significant increase in the area sown to rapeseed compared to the previous season (e.g. +12.1% in France, +8.7% in Germany), whereas the area sown to winter cereals has remained approximately stable.

According to our crop model simulations, frost damage to winter cereals has so far not occurred.

However, as another consequence of the mild conditions, the build-up of frost tolerance remains weak, with the exception of northern and central-eastern parts of Europe, where winter crops are almost or fully hardened by now.

The weak hardening of the winter crops in areas around the Black Sea, is of particular consideration. Precipitation was above average in this region, but mostly in the form of rain, or of snow that has melted since then; thus the snow cover is very limited, and a cold snap would lead to frost damages, especially in late-sown fields.

A marked rain deficit extending along the Mediterranean, from southern Spain to northern Italy has had no significant negative impact on winter crops so far.

In northern Africa, persisting drought conditions in Morocco negatively impacted the growth and development of winter crops, whereas rain is imminently needed to sustain adequate crop growth in western and central Algeria.

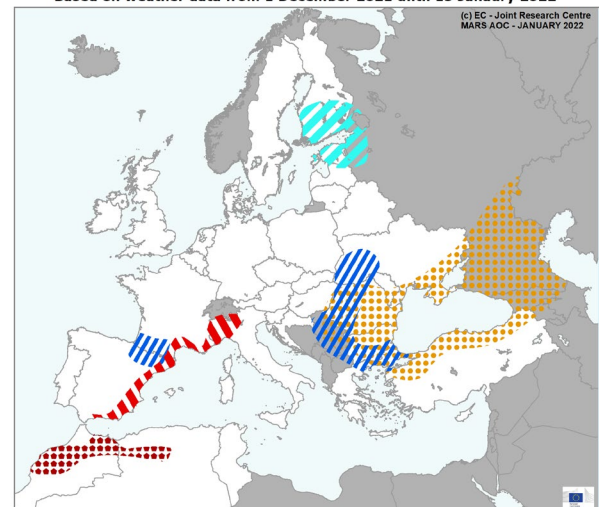
Contents:

1. Agrometeorological overview
2. Winter hardening and frost kill
3. Sowing update
4. Atlas

Covers the period from 1 December until 15 January 2022

AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on weather data from 1 December 2021 until 15 January 2022



1. Agrometeorological overview

1.1 Meteorological review (1 December 2021– 15 January 2022)

Slightly colder-than-usual conditions, with daily mean temperature anomalies with respect to the LTA from $-2\text{ }^{\circ}\text{C}$ to $-0.5\text{ }^{\circ}\text{C}$, were mainly observed in southern Scandinavia and the Baltic region. **More distinct cold anomalies** (with daily minimum temperatures between $-4\text{ }^{\circ}\text{C}$ and $-2\text{ }^{\circ}\text{C}$) were observed in Estonia, Finland and northern Scandinavia. In these regions, the number of cold days (i.e., days with minimum temperature below $0\text{ }^{\circ}\text{C}$) and severe cold events (days with minimum temperature below $-8\text{ }^{\circ}\text{C}$) was remarkably higher than usual.

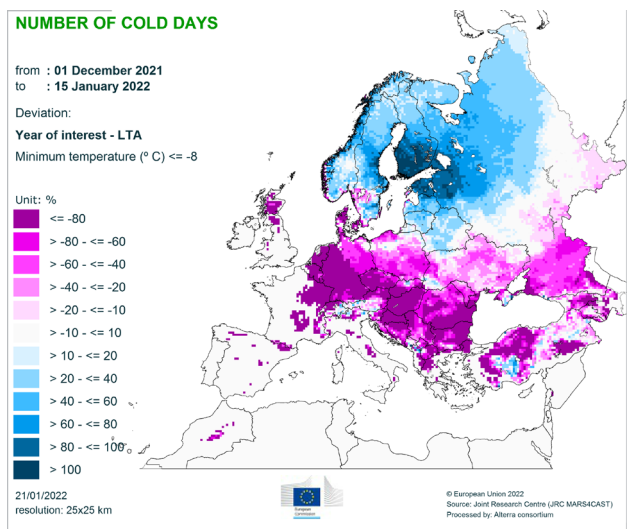
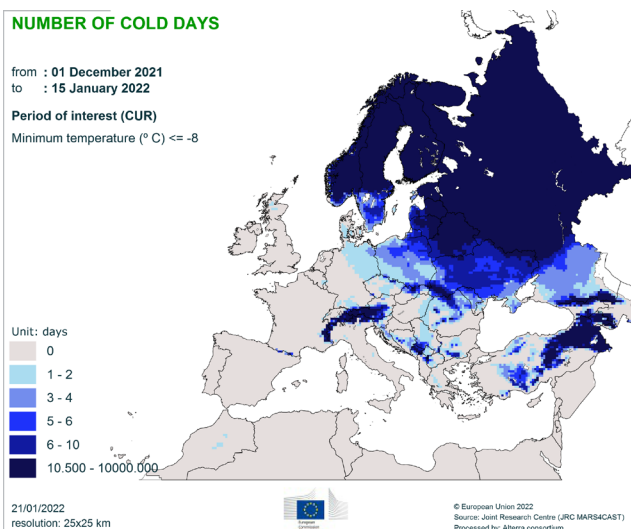
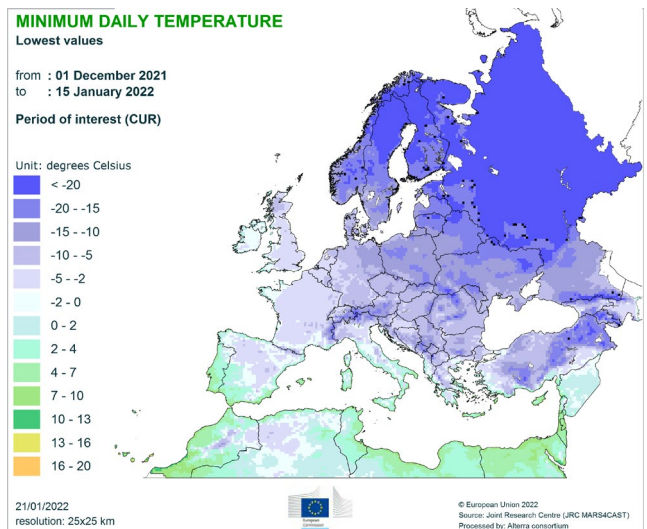
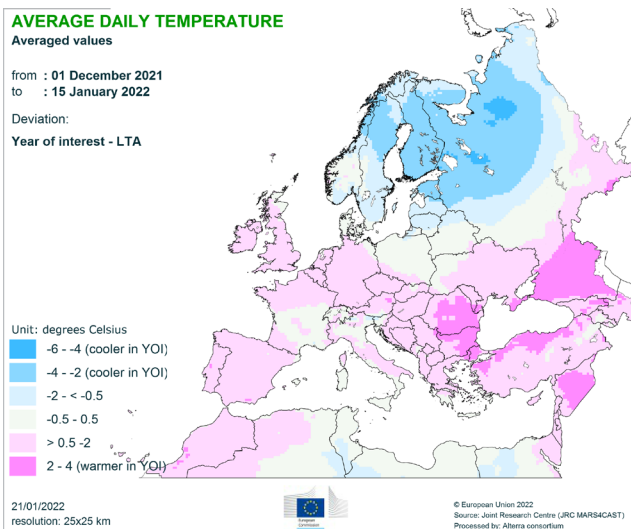
Warmer-than-usual conditions, with daily mean temperature anomalies ranging from $+2\text{ }^{\circ}\text{C}$ to $+4\text{ }^{\circ}\text{C}$, were observed in large areas surrounding the Black Sea.

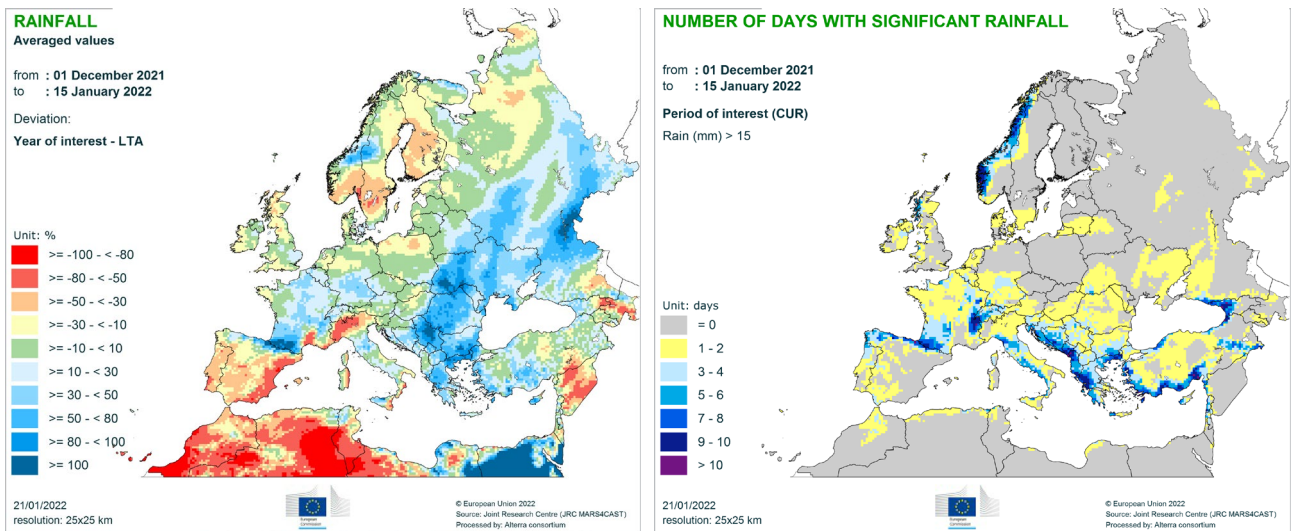
Slightly warmer-than-usual conditions, with daily mean temperature anomalies from $+0.5\text{ }^{\circ}\text{C}$ to $+2\text{ }^{\circ}\text{C}$, were recorded in most other parts of Europe. In all these regions, a remarkable reduction (compared with the LTA)

was observed in the number of cold days and severe cold events. Minimum temperatures remained above $-5\text{ }^{\circ}\text{C}$ in most parts of western Europe; and above $-10\text{ }^{\circ}\text{C}$ in most parts of southern central and south-eastern Europe.

Wetter-than-usual conditions were observed in south-eastern Europe, the northernmost part of Spain, and large parts of France and southern Germany. Anomalies in total precipitation were mainly from 30% to 80% (with respect to the LTA) in these regions. 9 to 10 days with intense precipitation (having a daily total higher than 15 mm) were recorded in the northern and eastern coastal regions of the Aegean Sea, southern coastal parts of Turkey, the Balkan region along the Adriatic coast, northern Spain, and south-western and eastern France.

Drier-than-usual conditions, with anomalies in total precipitation ranging from -80% to -50% , were recorded in southern Spain and north-western Italy.



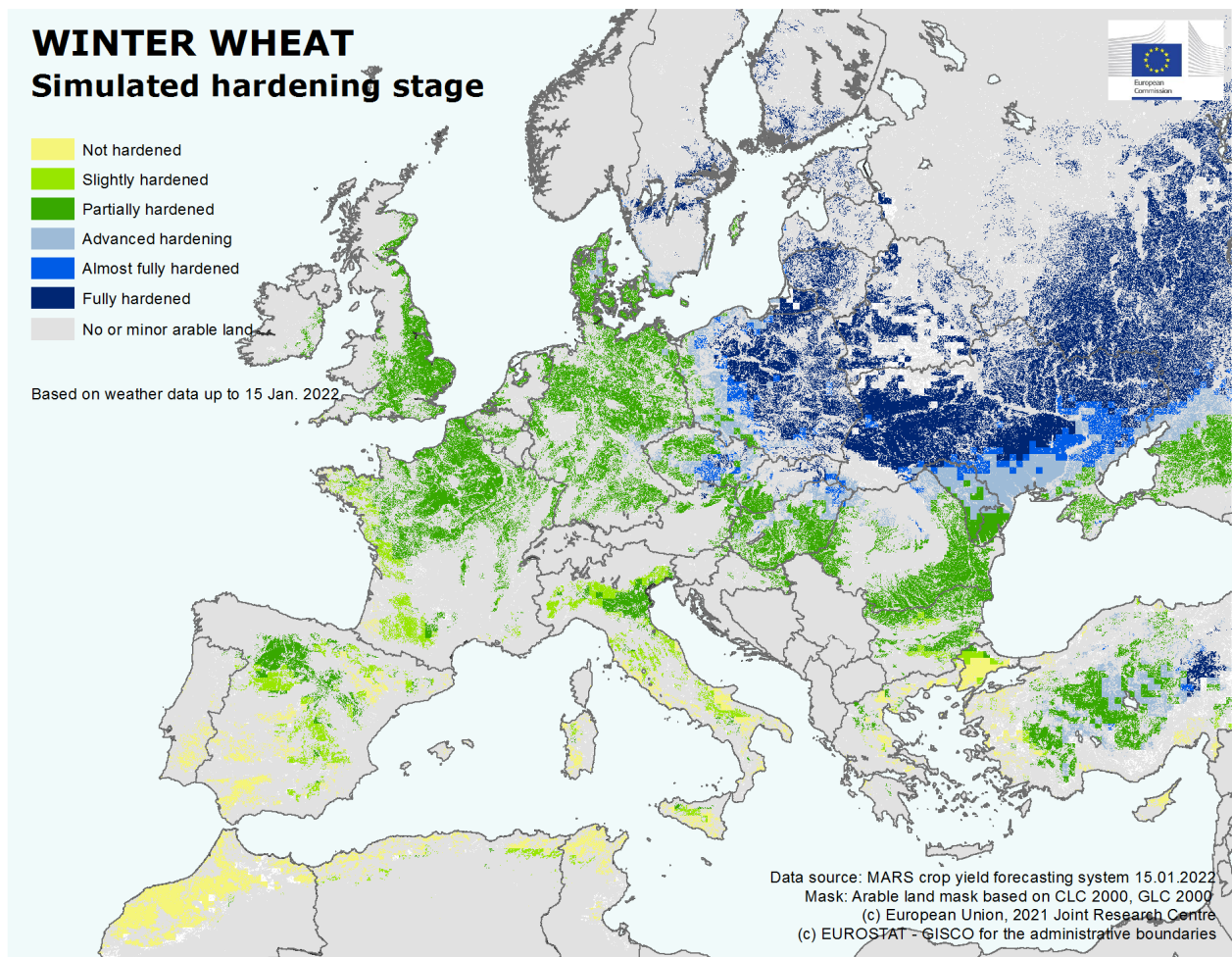


1.2 Weather forecast (21-27 January)

Weather conditions until 27 January are going to be determined by a slowly evolving large-scale trough extending over eastern Europe and the eastern Mediterranean. This deep trough will favour a cold air flow over this region and trigger intense precipitation events. At the same time, a ridge will expand over western and central Europe favouring milder temperature conditions.

The long-term forecasts for the next three months (February, March, and April) show likely-to-very likely warmer-than-usual conditions in most of Europe. Some models predict likely drier-than-usual conditions in western Europe.

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.

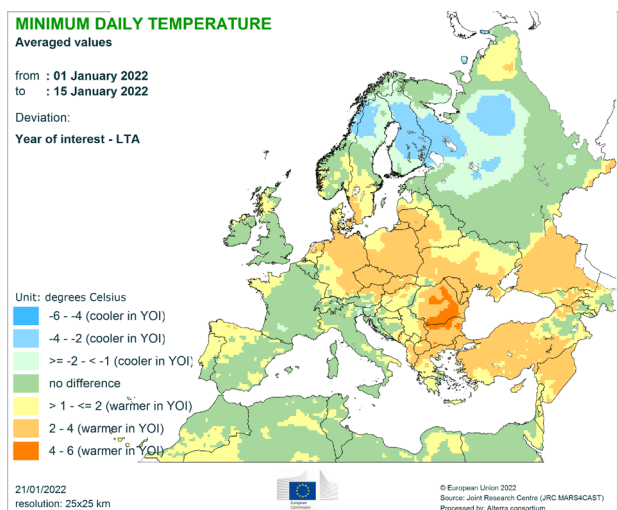
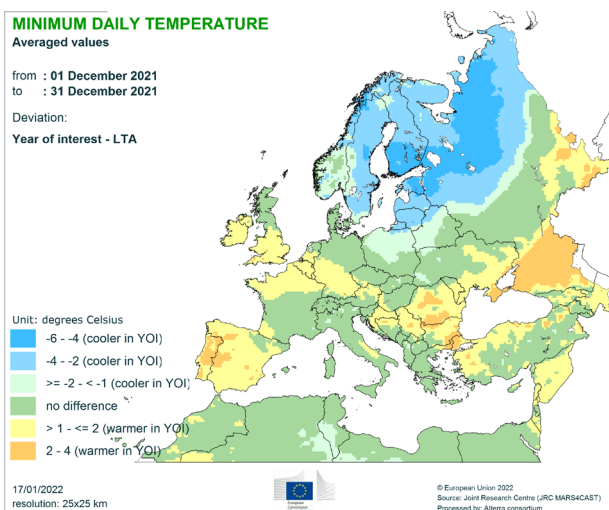
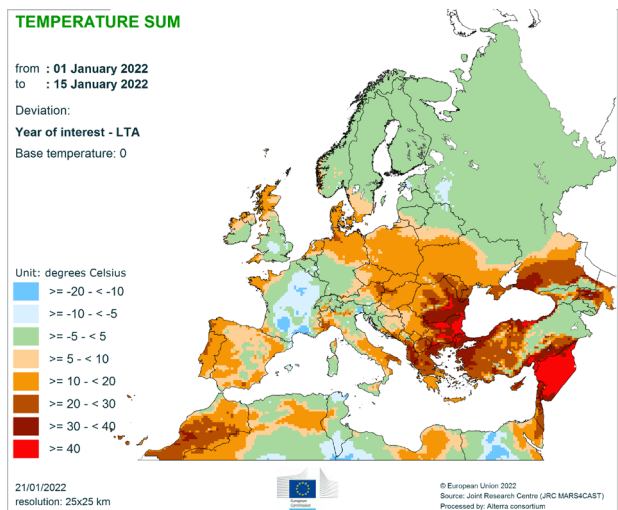
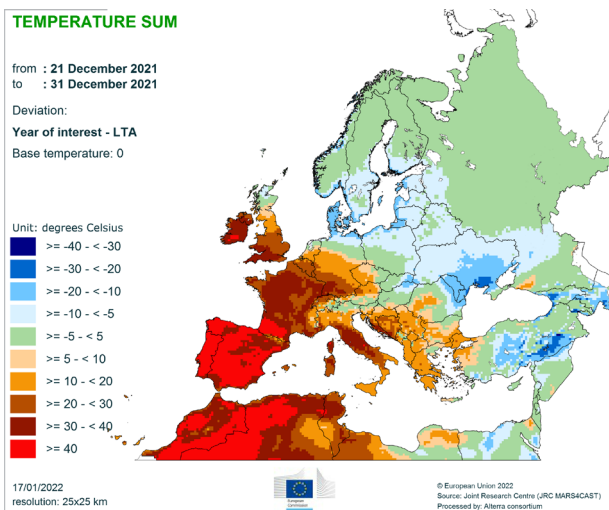
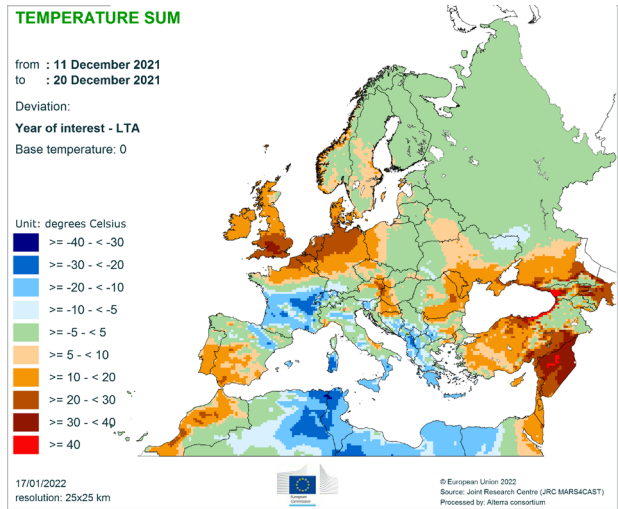
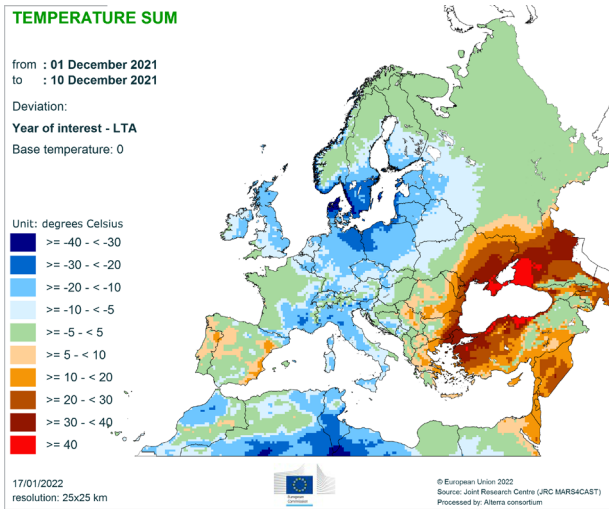
According to our crop model simulations, based on weather data up to 15 January 2022, frost damage to winter cereals has not occurred so far. Compared with the situation reported in the December 2021 issue of the Bulletin (until 3 December 2021), the hardening status has significantly improved in northern Europe and parts of central Europe; most markedly in Sweden, Finland, the Baltic countries, most of Poland, and northern Ukraine, where crops are almost or fully hardened by now.

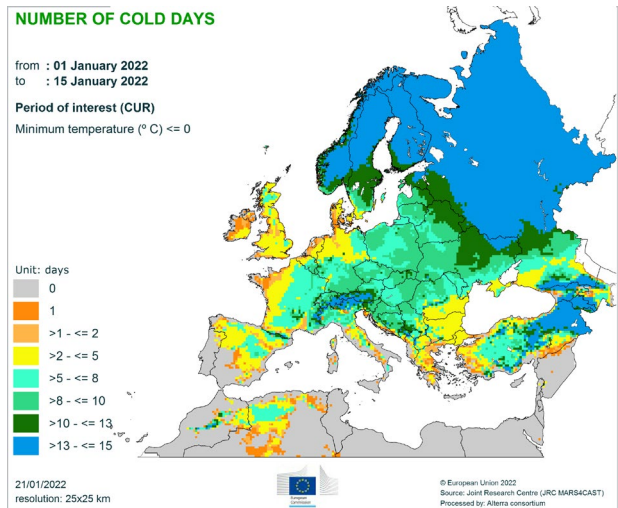
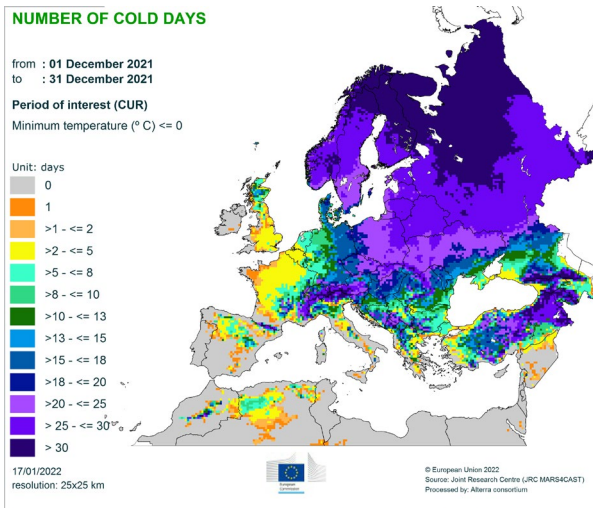
However, the level of frost tolerance of winter crops is weaker than usual in other parts of Europe. The weak hardening of the winter crops in the areas around the

Black Sea, especially Bulgaria, Romania, parts of southern Ukraine, and southern Russia, is of particular consideration. Although an increased frost tolerance was observed at the end of December in response to the temperature drop, a de-hardening process has taken place since then, due to the significantly above-average temperatures experienced during the first days of January. With the limited snow cover present in these countries, a cold snap would lead to frost damage in these areas, especially in late sown fields. The current weather forecast (21 to 27 January) shows a sharp decrease in temperatures in eastern Europe. Frost kill damages can locally occur, depending on the minimum temperatures reached and the timing and intensity of the accompanying snowfall.

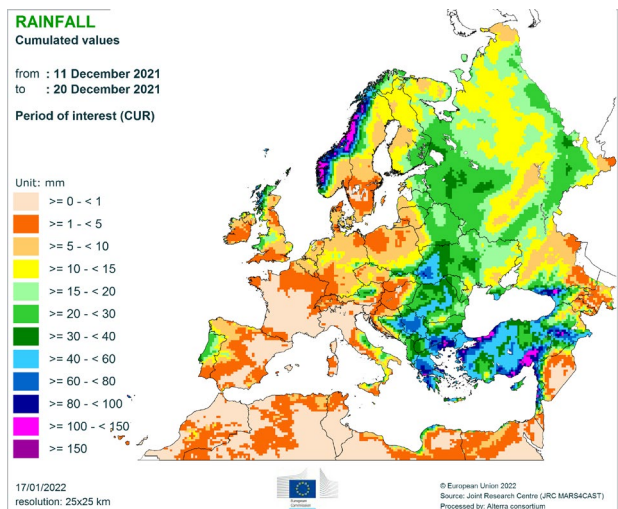
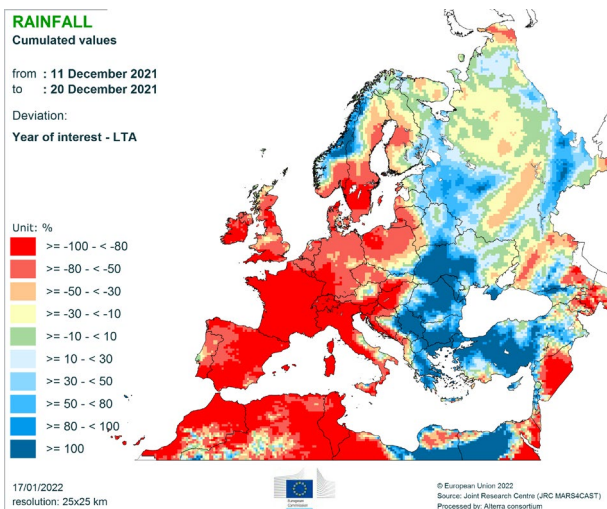
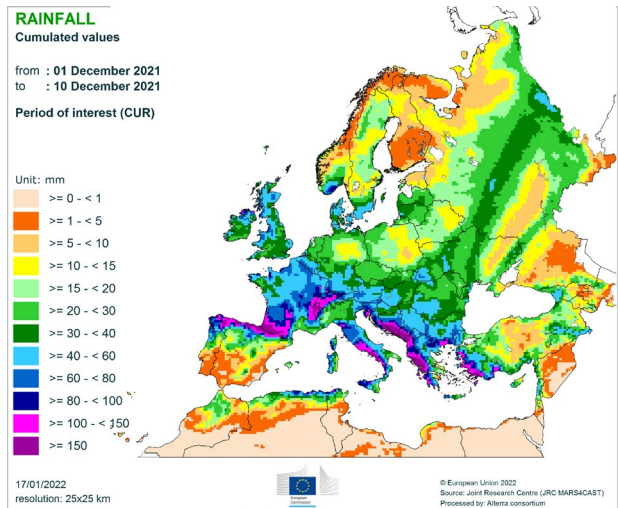
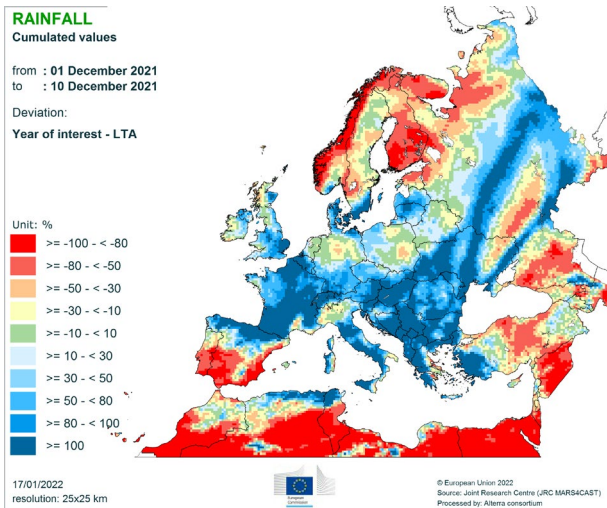
3. Atlas

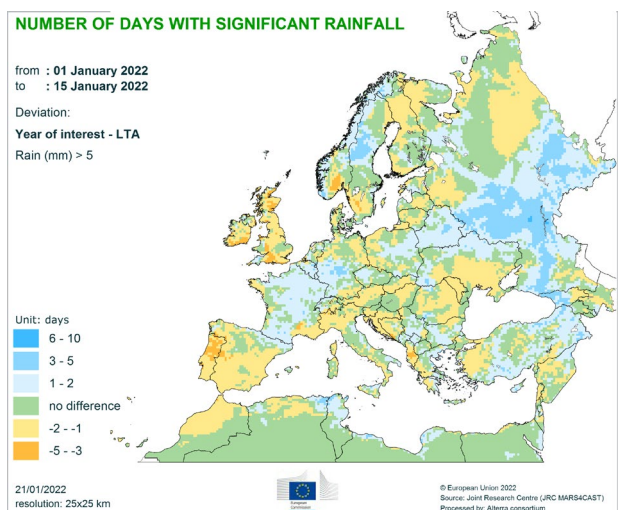
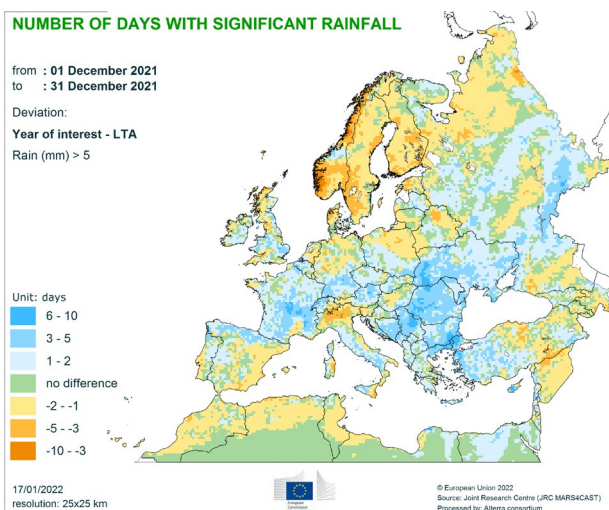
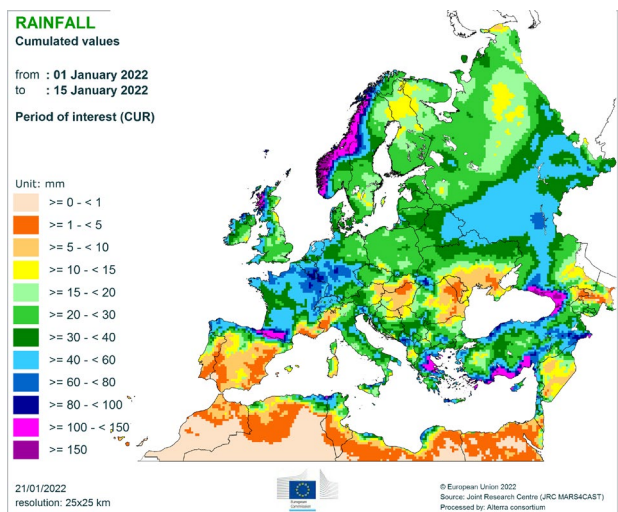
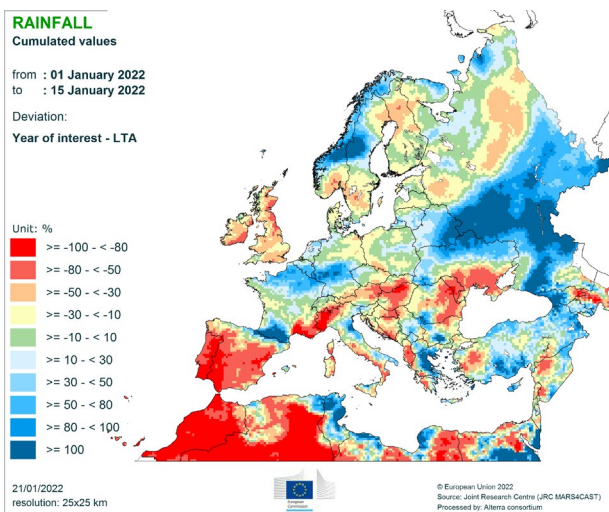
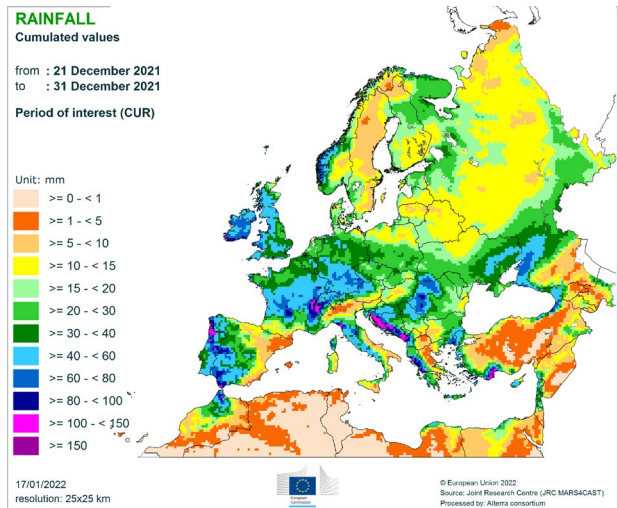
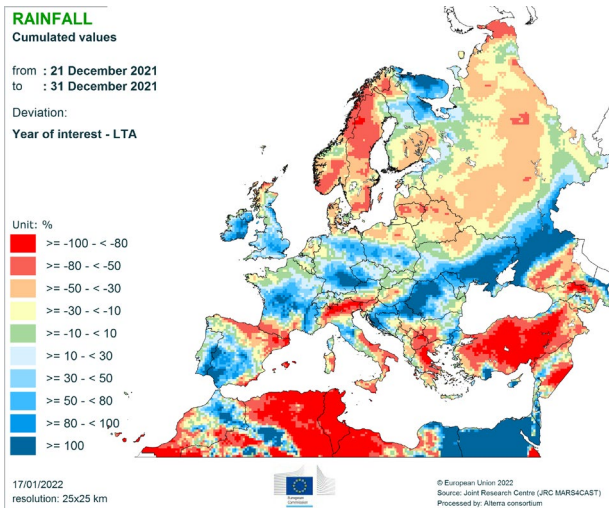
Temperature regime



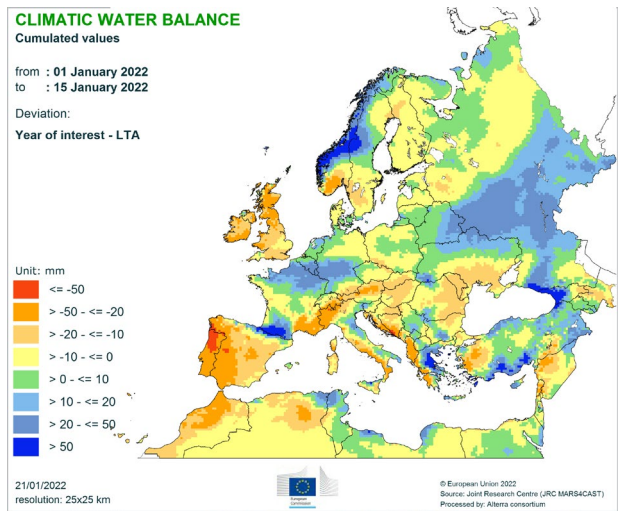
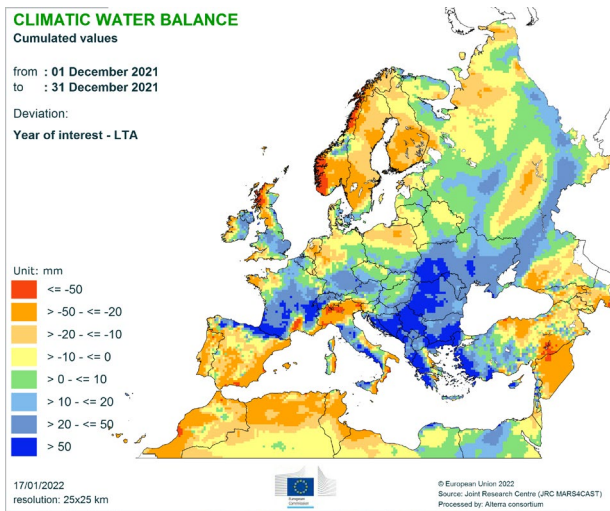


Precipitation





Climatic water balance



JRC MARS Bulletins 2022

Date	Publication	Reference
24 Jan	Agromet analysis	Vol. 30 No 1
21 Feb	Agromet analysis	Vol. 30 No 2
21 Mar	Agromet analysis, yield forecast	Vol. 30 No 3
26 Apr	Agromet analysis, remote sensing, pasture analysis, sowing conditions, yield forecast	Vol. 30 No 4
23 May	Agromet analysis, remote sensing, pasture analysis, sowing update, yield forecast	Vol. 30 No 5
20 Jun	Agromet analysis, remote sensing, pasture analysis, rice analysis, yield forecast	Vol. 30 No 6
25 Jul	Agromet analysis, remote sensing, pasture analysis, harvesting conditions, yield forecast	Vol. 30 No 7
22 Aug	Agromet analysis, remote sensing, pasture update, harvesting update, yield forecast	Vol. 30 No 8
19 Sep	Agromet analysis, remote sensing, pasture analysis, rice analysis, harvesting update, yield forecast	Vol. 30 No 9
24 Oct	Agromet analysis, pasture update, sowing conditions, harvesting update, yield forecast	Vol. 30 No 10
21 Nov	Agromet analysis, sowing update, harvesting update	Vol. 30 No 11
19 Dec	Agromet analysis	Vol. 30 No 12

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Analysis and reports

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Technical note

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