

# The European Commission's science and knowledge service

## Joint Research Centre



# JRC MARS Bulletin

## Crop monitoring in Europe

### August 2018

### Yield forecasts revised further downwards

Grain maize still positive because of good performance in south-eastern Europe

Yield forecasts of winter and spring cereals were revised further downwards at EU level, mainly due to continued exceptionally warm and/or dry weather conditions in northern and central Europe. The forecasts for durum wheat, winter barley and rapeseed underwent only minor adjustments, as harvesting of these crops had mostly been finished by the end of the previous review period. The yield forecast for grain maize was slightly revised downwards at EU level but remains above the 5-year average: Sharp downward revisions in central Europe as well as in France were counterbalanced by strong upward revisions in south-eastern Europe, where weather conditions were particularly favourable, especially in Romania and Bulgaria.

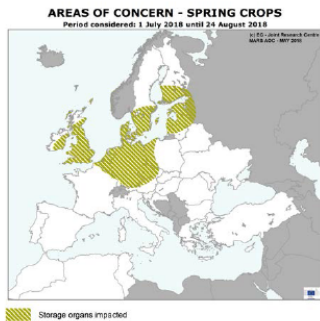
For sugar beet and potatoes, which are of less significance in south-eastern Europe, the balance was distinctly negative: For both crops the yield forecast at EU level is currently below the 5-year average. The forecast for green maize (i.e. fodder maize), was even more strongly reduced, by 8.4% to 10% below the 5-year average.

In large parts of central and northern Europe as well as in north-eastern France, pasture productivity – as inferred from remote sensing indicators – was at its lowest level since the start of our observations (in 1999).

**Content:**

1. Agro-meteorological overview
2. Observed canopy conditions by remote sensing
3. Country analysis
4. Crop yield forecasts
5. Pasture-regional monitoring
6. Atlas

Covers the period from 1 July until 20 August



Crop	Yield (t/ha)				
	Avg 5yrs	July Bulletin	MARS 2018 forecasts	% Diff 18/5yrs	% Diff July
<b>TOTAL CEREALS</b>	5.56	5.38	5.29	-4.8	-1.7
<b>Total Wheat</b>	5.73	5.59	5.49	-4.2	-1.8
soft wheat	5.97	5.82	5.70	-4.5	-2.1
durum wheat	3.39	3.48	3.47	+2.3	-0.3
<b>Total Barley</b>	4.91	4.74	4.71	-4.0	-0.6
spring barley	4.25	4.13	4.07	-4.3	-1.5
winter barley	5.79	5.60	5.61	-3.1	+0.2
<b>Grain maize</b>	7.30	7.64	7.57	+3.6	-0.9
<b>Rye</b>	3.93	3.48	3.37	-14	-3.2
<b>Triticale</b>	4.23	4.10	4.04	-4.5	-1.5
<b>Rape and turnip rape</b>	3.29	2.89	2.87	-13	-0.7
<b>Potato</b>	33.5	33.3	31.1	-6.9	-6.6
<b>Sugar beet</b>	74.6	77.9	73.8	-1.1	-5.2
<b>Sunflower</b>	2.12	2.47	2.45	+16	-0.8

Issued: 24 August 2018

# JRC MARS BULLETIN

## - September 2018 -

Committee for the Common Organisation  
of the Agricultural Markets  
Brussels, DG AGRI, 27 September 2018

# JRC MARS Bulletin

## Crop monitoring in Europe

### September 2018

**Weather improvements too late for crops**  
Partial pasture recovery in northern Europe

*Yield forecasts of spring and summer crops were slightly revised downwards at EU level. The outlook for sunflowers and grain maize remains above the five-year average. Forecasts for winter crops were not revisited for this issue of the Bulletin, as the season is finished.*

Conditions of drought continued in central and eastern Germany and western Poland. In other parts of central and northern Europe, weather conditions have become more favourable since mid August, but these improvements were generally too small or came too late to significantly improve the yield outlook for crops in these regions.

Eastern Europe continues to face a strong temperature anomaly (+2°C/+4°C), and a heatwave occurred at the end of August in southern Hungary and the Black Sea region. Grain maize and sunflower crops were affected in some regions, but the overall yield outlook remains positive to very positive throughout southern Europe, except southern Russia.

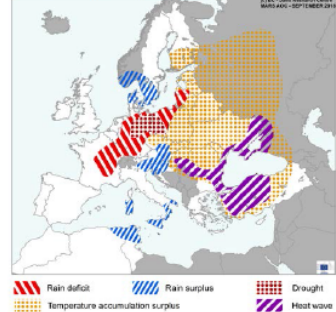
Pasture productivity in northern Europe and parts of central Europe recovered slightly from the very low levels observed in August. In southern Europe, pasture productivity has remained above the average thanks to sufficient precipitation to satisfy water demands.

- Content:**
1. Agro-meteorological overview
  2. Remote sensing – observed canopy conditions
  3. Country analysis
  4. Crop yield forecasts
  5. Pasture in Europe – regional monitoring
  6. Atlas

Covers the period from 1 August until 10 September

#### AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on weather data from 1 August 2018 until 22 September 2018



Crop	Yield (t/ha)				
	Avg 5yrs	August Bulletin	MARS 2018 forecasts	% Diff 18yrs	% Diff August
<b>TOTAL CEREALS</b>	5,56	5,29	5,27	-5,1	-0,4
<b>Total Wheat</b>	5,73	5,49	5,48	-4,3	-0,2
soft wheat	5,97	5,70	5,70	-4,5	+0,0
durum wheat	3,39	3,47	3,48	+2,5	+0,3
<b>Total Barley</b>	4,91	4,71	4,69	-4,3	-0,4
spring barley	4,25	4,07	4,05	-4,7	-0,5
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<b>Grain maize</b>	7,29	7,57	7,49	+2,6	-1,1
<b>Rye</b>	3,93	3,37	3,37	-1,4	+0,0
<b>Triticale</b>	4,23	4,04	4,02	-4,9	-0,5
<b>Rape and turnip rape</b>	3,29	2,87	2,88	-13	+0,3
<b>Potato</b>	33,5	31,1	30,9	-7,8	-0,7
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# Content

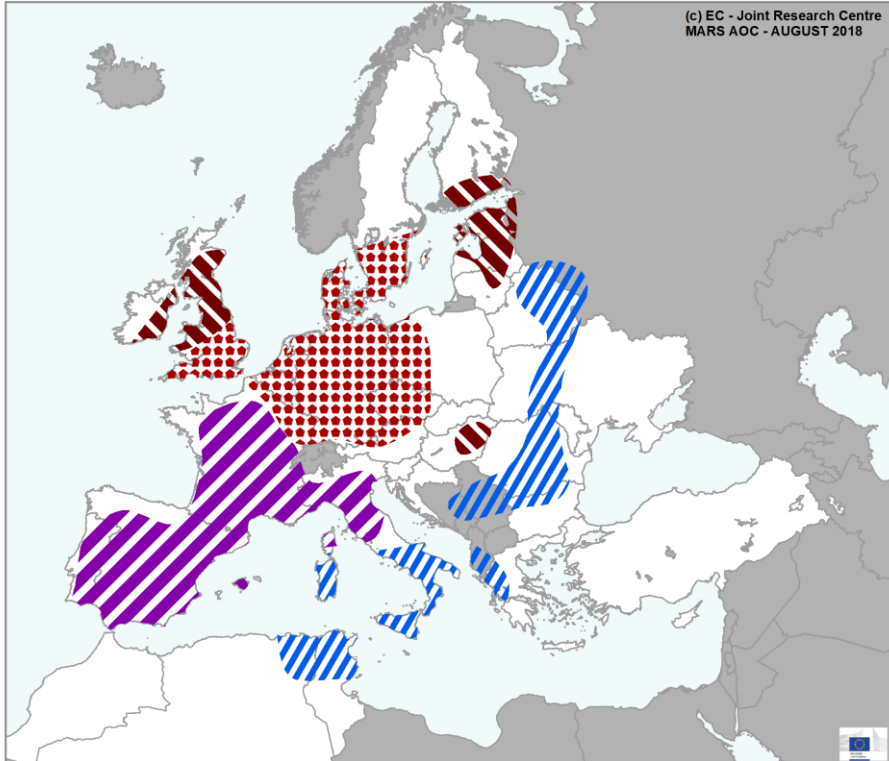
- Areas of Concern
- Meteorological overview (summer 2018 and 1-~~10~~24 Sept)
- Remote sensing - arable land
- Crop forecasts
- Pasture productivity
- Weather forecast until 22 September 2018


# AoC August Bulletin (1 July – 1 September)


## AREAS OF CONCERN - EXTREME WEATHER EVENTS


Based on weather data from 1 July 2018 until 1 September 2018


(c) EC - Joint Research Centre  
MARS AOC - AUGUST 2018



 Hot and dry conditions

 Rain surplus

 Drought

 Heat wave

- Continued drought in southern SE, DK, Benelux, central and northern DE, extending into southern DE, CZ and southern UK.
- Persistent rain and high temperatures deficit in IE, central and northern UK, LV, EE and Eastern HU
- Heat wave(s) in FR, southern DE, central and northern IT, ES and PT.
- Distinct rain surplus in southern IT, western GR, RO, BG, UA, BY and TN

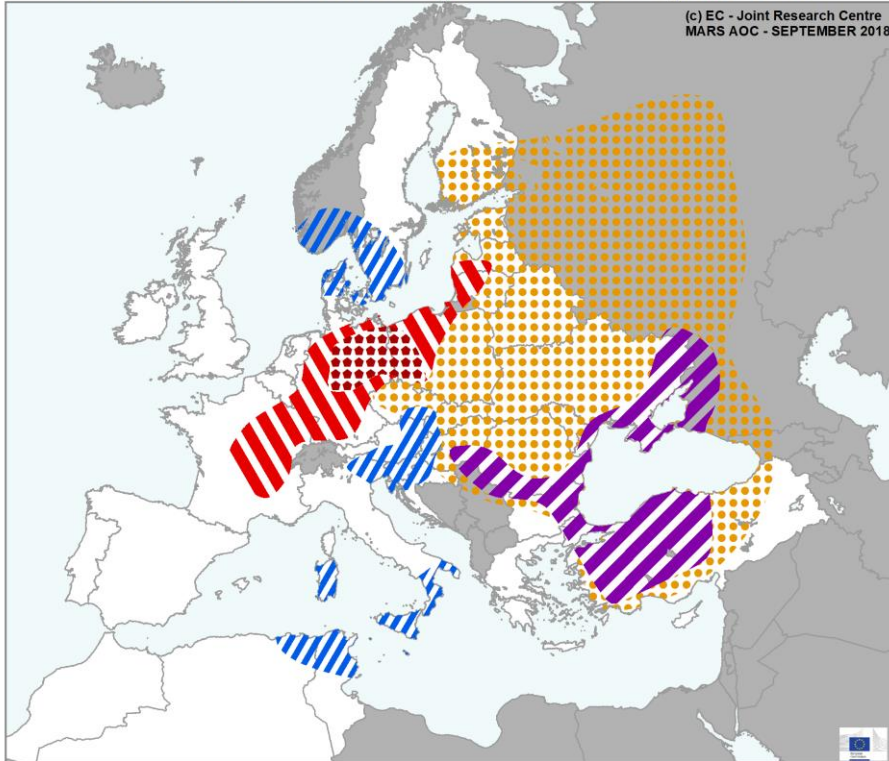
Based on observed weather data until 24 August and weather forecast until 1 September

# AoC September Bulletin (1 Aug – 22 Sept)

## AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on weather data from 1 August 2018 until 22 September 2018

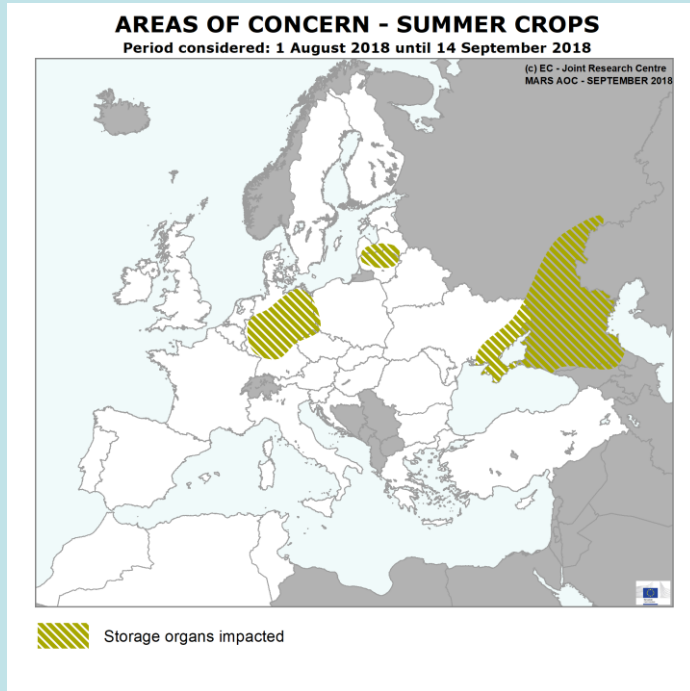
(c) EC - Joint Research Centre  
MARS AOC - SEPTEMBER 2018



Based on observed weather data until 12 September and weather forecast until 22 September

- Drought persists in eastern DE and western PL.
- Continued rain deficit in other parts of DE, northern PL, eastern FR, LV and LT
- Strong positive temperature anomaly ( $>2^{\circ}\text{C}$ ) throughout eastern Europe
- Heatwave (end of August) in southern HU, RO, BG, TK, south-eastern UA and RU
- Surplus precipitation in central Europe (CZ, AT, SI, HR), northern Europe (DK, SE) and Mediterranean region (IT, TN).

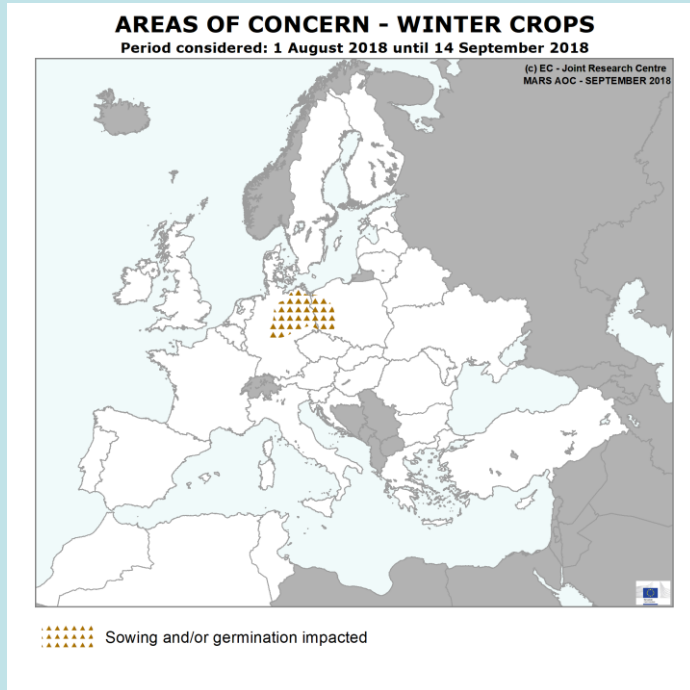
# AoC Impacts on summer crops



Based on data until 14 September

- Yield formation of maize, potatoes, sugar beet further impacted in DE, western PO, LV, LT; most markedly in region affected by continued drought
- Hot conditions and heatwave(s) in eastern Europe, mostly with little impact at national level (late in season, mitigated by irrigation) except on maize in southern RU.
- Some favourable effects of surplus precipitation in central Europe (CZ, AT, SI, HR) and in northern Europe (DK, SE)
- In other parts formerly impacted by hot and dry conditions (e.g. UK, northern FR, Benelux), improved weather conditions where too small or arrived too late for significant improvements to crop yield outlook.

# AoC Impacts on winter crops (sowing)

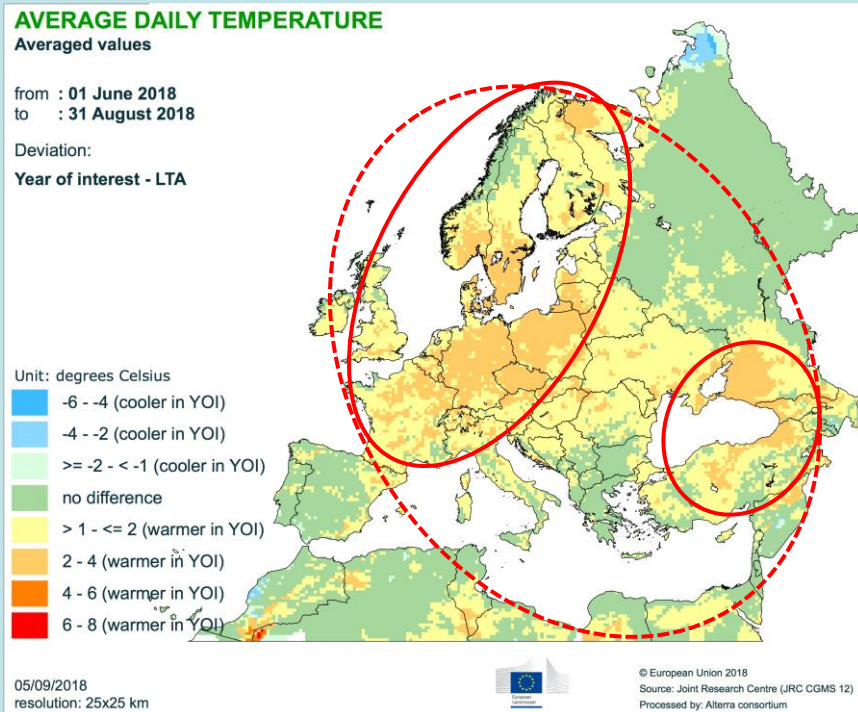


Based on data until 14 September

- Sowing of rapeseed delayed (or poor emergence of sown crops) in central and eastern parts of Germany and western Poland.

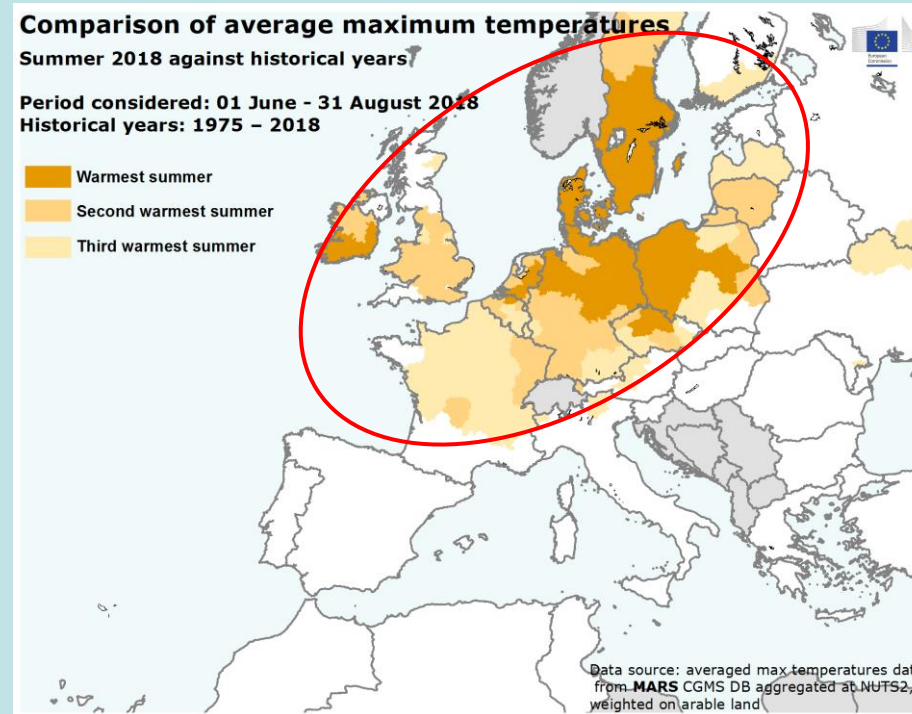
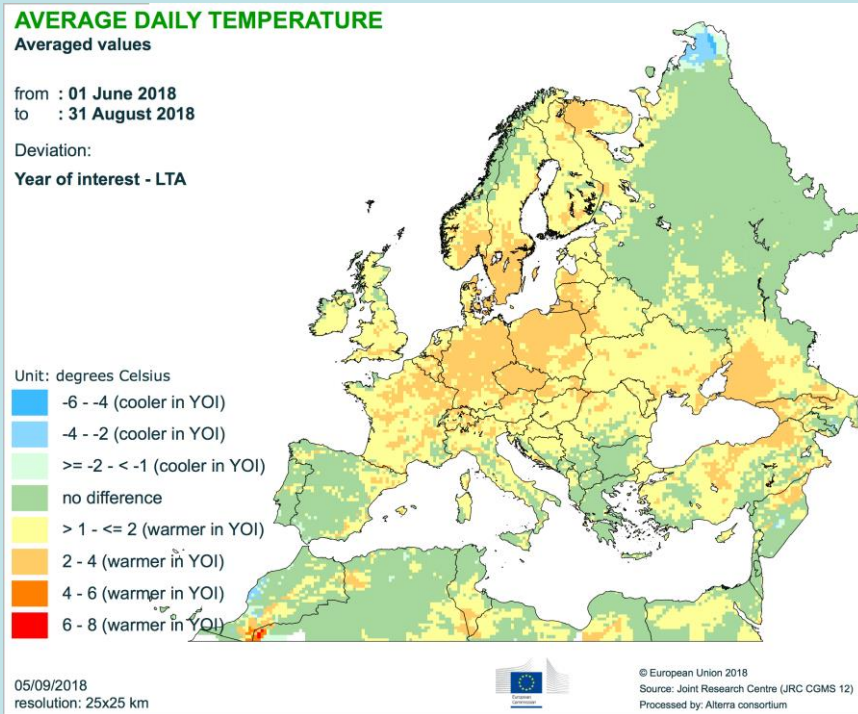


# Weather review – summer 2018



- Warmer-than-usual, in most of Europe. Highest temperature anomalies ( $> 2^{\circ}\text{C}$ ) in northern central Europe, northern France, southern Scandinavia, Baltic region, eastern Black Sea region.
- One of the warmest summers in our records in Poland, Germany, the Czech Republic, the Benelux countries, Scandinavia, the Baltic countries and the British Isles.
- Seasonal temperatures in southern Europe and north-eastern Europe.

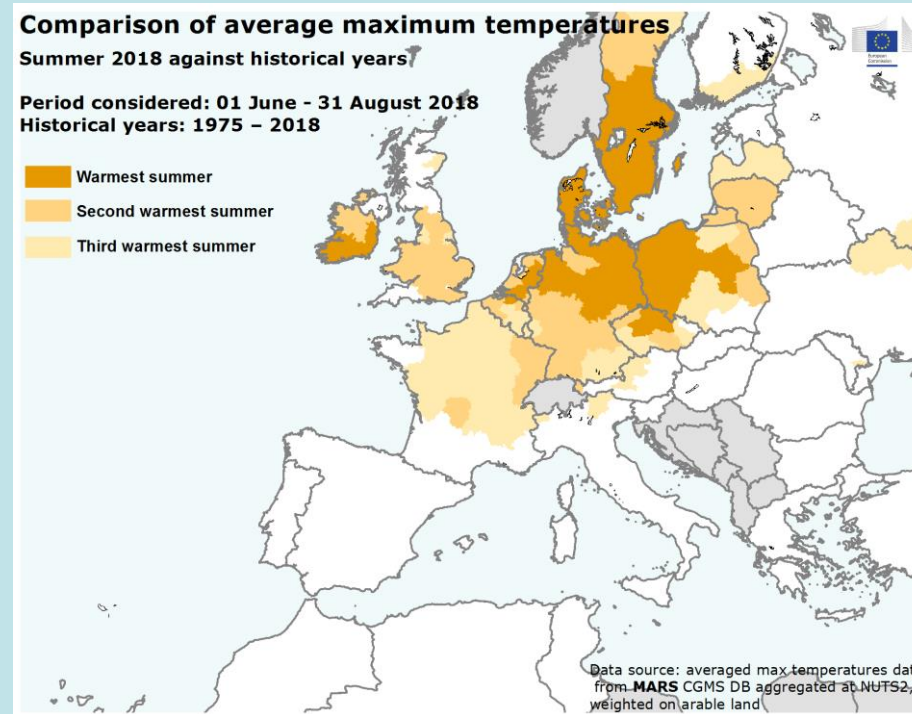
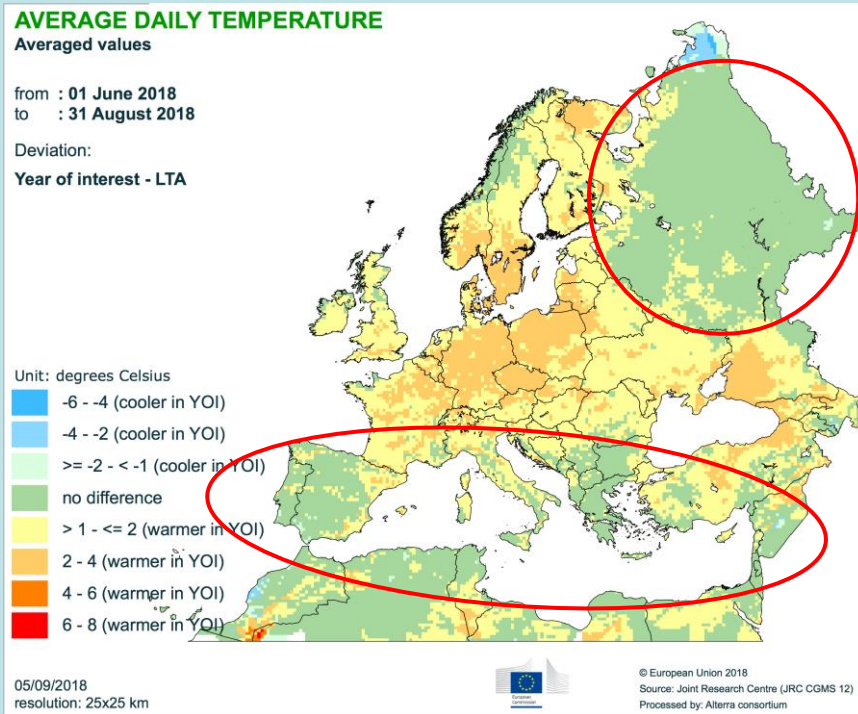
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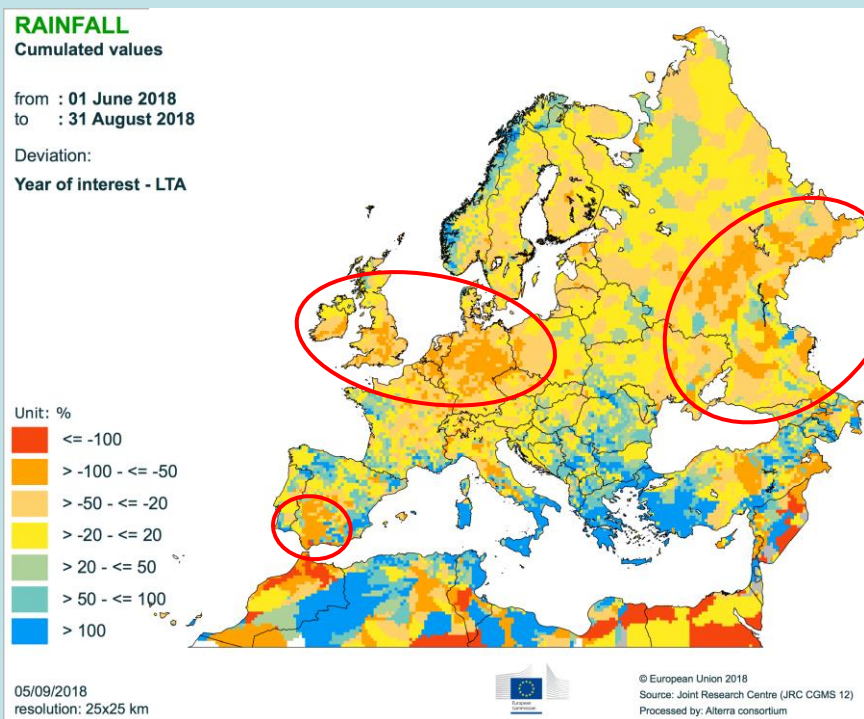


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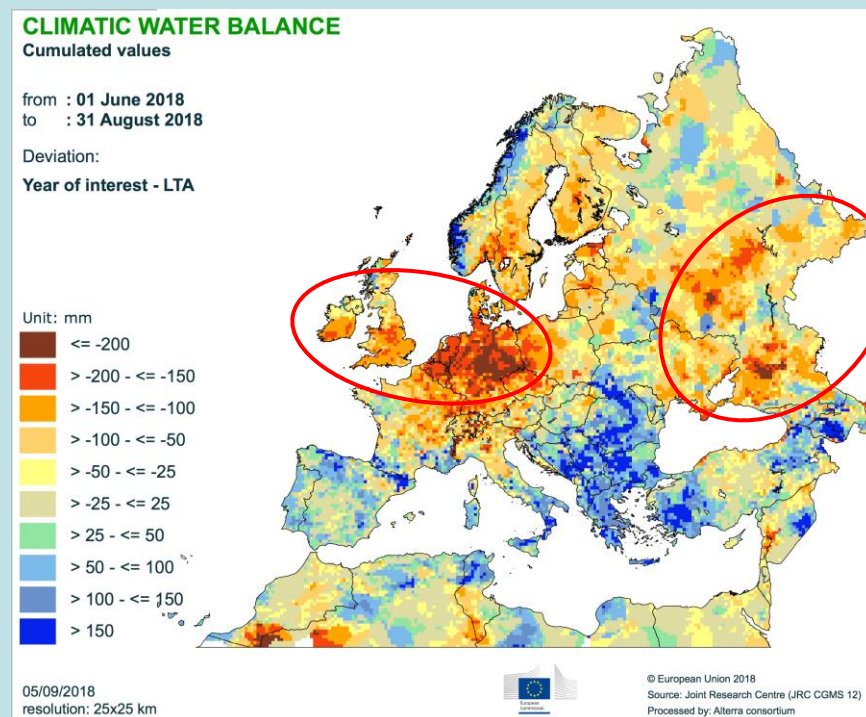
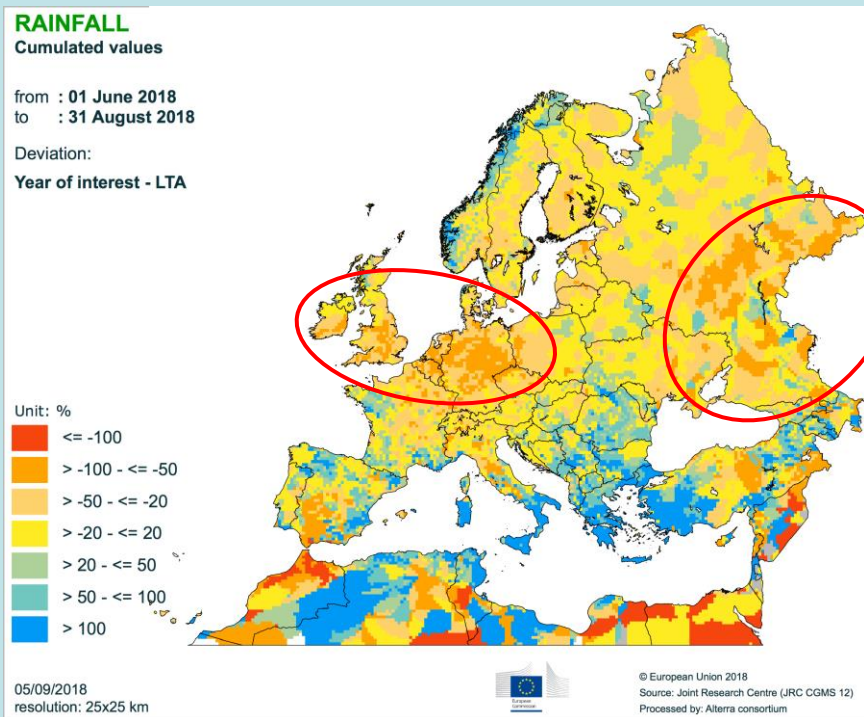
Seasonal temperatures in southern Europe and north-eastern Europe.

# Weather review – summer 2018



- Drier-than-usual in large parts of central Europe, Benelux, northern FR, UK, IE, southern Scandinavia, Baltic countries and eastern Europe.
- Precipitation <50% LTA (mostly <80 mm) in DE, Benelux, UK, IE, northern CZ, western PO, southern ES, large part of RU.
- Climatic water balance << LTA (often among the lowest in our records) in central Europe, Benelux, UK, IE, northern FR, southern Scandinavia, Baltic countries.

# Weather review – summer 2018

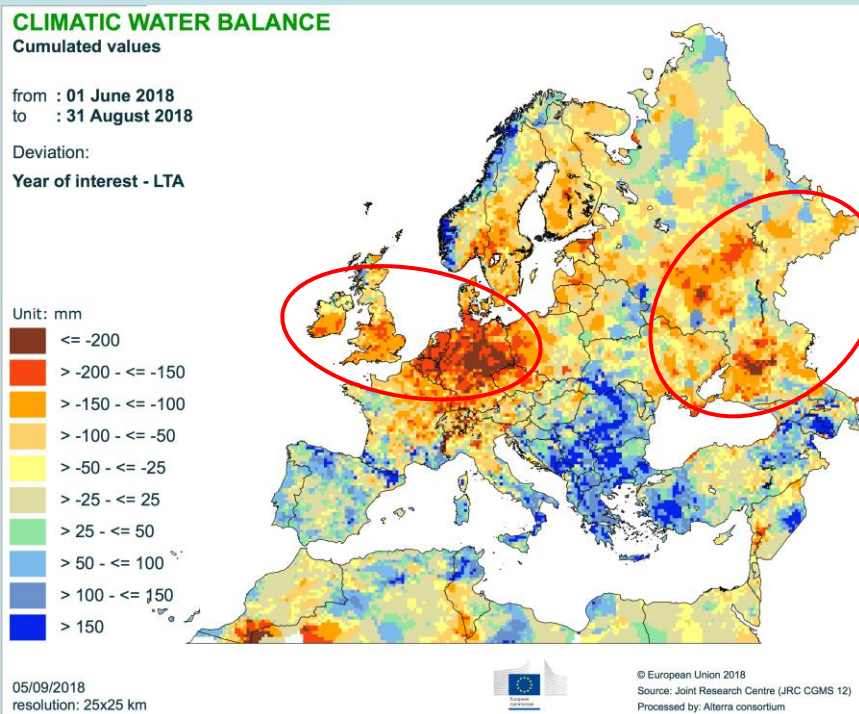
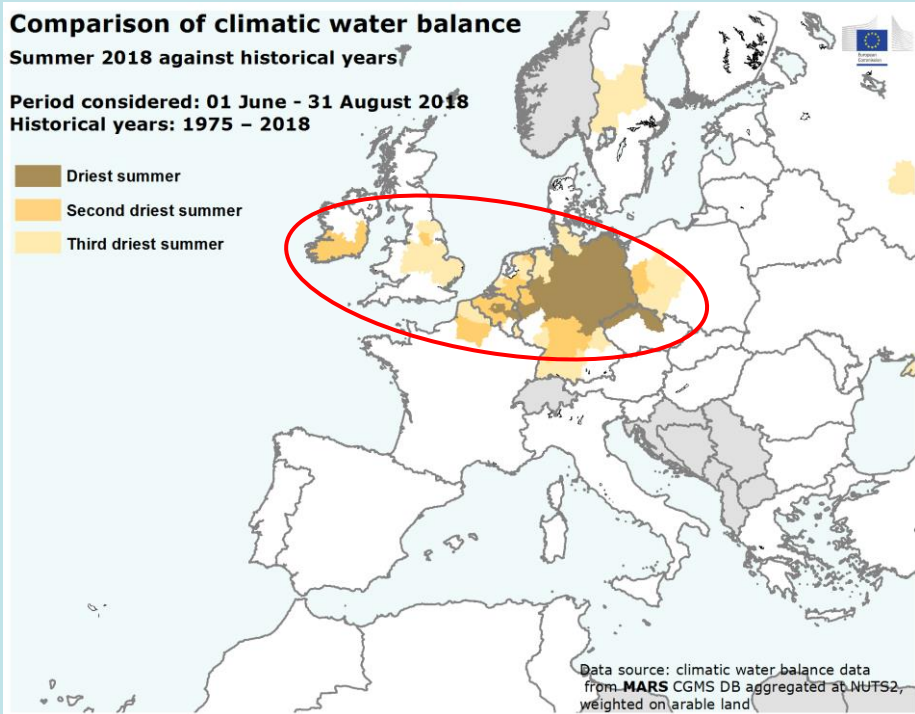


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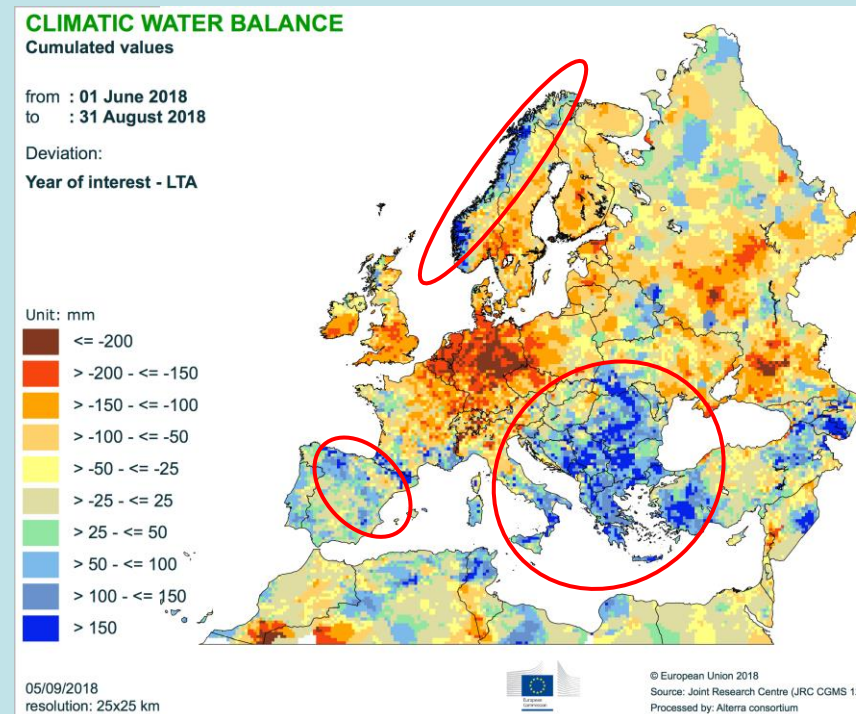
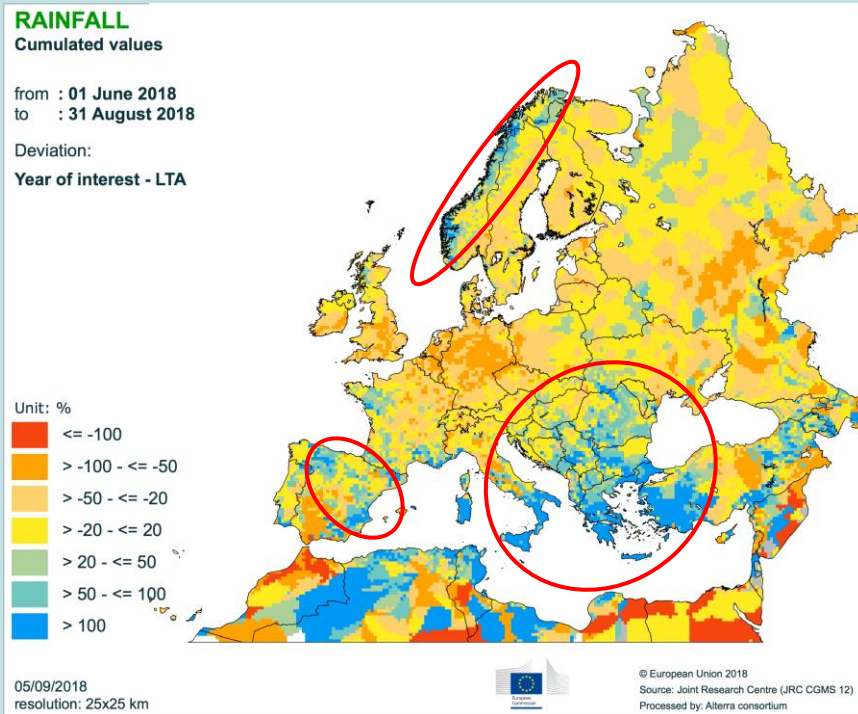


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# Weather review – summer 2018



- Wetter-than-usual (totals mostly >200 mm) in south-eastern Europe, western TK, southern IT, regionally in south-eastern and northern ES, and Atlantic coastal region of Scandinavia.
- Frequent heavy rainfall events, with strong winds and sometimes hail in south-eastern Alpine regions .

# JRC MARS Sept 2018 Bulletin 1 - 24 Sept

## AVERAGE DAILY TEMPERATURE

Averaged values

from : 01 September 2018  
to : 24 September 2018

Deviation:

Year of interest - LTA

Unit: degrees Celsius

- 4 - -2 (cooler in YOI)
- 2 - -0.5
- no difference
- 0.5 - 2
- 2 - 4 (warmer in YOI)
- 4 - 6 (warmer in YOI)

26/09/2018

resolution: 25x25 km



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Source: Joint Research Centre (JRC CGMS 12)  
Processed by: Alterra consortium

## RAINFALL

Cumulated values

from : 01 September 2018  
to : 24 September 2018

Deviation:

Year of interest - LTA

Unit: mm

- <-100
- 100/-75
- 75/-50
- 50/-25
- 25/0
- 0/25
- 25/50
- 50/75
- 75/100
- 100/200
- 200/300
- 300<

26/09/2018

resolution: 25x25 km



© European Union 2018  
Source: Joint Research Centre (JRC CGMS 12)  
Processed by: Alterra consortium

- Warmer-than-usual ( $> 2^{\circ}\text{C}$  above LTA) in most of Europe, except northern Atlantic region.
- Above average rainfall in northern UK, part of central Europe and western Mediterranean region, Scandinavia, eastern Ukraine.
- Most regions (somewhat) below average rainfall



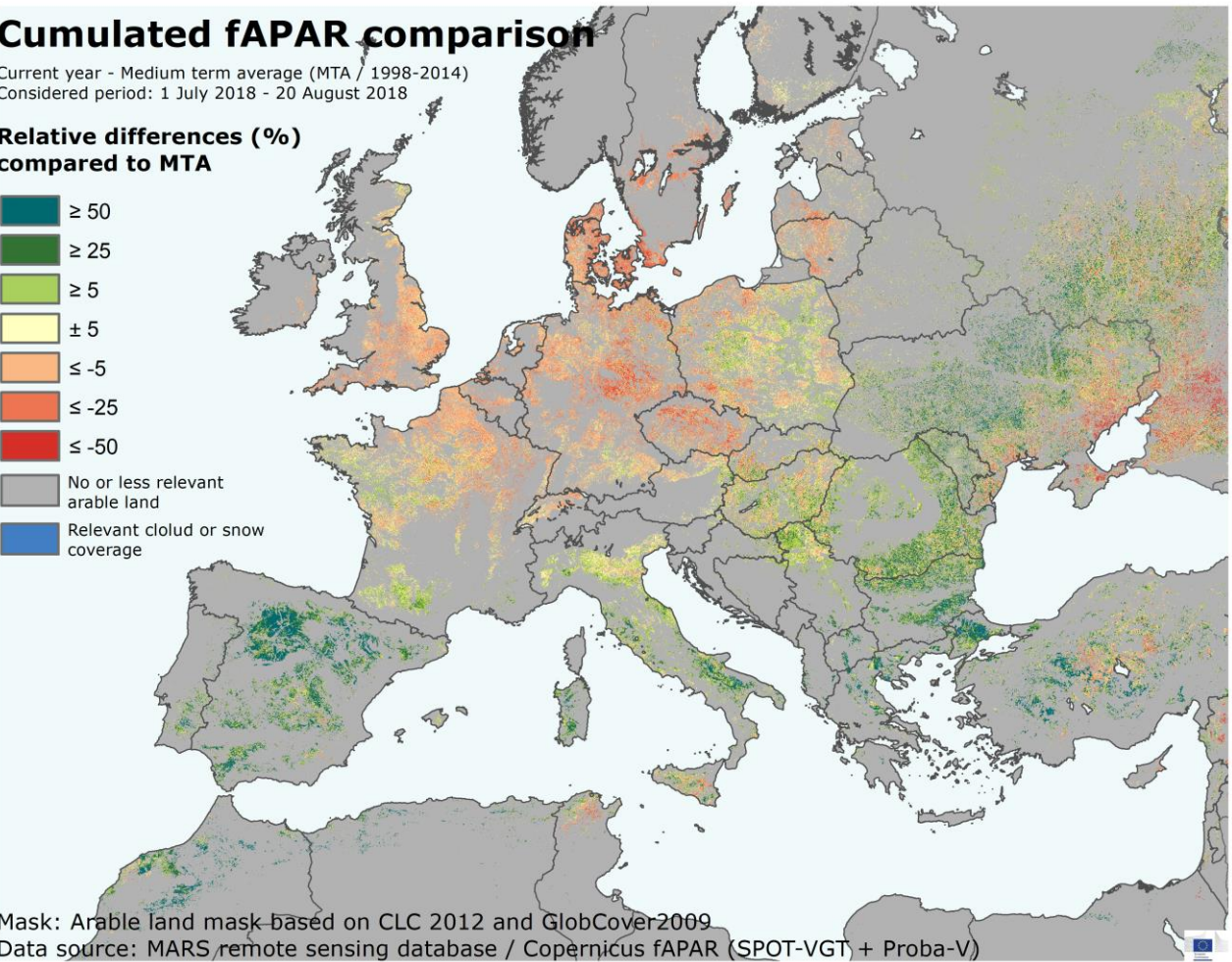
# Remote sensing, Arable Land - fAPAR 01/07 – 20/08

## Cumulated fAPAR comparison

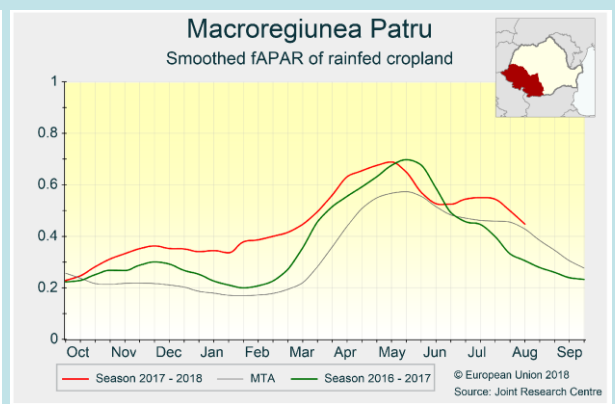
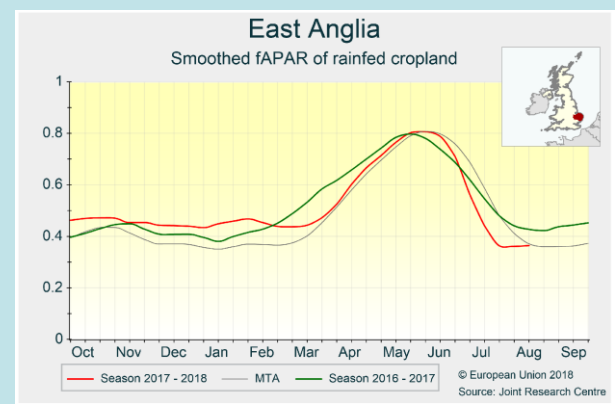
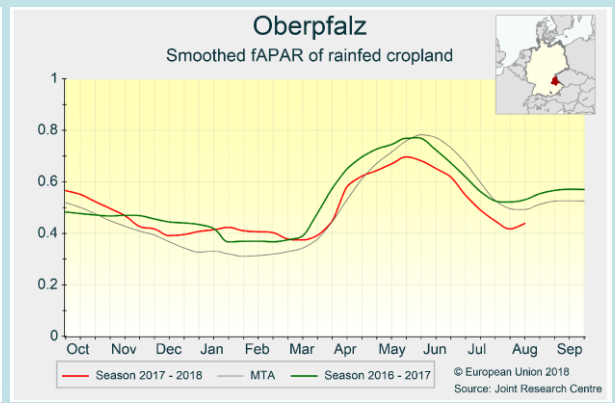
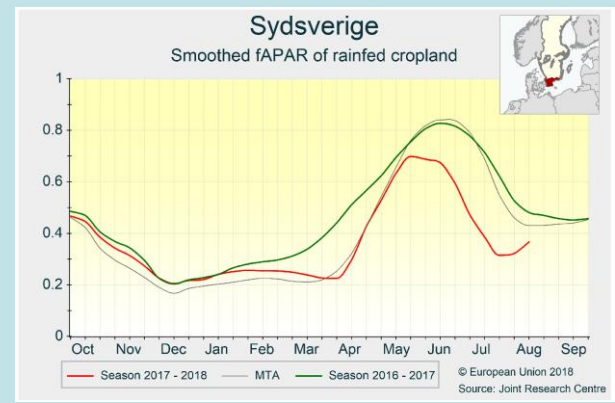
Current year - Medium term average (MTA / 1998-2014)  
 Considered period: 1 July 2018 - 20 August 2018

### Relative differences (%) compared to MTA

- ≥ 50
- ≥ 25
- ≥ 5
- ± 5
- ≤ -5
- ≤ -25
- ≤ -50
- No or less relevant arable land
- Relevant cloud or snow coverage



Mask: Arable land mask based on CLC 2012 and GlobCover2009  
 Data source: MARS remote sensing database / Copernicus fAPAR (SPOT-VGT + Proba-V)



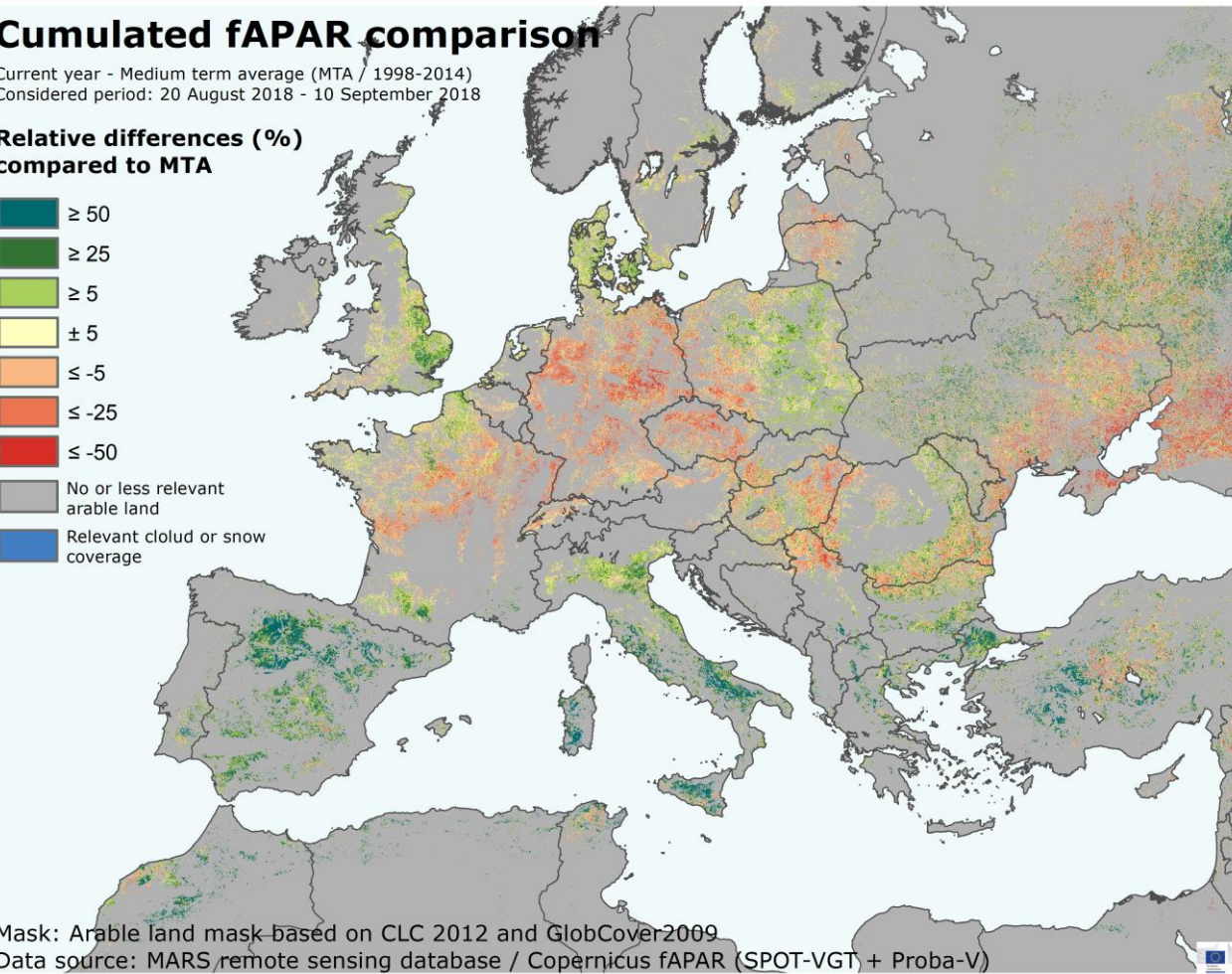
# Remote sensing, Arable Land - fAPAR 20/08 – 10/09

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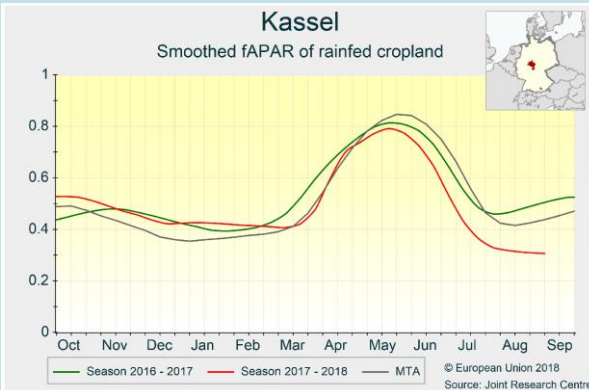
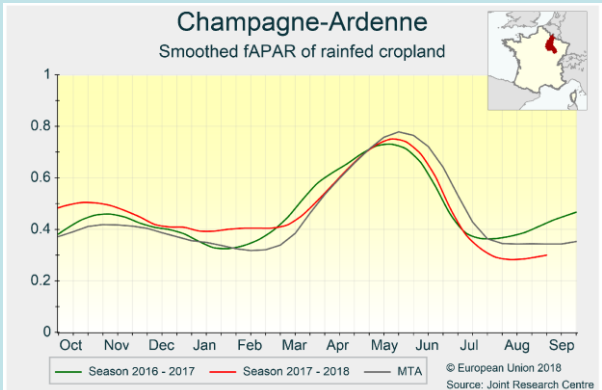
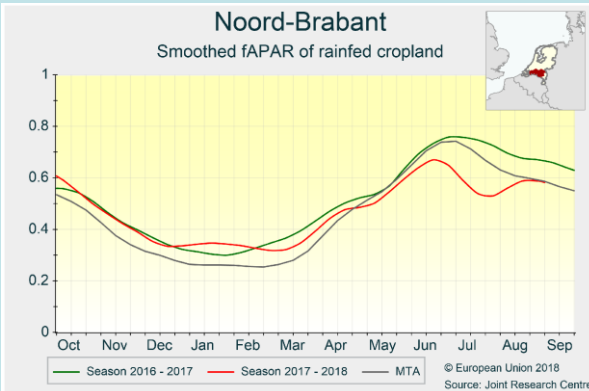
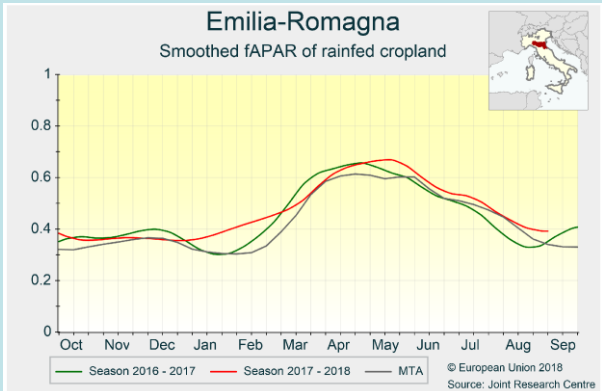
Current year - Medium term average (MTA / 1998-2014)  
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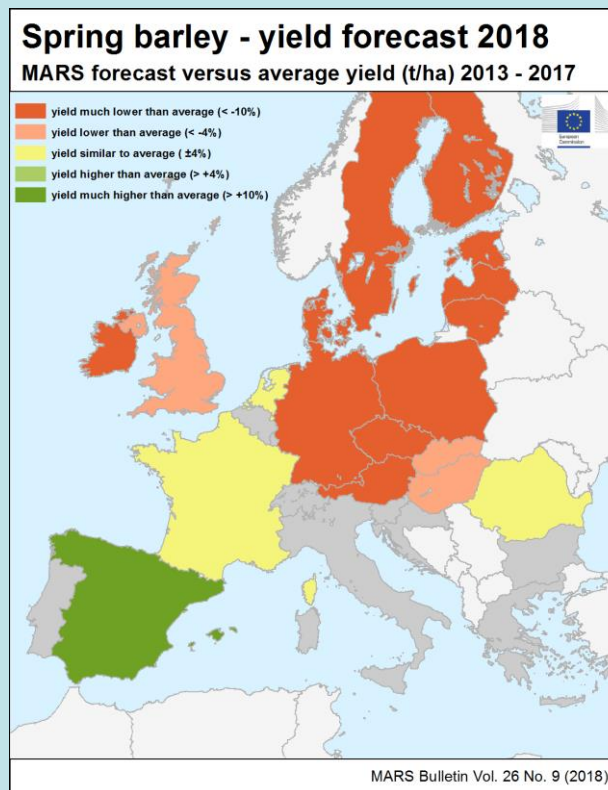
# **JRC MARS**

## **September 2018 forecasts**

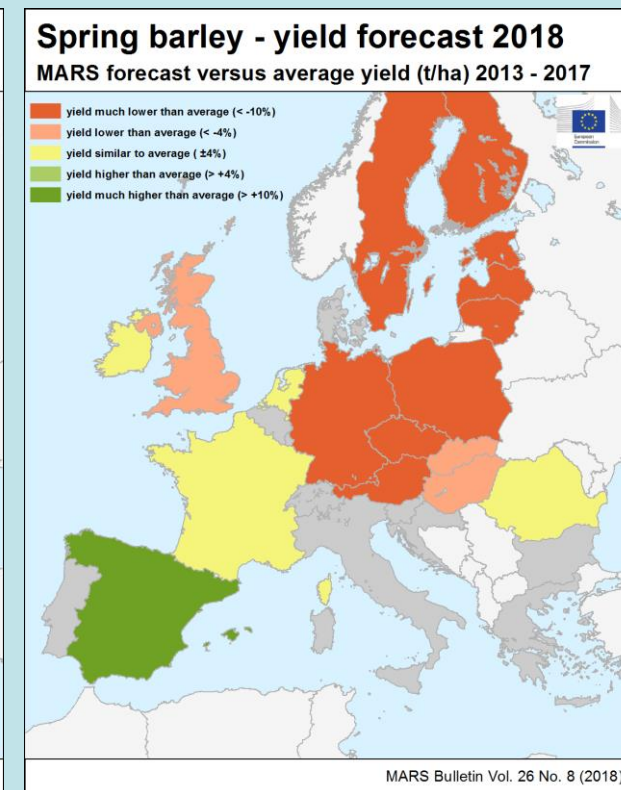
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<i>soft wheat</i>	5,97	5,70	<b>5,70</b>	<b>-4,5</b>	<b>+0,0</b>
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Issued: 14 September 2018



September forecasts

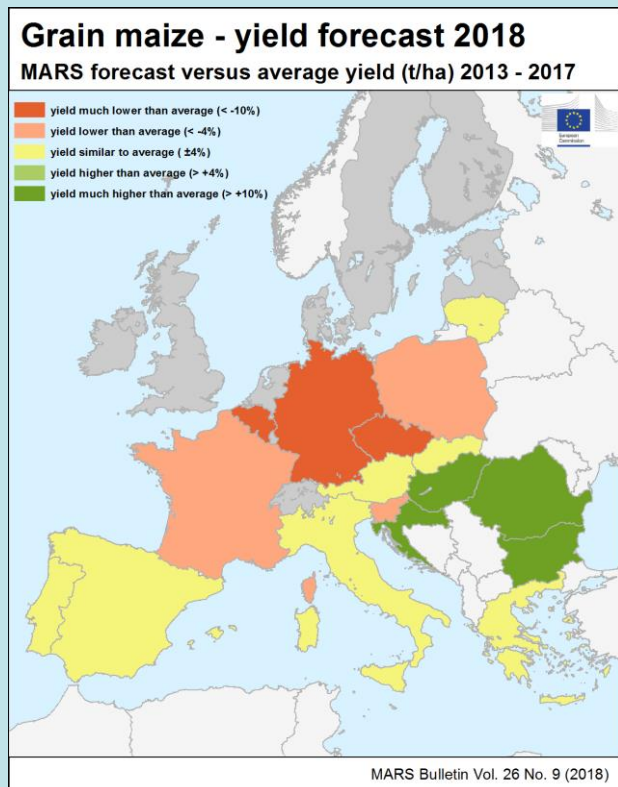


August forecasts

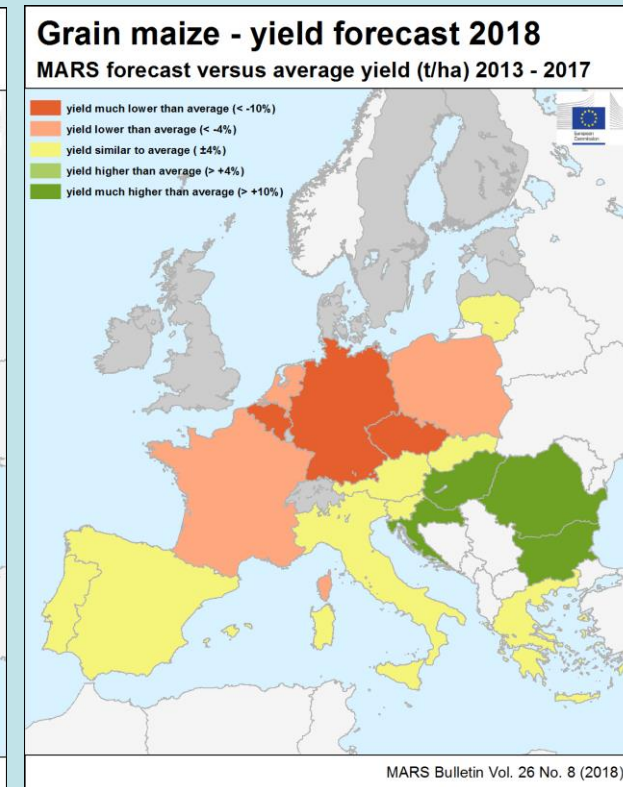
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<b>Sunflower</b>	2,12	2,45	<b>2,41</b>	<b>+14</b>	<b>-1,6</b>

Issued: 14 September 2018



September forecasts

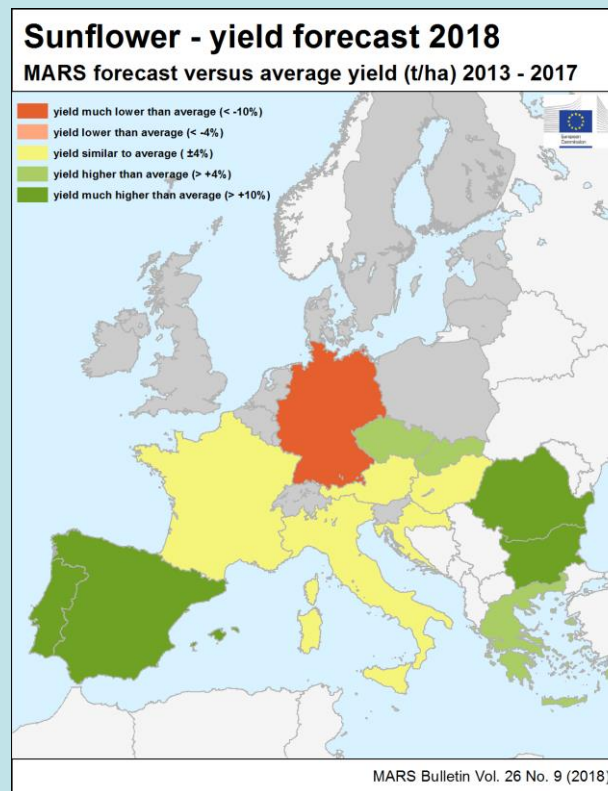


August forecasts

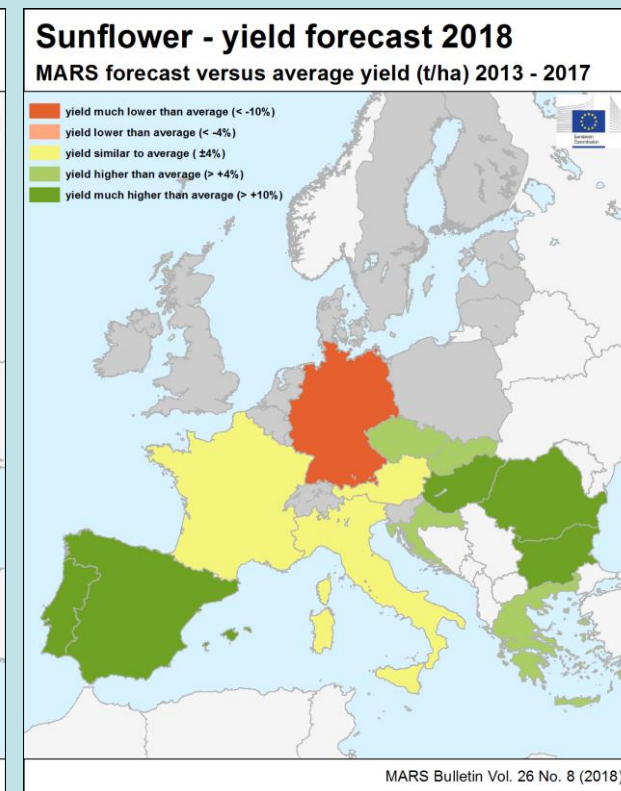
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Crop	Yield (t/ha)				
	Avg 5yrs	August Bulletin	MARS 2018 forecasts	% Diff 18/5yrs	% Diff August
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Issued: 14 September 2018



September forecasts

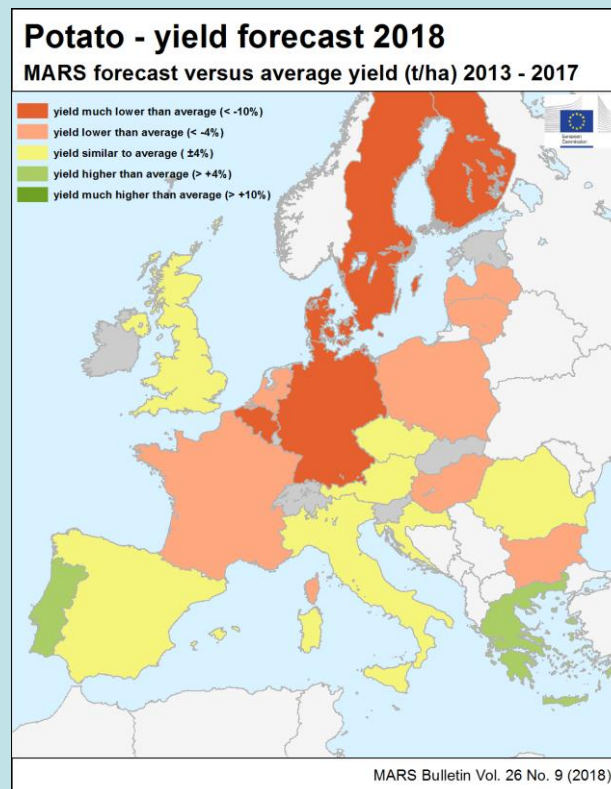


August forecasts

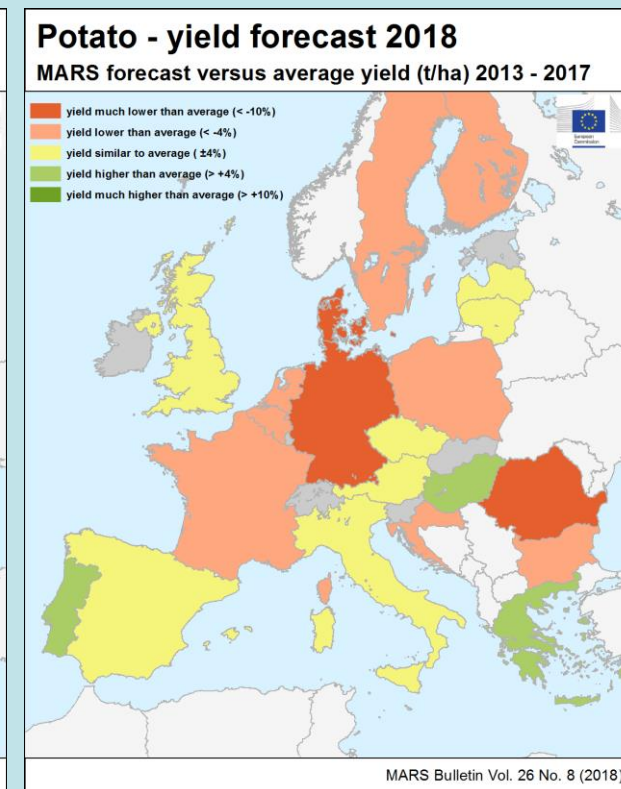
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Issued: 14 September 2018



September forecasts

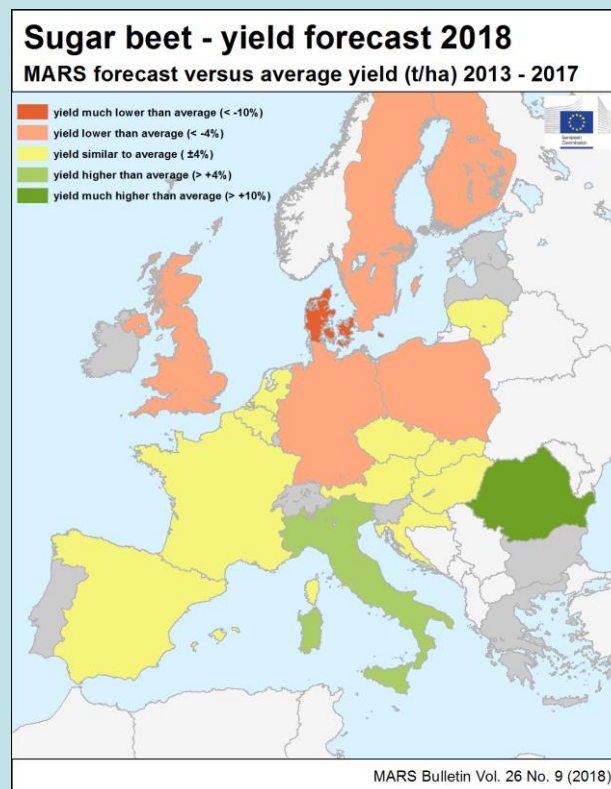


August forecasts

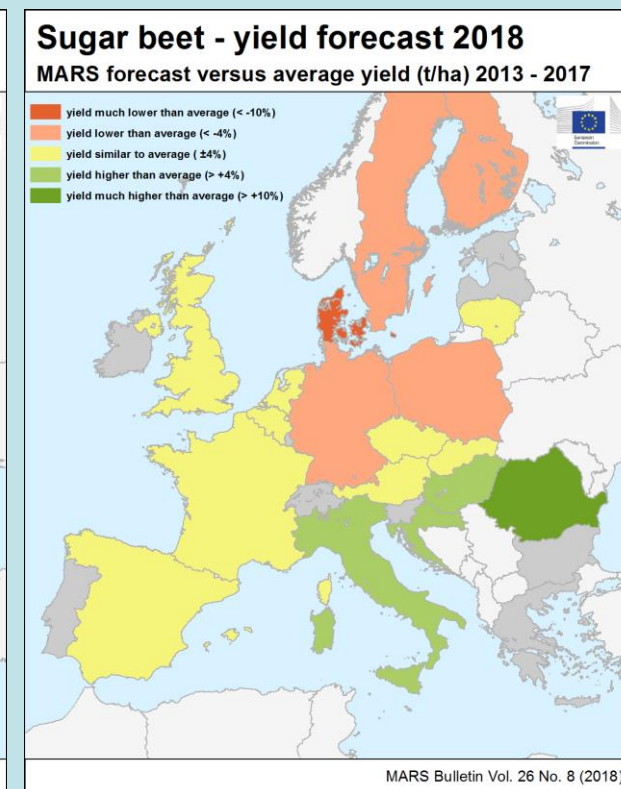
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Issued: 14 September 2018



September forecasts

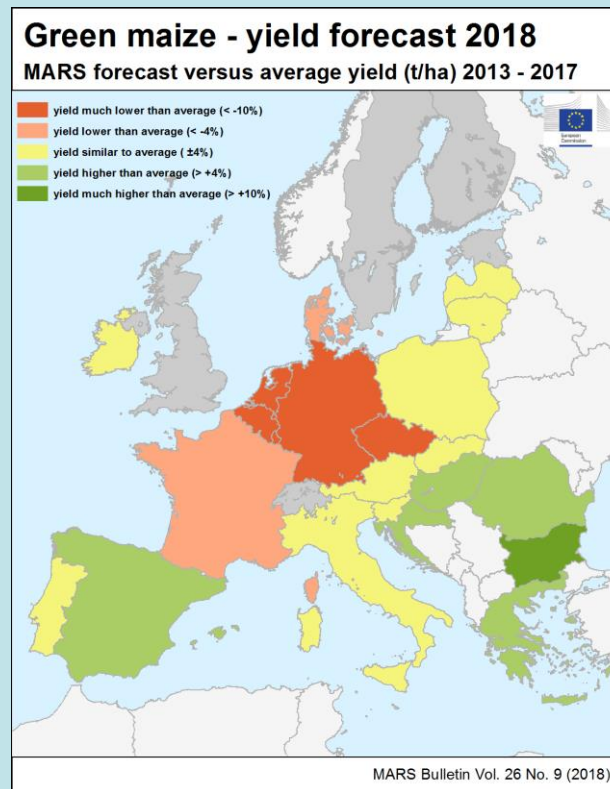


August forecasts

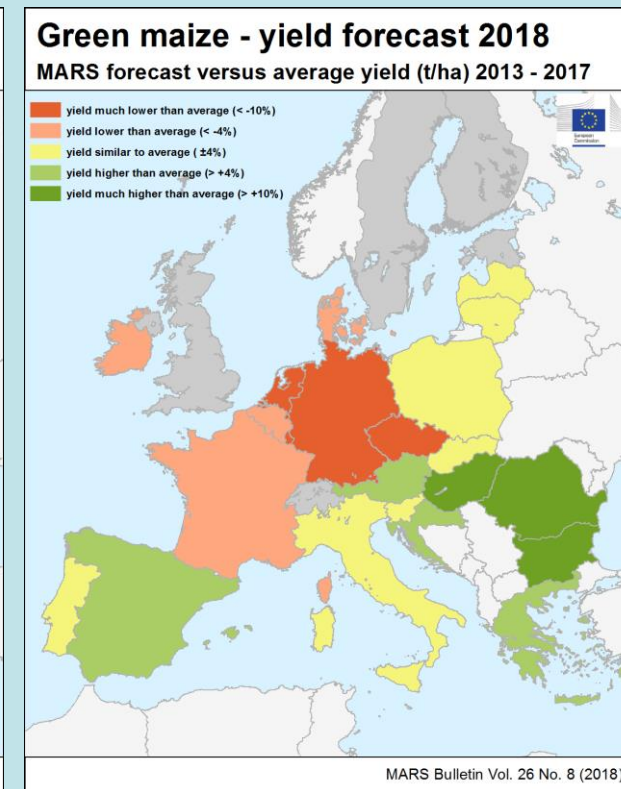


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<b>Green maize</b>	41.8	37.7	<b>37.6</b>	<b>-10</b>	<b>-0.1</b>



**September forecasts**



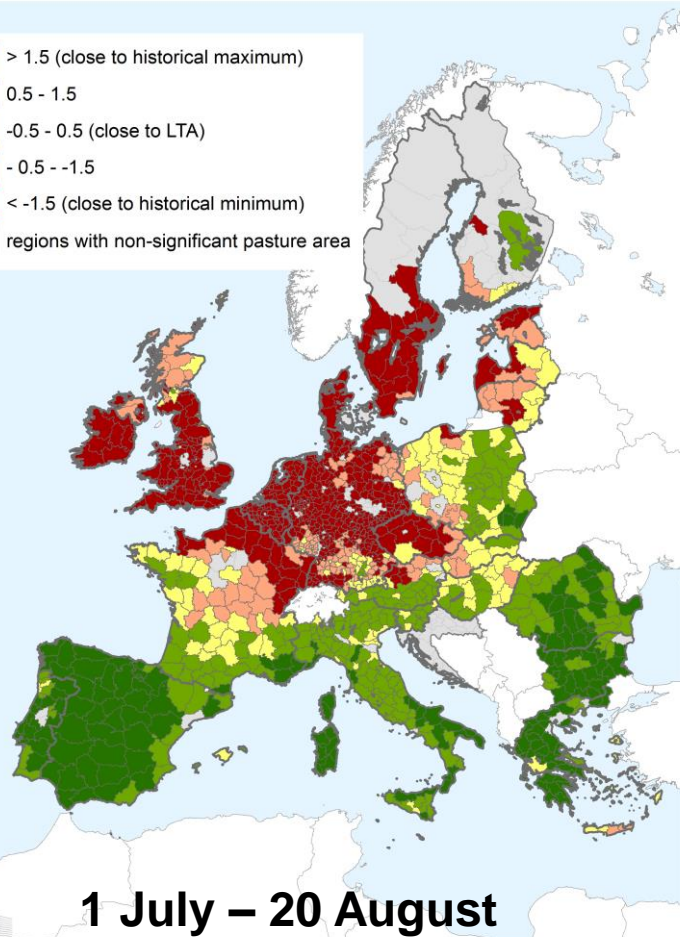
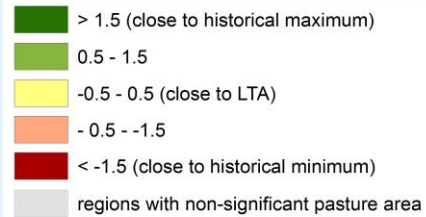
**August forecasts**

# Pastures in Europe

## Relative index of pasture productivity

Period of analysis: 1 July - 20 August 2018

Index based on Copernicus GEOV2 fAPAR 10-day product.  
Historical archive (LTA) from 1999 to 2017



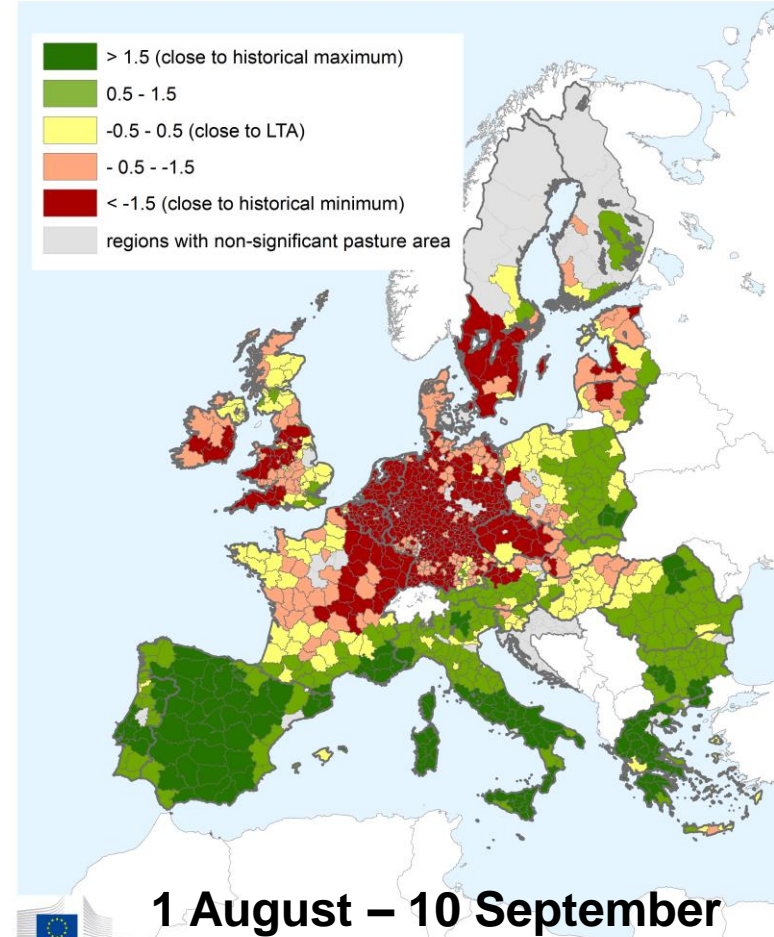
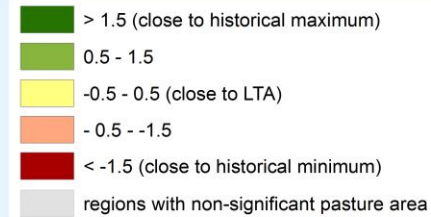
1 July – 20 August



## Relative index of pasture productivity

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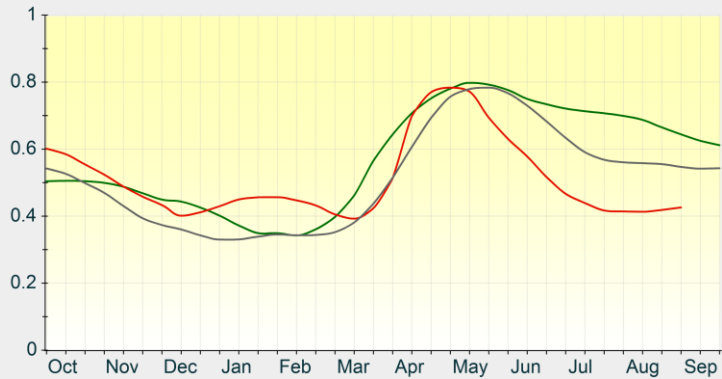
1 August – 10 September



# Pastures in Europe (1 July – 20 August)

## Sachsen-Anhalt (DE)

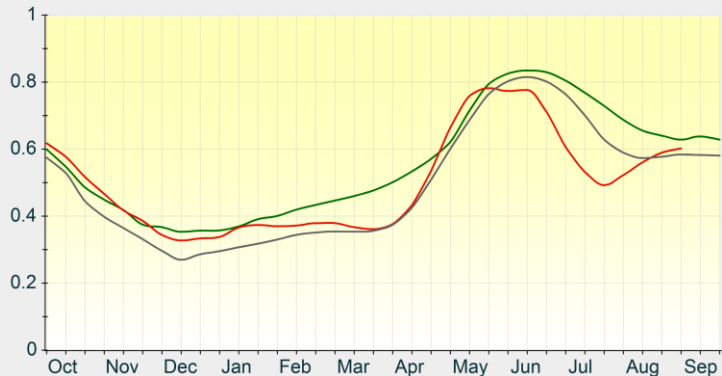
fAPAR of pastures



— Season 2016 - 2017 — Season 2017 - 2018 — LTA © European Union 2018  
Source: Joint Research Centre

## Midtjylland (DK)

fAPAR of pastures



— Season 2016 - 2017 — Season 2017 - 2018 — LTA © European Union 2018  
Source: Joint Research Centre

**Continued poor pasture productivity in central and northern DE, Benelux, north-eastern France, western PO, CZ**

**Improvements in southern SE, DK, UK, IE, eastern PO, LV, LT**

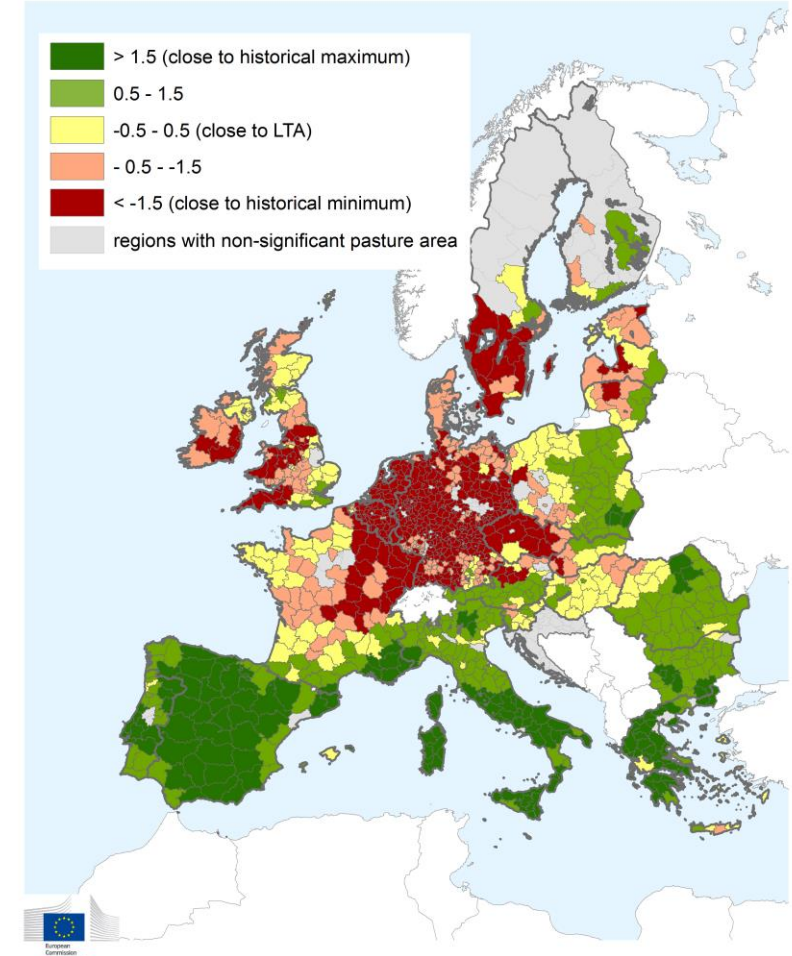
**Continued positive in southern Europe**

## Relative index of pasture productivity

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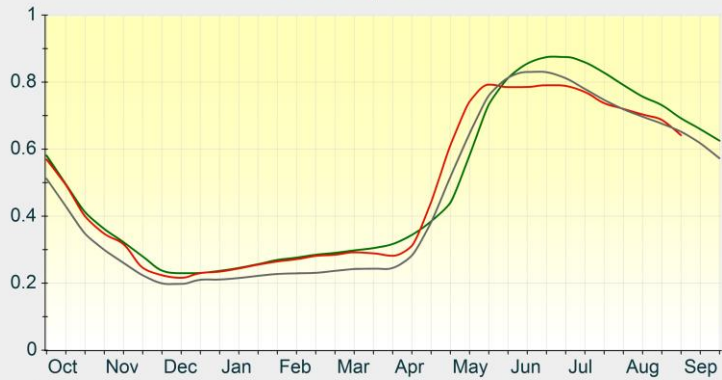
Index based on Copernicus GEOV2 fAPAR 10-day product.

Historical archive (LTA) from 1999 to 2017



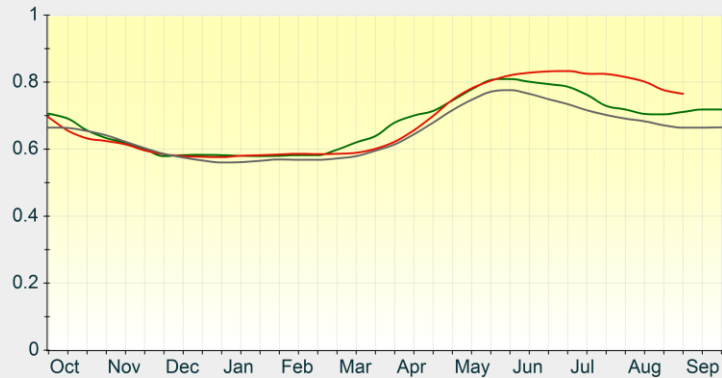
# Pastures in Europe (1 July – 20 August)

Latvija  
fAPAR of pastures



— Season 2016 - 2017 — Season 2017 - 2018 — LTA © European Union 2018  
Source: Joint Research Centre

Asturias (ES)  
fAPAR of pastures



— Season 2016 - 2017 — Season 2017 - 2018 — LTA © European Union 2018  
Source: Joint Research Centre

Continued poor pasture productivity in central and northern DE, Benelux, north-eastern France, western PO, CZ

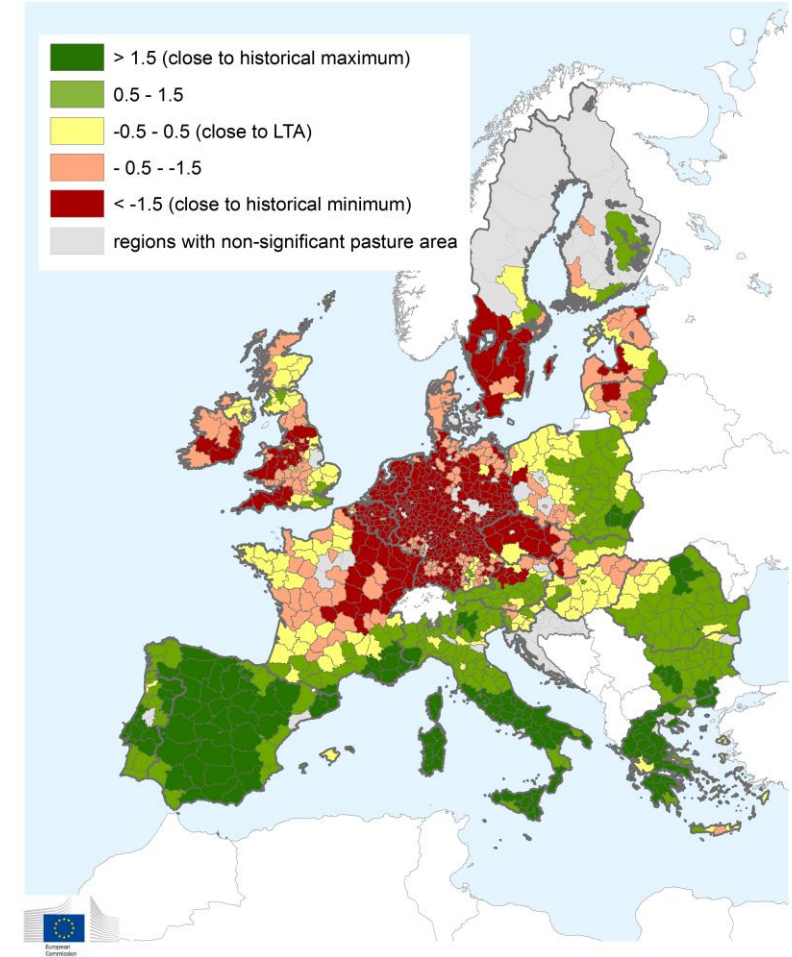
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Continued positive in southern Europe

## Relative index of pasture productivity

Period of analysis: 1 August- 10 September 2018

Index based on Copernicus GEOV2 fAPAR 10-day product.  
Historical archive (LTA) from 1999 to 2017



# Thank you

The JRC MARS Bulletin is available at <https://ec.europa.eu/jrc/en/mars/bulletins>

The October issue will be published on 19 October 2018

Weather and crop related maps and graphs are made available 3 times per month:

<http://agri4cast.jrc.ec.europa.eu/mars-explorer/>

## **Contacts:**

About this presentation: [maurits.vandenberg@ec.europa.eu](mailto:maurits.vandenberg@ec.europa.eu)

JRC MARS Bulletin: [JRCMARSBULLETIN@ec.europa.eu](mailto:JRCMARSBULLETIN@ec.europa.eu)

# Weather forecast 26 Sept - 03 Oct

## AVERAGE DAILY TEMPERATURE

ECMWF operational model (starting 27 September 2018)

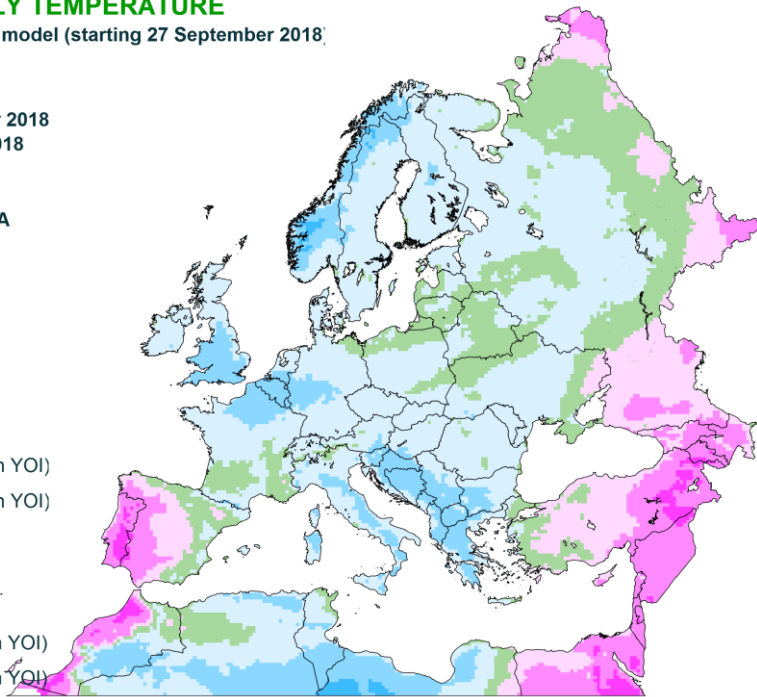
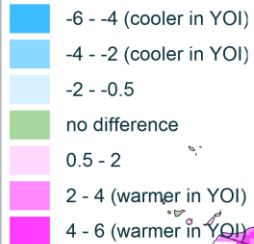
Averaged values

from : 26 September 2018  
to : 03 October 2018

Deviation:

Year of interest - LTA

Unit: degrees Celsius



27/09/2018  
resolution: 25x25 km



© European Union 2018  
Source: Joint Research Centre (JRC CGFS)  
Processed by: Alterra consortium

## RAINFALL

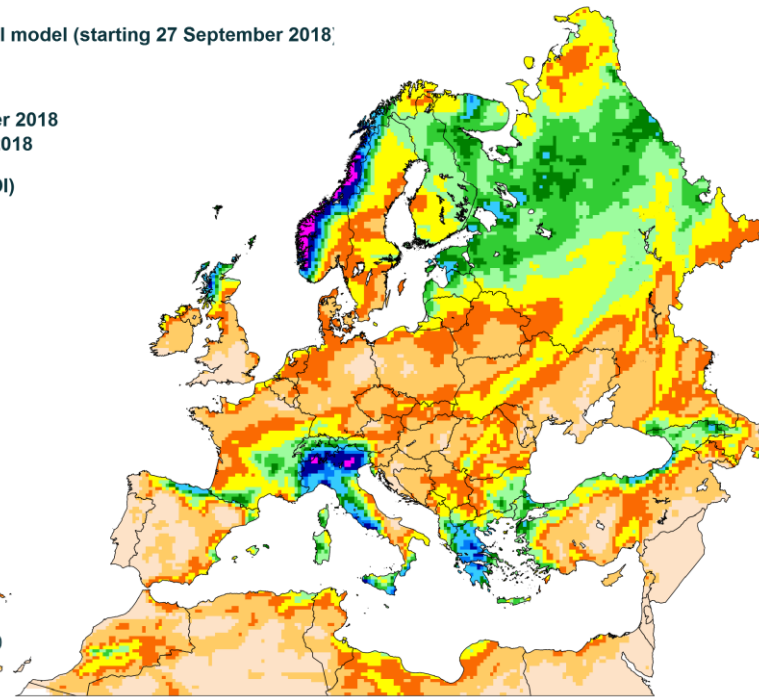
ECMWF operational model (starting 27 September 2018)

Cumulated values

from : 25 September 2018  
to : 03 October 2018

Year of interest (YOI)

Unit: mm



27/09/2018  
resolution: 25x25 km



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Source: Joint Research Centre (JRC CGFS)  
Processed by: Alterra consortium