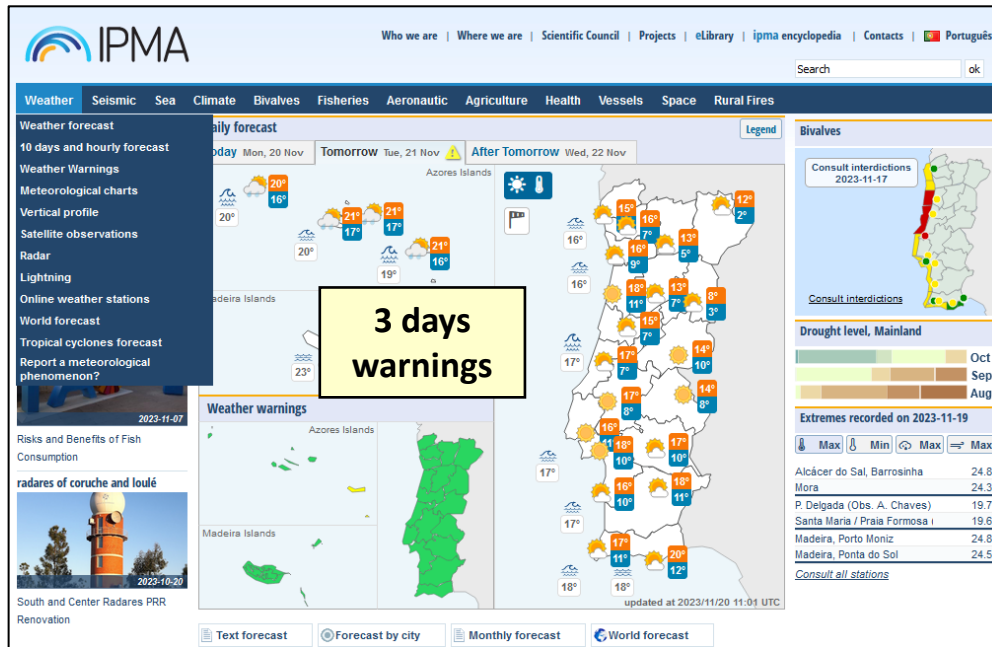


# **EDERA Training Workshop**

## **Loulé & Quarteira, 21<sup>st</sup> to 22<sup>nd</sup> November 2023**

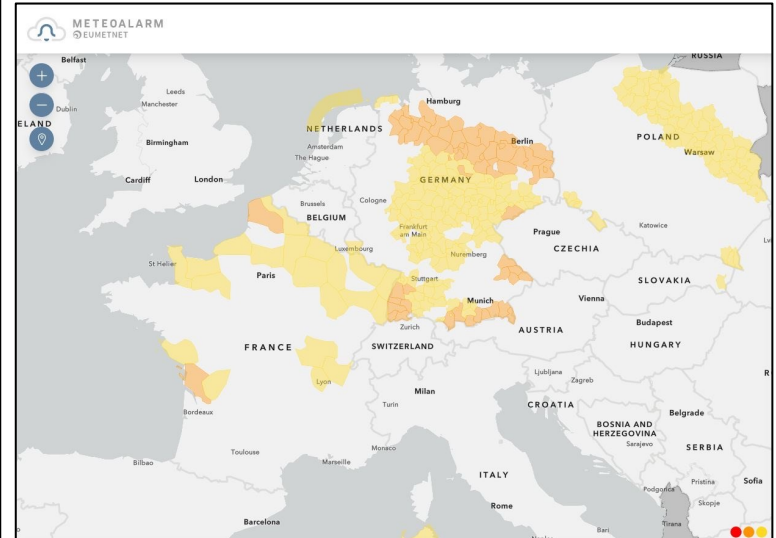
(Departamento de Meteorologia e Geofísica,  
DMG)

# IPMA – Introduction



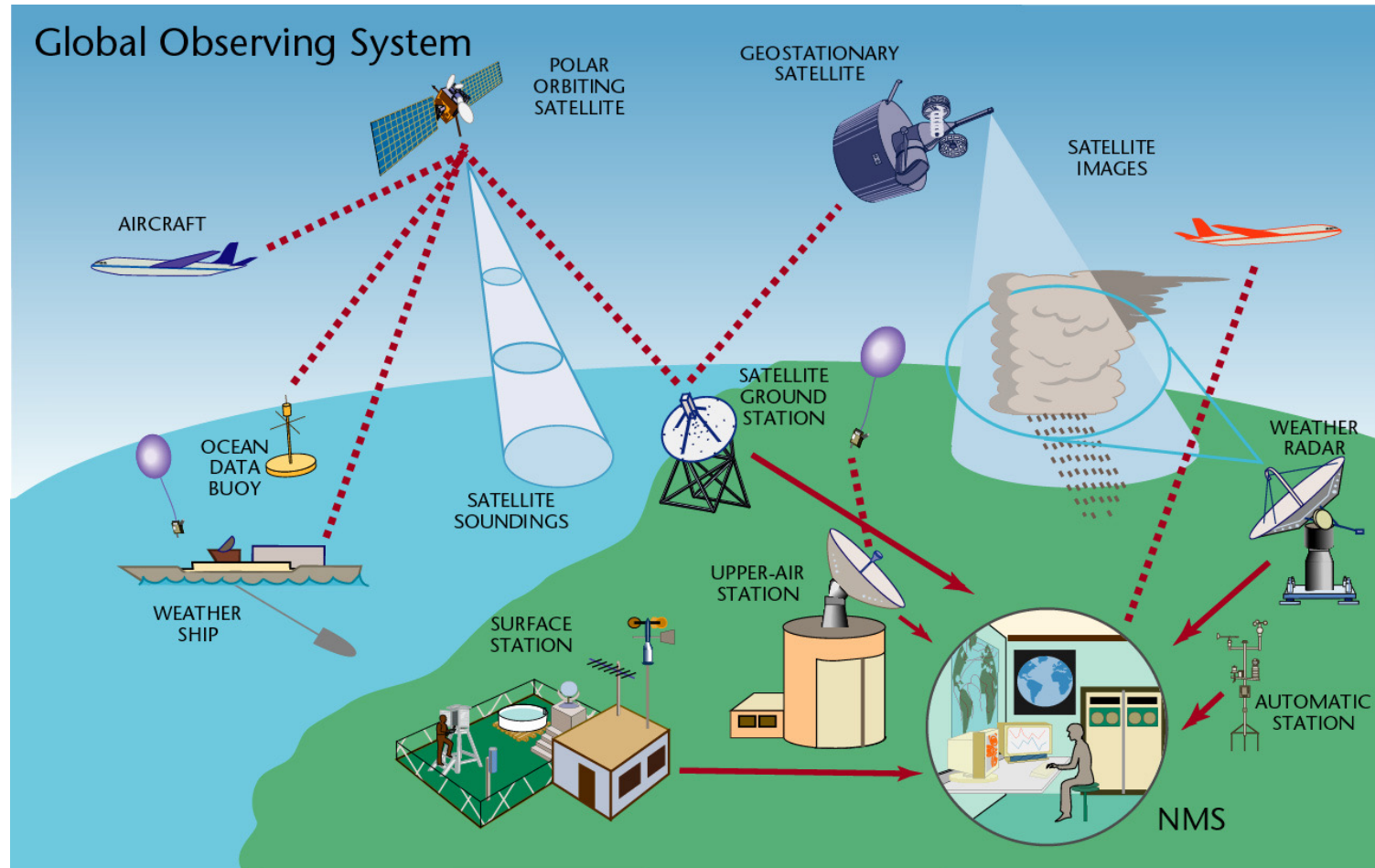
[www.ipma.pt](http://www.ipma.pt)

[meteoalarm.org](http://meteoalarm.org) (EUMETNET)



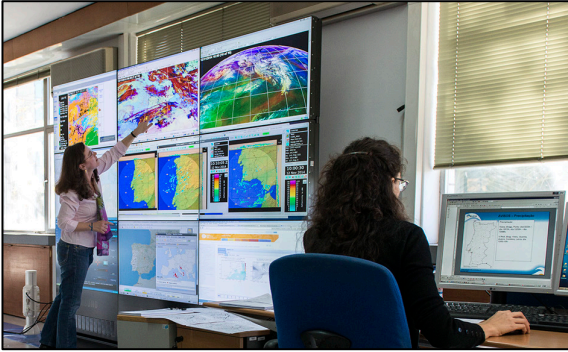
- Portuguese Institute for the Ocean and Atmosphere (IPMA) is the national authority for meteorology,
- IPMA has therefore the responsibility to guarantee a weather watch service,
- The weather watch service is put into practice through the national Weather Warnings System platform (SAM – “Sistema de Avisos Meteorológicos”) and cooperation with MeteoAlarm.

# Global Observing System (GOS)



<https://www.wmo.int/pages/prog/www/OSY/GOS.html>

# IPMA – Weather Forecasting and Surveillance Center, Lisbon



- 1) **Weather forecast** » short term (< 5 days), medium range (up to 10/15 days), extended range (up to 4/6 weeks) using as a base numerical models of weather forecast – ECMWF.
- 2) **Weather watch** » nowcasting (hours), using as means of observation: RADAR and lightning networks, satellite imagery (EUMETSAT), soundings and meteorological weather stations.
- 3) **Action** » communication with the public (social media / social networks / webpage) and official entities (such as National Emergency and Civil Protection Authority).



**Issuance of Meteorological Warnings!**

# IPMA – Weather Warnings

Cinzentos (grey)	Information to be updated.
Verde (green)	No Risk related to weather.
Amarelo (yellow)	<b>Risk for activities that are weather dependent » Follow weather forecasts</b>
Laranja (orange)	<b>Moderate/High Risk » Follow weather forecasts and civil protection guidance</b>
Vermelho (red)	<b>Extreme Risk » Regularly follow weather forecasts and civil protection guidance.</b>

Criteria for Portugal Mainland						
Warning	Parameter	Yellow	Orange	Red	Units	Notes
Wind	Maximum Gust	70 to 90	91 to 130	> 130	km/h	
		90 to 110	111 to 130	> 130	km/h	In the highlands
Rainfall	Rain/Showers	10 to 20	21 to 40	> 40	mm/1h	Milimeters in 1 hour
		30 to 40	41 to 60	> 60	mm/6h	Milimeters in 6 hour
Snow	Snowfall with accumulation	1 to 5	6 to 15	> 15	cm	Quota below 1000 m
		1 to 10	11 to 30	> 30	cm	Quota between 1000 and 1600 m
		5 to 25	26 to 50	> 50	cm	Quota above 1600 m
Thunderstorm	Electric Discharges	a)	b)	c)		a) Frequent and scattered. b) Frequent and close together. c) Very frequent and excessively close together.
Fog	Visibility	* ≥ 48h	* ≥ 72h	* ≥ 96h		* - duration
High Temperature	Maximum Temperature	# to # *	# to # *	> # *	°C	* - duration ≥ 48 horas
Low Temperature	Minimum Temperature	# to # *	# to # *	< # *	°C	* - duration ≥ 48 horas
Coastal Event	Significant Wave Height	4 to 5	5 to 7	> 7	m	
		2 to 3	3 to 5	> 5	m	With swell from Southwest off the southern Algarve coast

**Thresholds  
12h / 24h  
Warnings!**



# IPMA – Weather Warnings



Weather Warnings by Districts  
Example: 27<sup>th</sup> October 2023

Several  
precipitation  
events in  
October  
2023!

# IPMA – Weather Warnings

## Dynamic time range » according to warning colour:

Yellow Warning

can be issued up to **72** hours before the start of the event

Orange Warning

can be issued up to **48** hours before the start of the event

Red Warning

can be issued up to **24** hours before the start of the event

### Limitations:

- Warnings by districts,
- IPMA does not issue “**impacts oriented**” warnings (with the exception of snow warnings),
- Further updating of weather warnings regarding impacts is under evaluation (precipitation, fog,...).

# IPMA – Severe Weather Group / Flooding



## ARISTOTLE-eENHSP MULTI-HAZARD IMPACT ORIENTED BRIEF

Date: October 13, 2023

Report Secretary: INGVOE, Roberto Isaia, [aristotle.ingv@ingv.it](mailto:aristotle.ingv@ingv.it)

### HEADLINES

- Earthquakes in Afghanistan
- Numerous ongoing fires in western Madeira. National aid requested Portugal

### SUMMARY



#### 3: Heavy rain and thunderstorms - Western Iberia

##### Description

Showers, thunderstorms or longer periods of rain will affect this region at times through the next week. Up to 75-100 mm of rain could fall in 24 hours (especially early next week), with accumulations by next Thursday across the region of 50-100 mm and locally as high as 150-200 mm (especially in the northwest of the region). The average October rainfall ranges from 50 mm in the south to 200 mm in the north. Strong winds are also expected for a time on Monday and Tuesday, especially in the north of the region, perhaps with gusts reaching 70 km/h for a time.

##### Impacts

Flash flooding and landslides seem likely, especially early next week. Disruption from wind possible in the north.

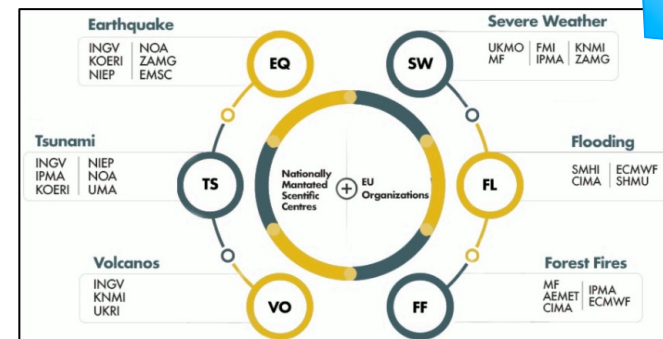


Likelihood vs Impact

Likelihood	High	Medium	Low
	Monitor	Prepare	Act
	Nil	Monitor	Prepare
Decision Matrix	Sub-national	National	International
	Resources	Resources	Resources

Based on the Decision Matrix, the **18** events in this report are grouped as follows:

- 1** "Act" (red) - **4** "Prepare" (orange)  
**9** "Monitor" (yellow) - **4** "Nil" (green)



Working Groups  
»  
Hazard Leaders



# European Flood Awareness System (EFAS)

## Flood monitoring



The screenshot shows the EFAS website interface. The header includes navigation links: About, Data access, Collaborate, News and events, Resources, Training, Notifications, and EFAS Wiki. The main banner features a large image of a flooded river with a bridge, overlaid with the text "European Flood Awareness System". Below the banner, a list of flood notifications is displayed, organized into two columns. Each notification includes the event type, location, river, and type, followed by a Copernicus EMS notification and its timestamp.

EFAS Flash Flood Notification for Portugal - Baixo Alentejo Region	○ Copernicus EMS - ...	22/10/2023, 11:30
EFAS Flash Flood Notification for Portugal - Alentejo Central, Lezíria do Tejo,...	○ Copernicus EMS - ...	22/10/2023, 06:40
EFAS Flood Notification for Portugal - River: Tagus - Type: Informal*	○ Copernicus EMS - ...	21/10/2023, 10:51
EFAS Flood Notification for Spain - River: Duero - Type: Formal*	○ Copernicus EMS - ...	20/10/2023, 05:40
EFAS Flash Flood Notification for Portugal - Oeste Region	○ Copernicus EMS - ...	19/10/2023, 12:33
EFAS Flash Flood Notification for Portugal - Região de Coimbra, Viseu Dão ...	○ Copernicus EMS - ...	19/10/2023, 06:51
EFAS Flash Flood Notification for Portugal - Alto Alentejo, Alto Minho, Alent...	○ Copernicus EMS - ...	18/10/2023, 11:44
EFAS Flood Notification for Portugal - River: Lima - Type: Informal*	○ Copernicus EMS - ...	18/10/2023, 11:13
EFAS Flood Notification for Spain - River: Jarama - Type: Informal*	○ Copernicus EMS - ...	18/10/2023, 11:05
EFAS Flood Notification for Spain - River: Duero - Type: Informal*	○ Copernicus EMS - ...	18/10/2023, 11:04
EFAS Flood Notification for Spain - River: Alagón - Type: Formal*	○ Copernicus EMS - ...	18/10/2023, 11:03
EFAS Flash Flood Notification for Portugal - Cávado Region	○ Copernicus EMS - ...	17/10/2023, 12:12
EFAS Flood Notification for Spain - River: Tiétar - Type: Formal*	○ Copernicus EMS - ...	17/10/2023, 11:03
EFAS Flash Flood Notification for Portugal - Região de Aveiro Region	○ Copernicus EMS - ...	17/10/2023, 06:25
EFAS Flood Notification for Spain - River: Tiétar - Type: Informal*	○ Copernicus EMS - ...	16/10/2023, 06:14

# ECMWF products

## Charts

Our Integrated Forecasting System (IFS) provides forecasts and associated verification at different resolutions and for multiple time ranges. The verification provides essential feedback on the [quality of the forecasting system](#).

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Medium range

---

Extended range

---

Long range

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<https://www.ecmwf.int/>

- Medium range (up to 10/15 days),
- Extended range (up to 28/42/46 days, 4/6 weeks),
- Long range (seasonal).

## ECMWF – global model

- Determinist – 9 km,
- ENS medium range – 18 » 9 km, 50 » 100 members, 2x week » daily updates (June, 2023).

### PRODUCTS – Precipitation

Total Accumulations (1h, 3h, 6h, 12h, 24h)

Meteograms (10/15 days, with climate)

Weekly Anomalies (2 weeks)

Probabilities (EPS)

EFI – Extreme Forecast Index

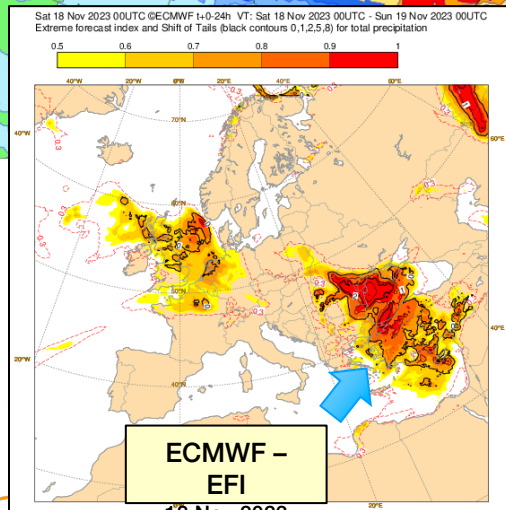
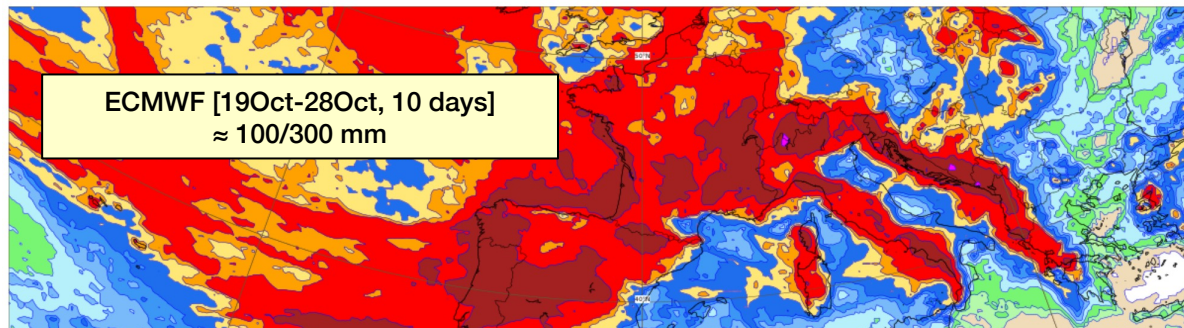
[ AROME – regional model (2,5 km) ]

# ECMWF products – Forecasting

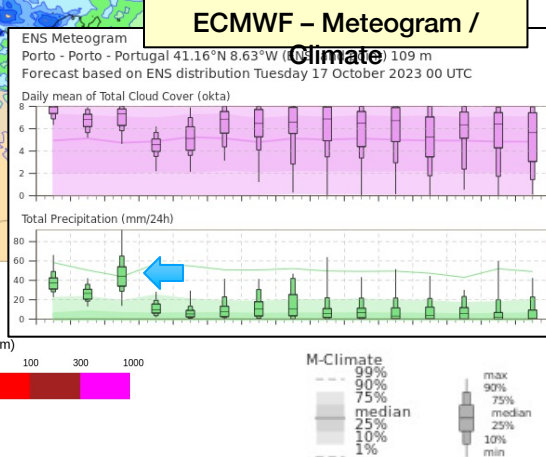
## Total accumulated precipitation

Base time: Thu 19 Oct 2023 00 UTC Valid time: Sun 29 Oct 2023 00 UTC (+240h) Area : South West Europe

Example:  
19th October

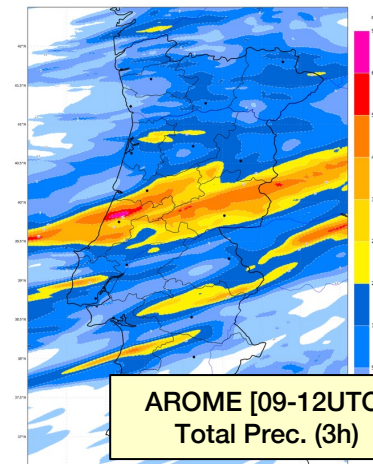


18 Nov 2023

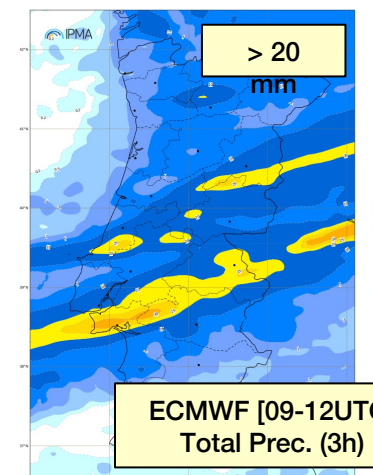


ECMWF

AROME: Precipitação total acumulada (mm) nas últimas 3 horas  
Thu 19 Oct 2023 00 UTC Previsão H+12 para Thu 19 Oct 2023 12 UTC



ECMWF: Precipitação total - líquida e sólida - acumulada em 3 horas (mm)  
Thu 19-Oct-23 00UTC Previsão H+12 para Thu 19-Oct-23 12UTC



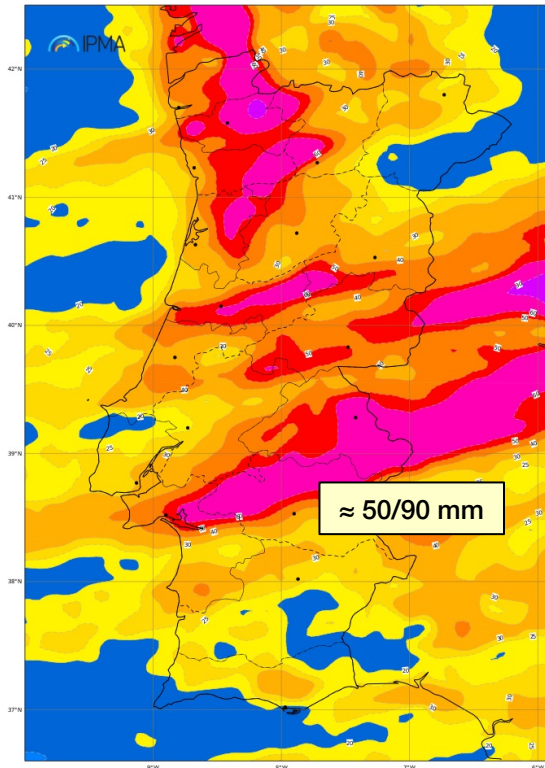


# ECMWF products – Forecasting

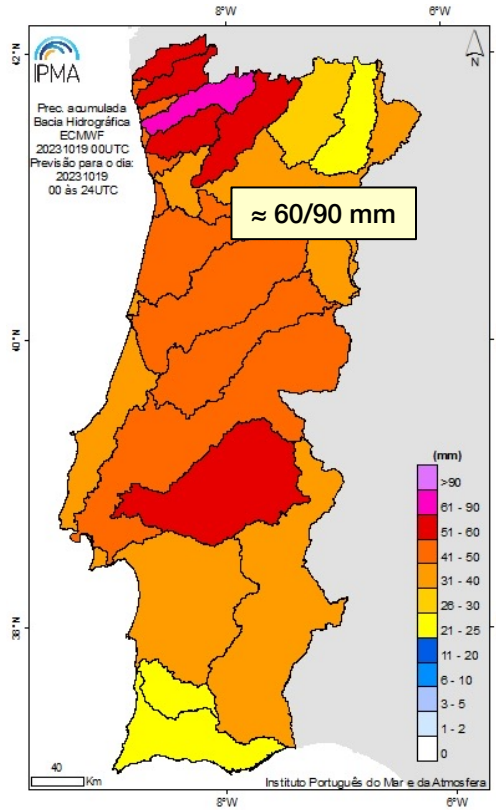
Example: 19th October

## ECMWF [19th Oct] – Total Prec. (24h)

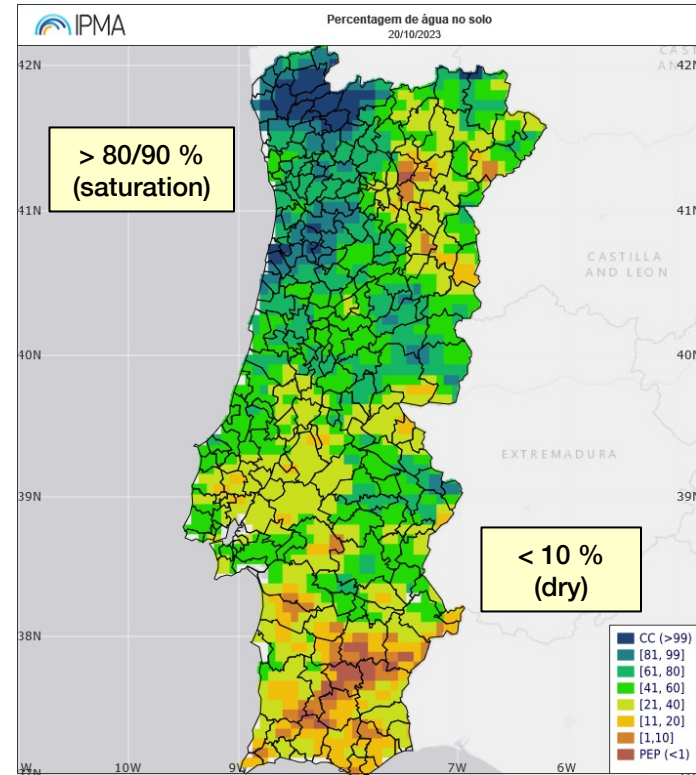
ECMWF: Precipitação total - líquida e sólida - acumulada em 24 horas (mm)  
Thu 19-Oct-23 00UTC Previsão H+24 para Fri 20-Oct-23 00UTC



## ECMWF [19th Oct] River Basin / Watershed



## ECMWF [19th Oct] – Soil moisture



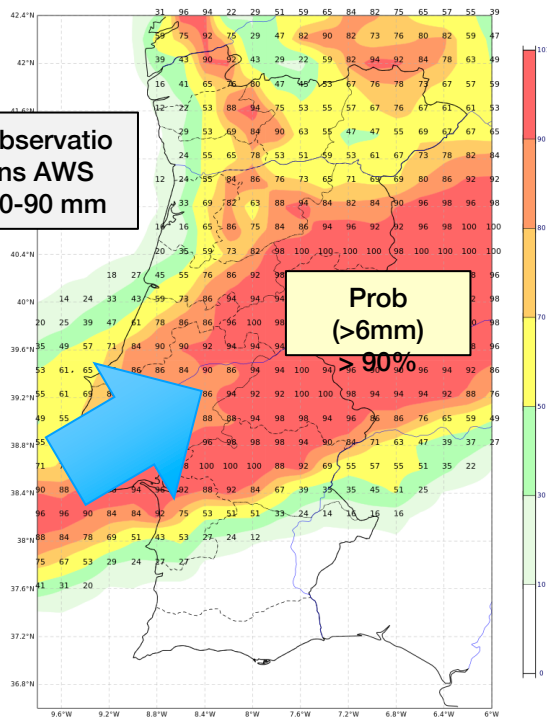


# ECMWF products – Forecasting

Example: 19th October

ECMWF [19th Oct]  
Prob. Total Prec. > 6 mm (3h)

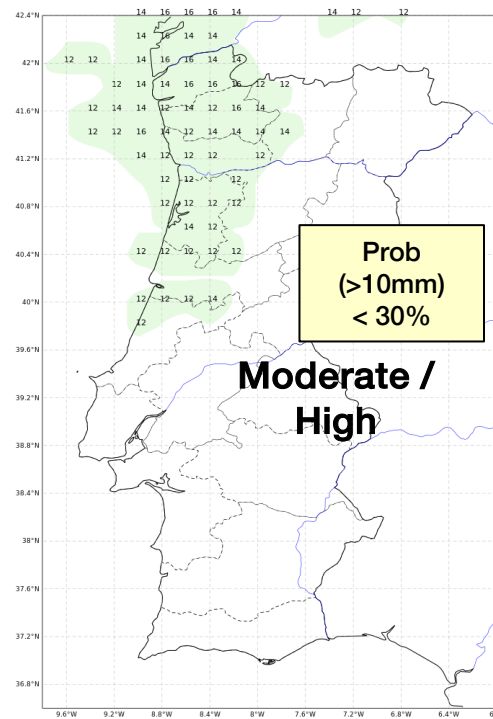
FCST ENS ECMWF Variable: PROB TOTAL\_PRECIP >=6.0 [%] 3h  
Run: 2023101900 Step: 12 Valid/Period: 2023101909 - 2023101912



Example: forecast for 27th  
November

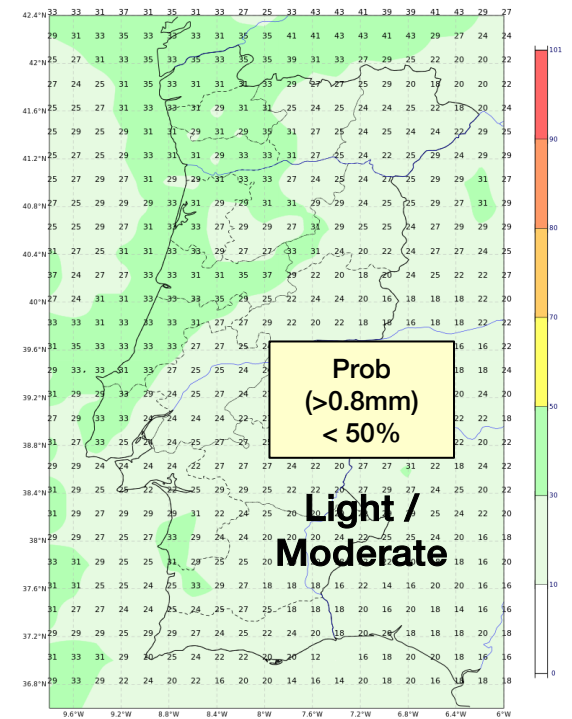
ECMWF [20th Nov]  
Prob. Total Prec. > 10 mm (24h)

FCST ENS ECMWF Variable: PROB TOTAL\_PRECIP >=10.0 [%] 24h  
Run: 2023112000 Step: 192 Valid/Period: 2023112700 - 2023112800

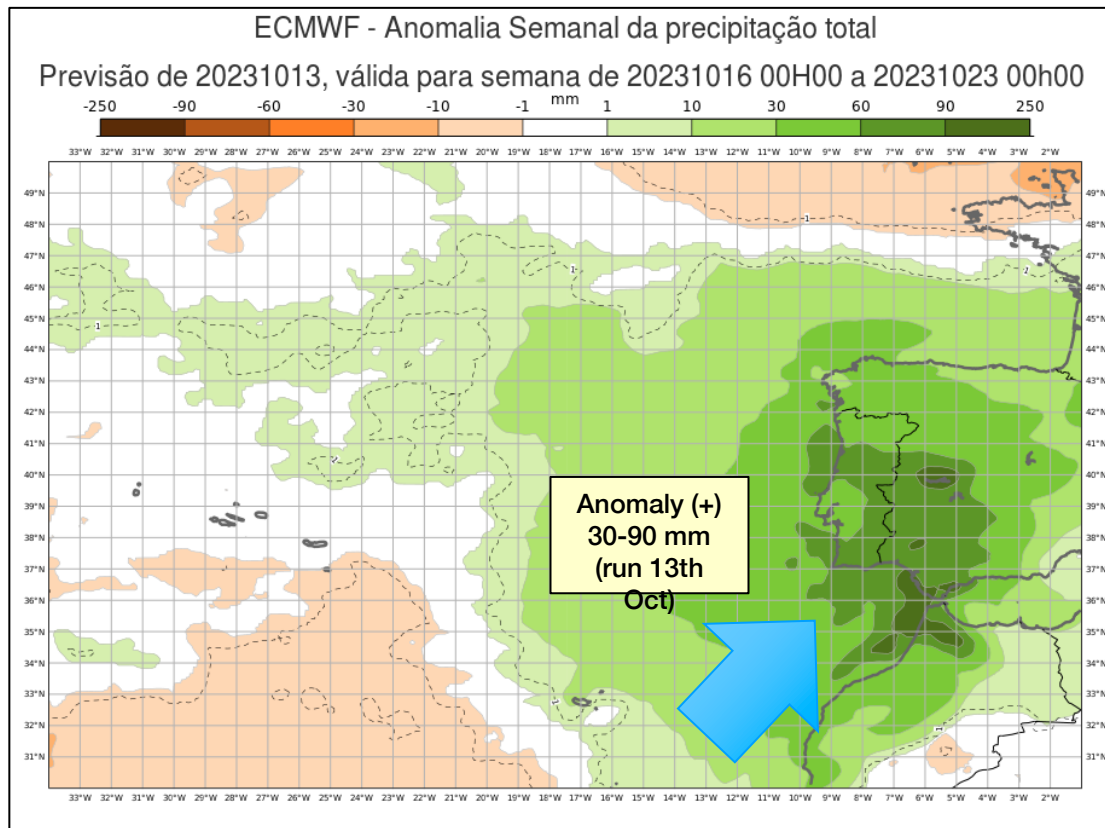


ECMWF [2th 0Nov]  
Prob. Total Prec. > 0.8 mm (24h)

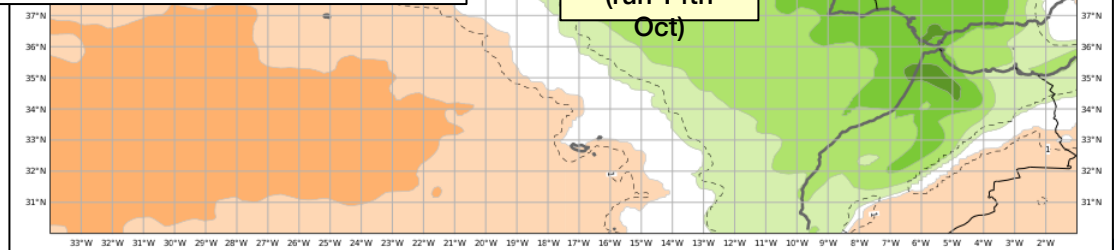
FCST ENS ECMWF Variable: PROB TOTAL\_PRECIP >=0.8 [%] 24h  
Run: 2023112000 Step: 192 Valid/Period: 2023112700 - 2023112800



# ECMWF products – Forecasting



Total Precipitation  
Weekly Anomalies  
(16<sup>th</sup>-23<sup>rd</sup> Oct 2023)



Thank for your attention!