

# EDERA

## Early warning Demonstration of pan-European Rainfall-induced impact forecasts

EDERA Workshop - Madrid, 07-8 May 2024

# Project summary

## Early warning Demonstration of pan-European rainfall-induced impact forecasts

- **Duration:** 01 Feb 2023 - 31 Jan 2025 (24 months)

- **Website:** [www.edera-project.eu](http://www.edera-project.eu)

- **Partners:**

Universitat Politècnica de Catalunya (ES)

European Centre for Medium-range Weather Forecasts (INT)

Finnish Meteorological Institute (FI)

Environment and Water Agency of Andalusia (ES)

Directorate-General for Civil Protection and Emergencies (ES)

National Authority of Emergency and Civil Protection (PT)

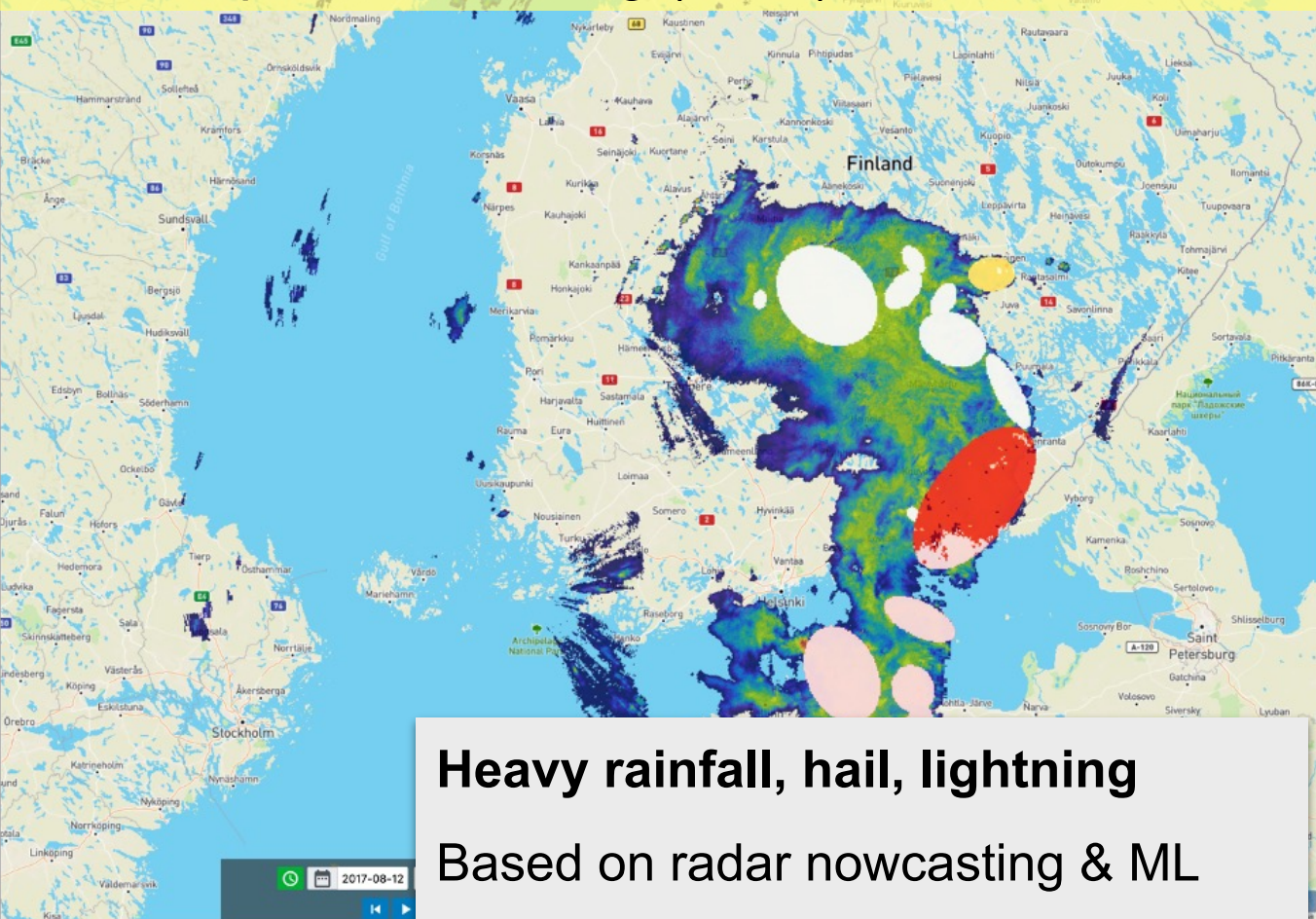


# Main objective

Integrating forecasts of the impacts due to storms and heavy rainfall into the operational EWSs of national, regional and local CPAs, fostering sharing information and cooperation of CPAs during cross-border events and coordination between CPAs.

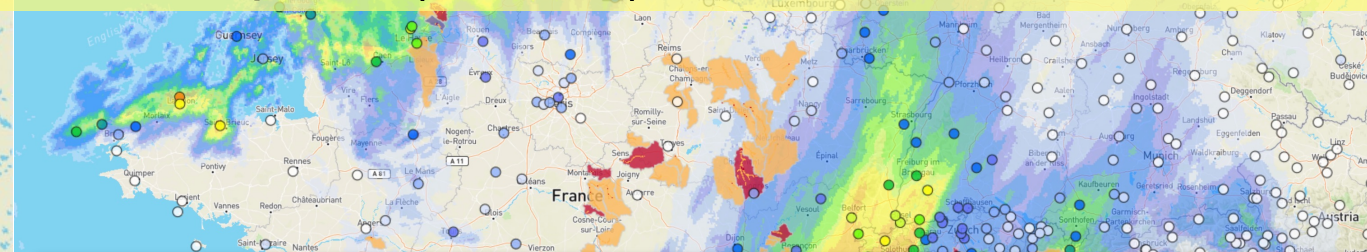
## Impact forecasting during storms and heavy rainfall events

Storm impact nowcasting (0-3 h).



**Heavy rainfall, hail, lightning**  
Based on radar nowcasting & ML  
Extended to European scale  
European-wide exposure.

Flood impacts (0-120 h).



**Flash floods (basins 10 - 2000 km<sup>2</sup>)**

Resolution: 1 h, 1 km - Update: 1 h

Blended  
precipitation  
forecasts



Flash flood  
hazard



Flash flood  
impacts

- Using probabilistic nowcasting & NWP.
- Seamless blending in the first 6 hours

- Basin-aggregated precipitation on the drainage network (1 km).
- Hazard assessment by comparison with climatological thresholds.

- By combining hazard with exposure.

# Specific objectives and expected outputs

- **Extend the convective hazard and pluvial flood forecasts over Europe.**
- **Increase the adaptability of the flood impact forecasts to the needs of the end users**, applying a strategy to provide compound impact forecasts, and implement configurable user-defined notifications.
  - *Improved products for flood impact forecasting at European scale*
- **Integrate the flood impact forecasts to the EWS platforms of the end users** for improved preparedness and response management during flood events.
- **Demonstrate the added value of seamless flood impact forecasts through a robust evaluation**, at European scale and in two pilot sites, with end-users analysing the added value for CPAs cooperation in cross-border operations and coordination.
  - *Demonstration for a period of 15 months*
  - *Recommendations for coordination and cross-border cooperation between CPAs*
- **Develop comprehensive guidance material** delivered through dedicated training workshops and e-learning materials.
- **Integrate the developments within the CEMS-Floods EFAS system.**
  - *Sustainability of the products*



# EDERA pilot sites



## ES-PT pilot site

**National Authority of Emergency and Civil Protection**

*CIM Coimbra Region*

*Portuguese Institute of Sea and Atmosphere*

*Portuguese Agency of Environment*



**Directorate-General for Civil Protection and Emergencies**

**Environment and Water Agency of Andalusia**

*Civil Protection of Andalusia*

*Civil Protection of Puente Genil*

*Association of CP operators of Andalusia*

*Agency of Security and Emergency Response of Valencia*

*Civil Protection of Catalonia*

*State Agency of Meteorology*

EUMETNET OPERA

## FI+ pilot site

**Finnish Meteorological Institute**

*Helsinki Rescue Department*

*Kymenlaakso Rescue Services*

*North Karelia Rescue Department*

*Finnish Environment Institute*



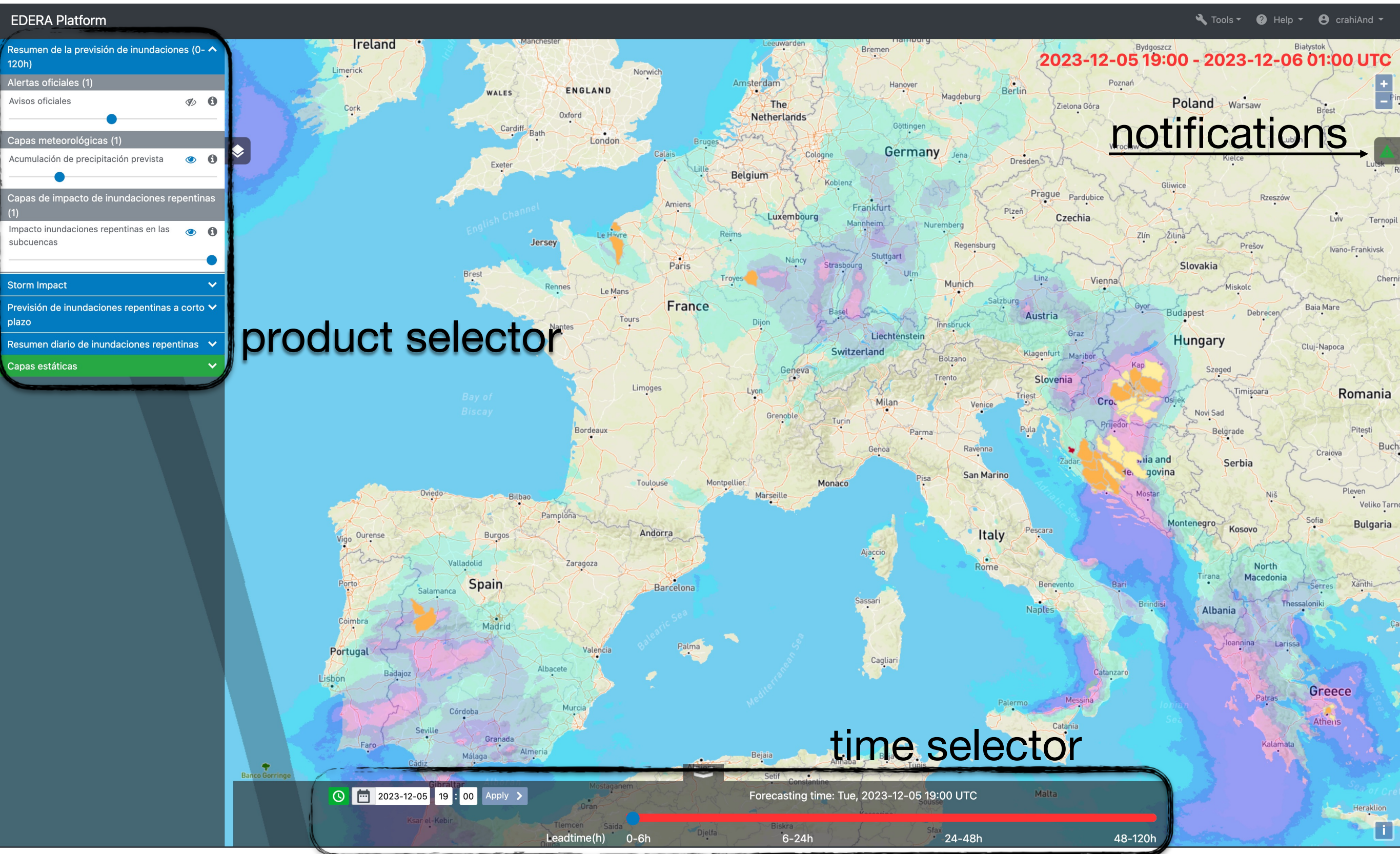
Co-funded by  
the European Union

# EDERA demonstration

- August 2023 – October 2024.
- With the participation of end users.
- Access to the products in real time through
  - + EDERA web-based platform.
  - + WMS
- Integration of *local* products/information (exposure, vulnerability, obs...)
- Notifications adapted to the end user.
- Contribution to the evaluation (feedback about the products, functionalities and results during events).
- Recommendations for coordination and cooperation between CPAs.
- Local training workshops.



# EDERA demonstration





# Training and guidance

## Local training at the pilot sites

- Presentation of the features and products.
- Discussion on the flow to use the implemented products.
- Design/configuration of notifications.
- Collecting feedback from end-users (through the platform and via frequent meetings).
- Need for further training (technical staff).

## International training Workshop

- Presentation to interested end users.

## Other

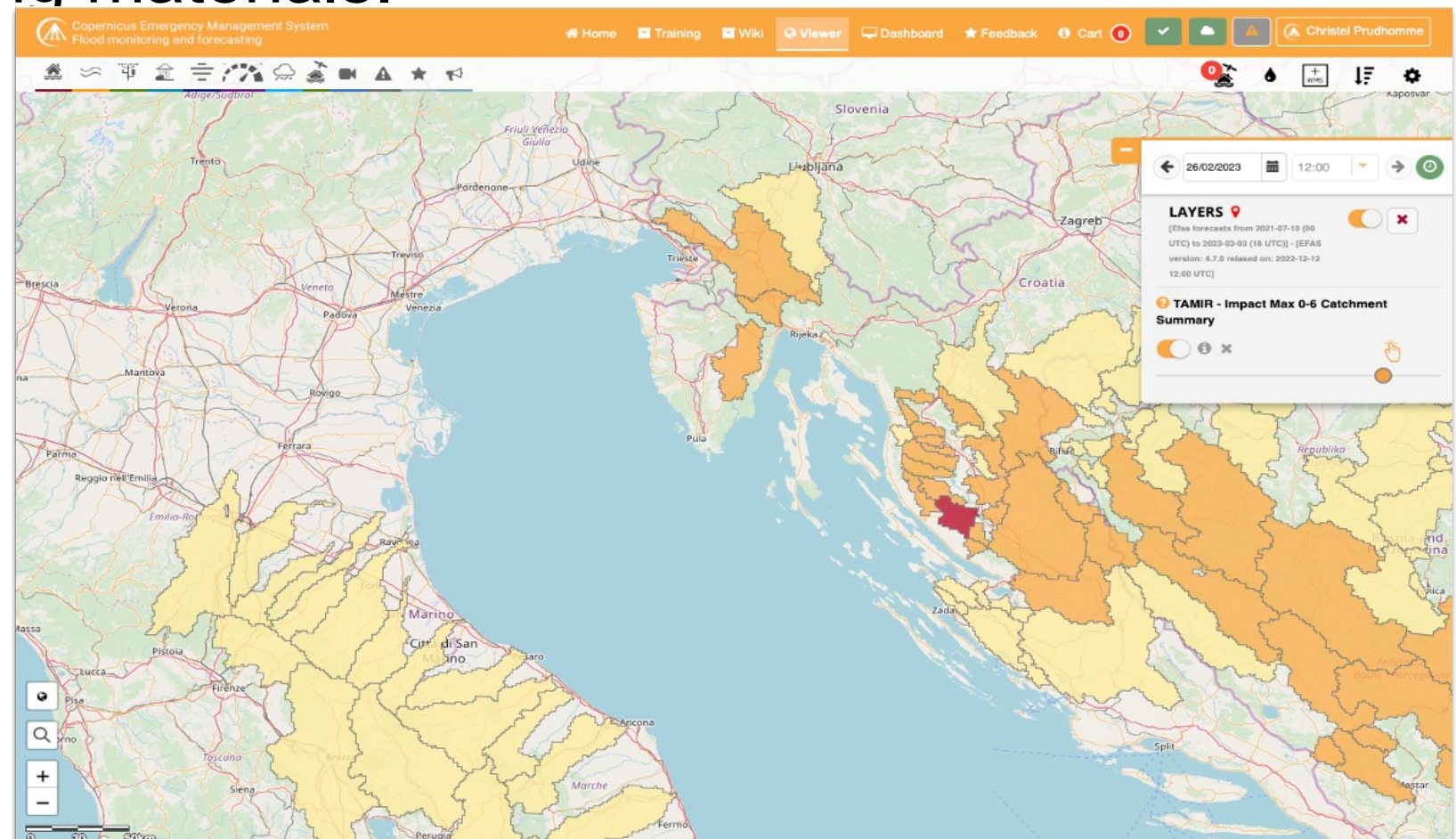
- Preparation of e-learning materials.





# Summary

- Improvement of products for storms and flash floods impact forecasting and development of new functionalities.
- Real-time demonstration.
- Evaluation of the added value with end users.
- Discussion on coordination among CPAs and cooperation during cross-border events.
- Training and e-learning materials.
- Integration in EFAS.



# EDERA Platform

EDERA Workshop - Madrid, 07-8 May 2024



# EDERA platform

- Web-based platform providing real-time access to the products.
- Organised in 4 blocks of real-time products.
- Access to historical datasets available.



# The EDERA platform

← → ↻ Not Secure http://gebrada.upc.es/edera-platform ☆ ⓘ

EDERA Platform Documentation Contact us

Login

eitw-en

edera-en

Login

(\*) Access to the platform is limited to the EDERA project partners and stakeholders.



# The EDERA platform

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EDERA Platform Documentation Contact us

Login

eitw-es

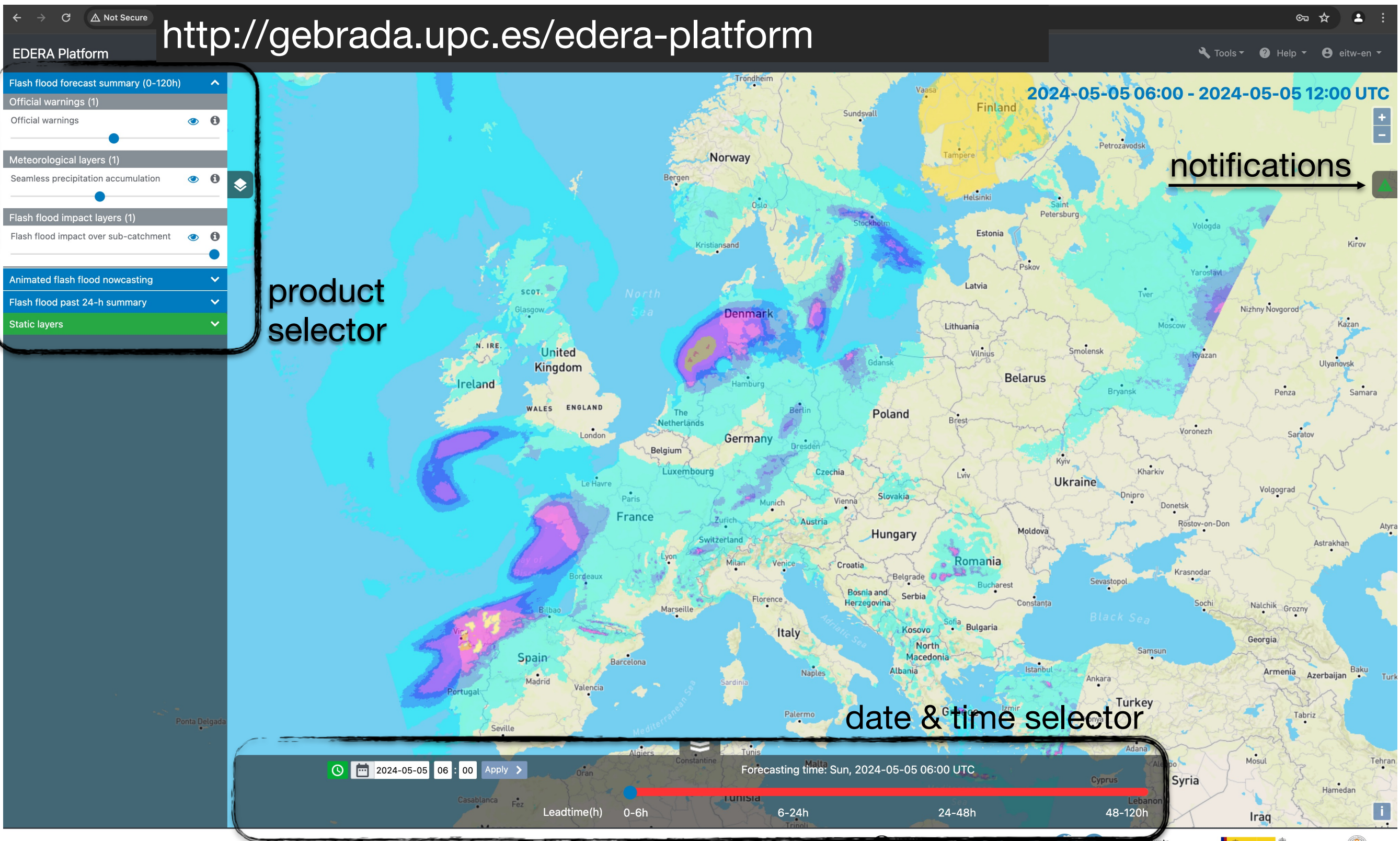
edera-es

Login

(\*) Access to the platform is limited to the EDERA project partners and stakeholders.



# The EDERA platform





# Product selector

EDERA Platform <http://gebrada.upc.es/edera-platform>

Flash flood forecast summary (0-120h)

Official warnings (1)

Official warnings

Meteorological layers (1)

Seamless precipitation accumulation

Flash flood impact layers (1)

Flash flood impact over sub-catchment

Storm Impact

Animated flash flood nowcasting

Flash flood past 24-h summary

Static layers

**Fcst Summary**

**Storms monitoring**

**Floods monitoring**

**24-h summary**

**Static layers**

2024-05-05 06:00 - 2024-05-05 12:00 UTC

Forecasting time: Sun, 2024-05-05 06:00 UTC

Leadtime(h) 0-6h 6-24h 24-48h 48-120h



# Date & time selector

http://gebrada.upc.es/edera-platform

EDERA Platform

Flash flood forecast summary (0-120h)

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Flash flood past 24-h summary

Static layers

2024-05-05 06:00 - 2024-05-05 12:00 UTC

Oct2023

MoTuWeThFrSaSu

1

2345678

9101112131415

16171819202122

23242526272829

3031

Today

Done

2024-05-05 06:00

Forecasting time: Sun, 2024-05-05 06:00 UTC

Leadtime(h)

0-6h

6-24h

24-48h

48-120h

EDERA

FINNISH METEOROLOGICAL INSTITUTE

ECMWF

CRAHI

UPC

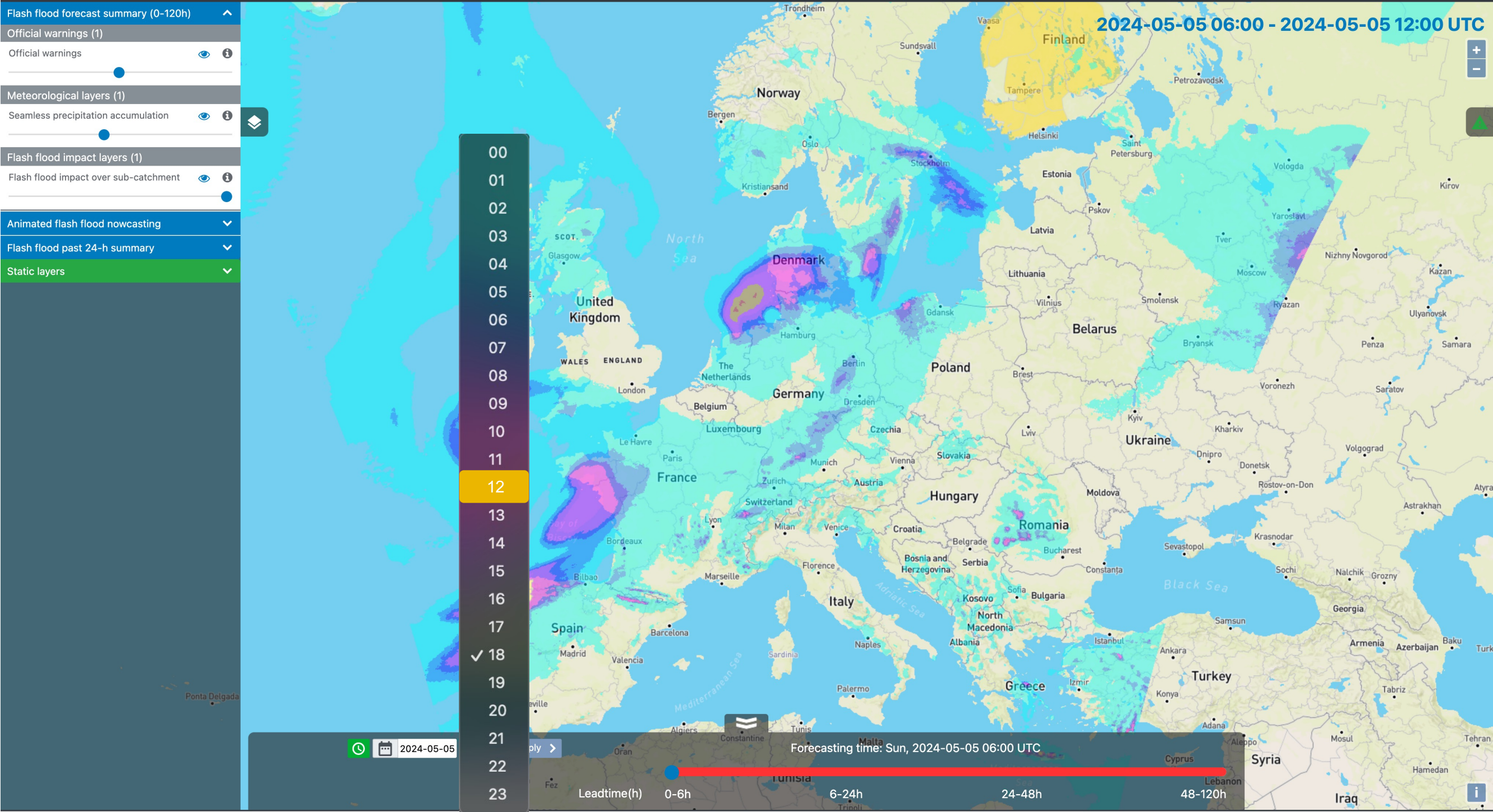
Junta de Andalucía

Co-funded by the European Union



# Date & time selector

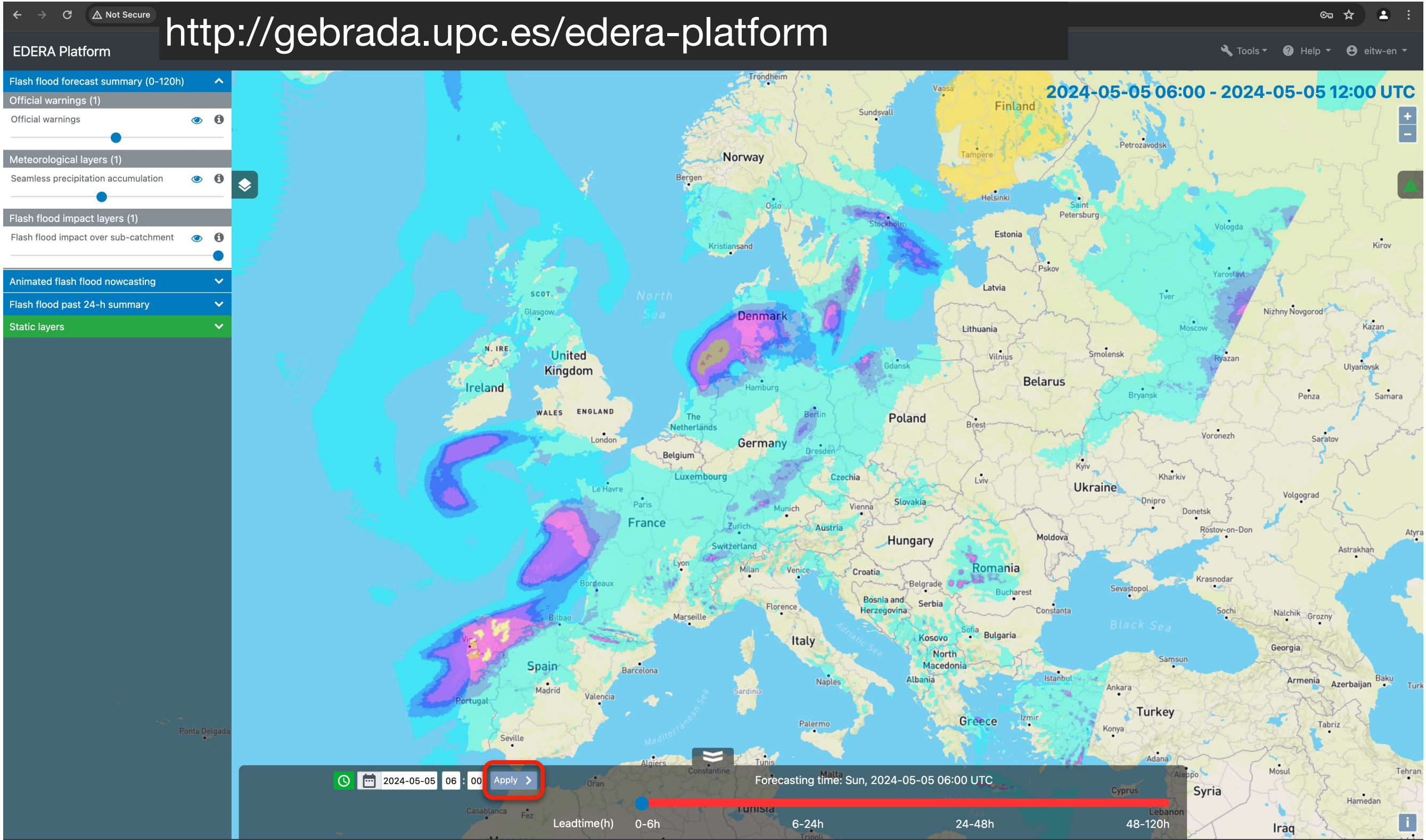
http://gebrada.upc.es/edera-platform





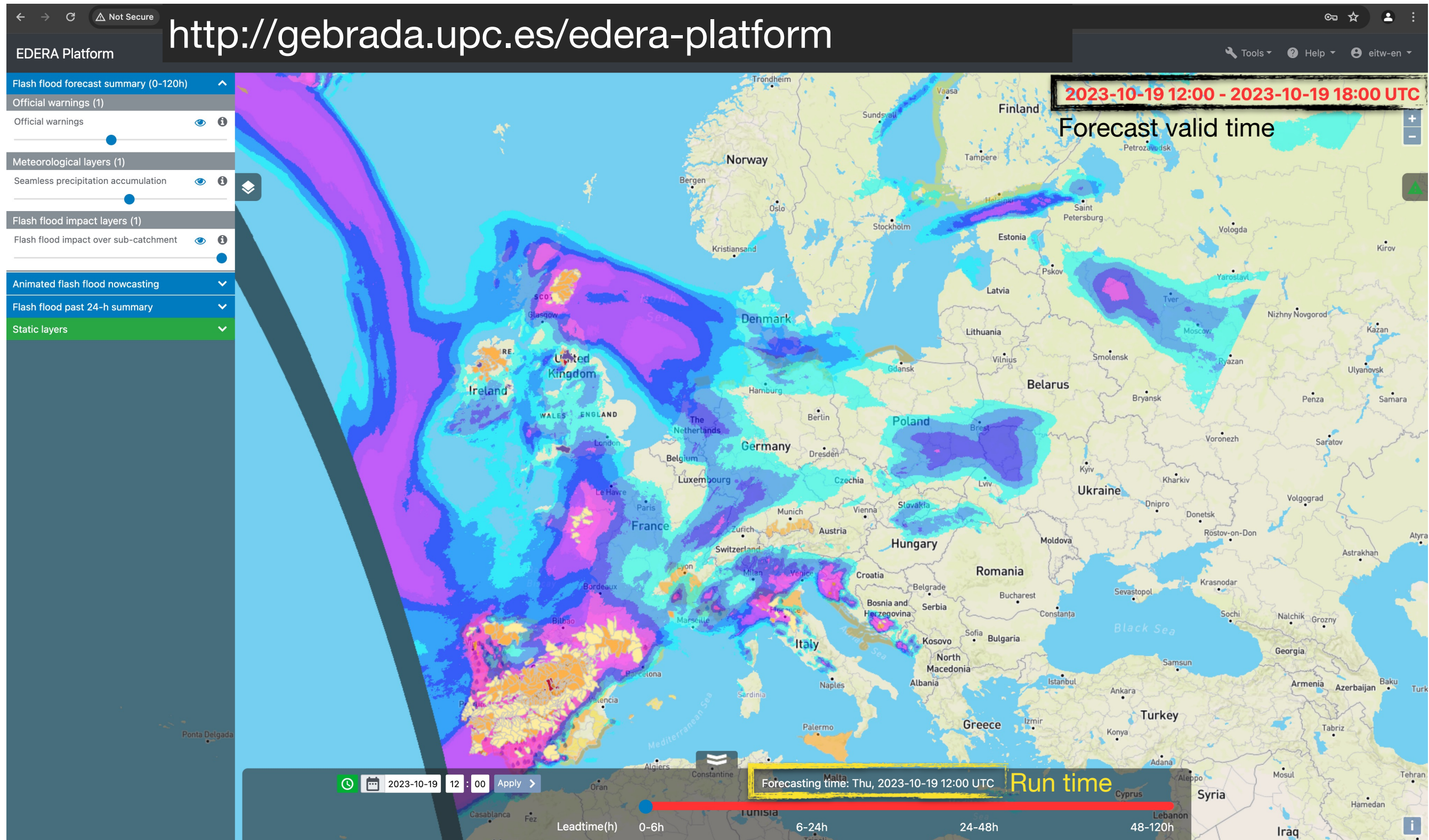
# Date & time selector

http://gebrada.upc.es/edera-platform



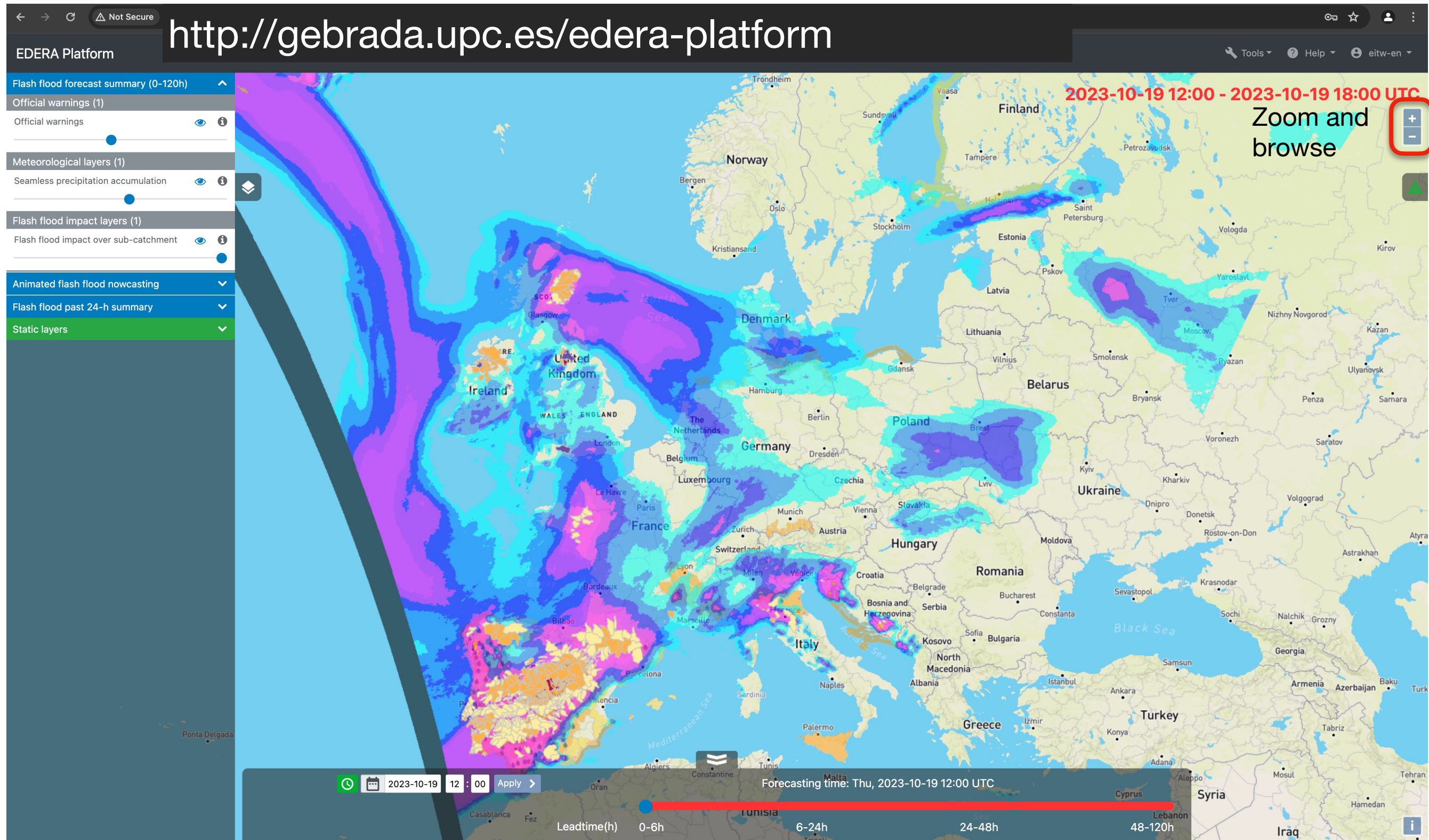


# Date & time selector



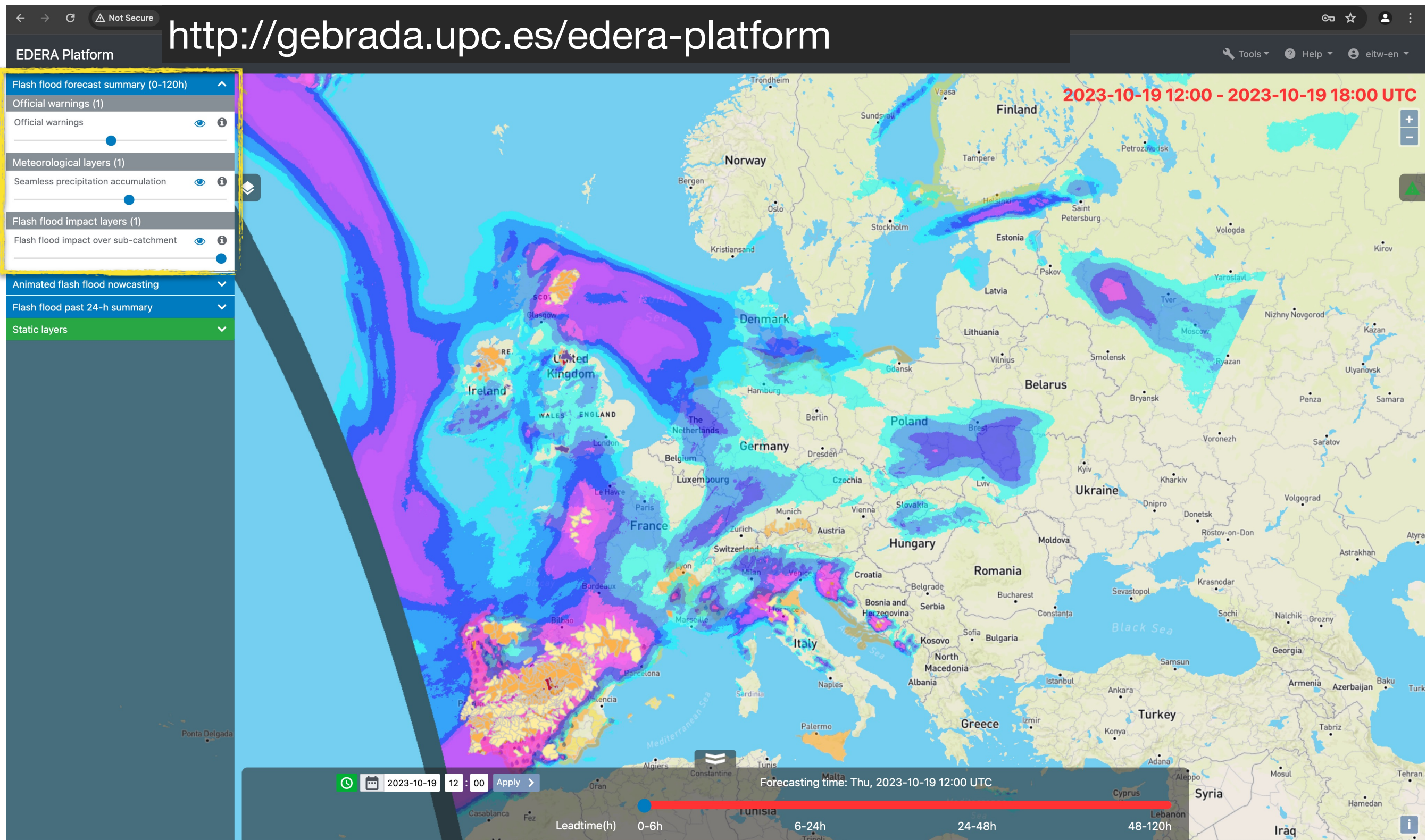


# Date & time selector



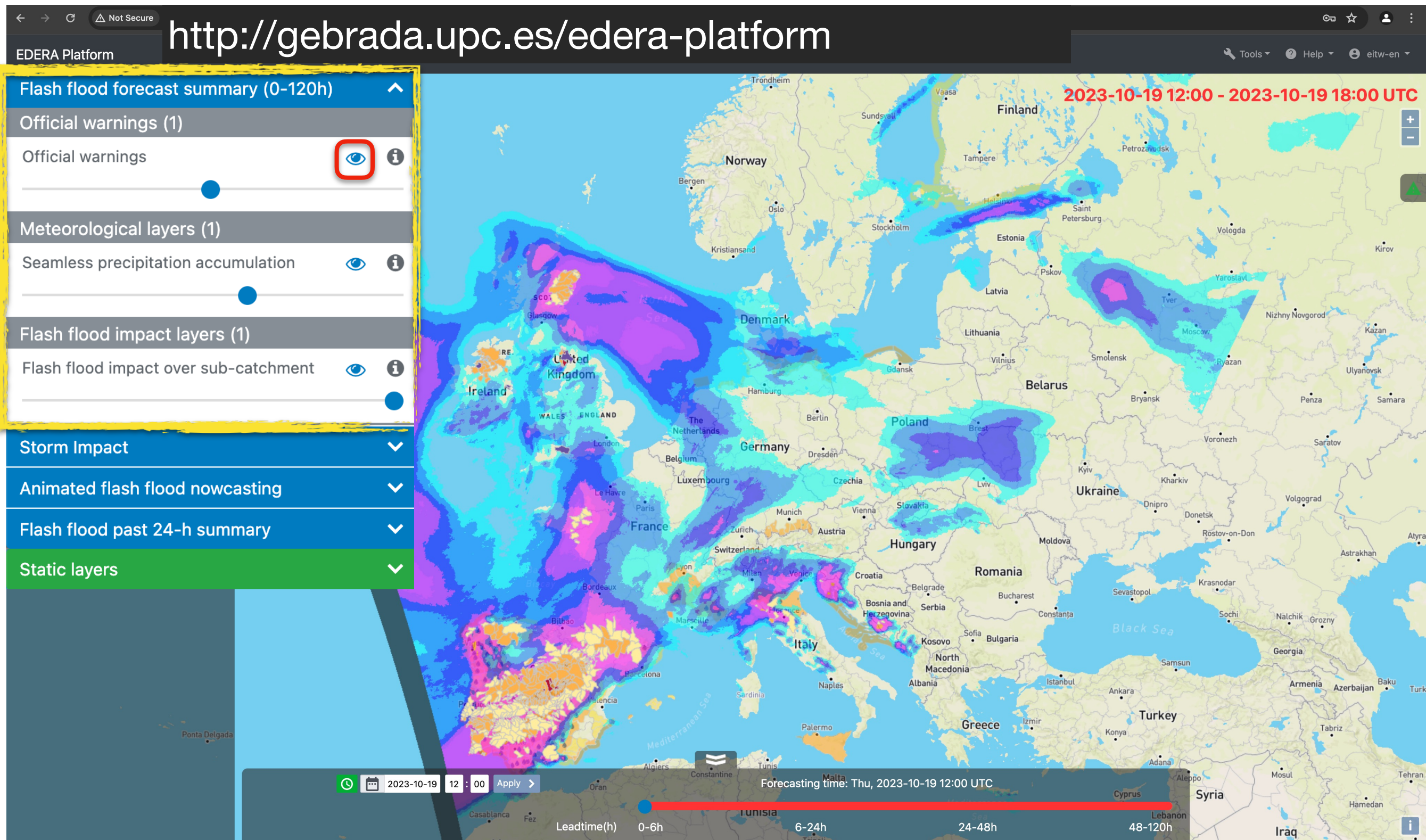


# Block 1: Forecast summary (0-120 h)



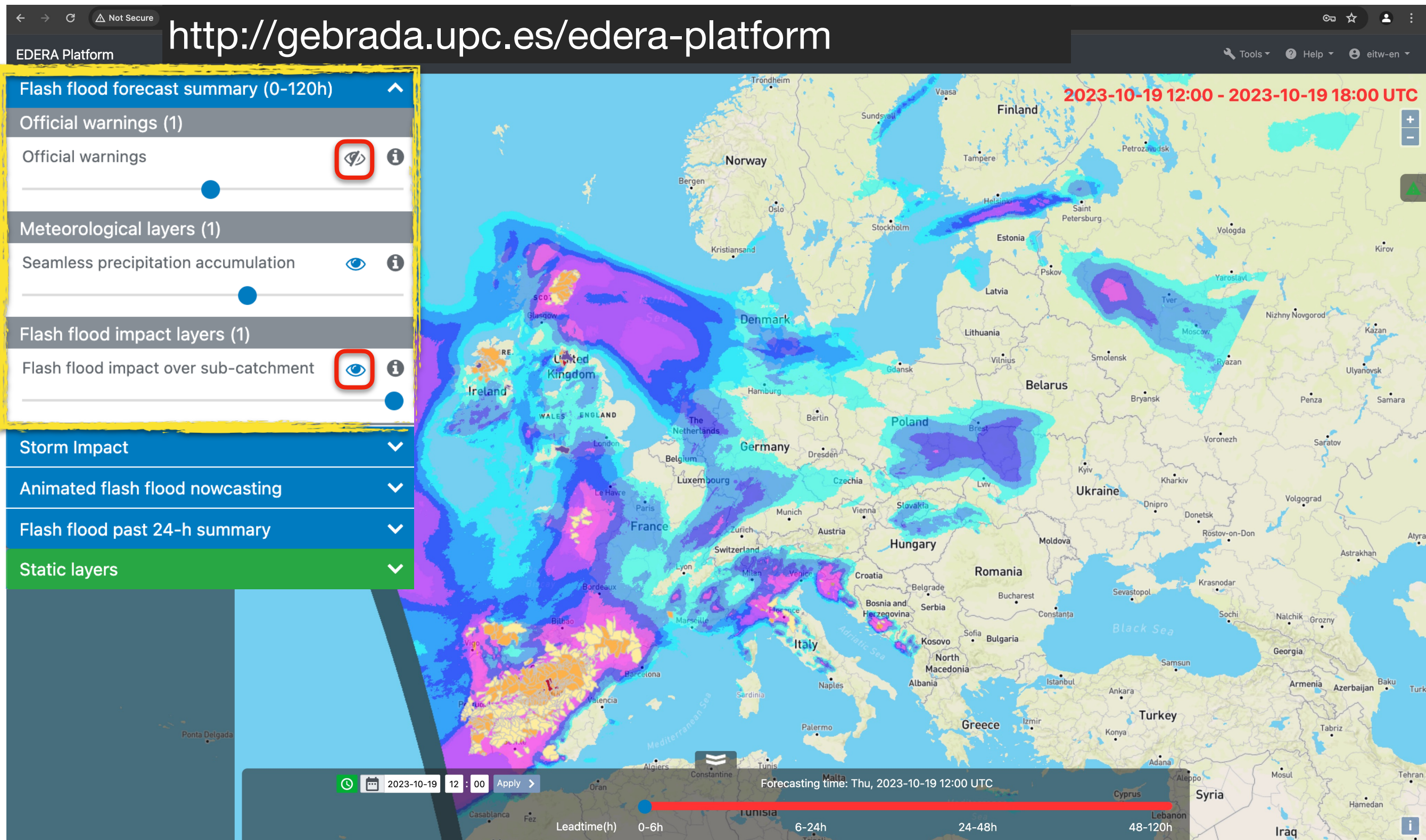


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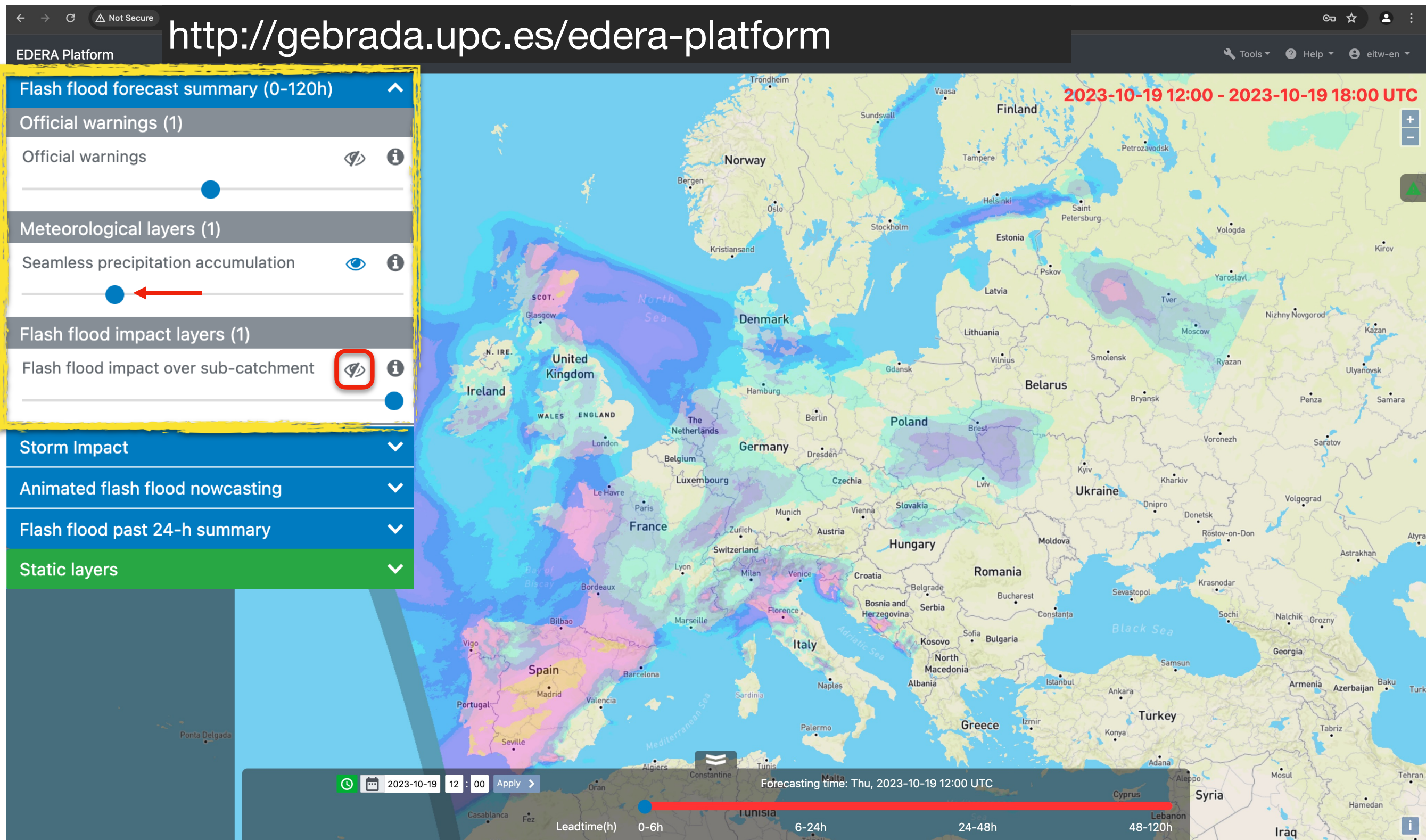


# Block 1: Forecast summary (0-120 h)



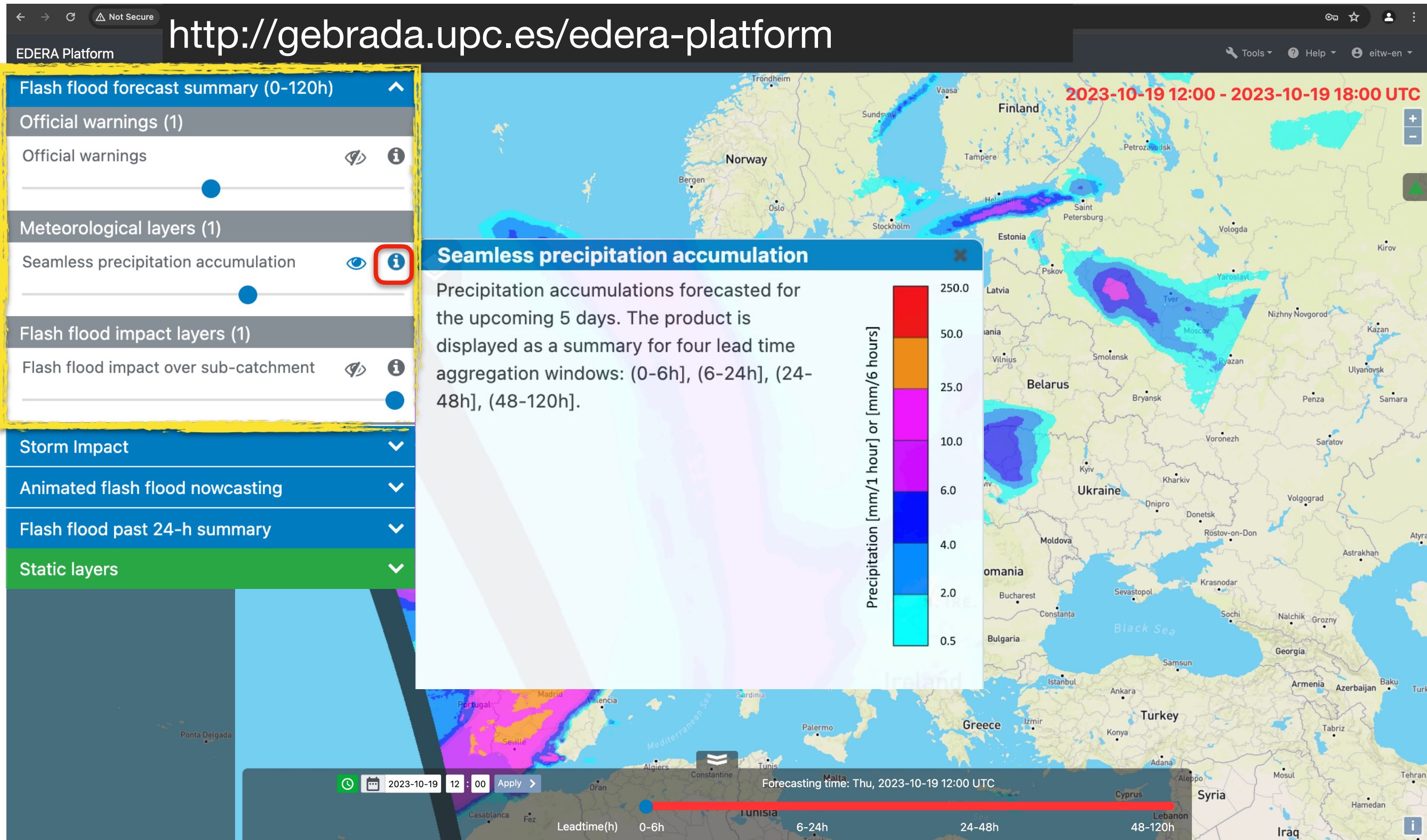


# Block 1: Forecast summary (0-120 h)



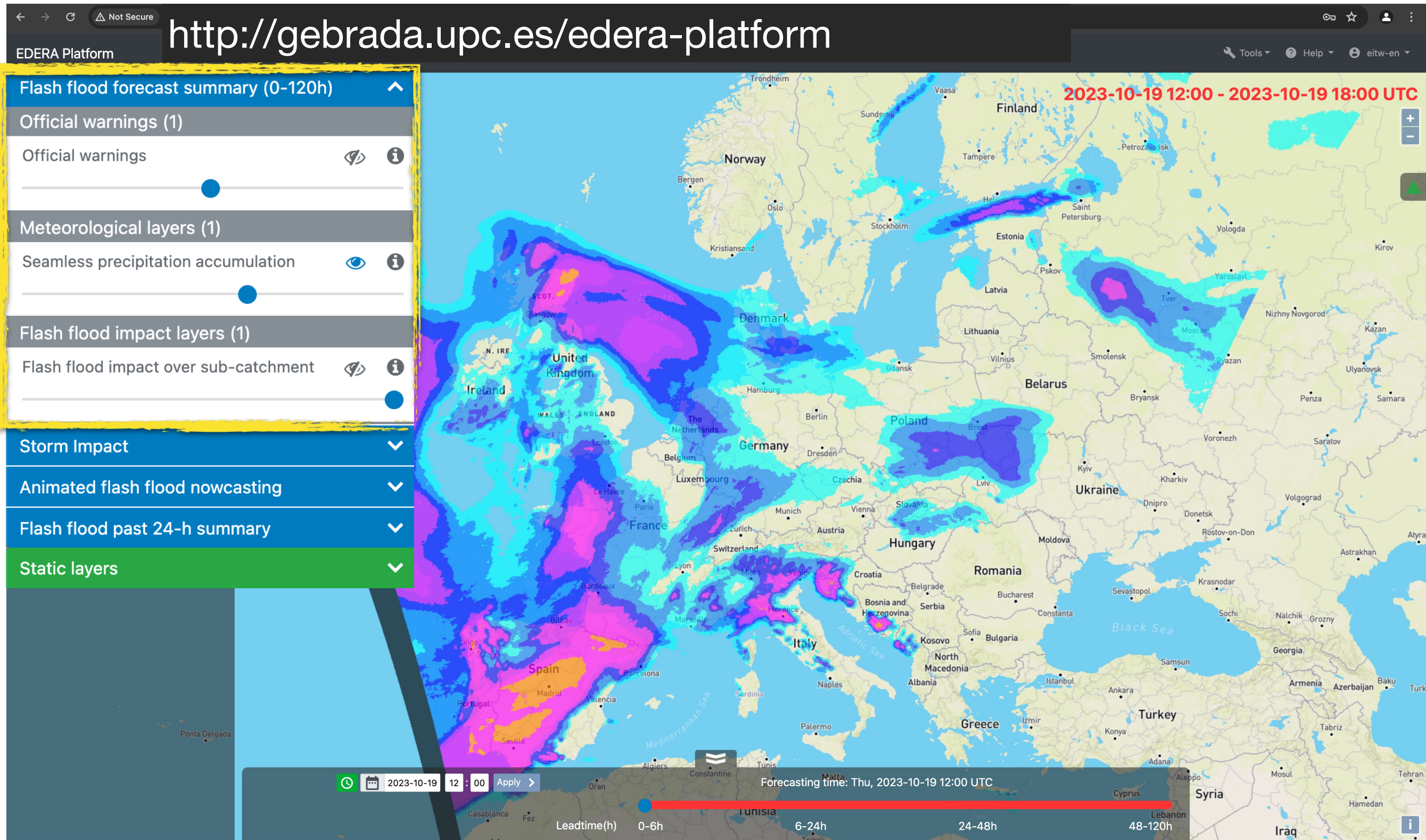


# Block 1: Forecast summary (0-120 h)



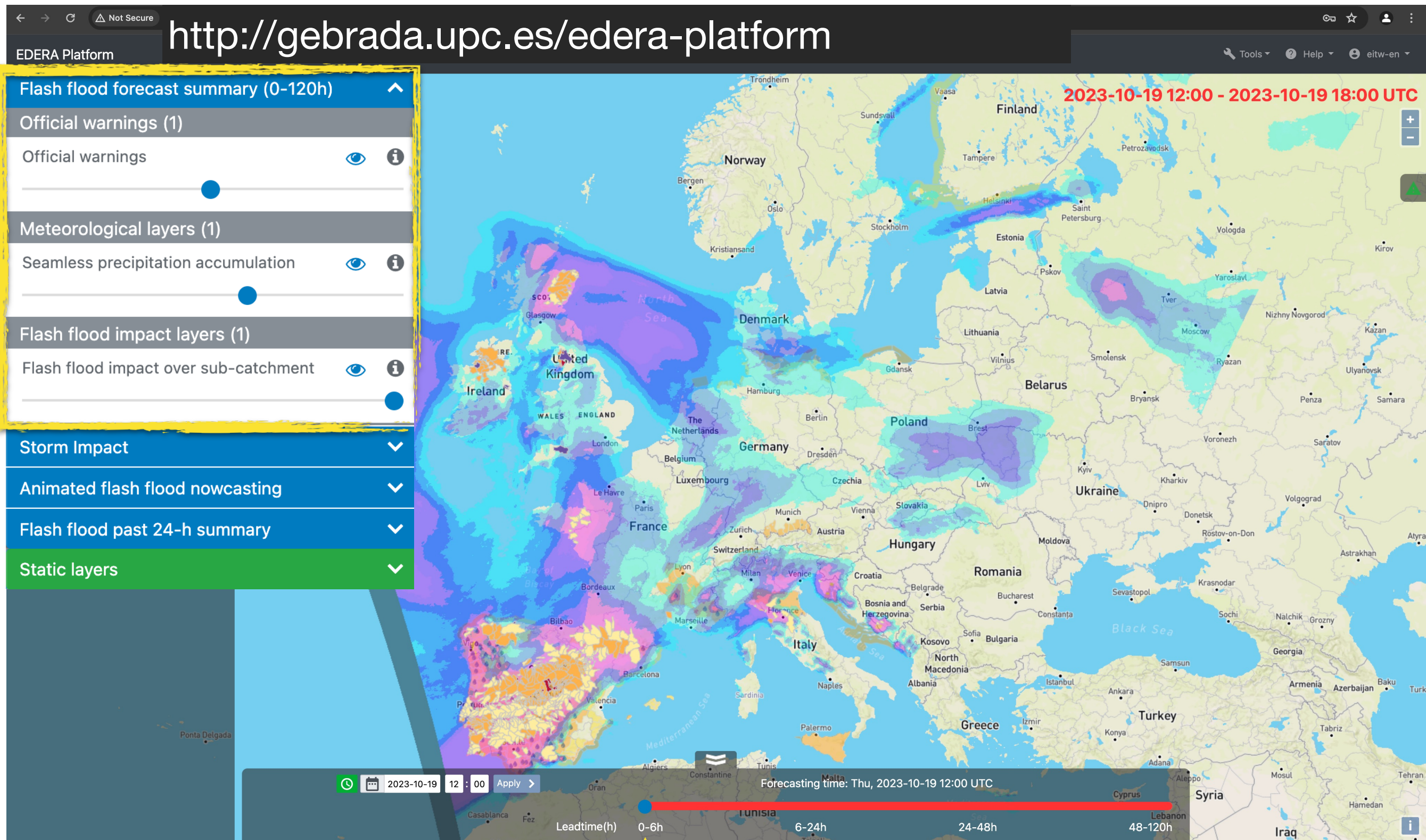


# Block 1: Forecast summary (0-120 h)





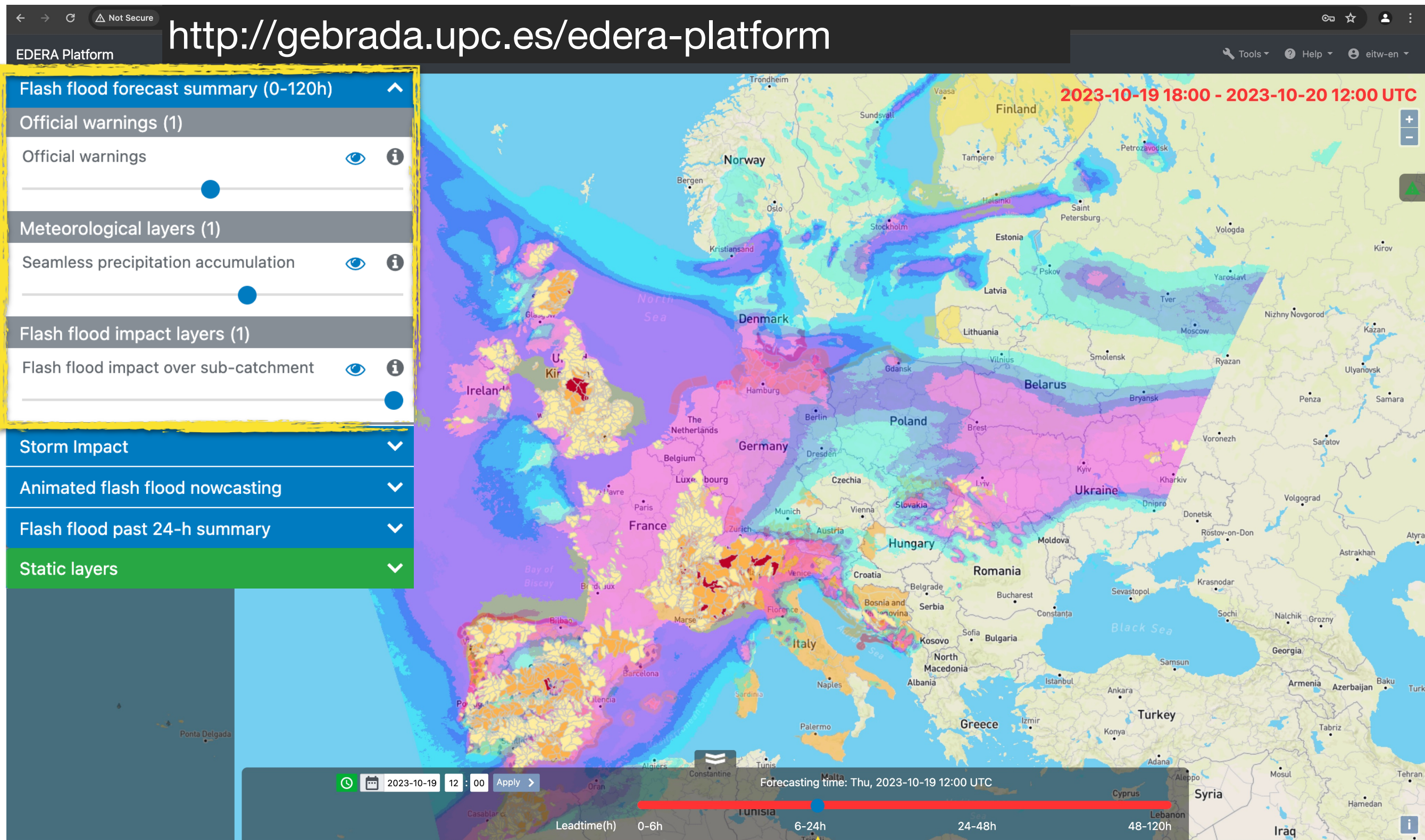
# Block 1: Forecast summary (0-120 h)



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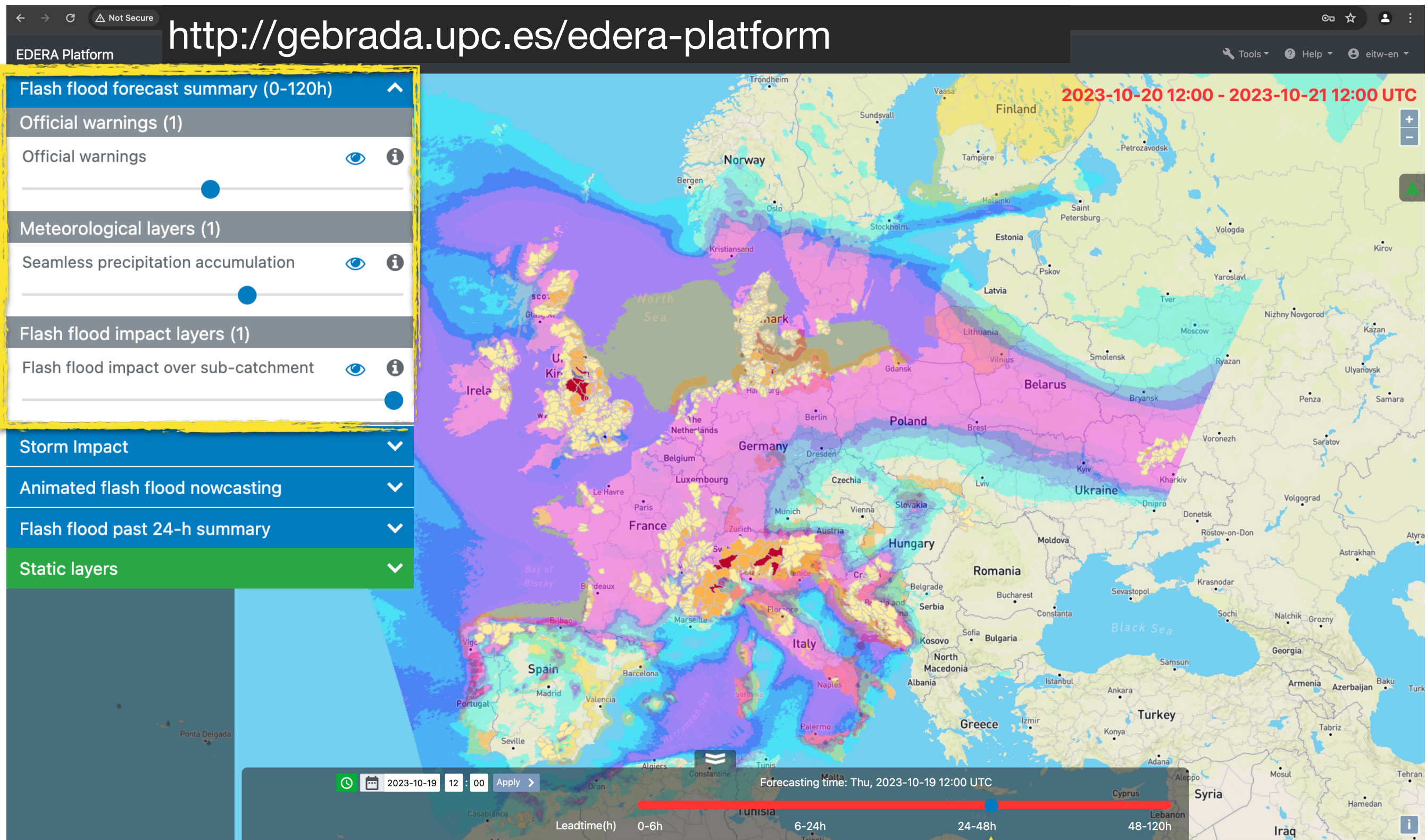


# Block 1: Forecast summary (0-120 h)



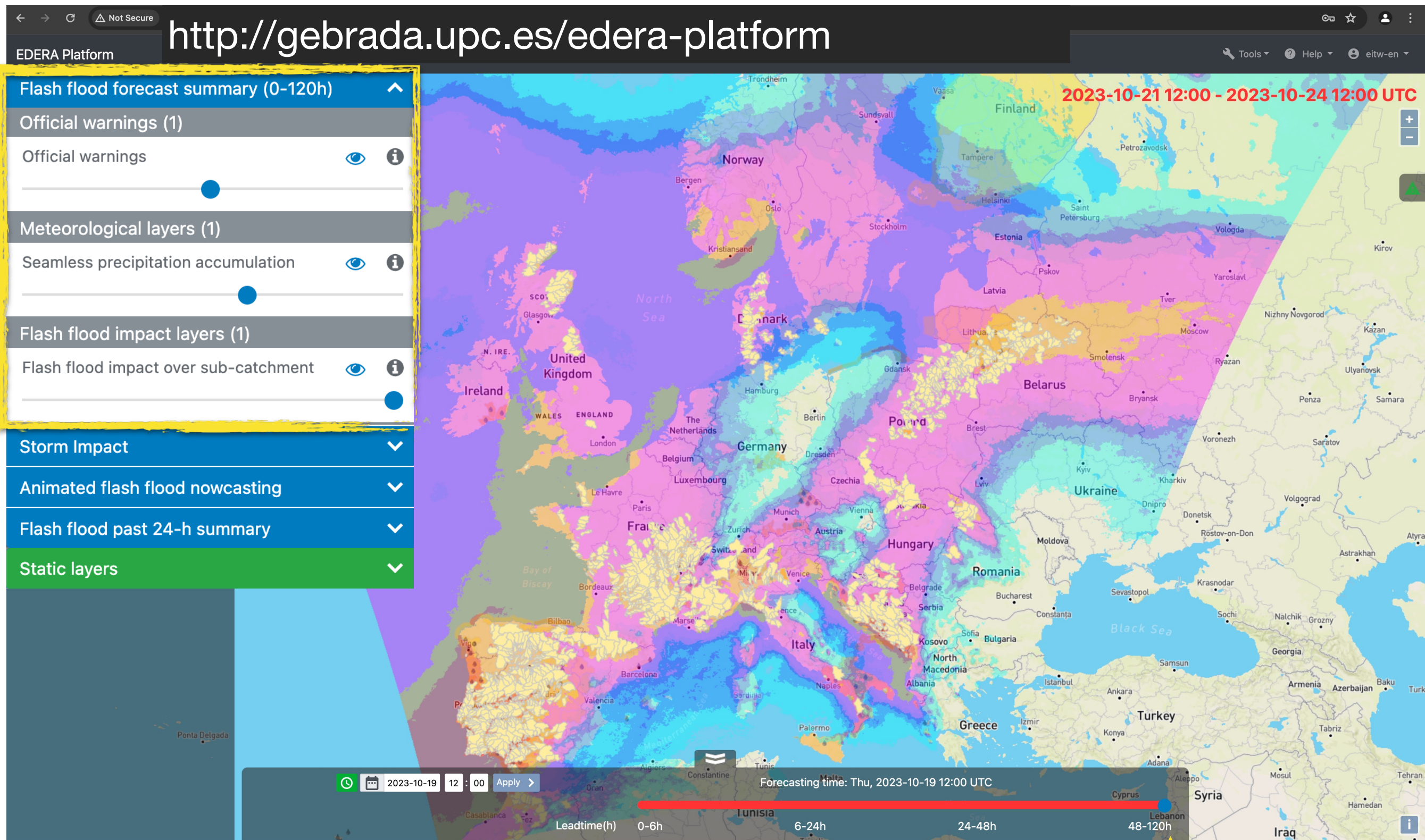


# Block 1: Forecast summary (0-120 h)





# Block 1: Forecast summary (0-120 h)





# Block 1: Forecast summary (0-120 h)

<http://gebrada.upc.es/edera-platform>

Flash flood forecast summary (0-120h)

Official warnings (1)

Official warnings

Meteorological layers (1)

Seamless precipitation accumulation

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Flash flood past 24-h summary

Static layers

2023-10-19 12:00 - 2023-10-19 18:00 UTC

Summary of the most recent forecasts into 4 lead-time ranges (now, today, tomorrow and beyond).

2023-10-19 12:00 Apply

Forecasting time: Thu, 2023-10-19 12:00 UTC

Leadtime(h)

0-6h

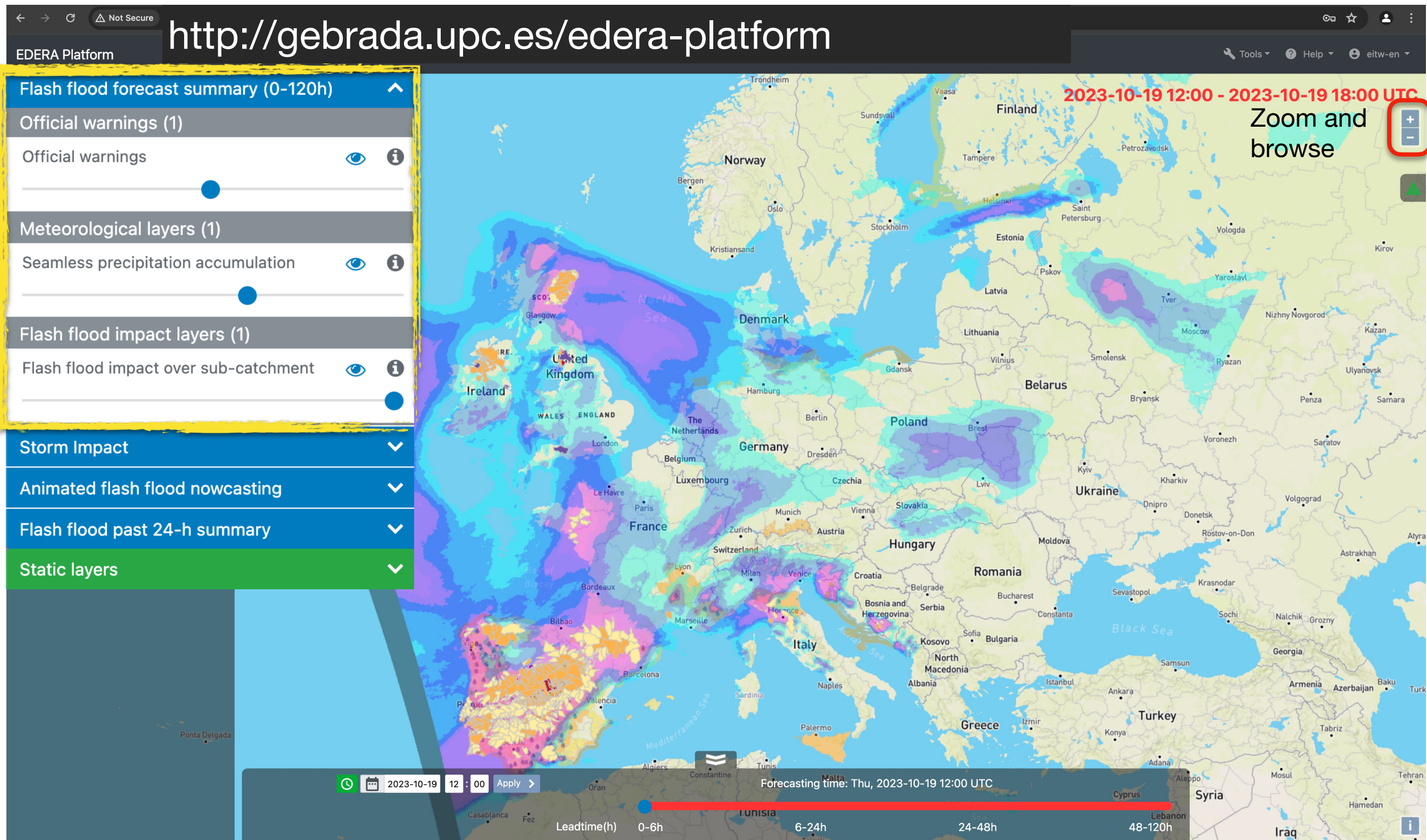
6-24h

24-48h

48-120h



# Block 1: Forecast summary (0-120 h)





# Block 1: Forecast summary (0-120 h)

EDERA Platform <http://gebrada.upc.es/edera-platform>

Flash flood forecast summary (0-120h)

Official warnings (1)

Official warnings

Selected feature information

Official Warnings Flash flood impact over sub-catchment

Lat,Lon: 40.385047,-3.759737

Impact matrix

	Low Exposure	Medium Exposure	High Exposure
High Likelihood			
Medium Likelihood			✓
Low Likelihood			

Exposure information

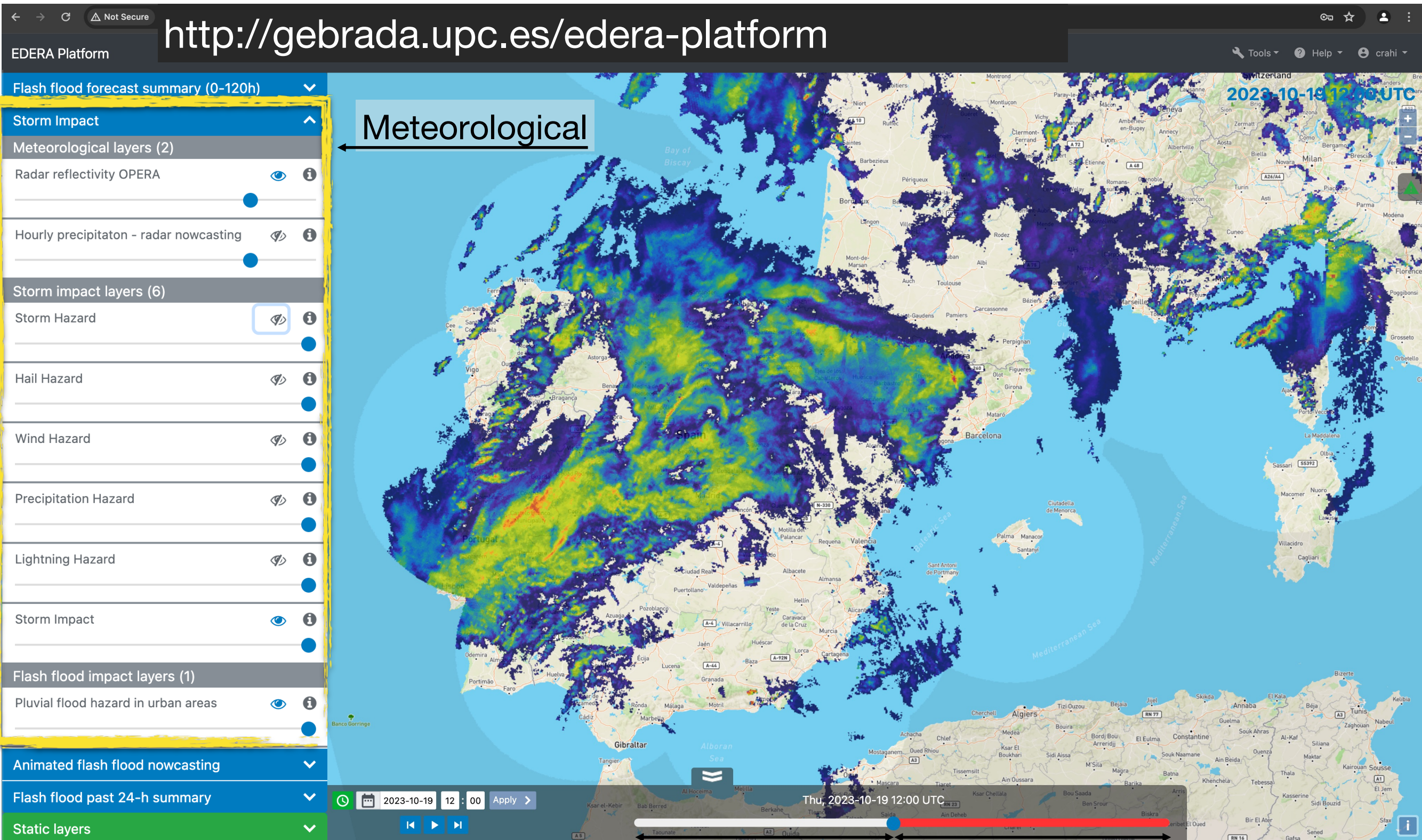
	#
Total population affected	279450
Education facilities affected	24
Health facilities affected	14
Energy generation facilities affected	
Time of the event peak	2023/10/19 15:00:00

Forecasting time: Thu, 2023-10-19 12:00 UTC

Leadtime(h) 0-6h 6-24h 24-48h 48-120h

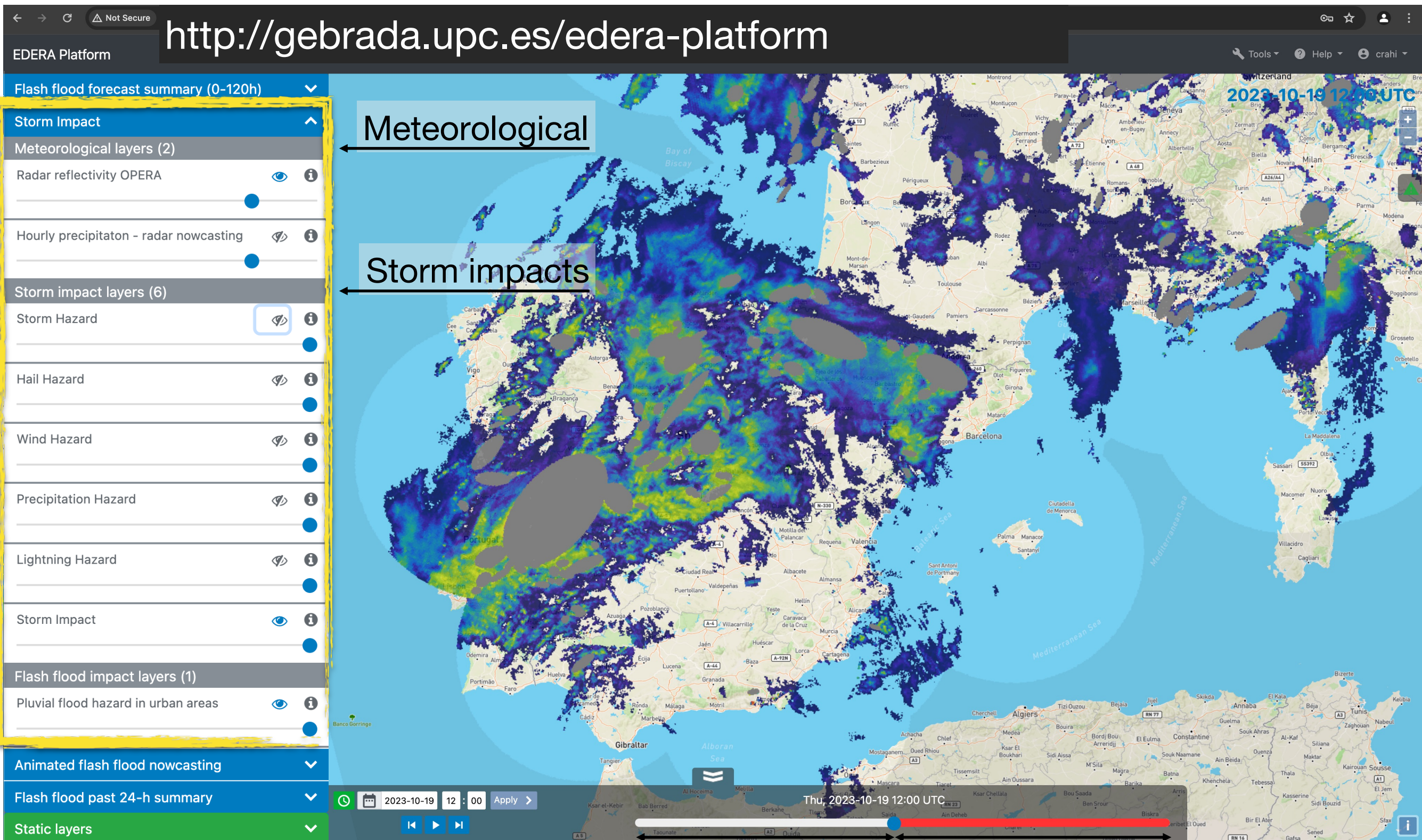


# Block 2: Storm impact nowcasting (0-3h)



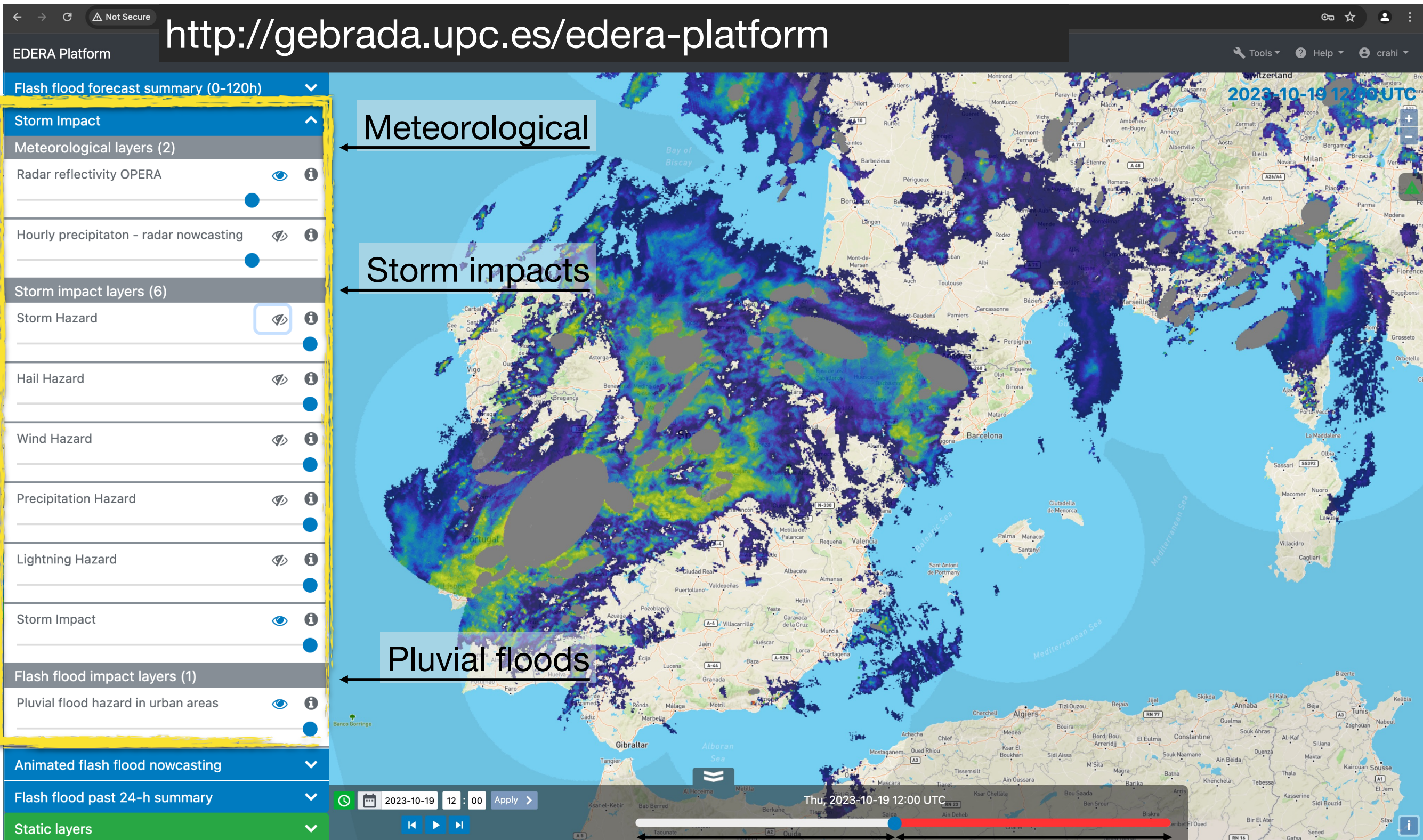


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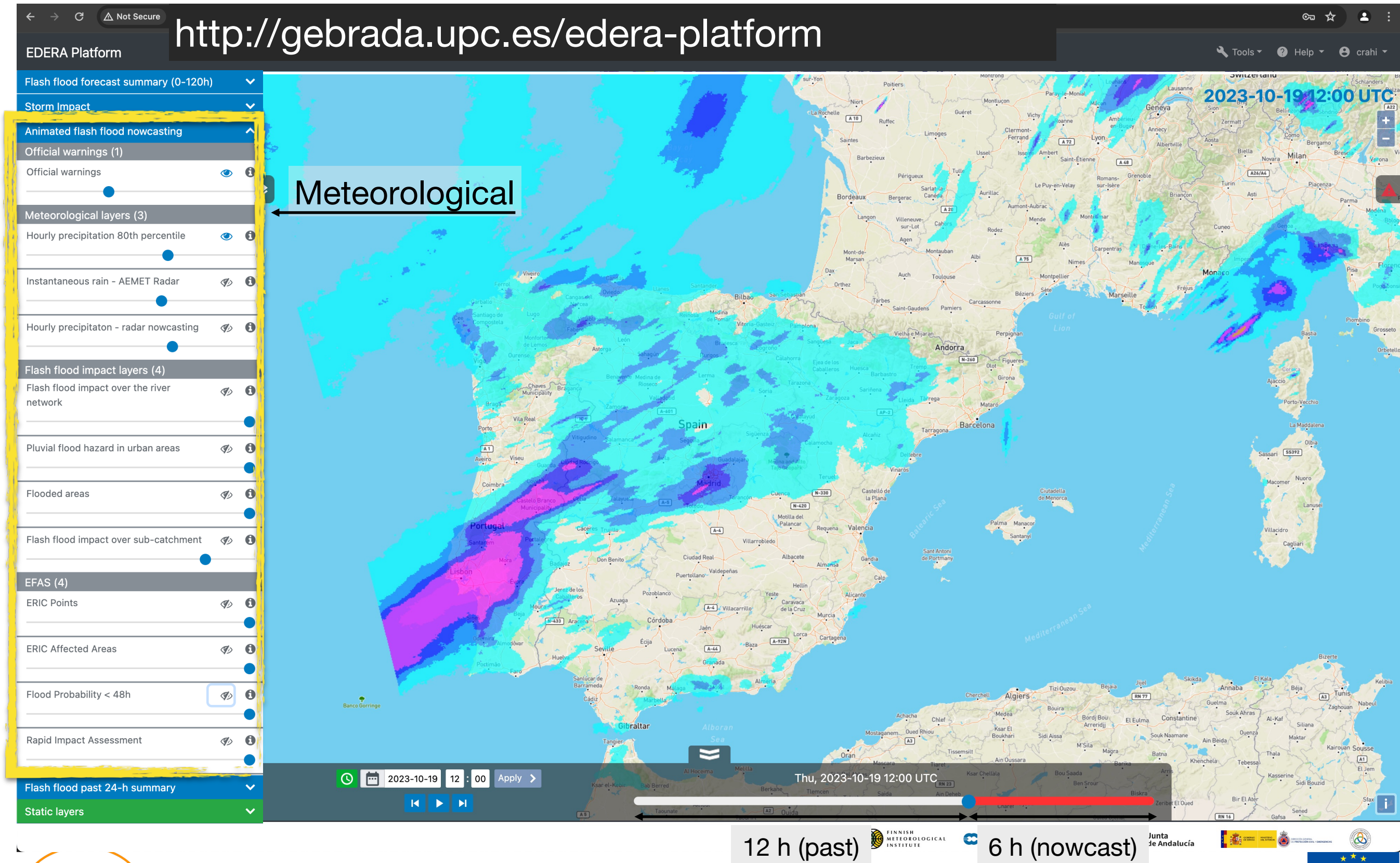


# Block 2: Storm impact nowcasting (0-3h)



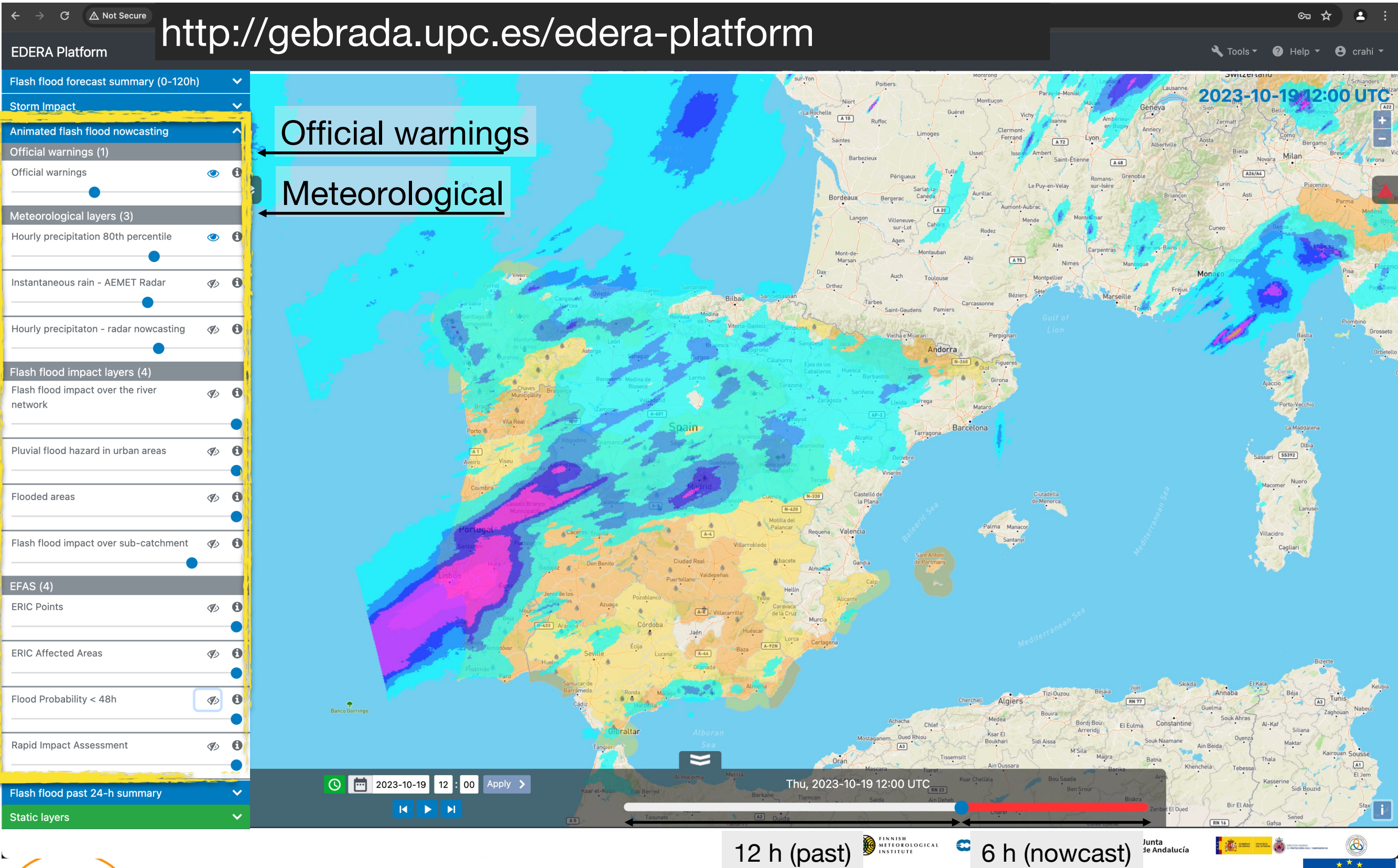


# Block 3: Flash flood nowcasting (0-6 h)



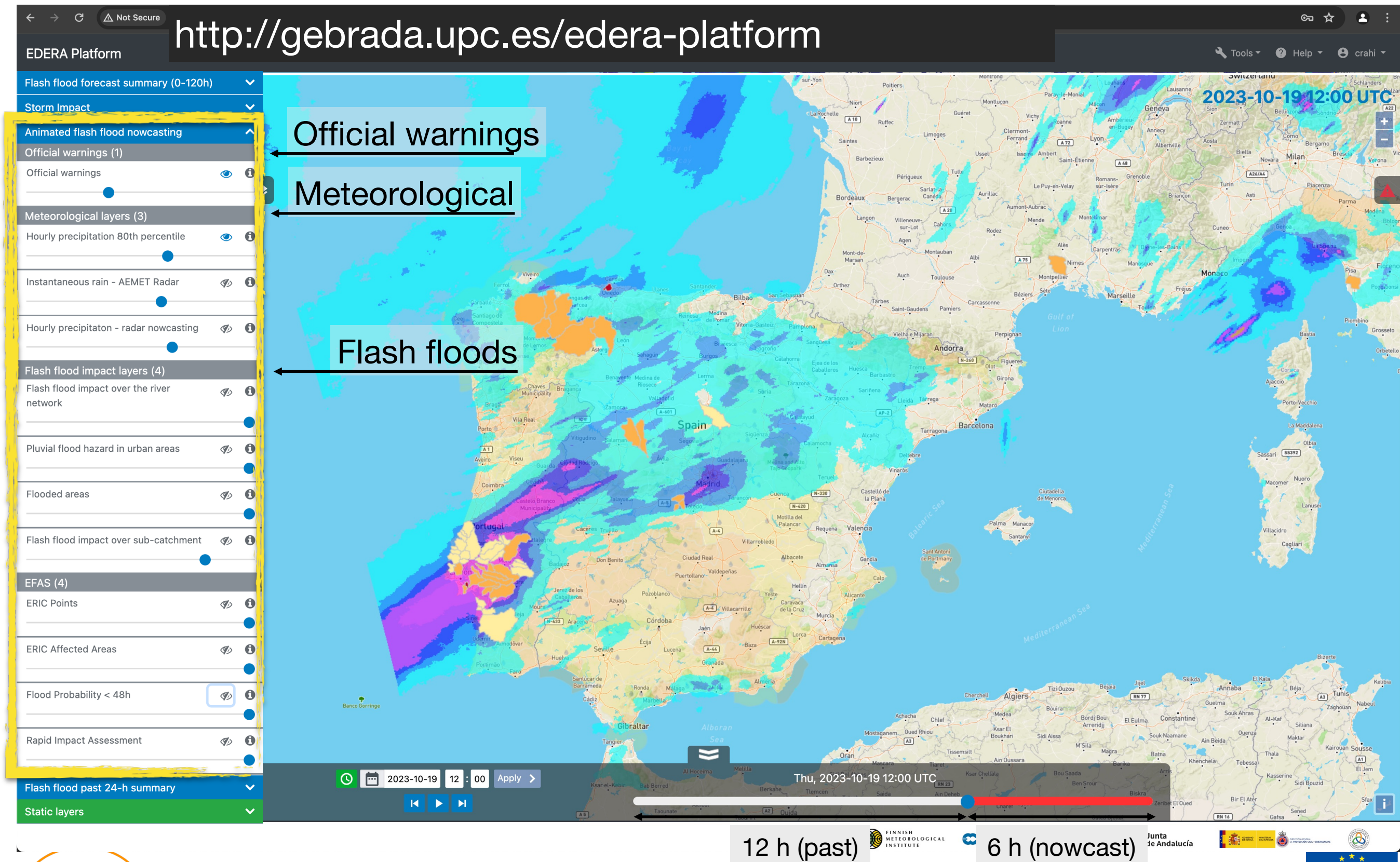


# Block 3: Flash flood nowcasting (0-6 h)



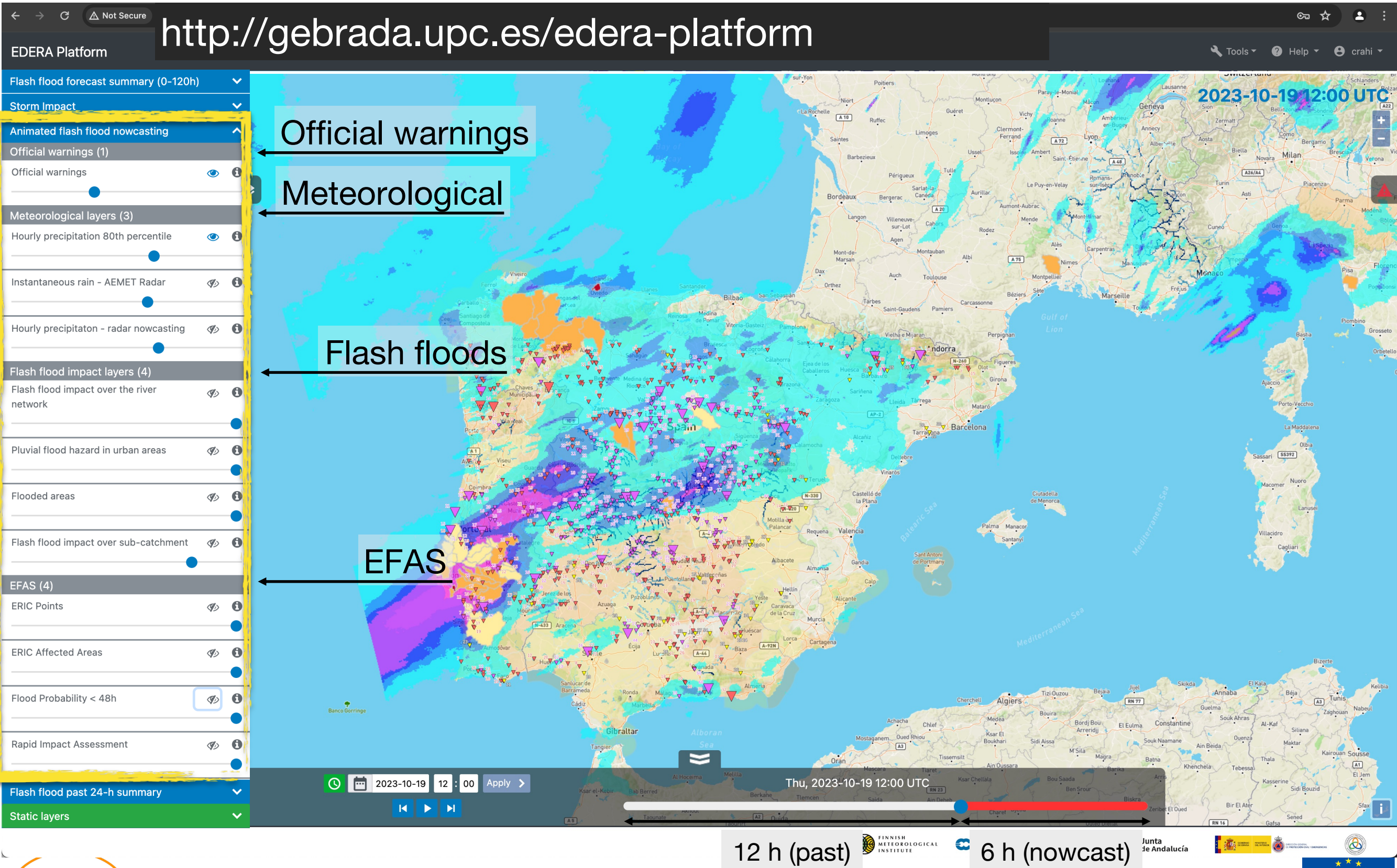


# Block 3: Flash flood nowcasting (0-6 h)



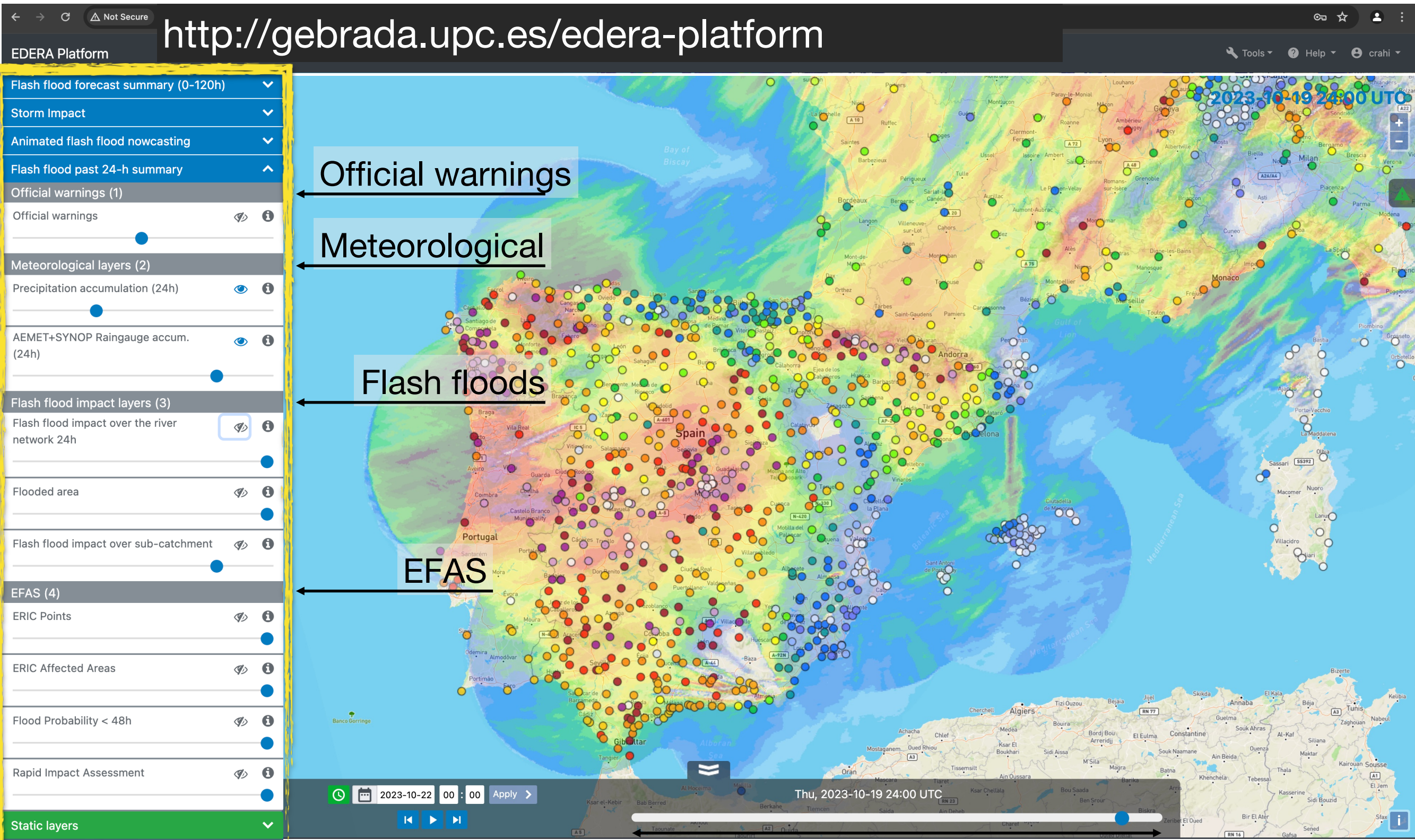


# Block 3: Flash flood nowcasting (0-6 h)



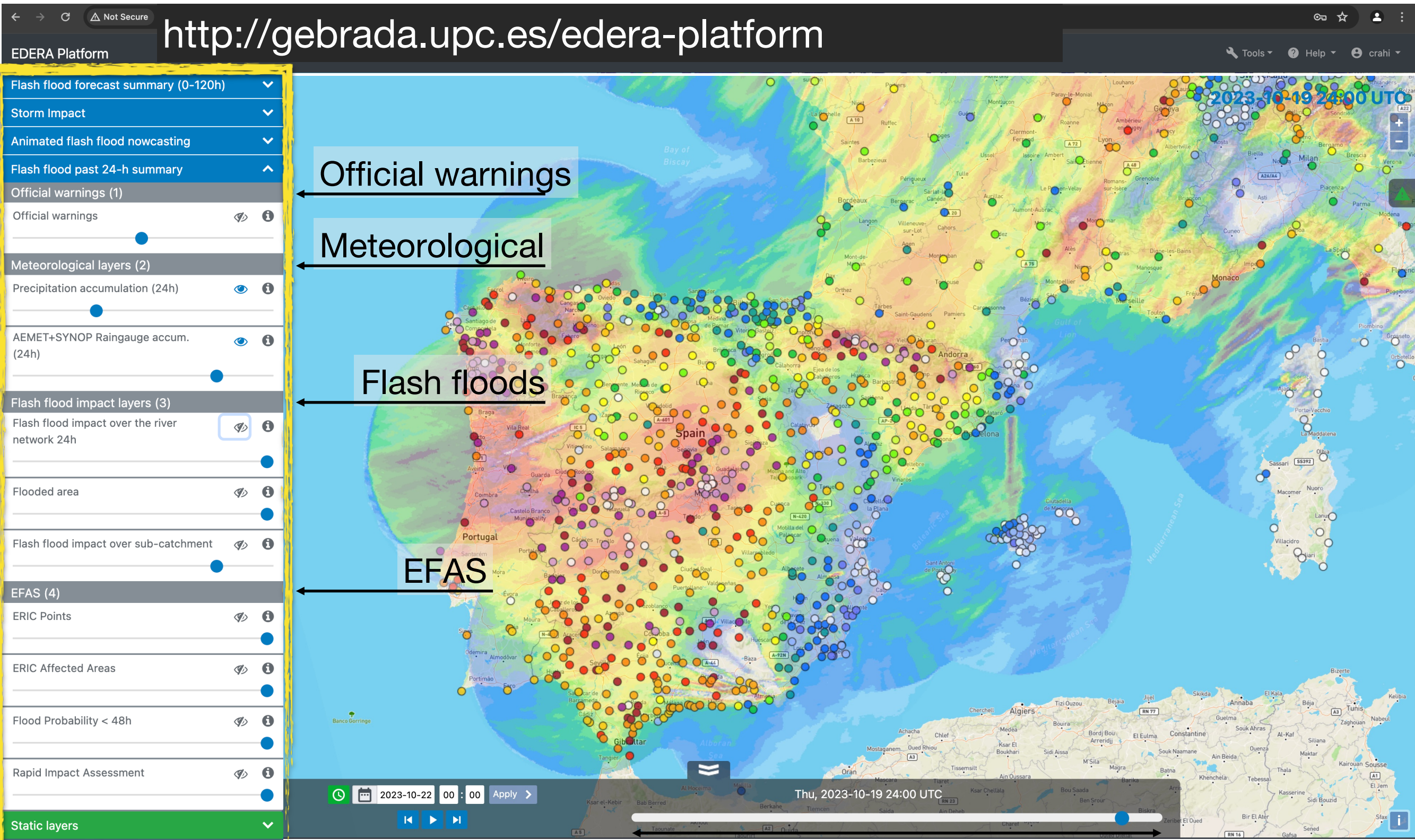


# Block 4: Past 24-h summary (based on observations)





# Block 4: Past 24-h summary (based on observations)





# Static layers

EDERA Platform <http://gebrada.upc.es/edera-platform> Tools ? Help crahi

Flash flood forecast summary (0-120h)

Storm Impact

Animated flash flood nowcasting

Flash flood past 24-h summary

**Static layers**

Exposure (1)

Exposure

Flood hazard and risk maps (9)

Flood Area (T500)

Flood Area (T100)

Flood Area (T010)

MRIF RECON (T500)

MRIF RECON (T100)

MRIF RECON (T010)

MRIF RPTOSMA (T500)

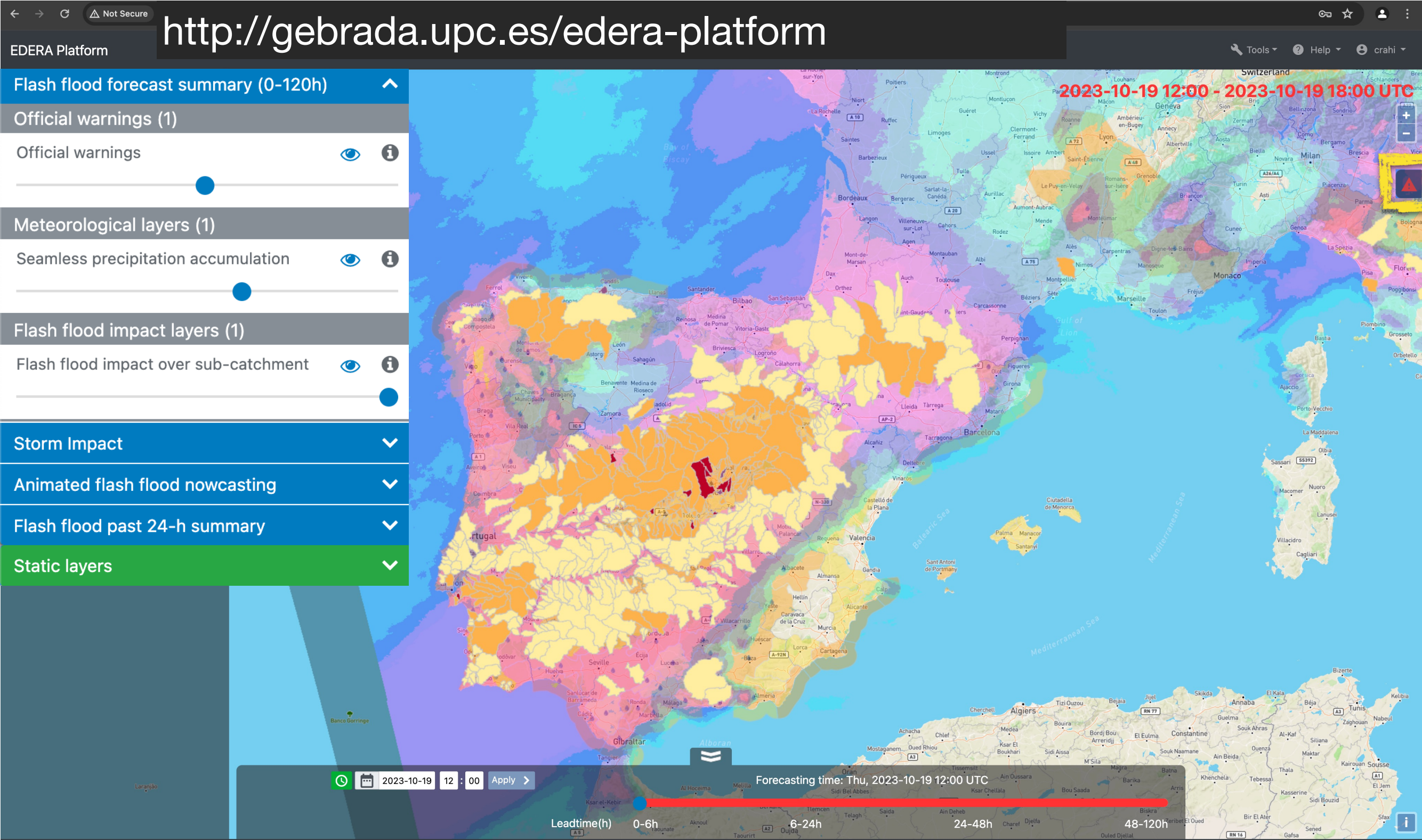
MRIF RPTOSMA (T100)

MRIF RPTOSMA (T010)

2023-10-19 24:00 UTC



# Notifications





# Notifications

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EDERA Platform

Flash flood forecast summary (0-120h)

Official warnings (1)

Official warnings

Meteorological layers (1)

Seamless precipitation accu

Flash flood impact layers

Flash flood impact over sub

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Static layers

2023-10-19 12:00

Forecasting time: Thu, 2023-10-19 12:00 UTC

Leadtime(h) 0-6h 6-24h 24-48h 48-120h

Tools

Help

crahi

Filter (ex: Litoral gaditano)

Severe (7) High (104) Medium (91)

Asturias

Source: Edera

Type: Edera event notification

Hazards:

Ávila

Source: Edera

Type: Edera event notification

Hazards:

León

Source: Edera

Type: Edera event notification

Hazards:

Madrid

Source: Edera

Type: Edera event notification

Hazards:

Salamanca

Source: Edera

Type: Edera event notification

Hazards:

Segovia

Source: Edera

Type: Edera event notification

Hazards:

Valladolid

Source: Edera

Type: Edera event notification

Hazards:

Notification details: Ávila

Type	Product	Start Date	End Date	Description
	Flash flood impact	2023-10-19 12:00	2023-10-19 19:00	Flood warning in Ávila.
	Flooded area	2023-10-19 13:00	2023-10-19 20:00	Flood warning in Ávila.

Showing 1 to 2 of 2 entries

< Previous 1 Next >





# EDERA

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EDERA Workshop - Madrid, 07-8 May 2024