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

European Union
Civil Protection and
Humanitarian Aid

EDERA Flash Flood Forecast Products

An Introduction

Centre de Recerca Aplicada en Hidrometeorologia
UNIVERSITAT POLITÈCNICA DE CATALUNYA

ECMWF

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FINNISH METEOROLOGICAL INSTITUTE

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Consejería de Agricultura, Pesca, Agua y Desarrollo Rural
Consejería de Sostenibilidad, Medio Ambiente y Economía Azul

GOBIERNO DE ESPAÑA
MINISTERIO DEL INTERIOR
DIRECCIÓN GENERAL DE PROTECCIÓN CIVIL Y EMERGENCIAS

EMERGÊNCIA E PROTEÇÃO CIVIL
AUTORIDADE NACIONAL

River Flash Flood Products

Definition:

- A rapid rise in a river in response to intense rainfall
    - Rivers typically <2,000 km2 upstream area
    - Peak river discharge <24 hours of peak rainfall intensity

- EFAS river flood forecasts do not always capture such events due to dynamic nature of convective events

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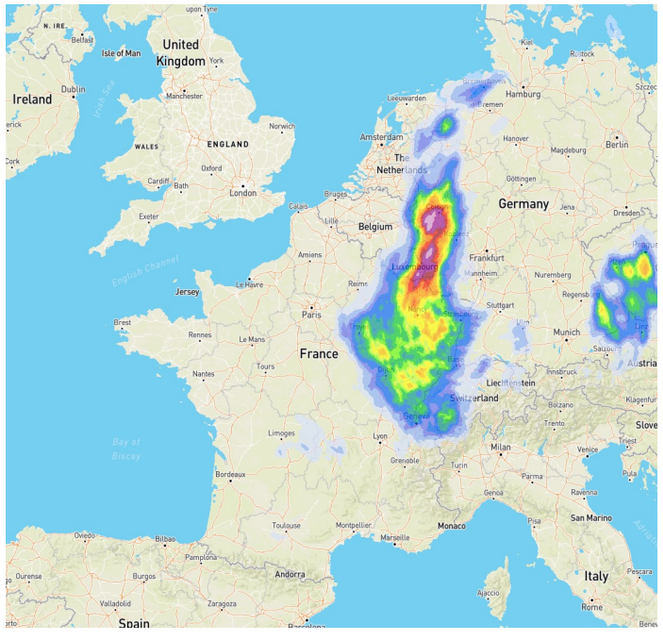
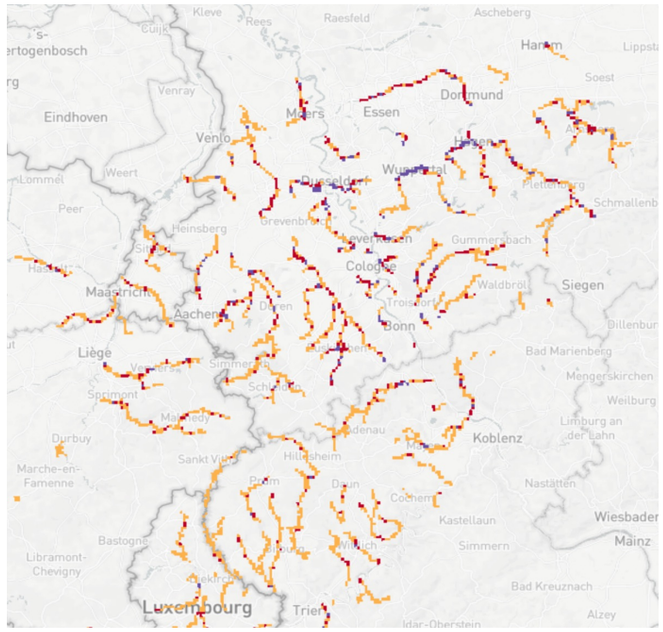
EDERA Flash Flood Impact Products Overview



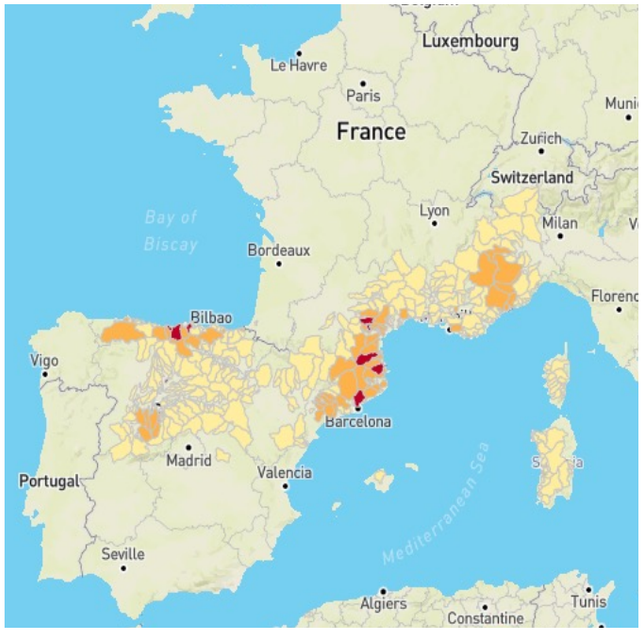
Summary precipitation

Summary and animated layers showing total precipitation per timestep up to 5 days



Flash flood impact

Summary and animated layers showing expected flash flood impact category up to 5 days for 4 decision-making periods



Catchment flash flood impact

Summary layers showing expected flash flood impact category per river catchment up to 5 days for 4 decision-making periods

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EDERA Flash Flood Forecast Summary Products

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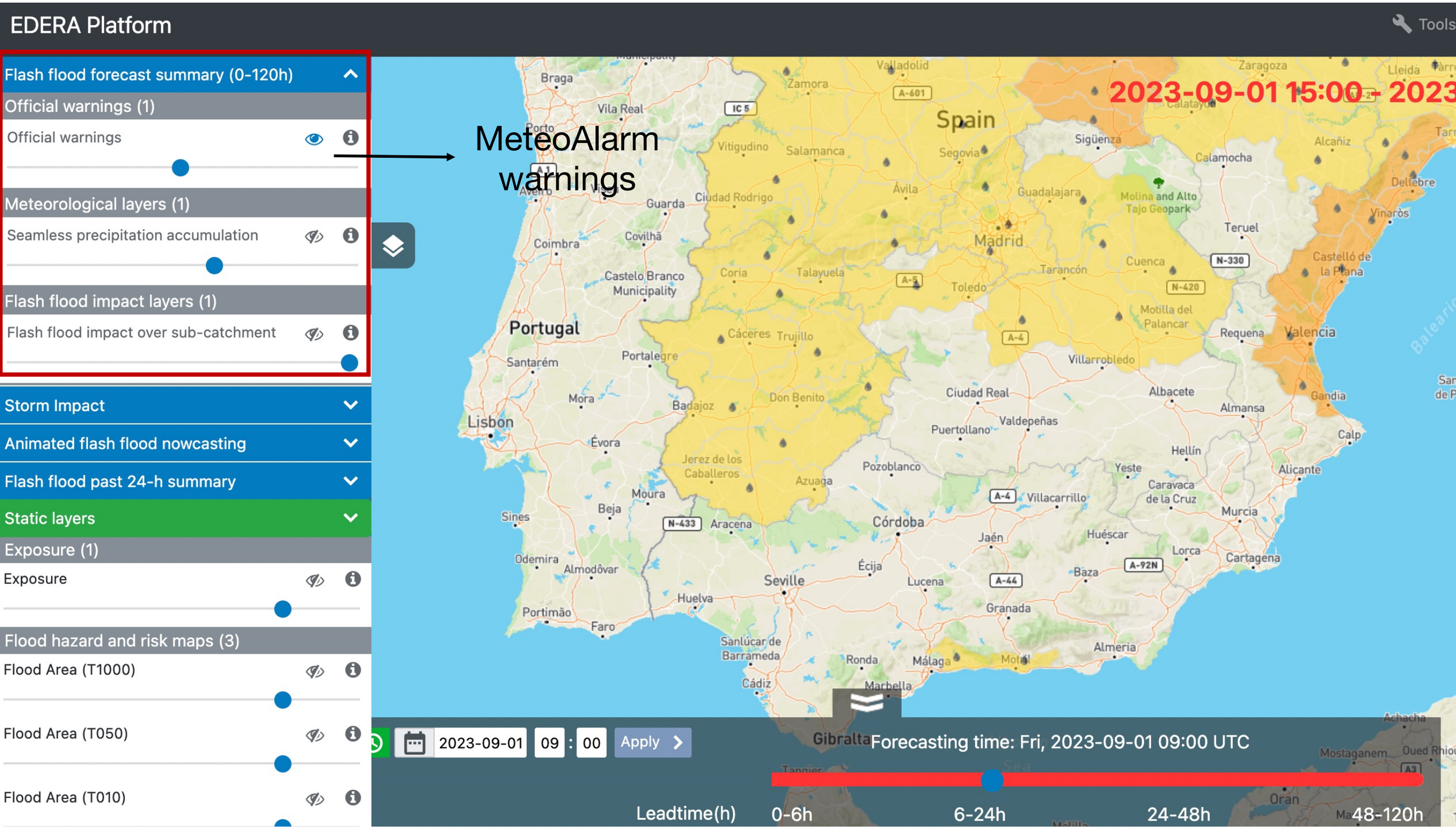
Flash flood forecast summary products



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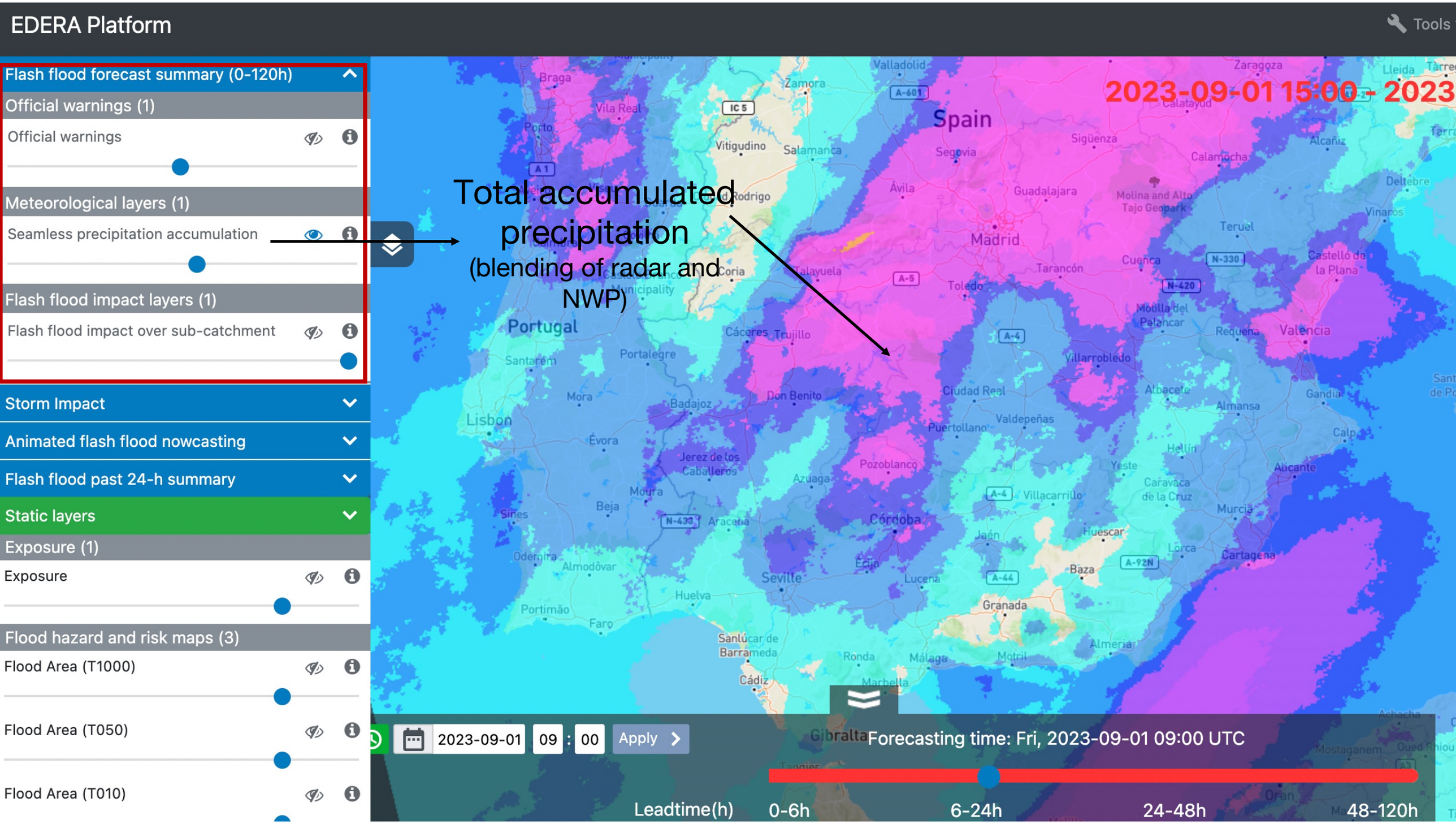
Flash flood forecast summary products



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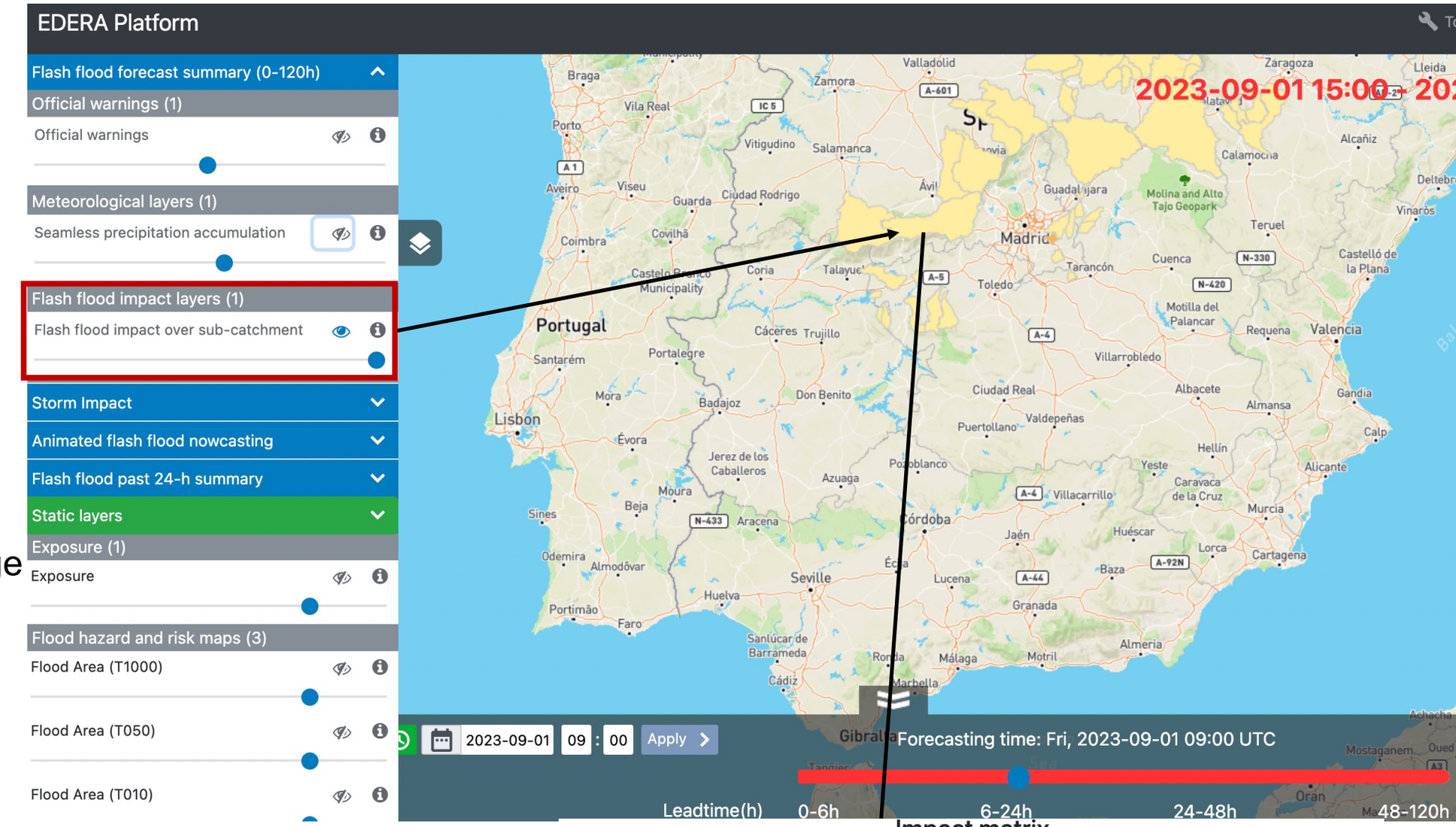
Flash flood forecast summary - Flash flood impact over sub-catchment

Update, time range and timestep:

- Hourly update
- 4 decision making periods
  - 0-6h nowcasting
  - 6-24h sub-daily
  - 24-48h short range
  - 48h-5d medium range

Maximum impact within lead time (across 90th percentile of catchment)

4 impact categories



Pop-out window

Impact matrix

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

Exposure information

	#
Total population affected	**450**
Education facilities affected	
Health facilities affected	**1**
Energy generation facilities affected	
Time of the event peak	**2023/09/02 06:00:00**

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EDERA Animated Flash Flood Nowcasting Products

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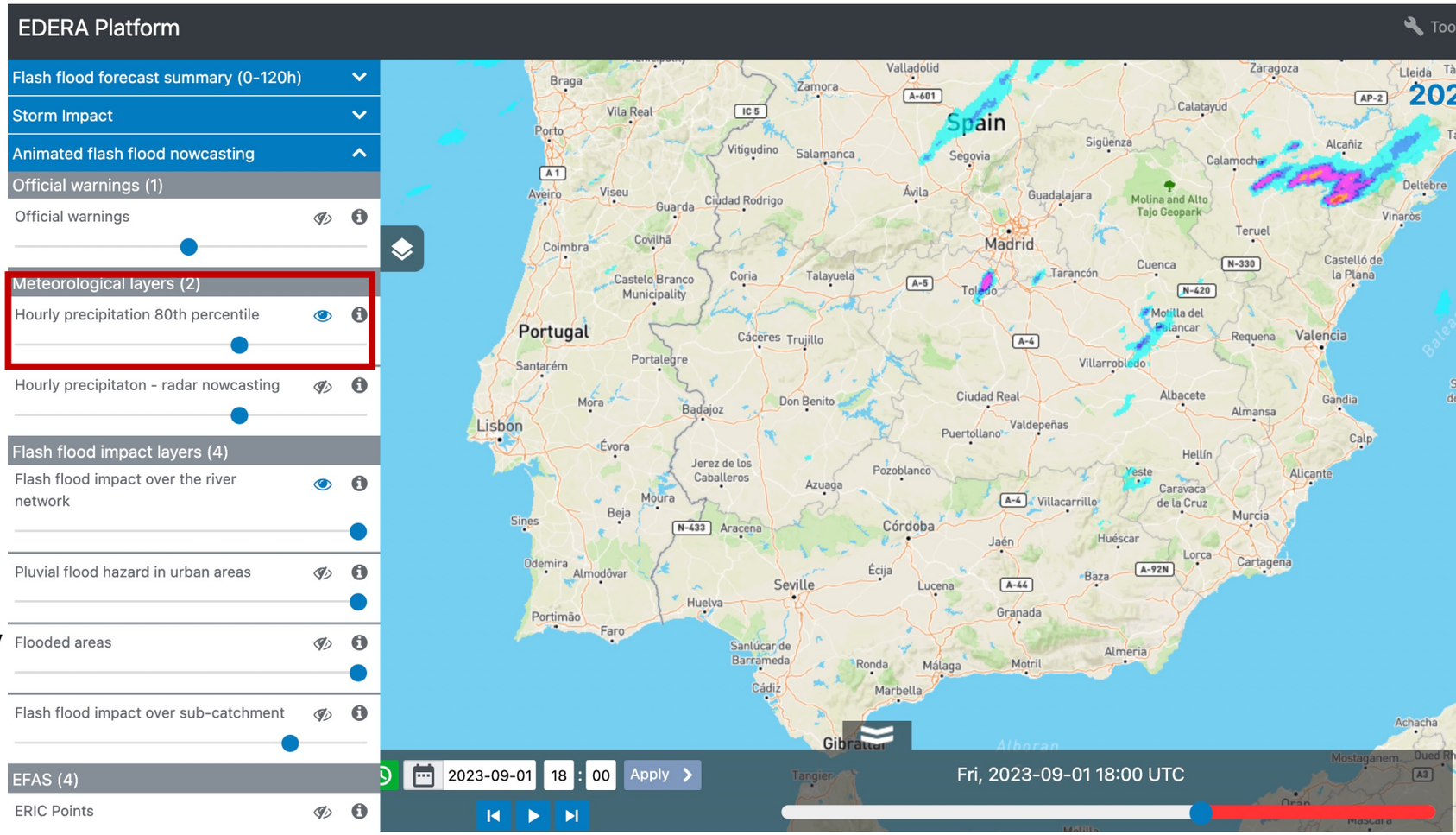
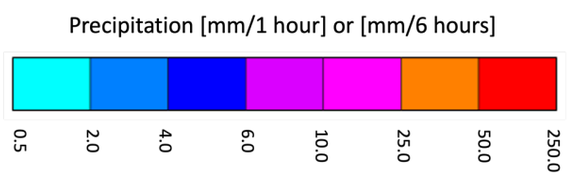
Animated flash flood nowcasting - Total precipitation 80th percentile

Update, time range and timestep:

- Hourly update
- Range: up to 6 hours
- Hourly time step for 0-6h. Driven by blending of radar nowcasting and NWP
- Hourly past precipitation. Driven by radar and NWP blends



Probabilistic based product which summarises ensemble forecast



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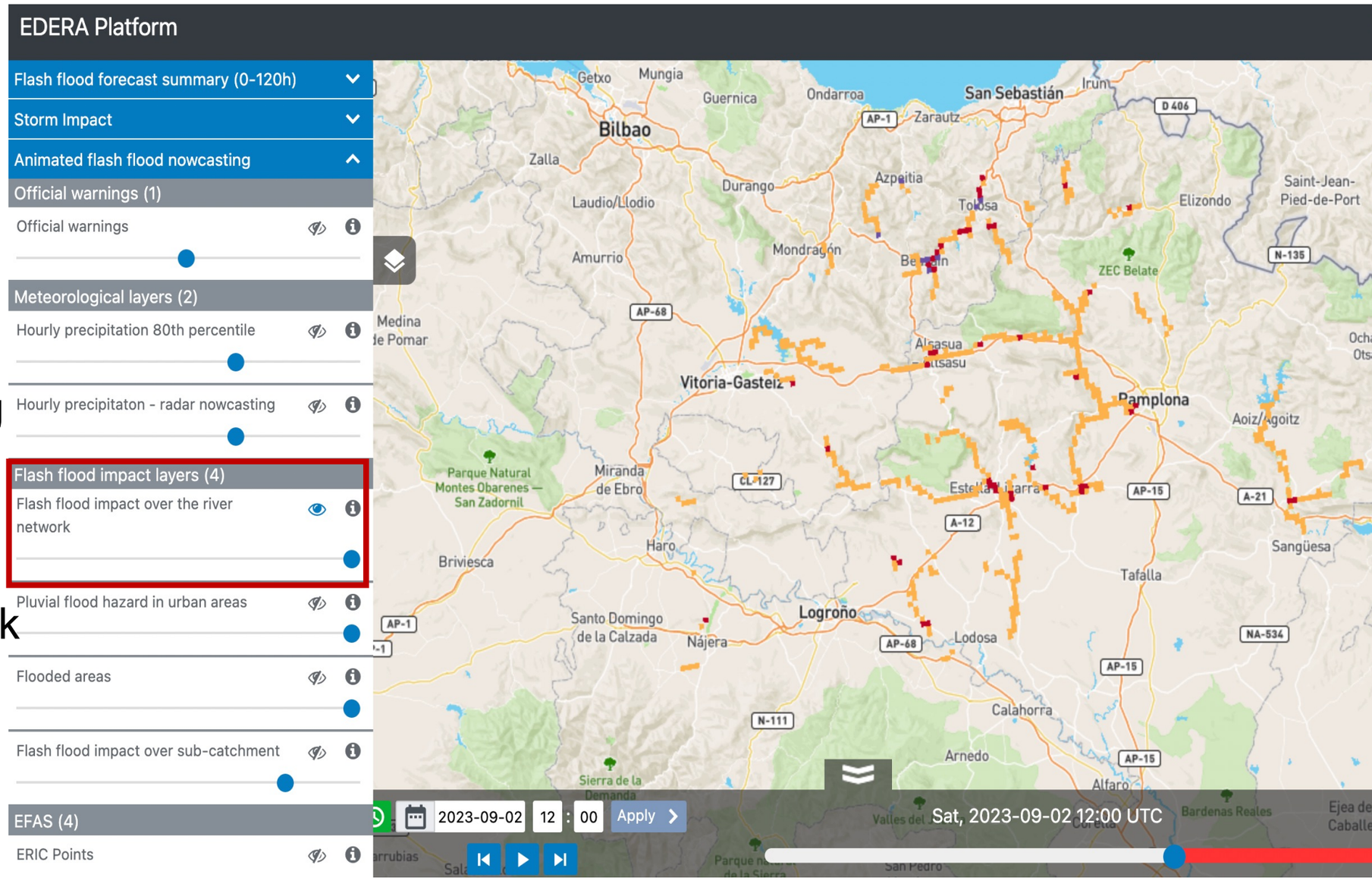
Animated flash flood nowcasting - Flash flood impact over river network

Update, time range and timestep:

- Hourly update
- Range: up to 6 hours
- Hourly time step for 0-6h. Driven by blending of radar nowcasting and NWP

~1.4 km river channel network

4 impact categories



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

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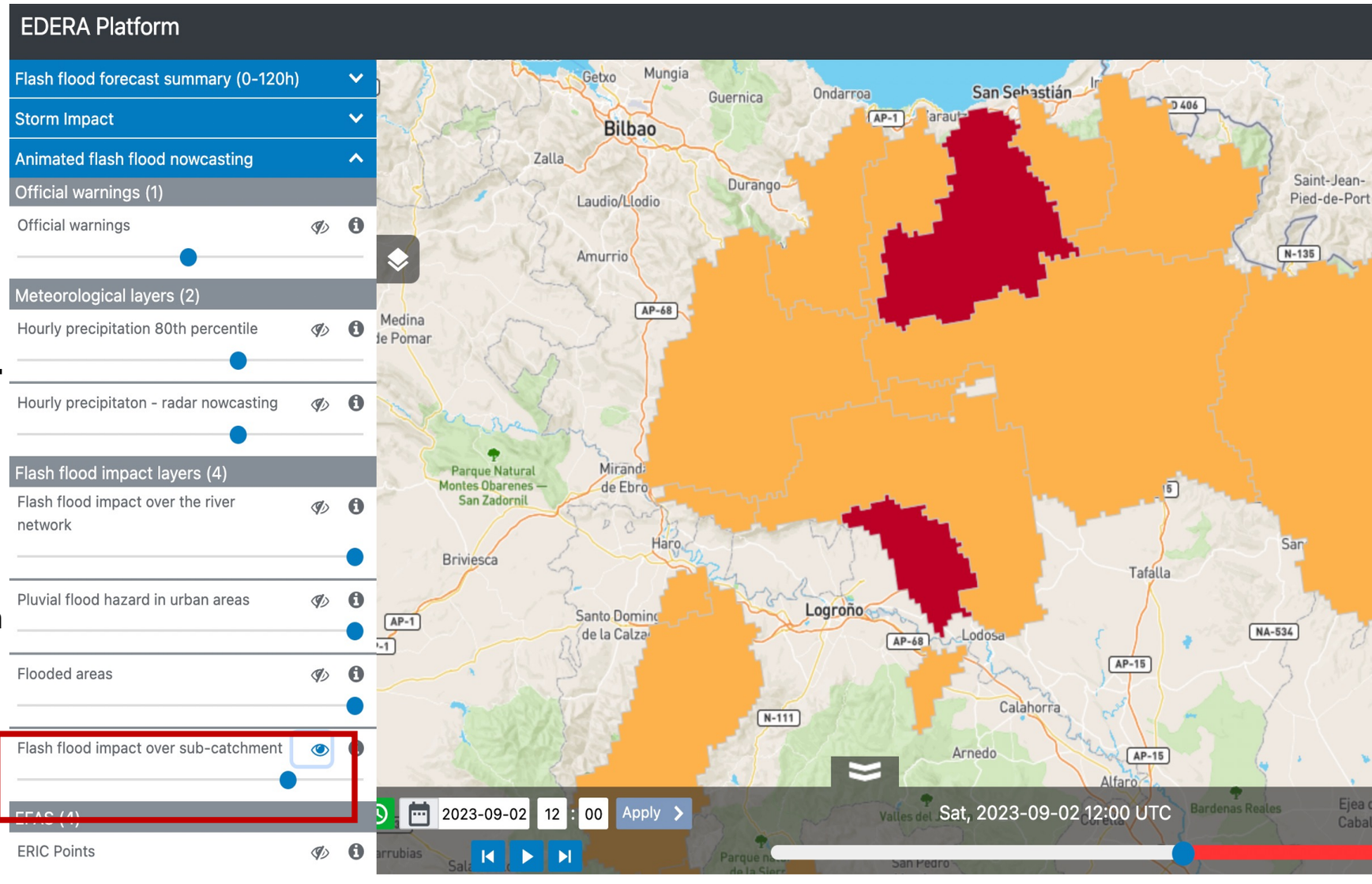
Animated flash flood nowcasting - Flash flood impact over sub-catchment

Update, time range and timestep:

- Hourly update
- Range: up to 6 hours
- Hourly time step for 0-6h. Driven by blending of radar nowcasting and NWP

Sub-catchment summary (90th percentile of river network cells)

4 impact categories



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

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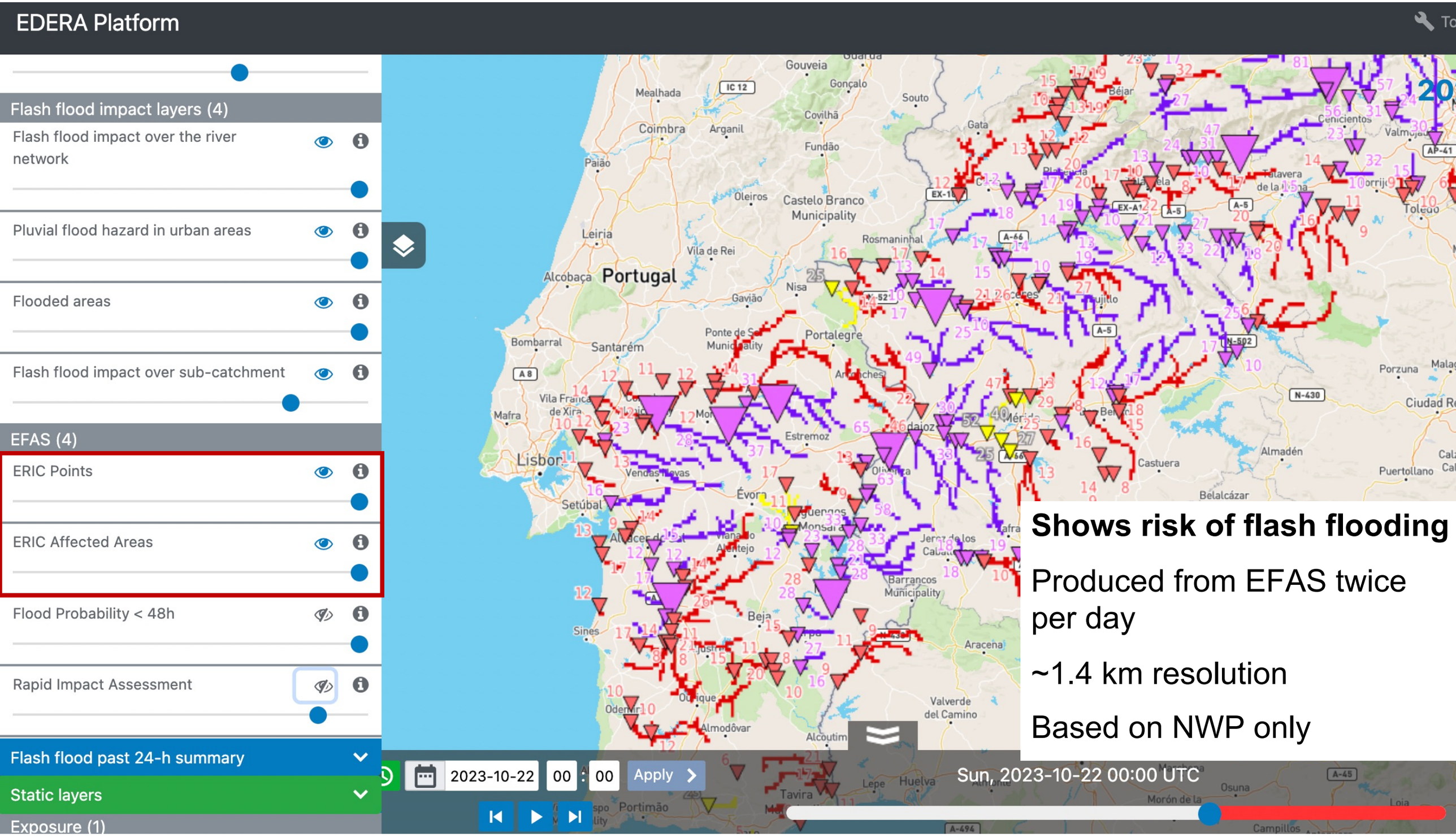
Animated flash flood nowcasting – ERIC layers



Shows risk of flash flooding

Produced from EFAS twice per day

~1.4 km resolution

Based on NWP only

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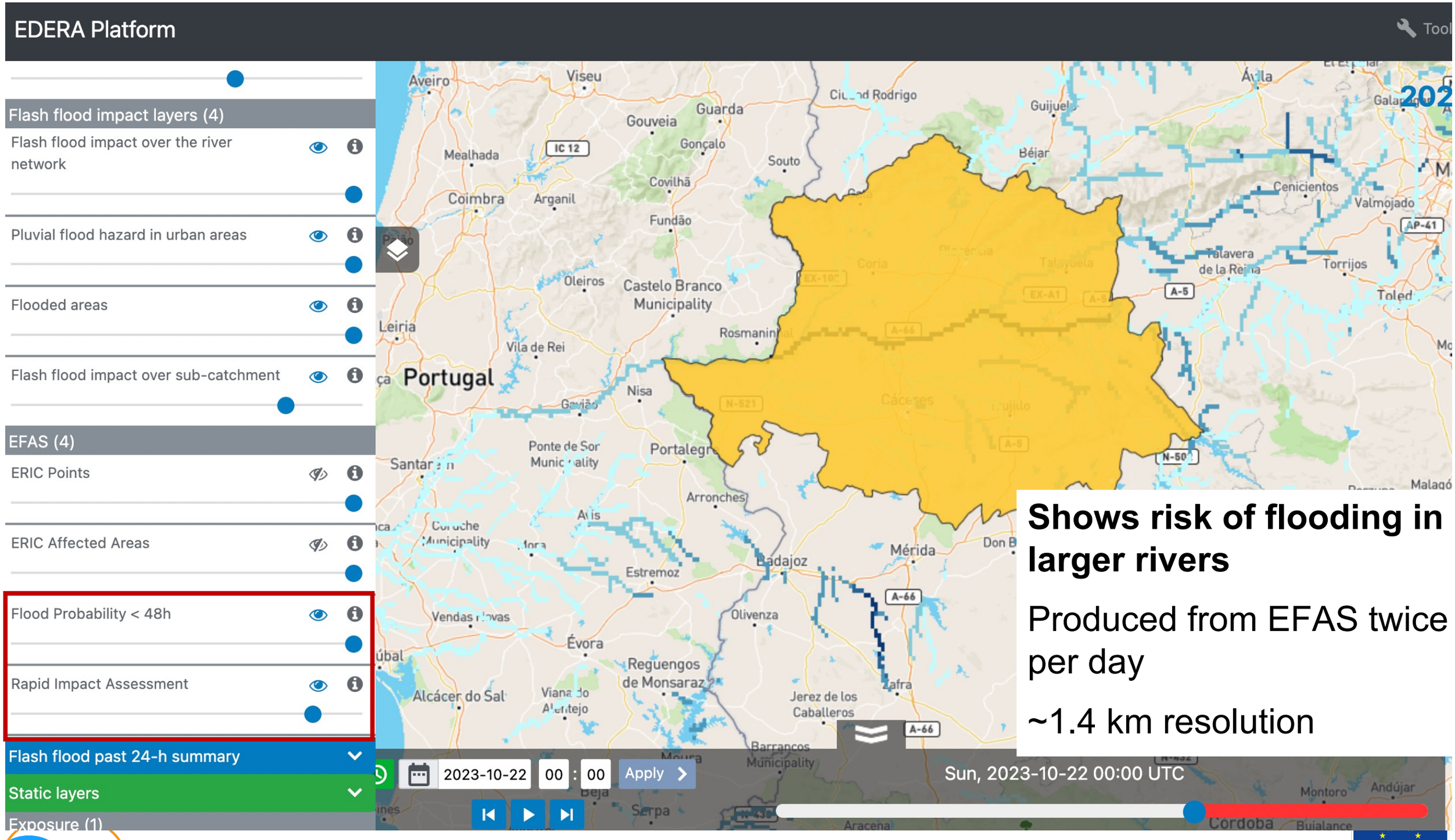
Animated flash flood nowcasting – Rapid Impact Assessment & Flood Probability <48h



Shows risk of flooding in larger rivers

Produced from EFAS twice per day

~1.4 km resolution

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