Impact Estimations for Flash Floods
The TAMIR Layers

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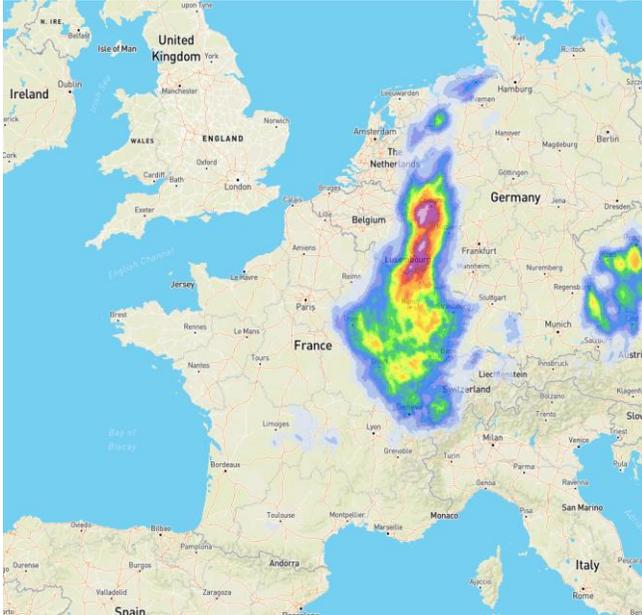
Emergency Management

Emergency Management

- Develop flash flood impact forecast products to display on EFAS website
- 1 km resolution with **all** EFAS domain coverage
- 1 hour timestep for first 6 hours lead time, 6 hourly timestep thereafter up to **120 hours lead time**
- Forecast updated every 1 hour with new information

Seamless precipitation forecast → **Flash flood hazard** → **Flash flood impacts** → **Web Services**

Seamless precipitation forecast	Flash flood hazard	Flash flood impacts	Web Services
• Blend ensemble radar and NWP • Account for precipitation type • Bias correct precipitation	• Calculate flash flood hazard using EPIC method • Climatological thresholds based on radar and NWP data	• Create pan-European combined exposure dataset • Overlay exposure and flash flood hazard to show where impacts are possible	• Final products pushed to EFAS • Available via EFAS-WMS

Copernicus
Europe's eyes on Earth

European Commission

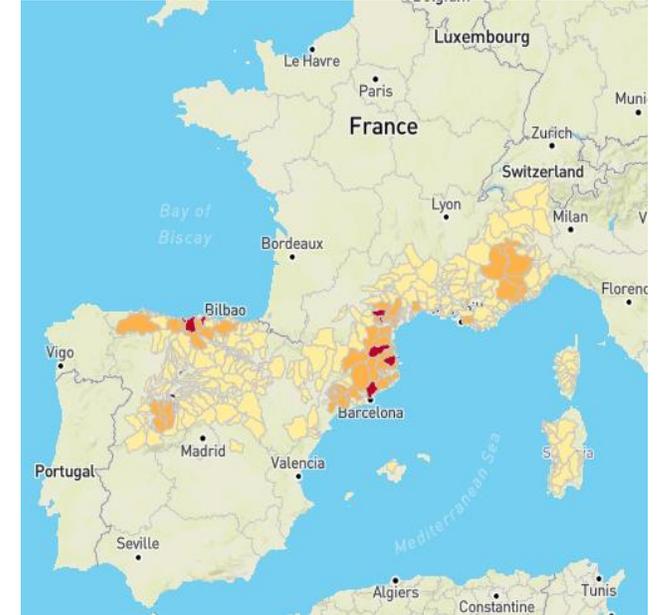Emergency Management

- TAMIR flash flood layers

Summary precipitation

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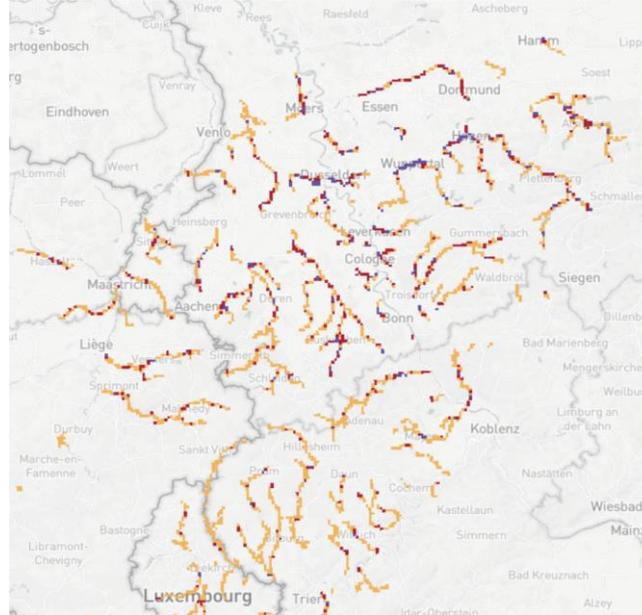
Flash flood impact

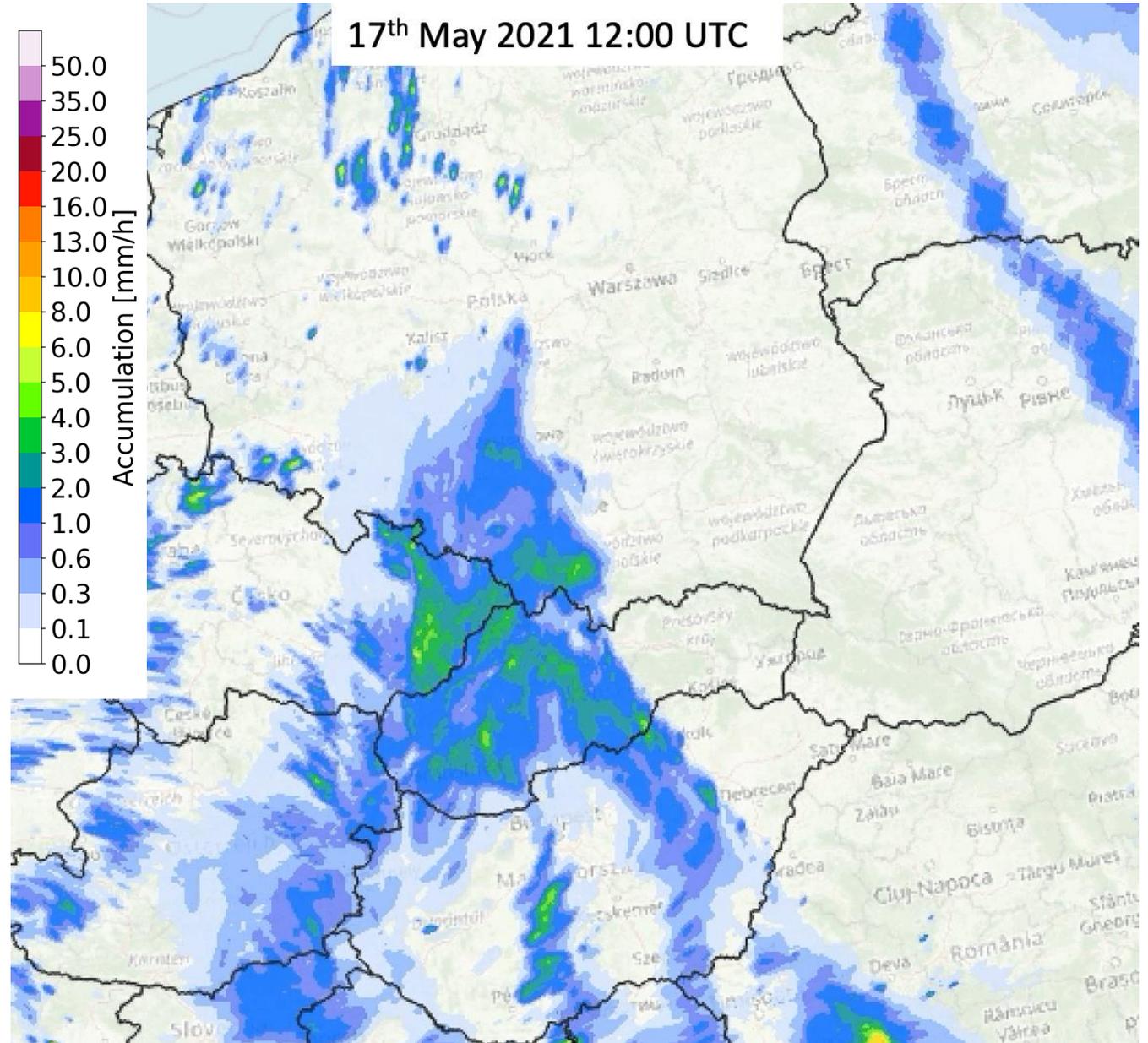Animated layer showing expected flash flood impact category up to 5 days ahead

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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- **Animated precipitation forecast**
    - Created from blending of OPERA pan-European radar nowcasts and NWP
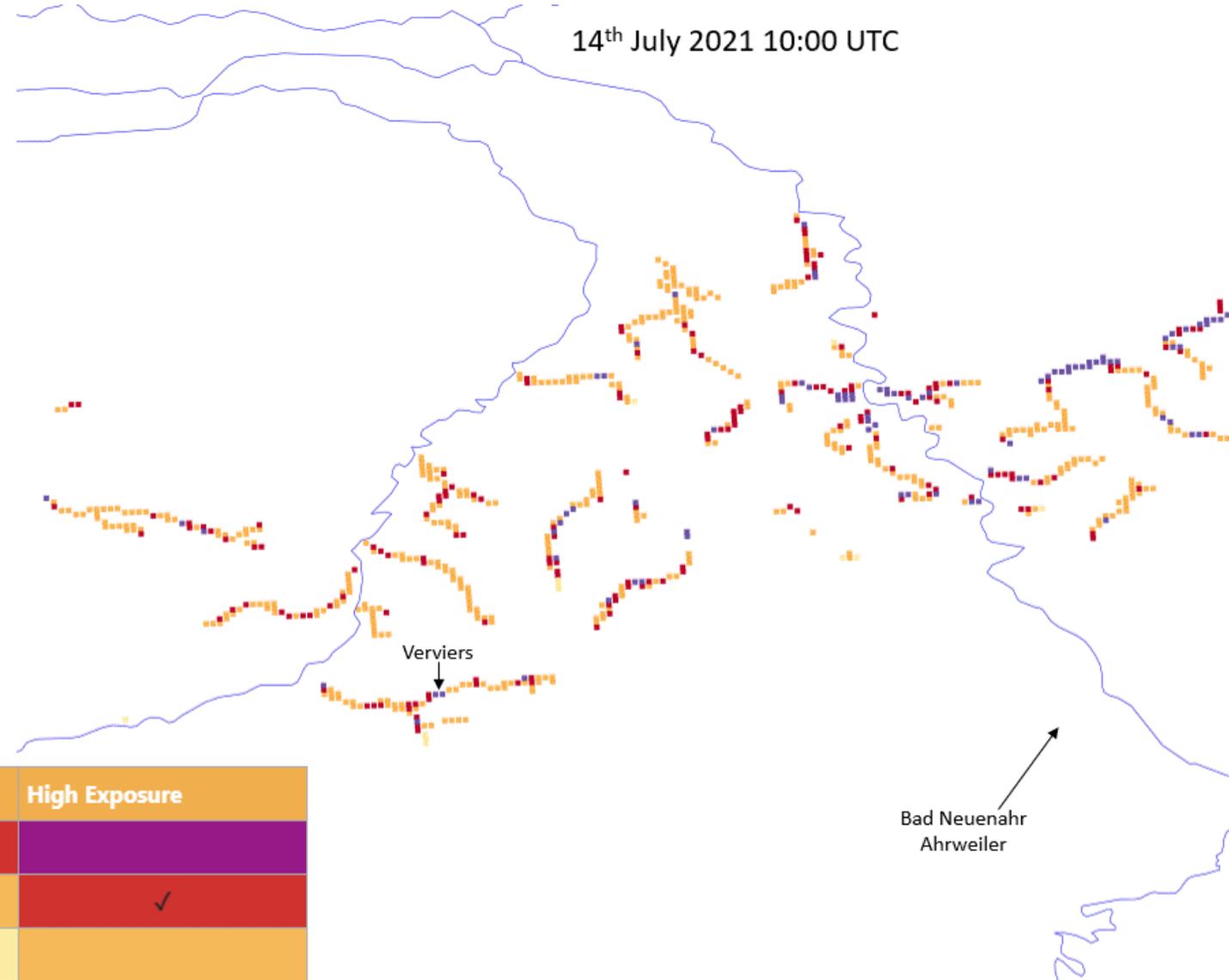   - 1 hour timesteps for first 6 hours, 6 hours thereafter until 120h

17th May 2021 12:00 UTC

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- ## Animated flash flood impact

  – Precipitation layer accumulated on 1km channel network

  – EPIC indicator computed

  – Overlaid with exposure data

 – Flood impact computed according to matrix

14th July 2021 10:00 UTC

Verviers

Bad Neuenahr Ahrweiler

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

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- Catchment flash flood impact summary
  - Summarises the 90th percentile of the maximum impact in each sub-catchment for leadtime ranges of
    - 0-6, 7-24, 25-48, >48h
  - Pop out window summarises impact matrix and exposure information
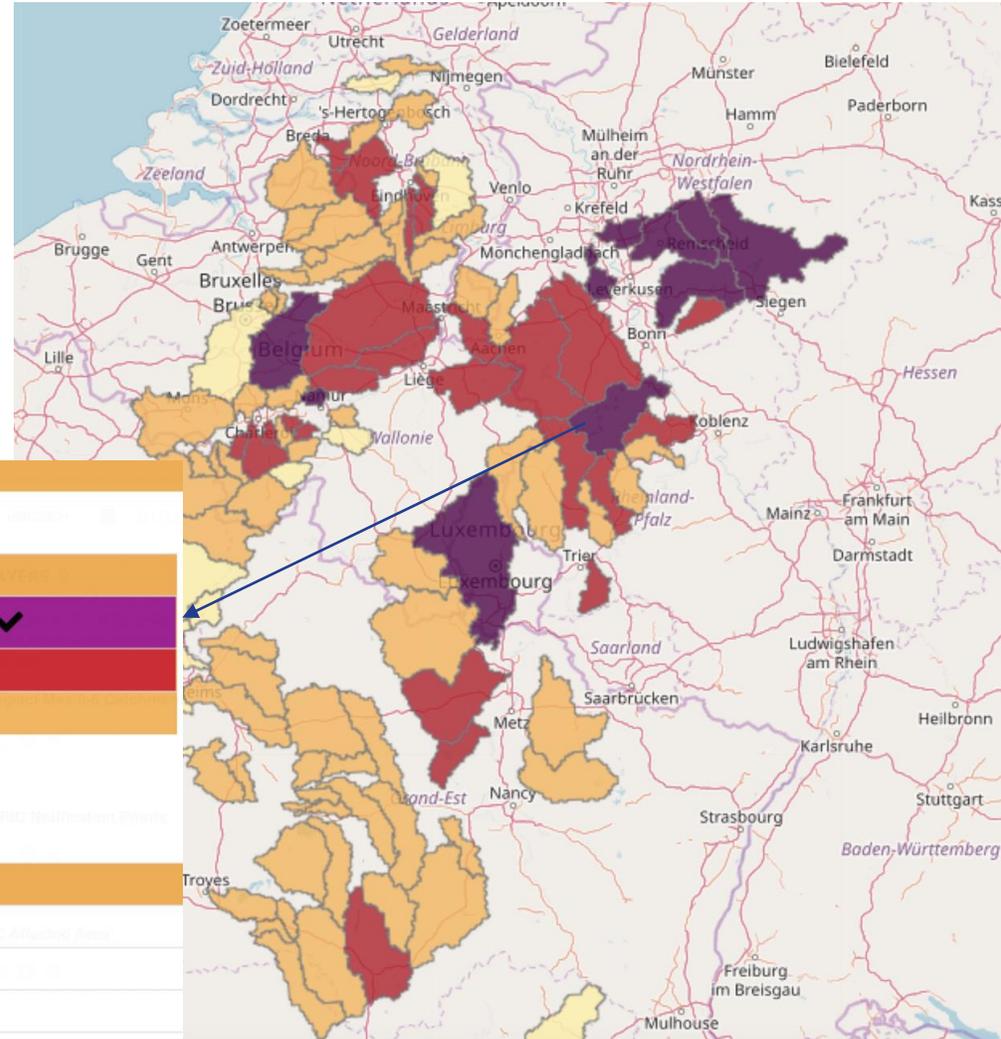
Feature Info

Impact matrix ⌃

	Low Exposure	Medium Exposure	High Exposure
High Likelihood			✔
Medium Likelihood			
Low Likelihood			

Exposed population and critical infrastructure⌃

	#
Lead time date	2021/07/15 11:00:00
Total population affected	25560
Education facilities affected	9
Health facilities affected	2
Energy generation facilities affected	

TAMIR Layers on EFAS-IS

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- Very difficult to identify affected areas using animated impact layer

  – Grid cells are too small to see when zoomed out

- Firstly, load the catchment summary for lead time of interest

  – Identify affected catchments, then zoom in to view the animated impact layer

- More documentation on CEMS wiki

Zoom into this area of interest

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- New TAMIR flash flood impact layers released in EFAS

- 1 km, 1 hour (for first 6 hours) resolution updated every hour
  - Up to 120 hours lead time

- Layers available in EFAS-IS and via WMS

- Documentation on CEMS-Wiki

- Any feedback? Please let me know calum.baugh@ecmwf.int