EFAS Flash Flood Workshop

Emergency Management

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Aim: To find out your **user experience** of the EFAS flash flood products and discuss where the focus should be on **improving the products**

Structure:

1. Introductory questionnaire about your current use of EFAS flash flood products (5 mins)
2. Group work - discuss your experiences (15 mins)
3. Present results of group work (15 mins)
4. Future improvements to the flash flood products (20 mins)
5. Discuss the importance of each improvement (10 mins)
6. Conclusions

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Please follow this link to the questionnaire:

https://tinyurl.com/2py8z632

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You will now be split into teams:

In person: you will be grouped based on how social distancing rules allow!

Online: you will be assigned to a breakout room

In your groups discuss the following:

– **What are your experiences of using the flash flood products?**

- Think of times when you have looked at the products in your area of interest
- What prompted you to look at the products? If you haven't used them, why?

– **How can the flash flood products be improved?**

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If no one in your group has used the flash flood products:

1. Look at the documentation in CEMS-wiki: https://confluence.ecmwf.int/display/CEMS/EFAS+flash+flood+forecast+products (focus on the ERIC * products)

2. Look at an example flash flood event in EFAS web viewer:
   - **Location**: Valencia, Spain
   - **Date:** Flooding reported on 3rd May 2022
   - More information: https://www.efas.eu/en/news/southern-and-central-spain-flooding-early-may-2022
   - **Layers to look at:**
     – ERIC Reporting Points
     – ERIC Affected Area

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- Please fill out your discussion points in the slides which in the next few slides of this document:

https://tinyurl.com/2p94sx6c

- You will have 15 minutes to discuss
- Then each group will have 3 minutes to present to everyone

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Group 1

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- What are your experiences of using the flash flood products?
    - [When have you used the flash flood products? What prompted you to use them?
    - Which products did you look at?
    - What did you like about the products?
    - If you haven't used them, why?]
    - Eric product is used
    - short and medium products
    - Tamir (seldom because there is no time to look at two different products)
    - ensembles are interesting: because you have a signal for a large area
    - need of improvement of the quality, sometimes overestimated forecast (time ok, but range not), sometimes not enough enough time to explore the products of the nowcasting (stressing situations)
    - an automatic notification system for tamir similar to eric notifications?
    - geographical accuracy of the effected area

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- ## What needs to be improved ?
  - [For example:
    - Reducing false alarms and missed events - can you give examples of when this has affected you?
    - Are the products missing important information - if so what?
    - Visualisation of the products - should the products be shown differently e.g. using animations
    - Should the flash flood notifications be changed?
    - Could the documentation and training materials be improved?
  - Can you give suggestions for how to make these improvements?]

Group 2

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- What are your experiences of using the flash flood products?
  - When have you used the flash flood products? What prompted you to use them?
    - when there is a notification, using it to check the area and go back to the own system
    - checking on a daily basis for dissemination, when there is a notification, go to the system checking it
  - Which products did you look at?
    - only ERIC
  - What did you like about the products?
    - TAMIR seems useful, but no experience yet
  - If you haven't used them, why?:
    - working for civil protection (not analysing themselves and)
    - working for HYDRO, sometimes checking information, no reason to
    - not available in my region (Israel)
    - a lot of false warnings/notifications
    - too general, administrative area too big

- ## What needs to be improved ?
  - For example:
    - Definitely reducing false alarms and missed events
    - reduce the area (not for administrative regions, though larger regions could be useful for a very early warning to the emergency management services)
    - webinar on the TAMIR products
  - Can you give suggestions for how to make these improvements?
    - integrating information on reservoirs upstream in the system
    - use of radar data is a good development!!

Group 3

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- **What are your experiences of using the flash flood products?**

  - Participants used FF products after receiving FFNs. For historical assessment. For providing feedback. When national system shows some events. [When have you used the flash flood products? What prompted you to use them?

  - Which products did you look at: Reporting points, Affected area. Nobody have experience with TAMIR in operation.

  - What did you like about the products? A lot of information, not only Qvalue, I like uncertainty. We like information from the ungauged rivers.

  - If you haven't used them, why?] Beginners in EFAS, meteodata provider, reservoirs managers, few forecasters

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- ## What needs to be improved ?
  - [For example:
    - Reducing false alarms and missed events - can you give examples of when this has affected you? False alarms and missed events should be improved. One institution received a false alarm, but comparing with the national system it was visible that is a false one. Better to have a false alarm than a missed one. Everyone compare FFNs with national systems.
    - Are the products missing important information - if so what? Participants log into the EFAS IS and see all info there. Nothing is missing in the email.
    - Visualisation of the products - should the products be shown differently e.g. using animations No specific suggestions.
    - Should the flash flood notifications be changed? No
    - Could the documentation and training materials be improved? The legend with training and webinars is sufficient. No one uses wiki.
  - Can you give suggestions for how to make these improvements?]

Group 4

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- What are your experiences of using the flash flood products?
  - [When have you used the flash flood products? What prompted you to use them?

every day (even if not notified): there is a good match and also it is a way to cross-checked our own system.

RP of surface runoff VS return period of discharge !

  - Which products did you look at?

Ericha reporting point

affected area (==> is also useful for fluvial floods, as a first guess)

  - What did you like about the products?

it's free ;-)

  - If you haven't used them, why?]

in-house alternative: RP of rainfall ⇒rule of the tumb
to coarse resolution

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- ## What needs to be improved ?
  - [For example:
    - Reducing false alarms and missed events - can you give examples of when this has affected you?

      matrix of good/bad hits by subcatchment

      put a BIG disclaimer
    - Are the products missing important information - if so what?

    axes of runoff (use a less rough DTM)

    - Visualisation of the products - should the products be shown differently e.g. using animations
    - Should the flash flood notifications be changed?

      better description of extreme events
    - Could the documentation and training materials be improved?
  - Can you give suggestions for how to make these improvements?]

Group 5

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- What are your experiences of using the flash flood products?
  - [When have you used the flash flood products? What prompted you to use them?
  - Which products did you look at?
  - What did you like about the products?
  - If you haven't used them, why?]

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- What needs to be improved ?
  - [For example:
    - Reducing false alarms and missed events - can you give examples of when this has affected you?
    - Are the products missing important information - if so what?
    - Visualisation of the products - should the products be shown differently e.g. using animations
    - Should the flash flood notifications be changed?
    - Could the documentation and training materials be improved?
  - Can you give suggestions for how to make these improvements?]

Group 6

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- What are your experiences of using the flash flood products?
  - [When have you used the flash flood products? What prompted you to use them?
  - Which products did you look at?
  - What did you like about the products?
  - If you haven't used them, why?]

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- What needs to be improved ?
  - [For example:
    - Reducing false alarms and missed events - can you give examples of when this has affected you?
    - Are the products missing important information - if so what?
    - Visualisation of the products - should the products be shown differently e.g. using animations
    - Should the flash flood notifications be changed?
    - Could the documentation and training materials be improved?
  - Can you give suggestions for how to make these improvements?]

Group 7

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- ## What are your experiences of using the flash flood products?
  - [When have you used the flash flood products? What prompted you to use them?
    - Franz DWD: Sometimes to get an impression if it is useful for my work as meteorologists on duty responsible for severe weather warnings.
    - I work as an EFAS officer in duty and send notifications of flash floods when eric points fulfill criteria.
  - Which products did you look at?
    - Franz:
      » Ericha hourly accumulated precipitation
      » ERIC Reporting points
      » flood probability and ….
      » today: TAMIR Impact Max 0-6 Catchment
  - What did you like about the products?
    - Reporting points, flood probability and seasonal outlook
  - If you haven't used them, why?]
    - Franz: I had the impression, that the quality of the ERIC products weren´t the best. I don´t have experience with TAMIR. But my first look today also yielded unreliable results for SW Germany

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- What needs to be improved ?
  - [For example:
    - **More feedback about performance (false alarms and missed events).**
    - Are the products missing important information - if so what?
    - Visualisation of the products - should the products be shown differently e.g. using animations.
    - Should the flash flood notifications be changed?
    - Could the documentation and training materials be improved?
  - Can you give suggestions for how to make these improvements?]

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Future Improvements to Flash Flood Products

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1. Forecast skill (false alarms, missed events)

   a. Hydrological basis

   b. Meteorological forcings (change rather than improvement)

   c. Use of radar data

2. Information content

   a. Impact information

3. Visualisation

   a. Animations

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Generate flash flood products from LISFLOOD hydrological model

- EFASNext will produce hydrological forecasts at ~1.6 km resolution, 6 hourly

    = same resolution as ERIC

- Advantages:
    - Represent more hydrological processes e.g. full soil dynamics, reservoir storage
    - LISFLOOD is calibrated in many areas (albeit not always in upstream reaches)
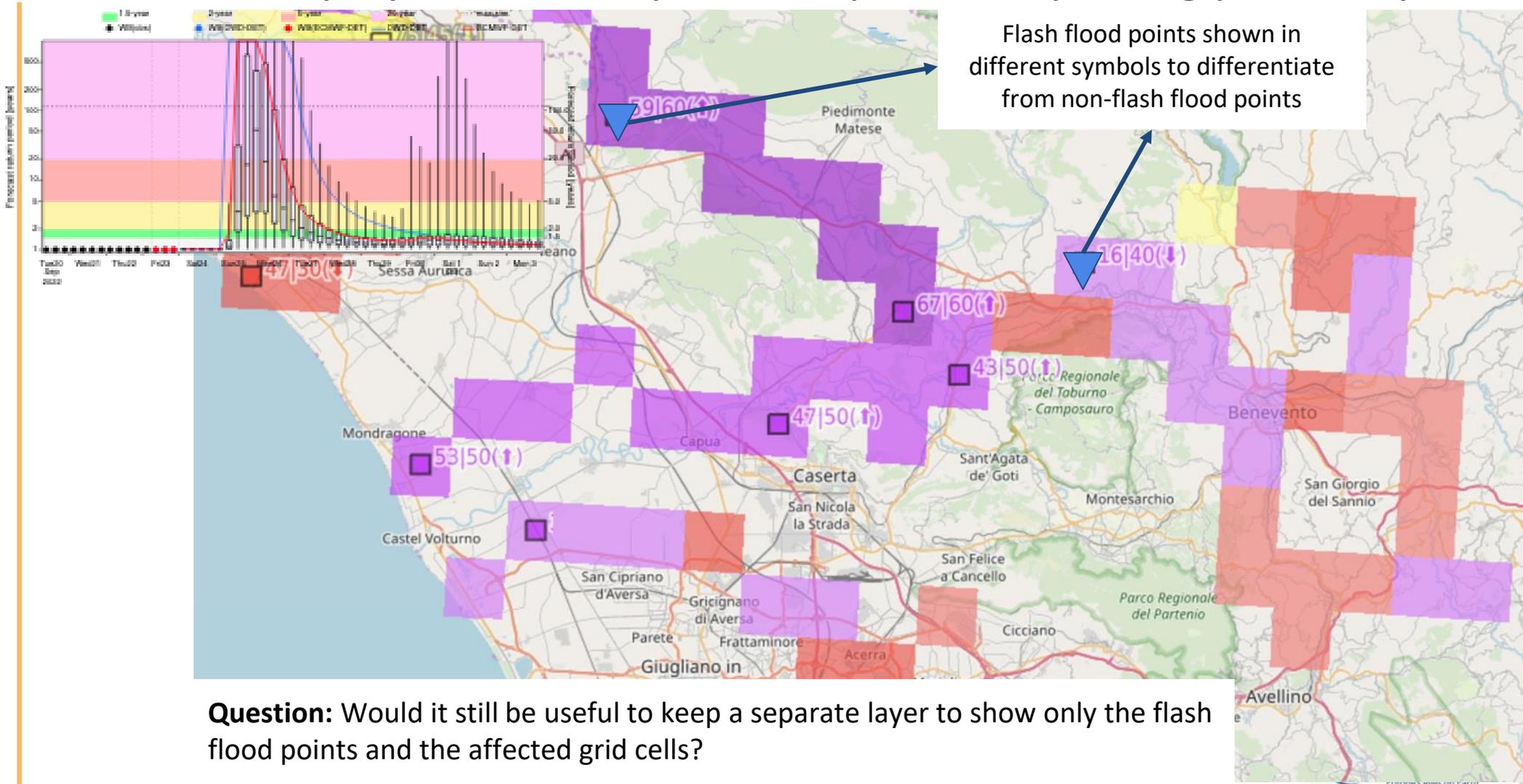   - Display forecast in units of m3/s rather than ERIC return period
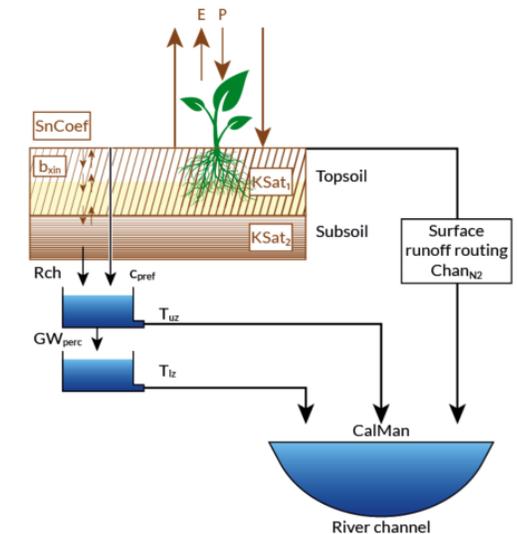
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Could display flash flood points as part of *Reporting points* layer

Flash flood points shown in different symbols to differentiate from non-flash flood points

Question: Would it still be useful to keep a separate layer to show only the flash flood points and the affected grid cells?

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Update flash flood layers with latest radar information

- Convective events are missed in NWP - but are witnessed in radar nowcasts with a lead time of a few hours ahead
- Update reporting points layer with latest hourly radar nowcast
- How to notify you if an event is possible?
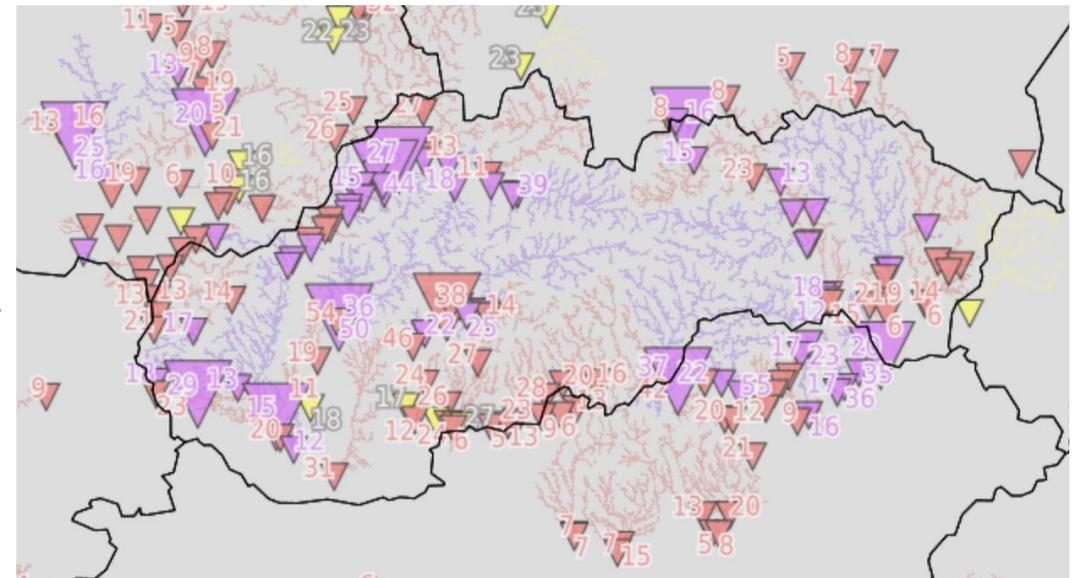
**Use different NWP meteorological forcings**

- COSMO-LEPS will be replaced by ICON-LEPS
  - But this does not have reforecasts - which are important for defining the thresholds
- ECMWF cycle 48r1 will have spatial resolution of ~9 km = similar to ICON-LEPS

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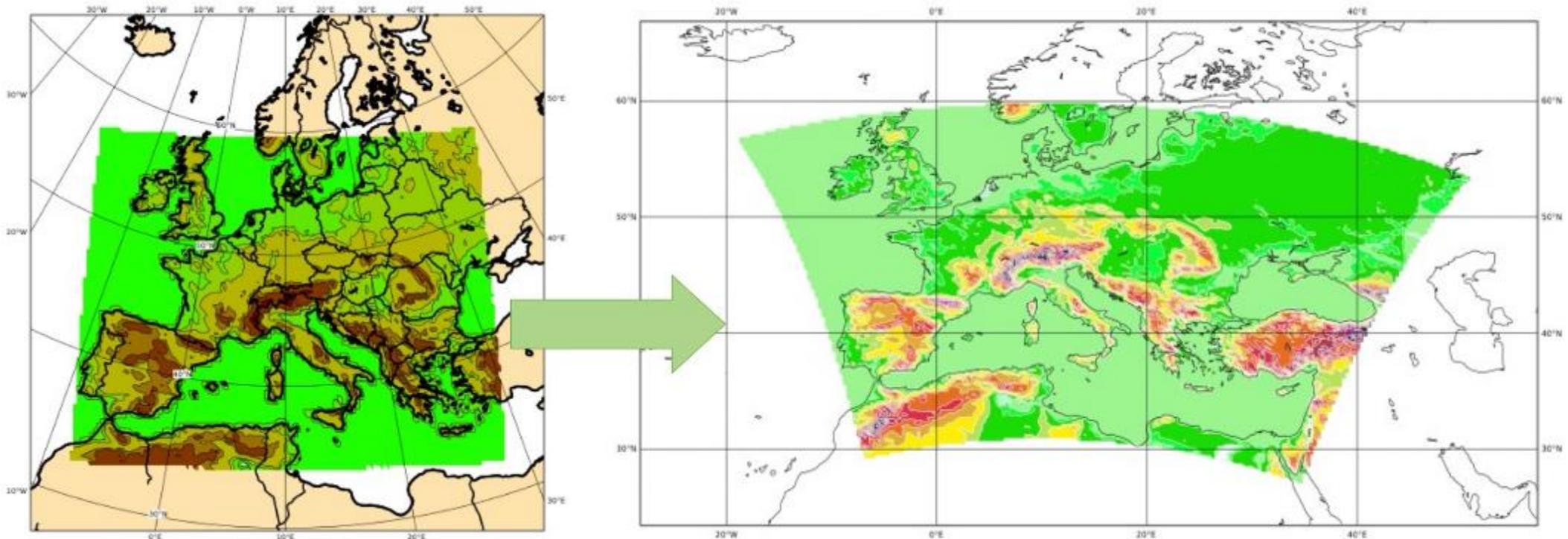
Highlight areas where greatest impacts may occur

- Flash flood layers currently highlight very broad area
- Overlay hazard predictions with exposure to highlight where greatest impacts could be - like TAMIR
- Separate layer to highlight urban/populated areas?

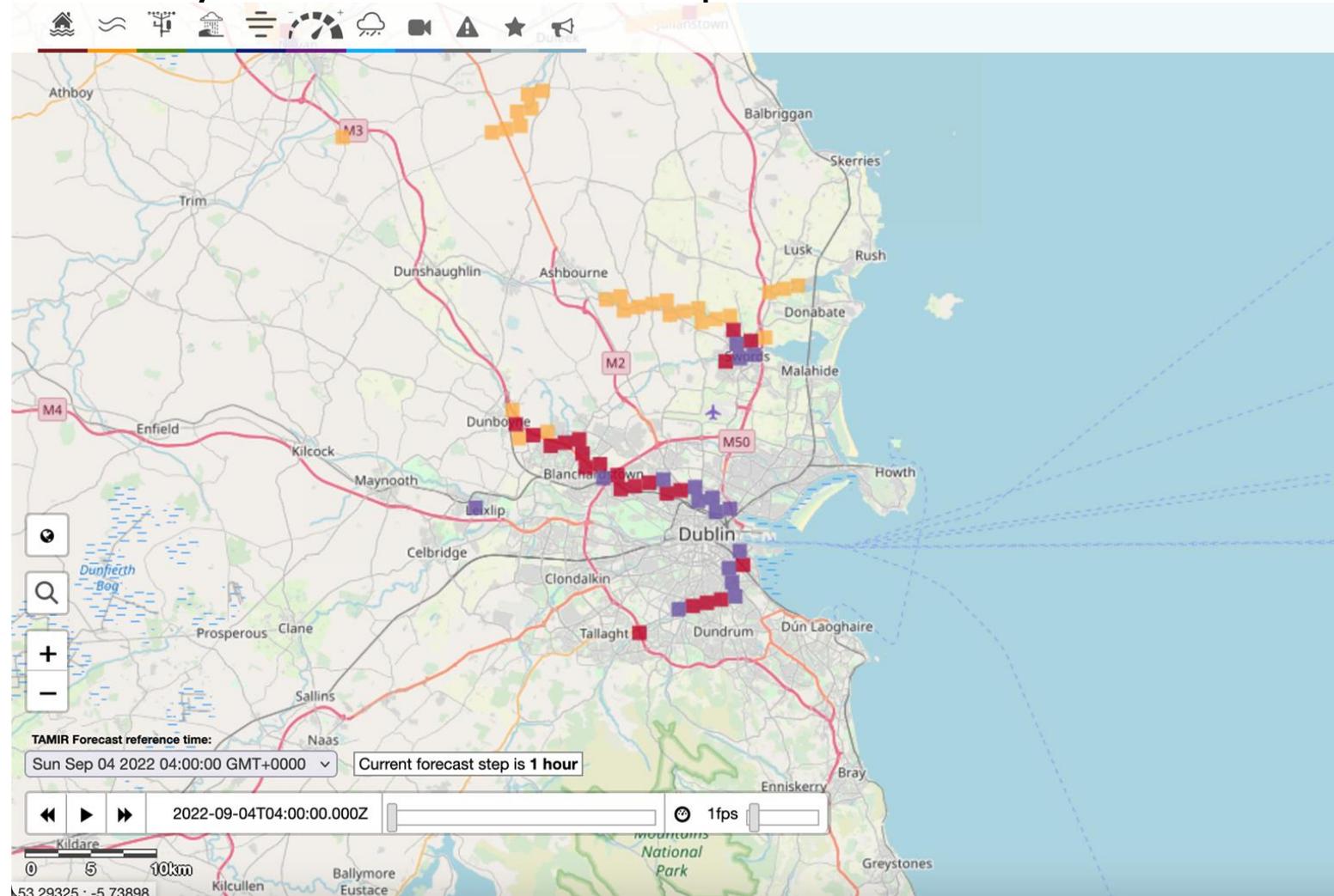- What about a separate pluvial layers?

14th July 2021 10:00 UTC

Verviers

Bad Neuenahr
Ahrweiler
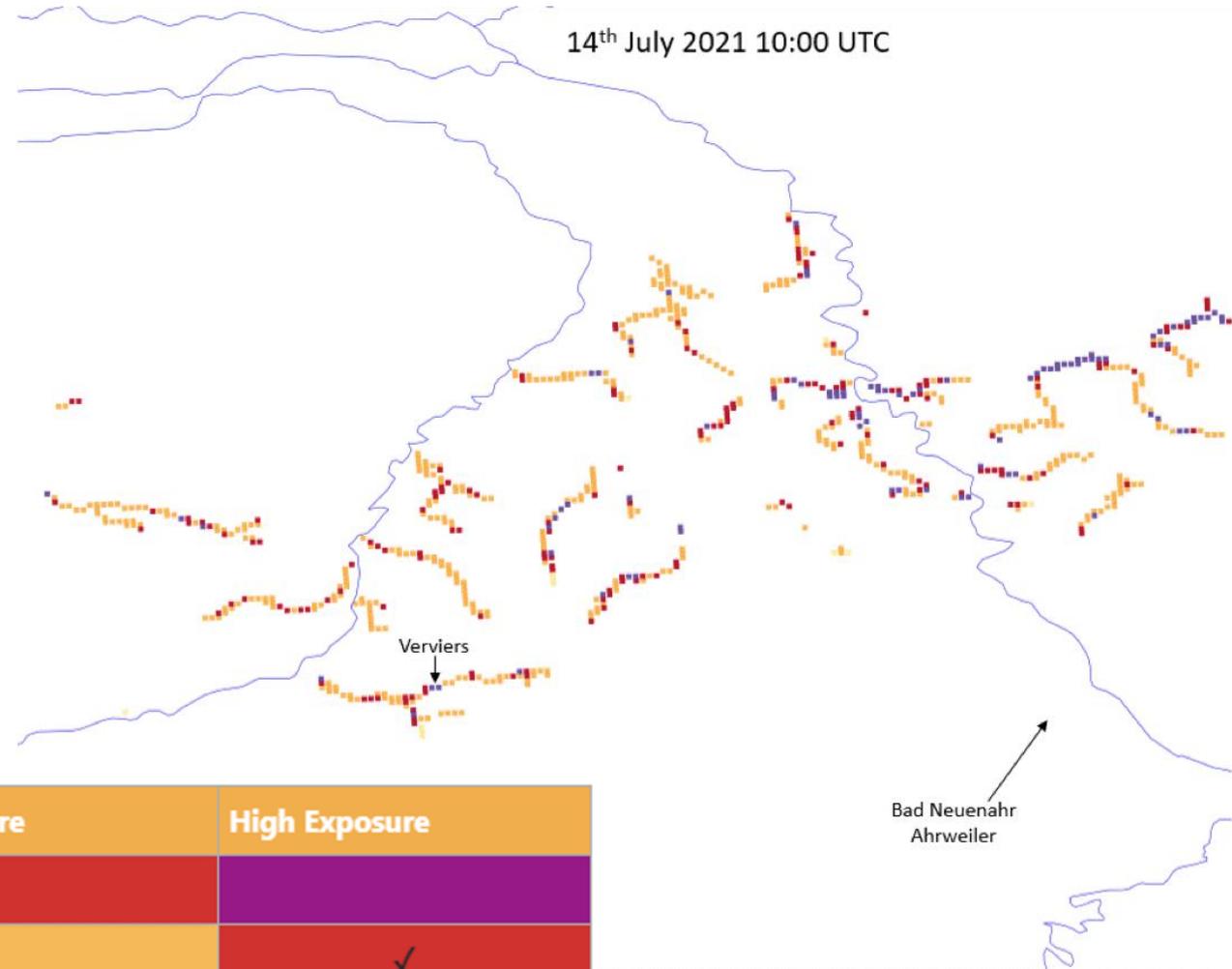
	Low Exposure	Medium Exposure	High Exposure
High Likelihood			
Medium Likelihood			✓
Low Likelihood			

Would it help to animate the forecasts through the different lead times?

- See the TAMIR layers - would this be helpful?

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Discussion:

- Which of these suggested areas of improvement should receive the highest priority?

- Are there other ways in which the products could be improved?

Any question suggestions, please email me:

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