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Emergency Management

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CEMS-Floods Global Flood Hazard Maps

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What are the global flood hazard maps?

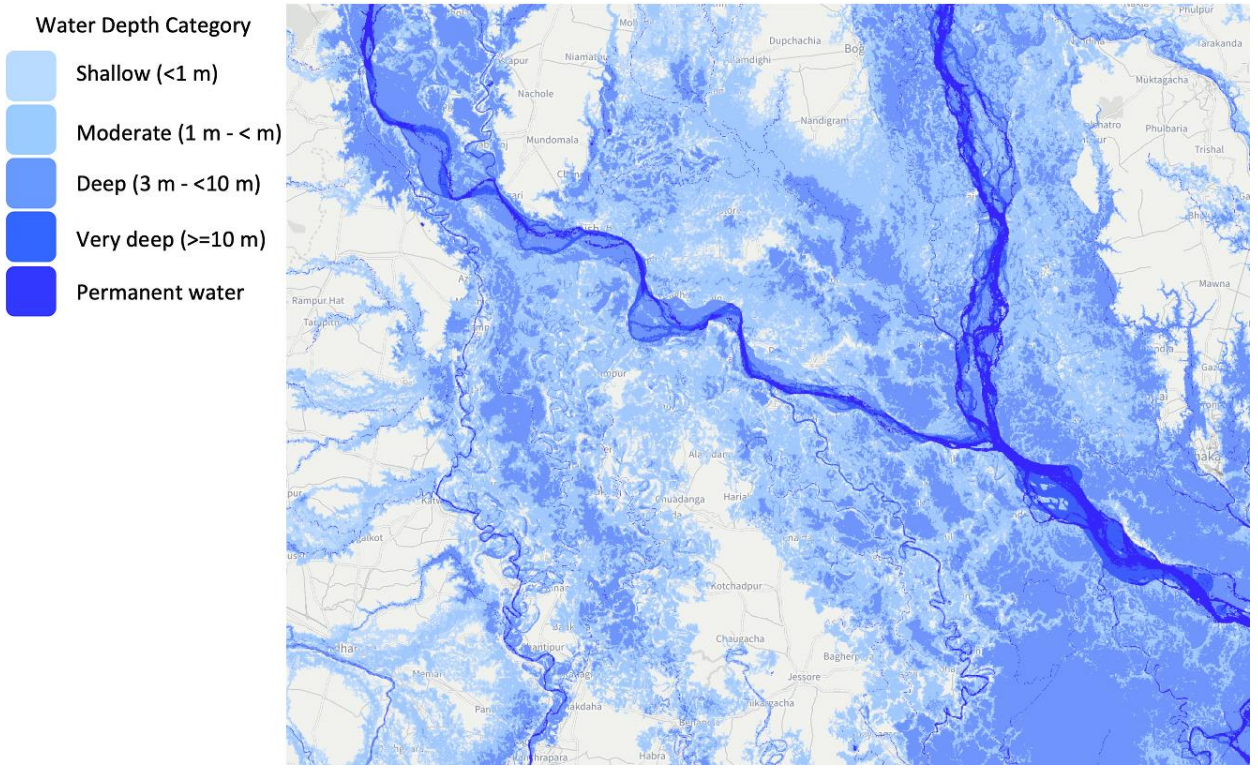
- A **catalogue of flood inundation** extents at **~90 m** for different return period scenarios are generated across the GloFAS domain

  Return period scenarios = 10, 20, 50, 75, 100, 200 and 500 years

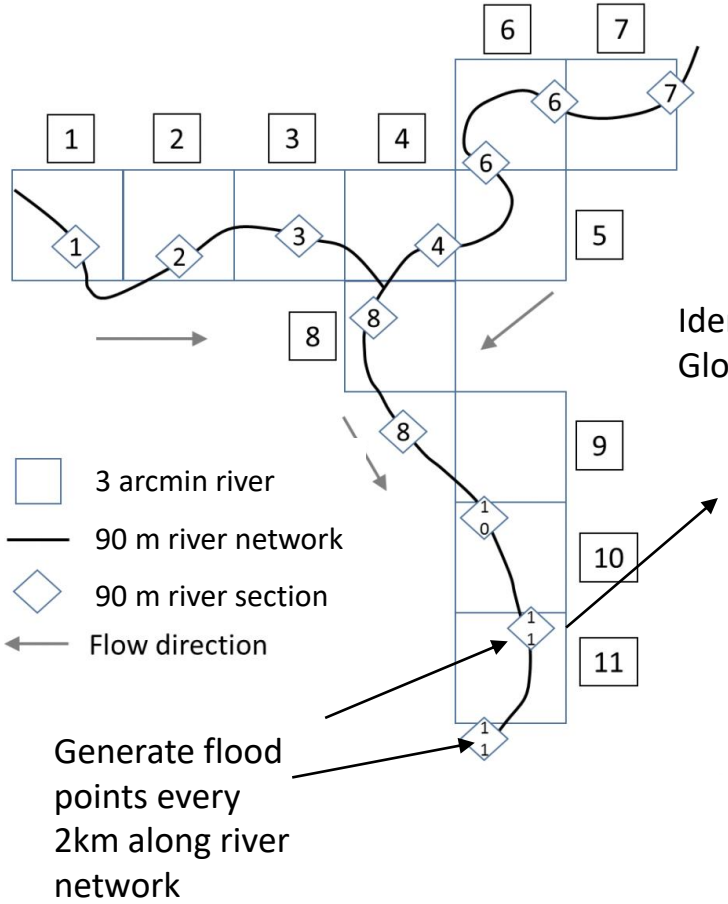
- Realtime forecast product '**Rapid Flood Mapping**' layer

What's new in GloFAS v 4.0?

- Use of **MERIT-Hydro DEM**
  - **Higher** resolution
  - Hydrological terrain **corrections**
- GloFAS v4.0 long term run forcings (from ERA5)
- **Additional return period scenario** 75 years
- Generated for rivers with **upstream area >=500 km^2** (previously >=2000 km^2)



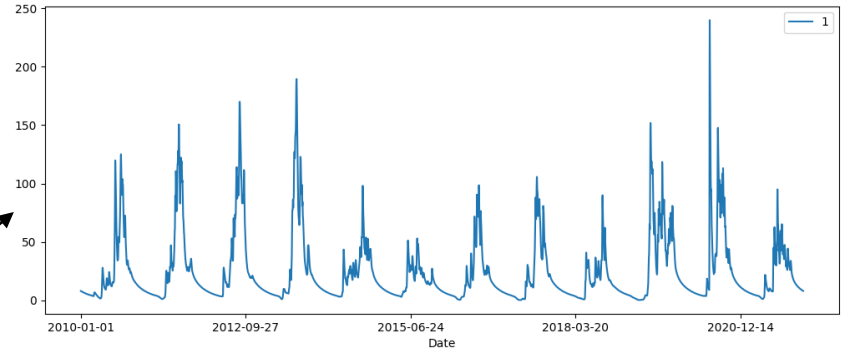
How are the flood maps created?



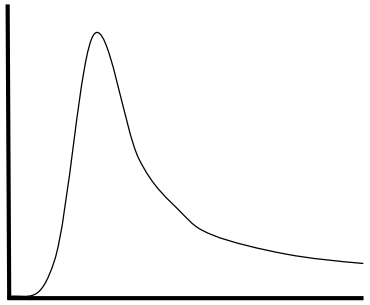
Generate flood points every 2km along river network

Identify nearest GloFAS grid cell

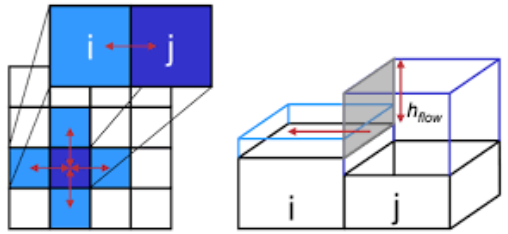
Extract GloFAS discharge long term run



Generate flood event hydrographs for each return period



Run hydraulic model with hydrograph



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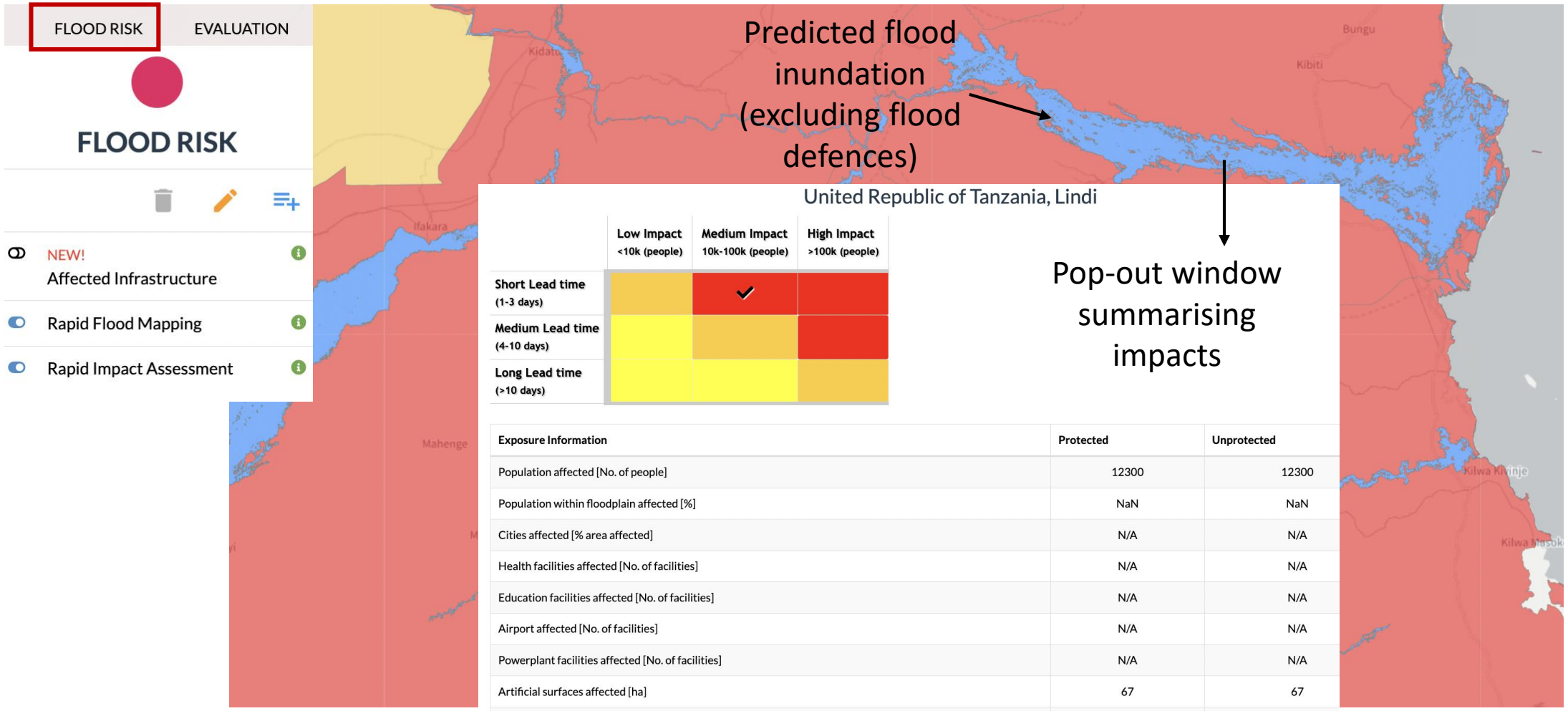
Create **90m pan-Global mosaic** for each return period scenario (10, 20, 50, 75, 100, 500 years)

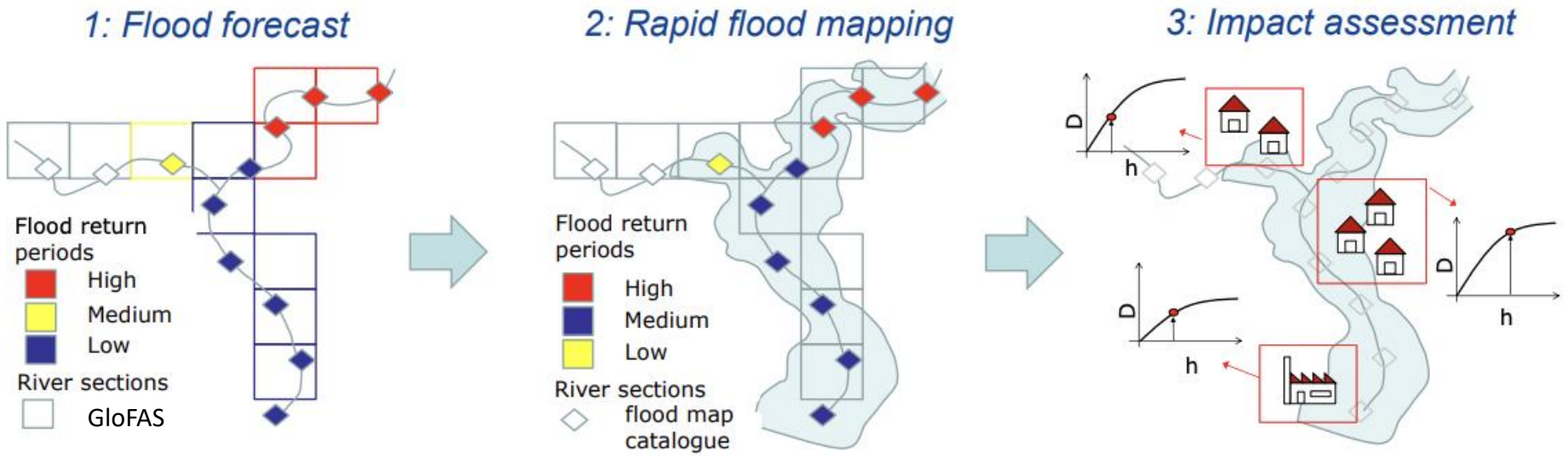
How are the maps used in GloFAS?



Exposure Information	Protected	Unprotected
Population affected [No. of people]	12300	12300
Population within floodplain affected [%]	NaN	NaN
Cities affected [% area affected]	N/A	N/A
Health facilities affected [No. of facilities]	N/A	N/A
Education facilities affected [No. of facilities]	N/A	N/A
Airport affected [No. of facilities]	N/A	N/A
Powerplant facilities affected [No. of facilities]	N/A	N/A
Artificial surfaces affected [ha]	67	67
Agricultural surfaces affected [ha]	4958	4958
Forest and semi-natural surfaces affected [ha]	94309	94309

How are these forecast products calculated?

Adapted from Dottori *et al.*, 2017

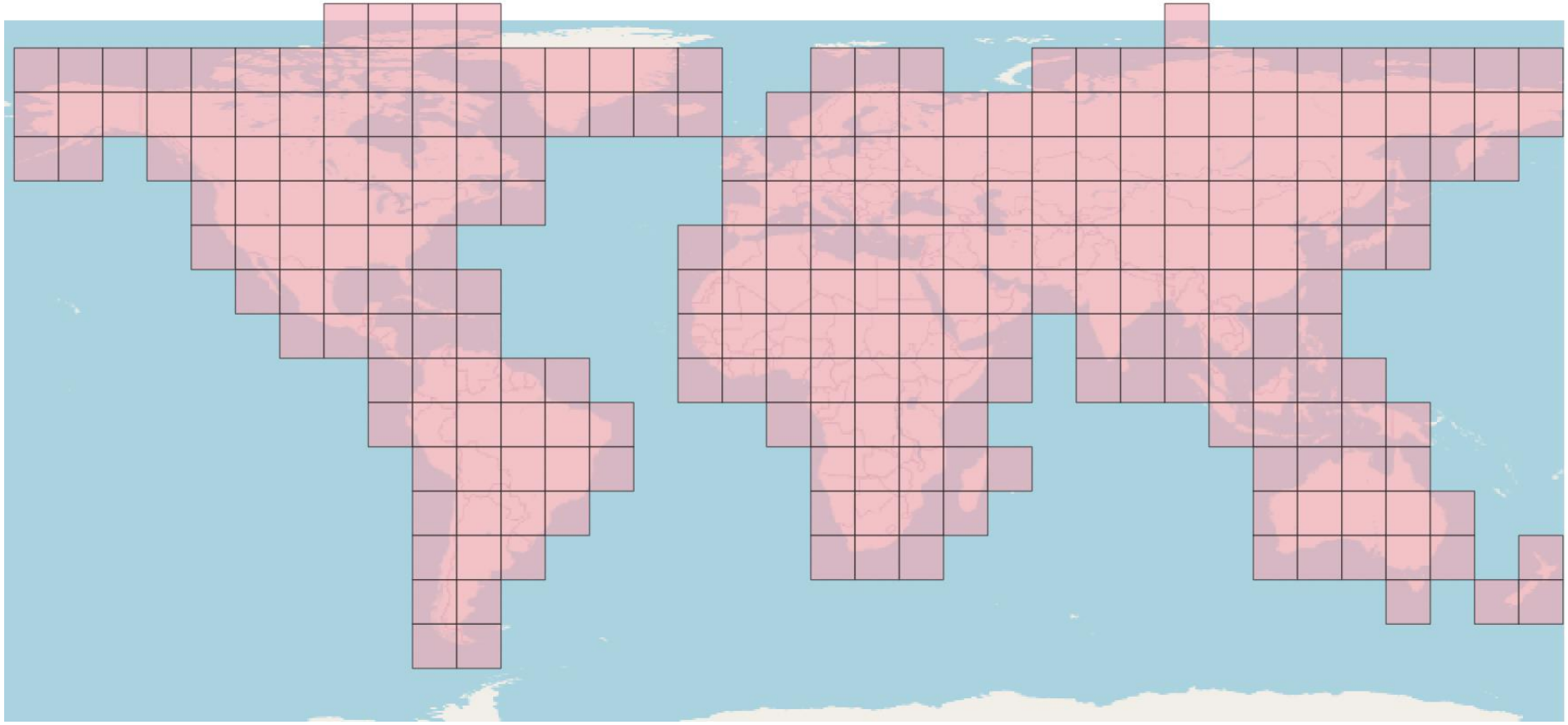


- **Streamflow return periods** forecasted by GloFAS are connected to the corresponding scenario flood map
  - Use the 30 day maximum of the ensemble median

- **Population data** from Global Human Settlement Layer v2023A for 2020 epoch
- New **affected critical infrastructure**:
  - Powerplants, dams, refugee camps and airports (from OpenStreetMap)
  - Cities, health and education facilities affected still calculated

How can I get the data?

- From the JRC website – soon (old data available at > https://data.jrc.ec.europa.eu/collection/id-0054)
- Flood depth data available in 5x5 degree tiles



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Thank you