What's next for EFAS?

Emergency Management

**Peter Salamon, Joint Research Center, European Commission**

- A **km-scale EFAS (from 5km to 1.3km)**
- Improved representation of the drainage network
- Better modelling for **small scale catchments**

Large increase in the number of model pixels (× factor 14) !!!

Google satellite

EFAS 5

EFAS 4

EFASNext 1arcmin drainage network

See following presentation from Cinzia!
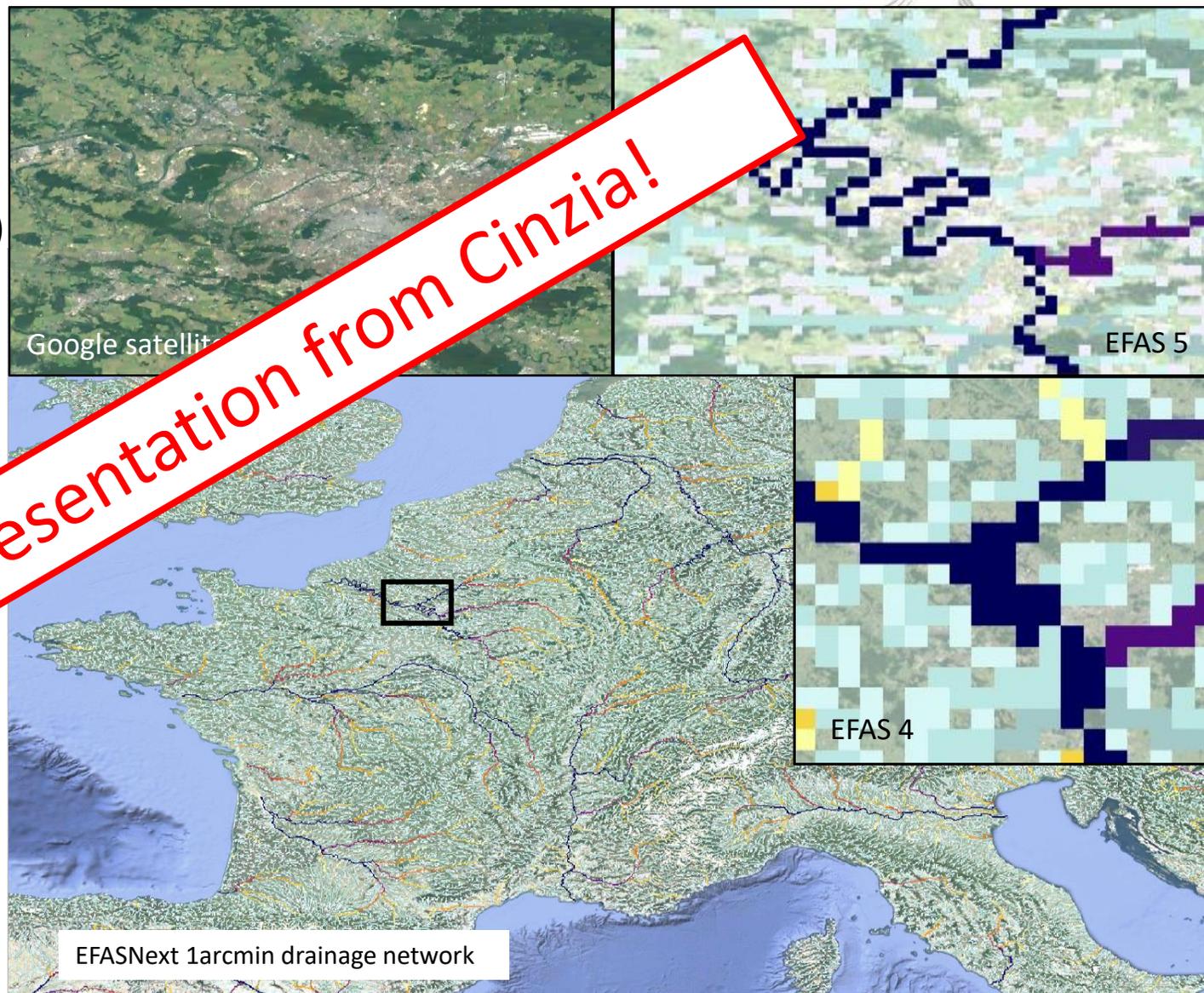
Global Flood Monitoring - User requirements:

- **Timeliness**: better response planning

- **Frequent updates/continuous monitoring**: adapt measures depending on the evolution of the flood

- **Resolution**: needs to be adequate for impact assessment

- **Historic data**: improved prevention planning

- **Access**: as diverse as possible to account for needs

Sentinel-1 based:

- SAR enables all weather flood monitoring

- High resolution of 20 m

- High revisit frequency: Europe **~ 1 – 3 days** World **~ 3 – 14 days** (to be further increased with Sentinel-1 C)

See following presentation from Dragana!
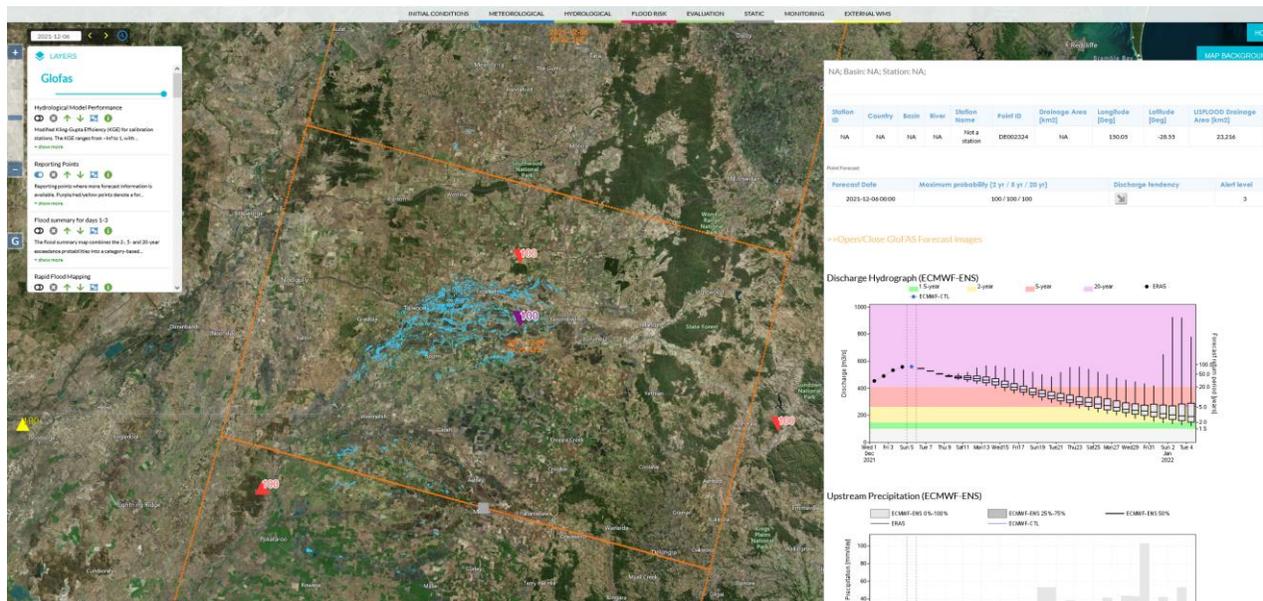
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EFAS FORMAL FLOOD NOTIFICATION

An EFAS Formal Flood Notification is issued when the probability of exceeding critical flood thresholds are forecasted more than 2 days ahead in a river basin with a minimum upstream area of 2000 km2 where there is an EFAS partner. The forecast also must be persistent (see below under criteria) and at least one deterministic forecast must exceed the EFAS 5-year return period. Formal flood notifications are automatically added to the ERCC overview (restricted information) and disseminated to the respective EFAS partner(s), the ERCC and the Civil Protection.

Criteria:

- Catchment part of CoA (Condition of Access)
- Catchment area >= 2000 km^2
- Event >= 48 h ahead
- 3 consecutive forecasts with >= 30% exceeding EFAS 5 year return period according to ECMWF ENS or to COSMO-LEPS forecasts
- At least one of the deterministic ECMWF or DWD forecasts exceeds EFAS the 5 year return period.
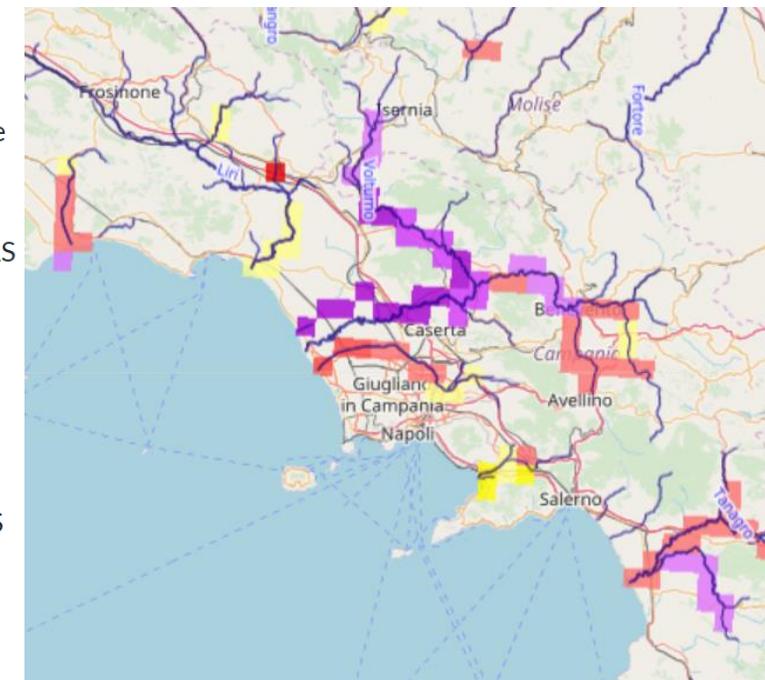
- Assess the 30% probability exceeding the EFAS 5 year return period (new skill assessment)
- Usage of total probability instead of "separate" forecasts
- Revise the minimum catchment area (e.g. maybe 500 or 1000km2?)
- Is persistence still adding value?

Do we still need the ERIC product with the new EFAS resolution?
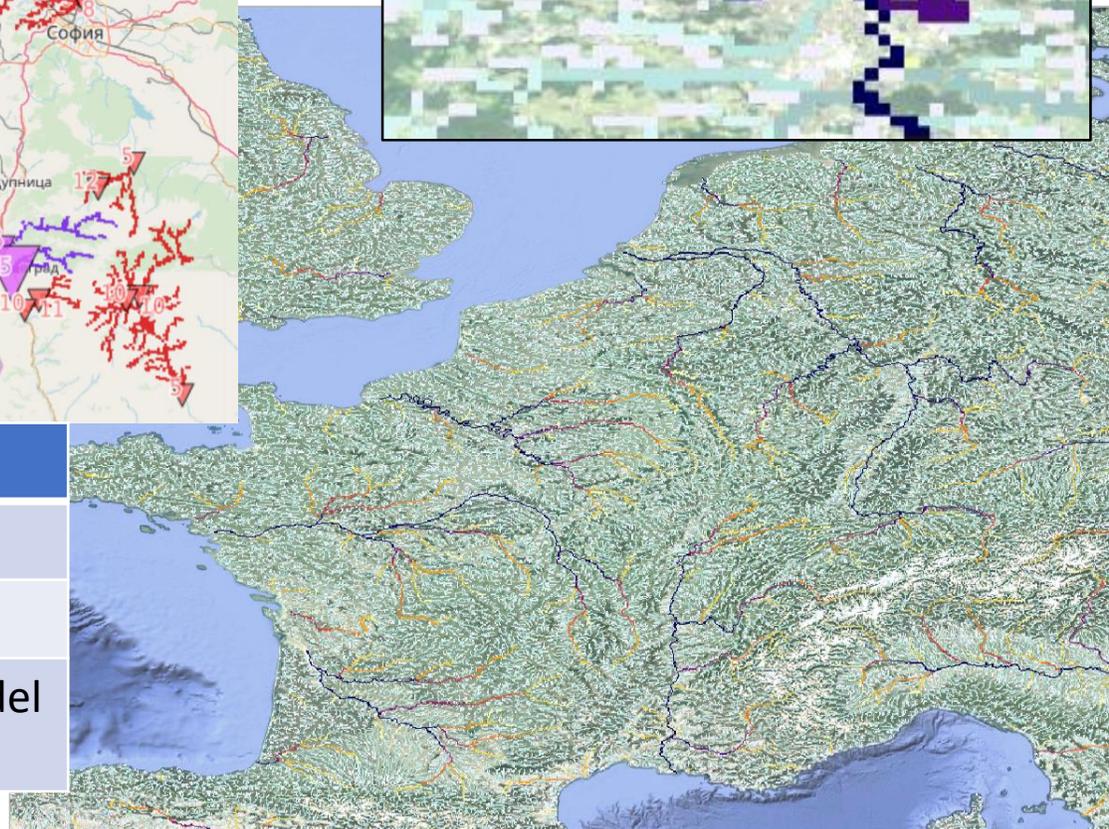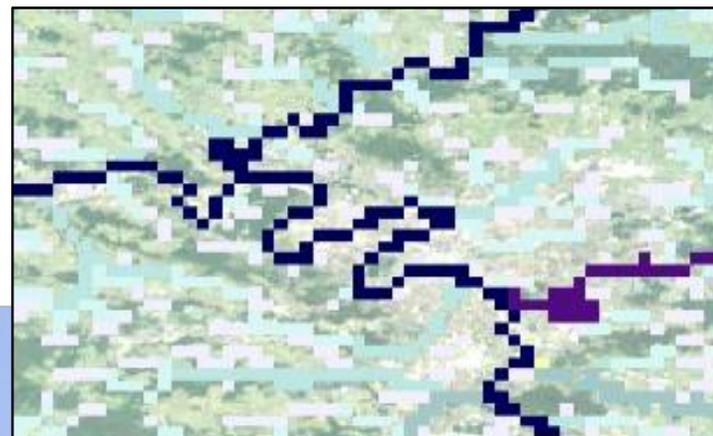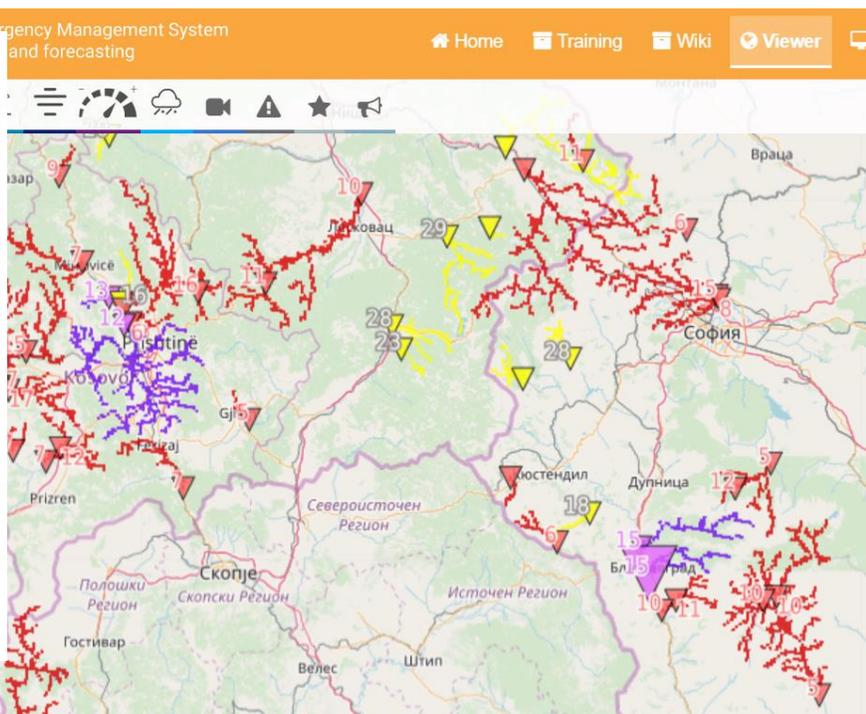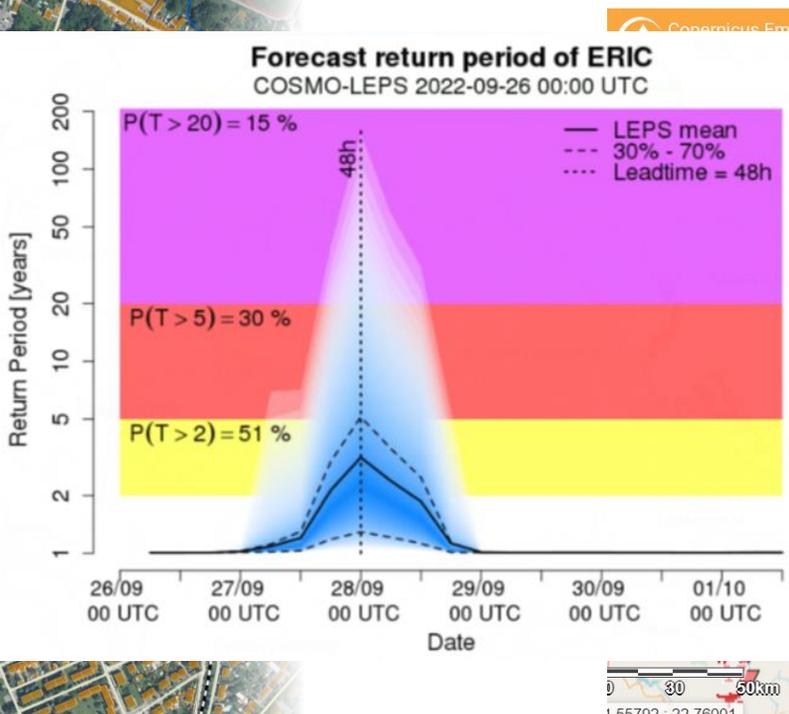
	ERIC	EFAS Next
Spatial resolution	1km	1.5km
Temporal resolution	6h/12h/24h	6h
Hydrol. processes	Precip + sim. Soil moisture	Full hydrological model

https://ec-jrc.github.io/lisflood/

- LISFLOOD is fully open source
- Repository includes other tools such as a calibration tool
- Test catchments and test suites for new developments
- Bug-fixes and performance improvements for EFAS Next
- Updated extensive documentation

New developments
- Static maps for EFAS and GloFAS will be freely available!
- Add Muskingum Cunge Routing!
- New model calibration using deep parameter learning (Feng et al. , Nature Comm. 2021)
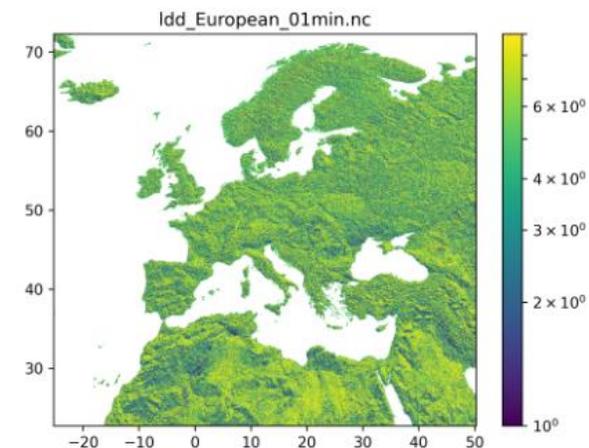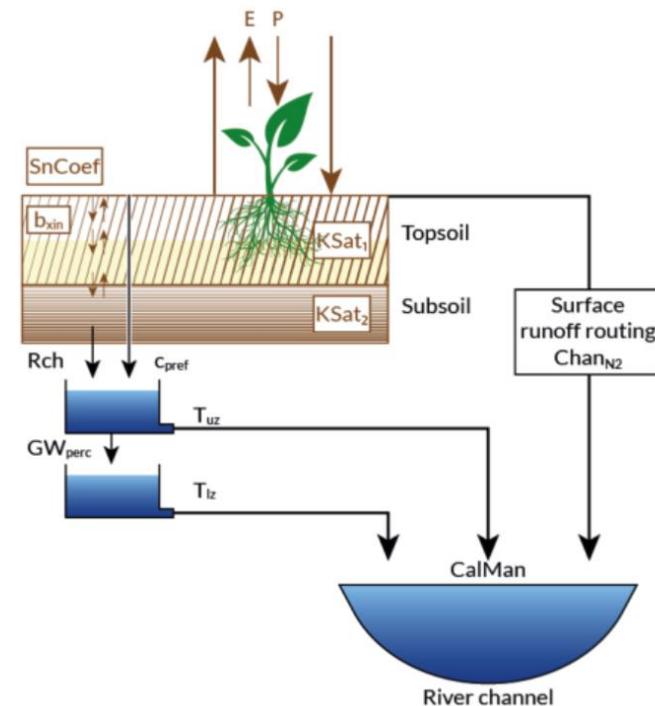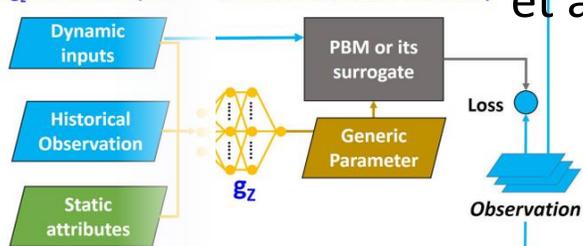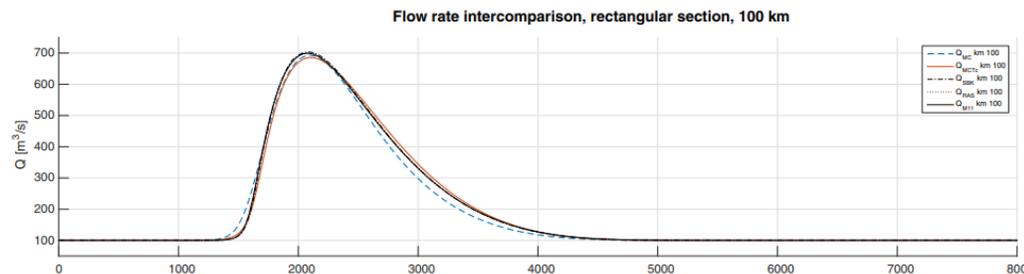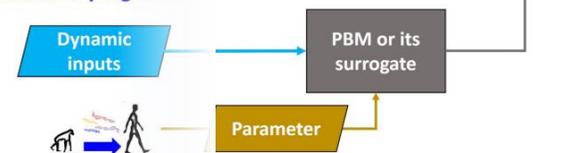
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Thank you!

Preparedness
Recovery
Response

Rapid Mapping
Risk & Recovery Mapping
Floods
Fires
Droughts
Population
Built-up areas

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