

The European Flood Alert System EFAS

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The European Flood Alert System (EFAS) prototype is running pre-operationally for the whole Europe since 2005. EFAS is providing 3-10 day hydrological forecasts (deterministic and probabilistic) for 22 hydrological national services, covering most of the trans-national river basins in Europe. Interesting aspects of the system, forecasting results and verification approaches are presented in the following presentation.

After the potential advantages of such a system, the EFAS technical setup and the EFAS threshold approach are explained. Several EFAS forecasting products are presented: Hydrographs with alarm thresholds, spaghetti plots and historical diagrams (deterministic and probabilistic). The creation of the EFAS total probability maps are illustrated. These maps summarize most of the important information, including persistence, in just one hydrological forecast map.

Last but not least the EFAS interactive web-interface (password-protected and only for EFAS-partners) is introduced and the way forward shown.



Potential advantages of EFAS

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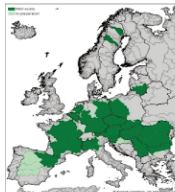
European Commission

- assist aid management during a crisis
- comparable information across Europe


National hydrological services

- extend leadtime to medium-range (+ most services)
- flood information for entire river basin (+ most services)
- operationally applied research (++ all services)
- information exchange (++ all services)
- backup (+ most services)

!! Aim: additional information *not* replace local expertise



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EFAS setup


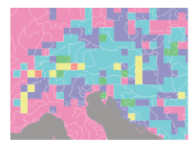
Joint Research Centre

EFAS hydrologic model : LISFLOOD

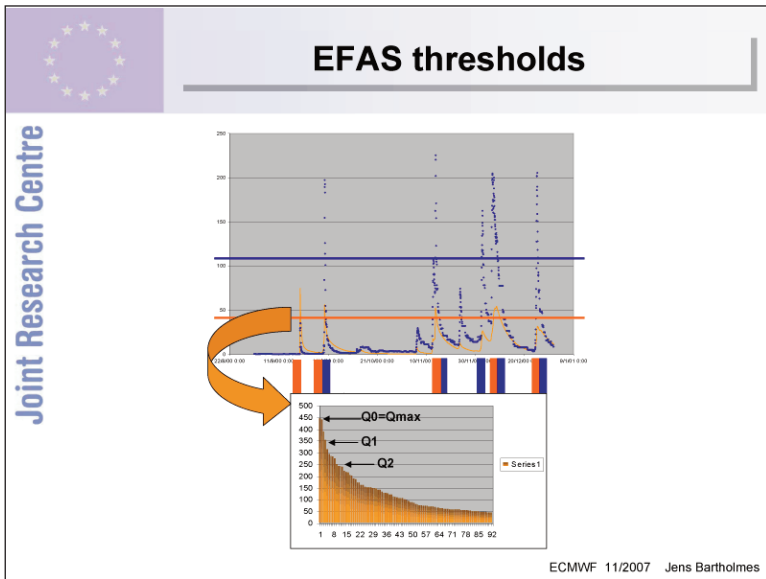
- Europe : 5 km grid
- 1, 6h or 24 h timesteps
- EFAS forecasts are based on 00 hrs & 12 hrs weather forecasts

Meteo Input

- 2x DWD, 7 days
- 2x ECMWF – Deterministic, 10 days
- 51x2 ECMWF EPS, 10 days
- observed meteo data (JRC-MARS)

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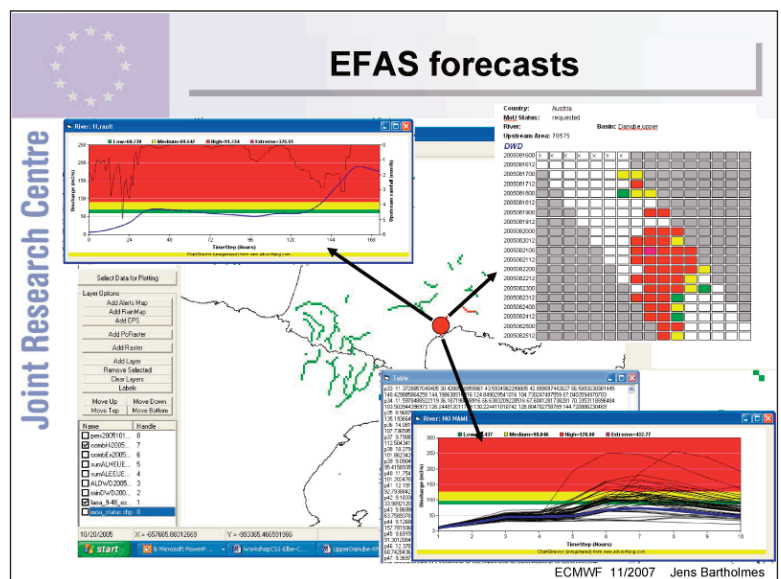


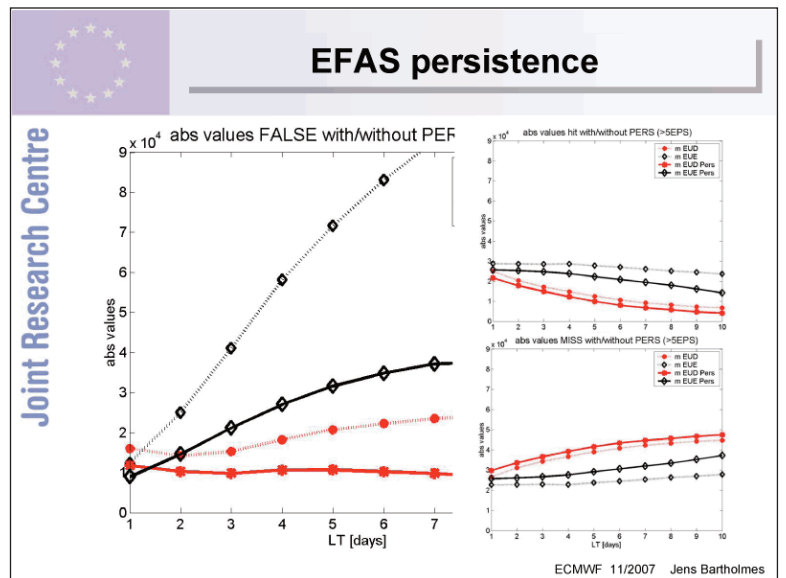
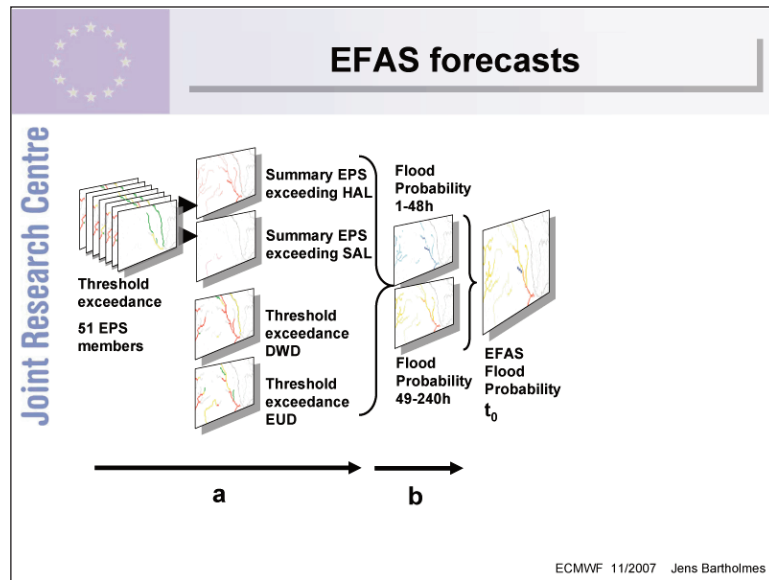
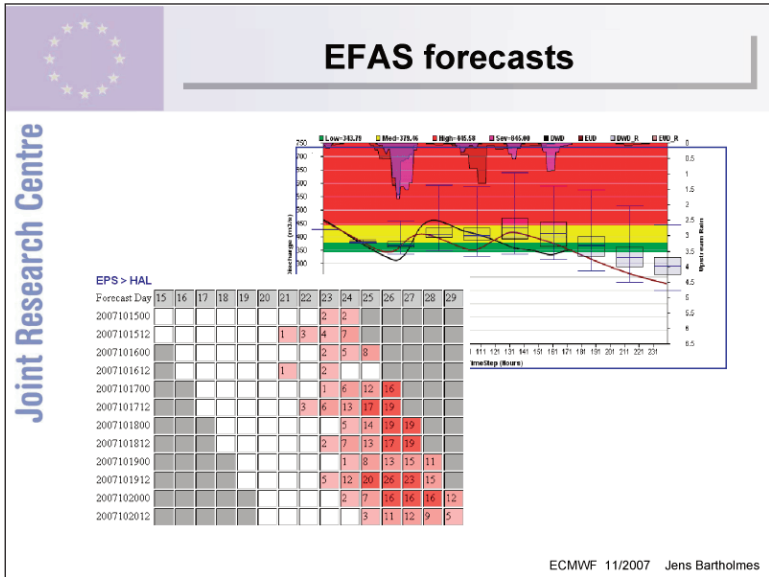
Advantage of EFAS thresholds

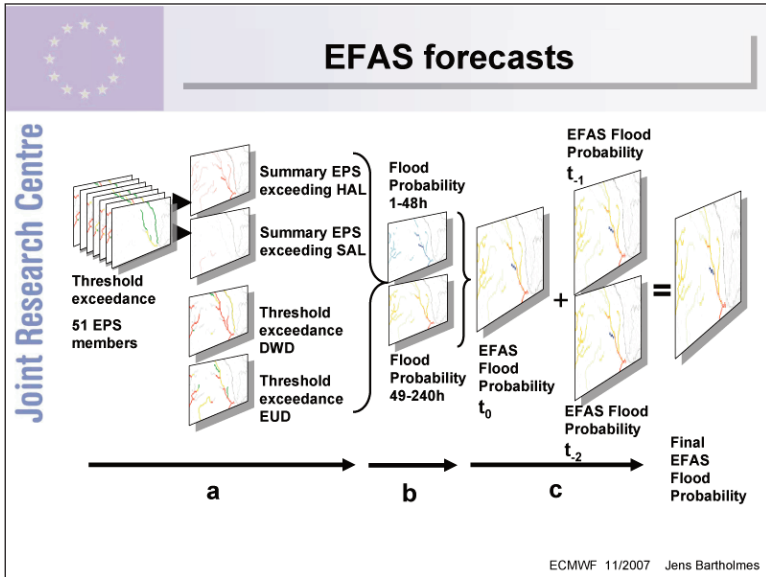
- systematic over- under predictions are compensated for
- EFAS alarm thresholds are available for every pixel
- easy to understand / display

EFAS Level		Description
S (Severe)	■	very high possibility of flooding, potentially severe
H (High)	■	seriously increased river discharges with high possibility of flooding (likely exceeding bankful conditions)
M (Medium)	■	significantly increased river discharges, no flooding expected
L (Low)	■	river discharges increased, no flooding expected

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EFAS-IS

- Password protected web interface EFAS-IS for EFAS Partner organizations was launched in October 2007

The screenshot shows the EFAS-IS web interface. It includes a navigation menu with 'Home page', 'On line press articles', and 'EFAS forecasting'. A 'Network reliability' section contains a disclaimer. The main content area features a 'Forecast' section with a date selector (set to 2007-10-20) and a map of Europe showing forecasted flood areas. A sidebar on the left lists various layers and parameters for the forecast.


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EFAS-IS

This view shows a detailed map of Europe with a red-shaded area indicating a forecasted flood event. The map includes a scale bar (0 to 2800 km) and a toolbar with the following options: Zoom In, Zoom Out, Full View, Recentre, Query, Print, and Zoom Factor (set to 2). A 'Disclaimer' link is visible at the top left of the map area.

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EFAS-IS

Country: Romania
[MoU Status](#) MoU_Status
River: Siret **Basin:** Danube/Siret
Upstream Area: 36025
Probability Tendency: 
Probability value: 83.720
PointID: 1011 **Lat:** 45.5 **Long:** 27.5

Forecast Day	23	24	25	26	27	28	29	30	31	32
DWD										
ECMWF										
EPS > HAL			31	37	19	5	3	2	2	3
EPS > SAL										

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EFAS-IS

- Real time access to EFAS forecasts 24/7
- Built up experience on a day to day basis
- EMM floods DB

Flood date	River	Country	Language	Title	Date inserted article	Entered by
23-OCT-07 to 26-OCT-07	Trotus	Romania	English	Waters withdraw, weather improves	26-OCT-07	McCormick Niall
23-OCT-07 to 26-OCT-07	Trotus	Romania	English	Flood warning for 10 Romanian counties	26-OCT-07	McCormick Niall
23-OCT-07 to 26-OCT-07	Trotus	Romania	English	Thousands of Romanians isolated by floods	26-OCT-07	McCormick Niall
18-SEP-07 to 18-SEP-07	Sava, above Kupa	Slovenia	English	Šelenci a week after the storm	05-OCT-07	McCormick Niall
18-SEP-07 to 18-SEP-07	Sava, above Kupa	Slovenia	English	Flooding in Slovenia leaves six dead	05-OCT-07	McCormick Niall
07-SEP-07 to 08-SEP-07	Danube	Germany	German	Hochwasser in Südbayern - Donau in Passau stark ansteigen	18-OCT-07	McCormick Niall
06-SEP-07 to 09-SEP-07	Danube	Austria	German	20-jährliches Hochwasser für Donau in NO-Österreich	22-OCT-07	McCormick Niall
06-SEP-07 to 09-SEP-07	Danube	Austria	German	Hochwasser: Situation entspannt sich	16-OCT-07	McCormick Niall
06-SEP-07 to 09-SEP-07	Danube	Austria	German	Angepannte Hochwasserlage an der Donau	09-OCT-07	McCormick Niall

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Conclusions and Way Forward

- EFAS is now available online to EFAS partners 24/7
- EFAS is producing medium-range probabilistic flood forecasts with leadtimes up to 10 days
- Feedback is positive and products are used by partners
- Try Var-EPS
- Include forecasts of other weather forecasting services

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