



Deltares

Introducing Deltares and OWM

FEWS Anwendertreffen 2026

Maarten Smoorenburg

LANUK, Duisburg, Thursday, 2 July 2026

Deltares – Enabling Delta Life

Deltares

[News](#) [Stories](#) [Expertise](#) [Impact](#) [Research facilities](#) [Software and data](#) [Q](#)

Enabling Delta Life

As an independent knowledge institute, Deltares works on innovative solutions in the field of water and subsurface.

Deltares



Deltares – Enabling Delta Life

WHY?

We have made our ambitions - challenging goals with huge societal importance - more concrete in moonshots. These can only be achieved by working together with others

Delta's remain habitable

Safer from flooding

Resilient and healthy water systems

CO₂ reduction and sustainable energy

Resilient infrastructure

HOW?

Research and Development

Software and support

Data and Services

Courses and Trainings

Expert consultancy

Deltares – Real time information

WHO?

About 50 people,
spread over 3 departments:

- **Operational Water Management**
- **Environmental Hydrodynamics and Forecasting**
- **Water Operations Software**

Deltares

HOW?

Research and Development

Software and support

Data and Services

Courses and Trainings

Expert consultancy



OWM¹ Mission:

**Enabling better forecast,
enabling better decisions**

¹OWM: Deltares' Operational Water Management department

As software tools we use FEWS and RTC-Tools



Delft-FEWS and other water software

Real-time and forecasting

- [RTC-Tools](#): simulating and optimizing water operations
- [OpenDA](#): data assimilation and calibration of water models
- FEWS suite extensions:
 - [Open Archive](#): longterm storage of FEWS related data
 - [WaterCoach](#): training of forecasters
 - [Veriflow](#): model and forecast verification

Hydraulic and Hydrology software

- [Wflow](#): gridded hydrological modeling
- [Delft3D-FM](#): 1D, 2D and 3D modeling (+ water quality and sediment transport plugins)
- [SFINCS](#): Super-Fast INundation of CoastS modeling
- [Ribasim](#): river basin planning and management
- [iMOD](#): MODFLOW groundwater modelling suite
- [WANDA](#): Pipeline systems design and control

Deltares



Events, workshops and training @ Delft Software Days

DSD-INT 2026

29 Sep 2026 - 26 Nov 2026

09:00 - 17:00 (CET)

Online / Delft, Netherlands

Welcome to the DSD-INT 2026!



Events, workshops and training @ Delft Software Days

09 November 2026



Delft-FEWS - Basic Configuration Course

09:00 - 17:00 (GMT+1) | € 1259



Delft-FEWS - Web OC Course

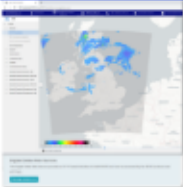
09:00 - 17:00 (GMT+1) | € 629



RTC-Tools User Day 2026

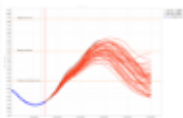
13:30 - 17:00 (GMT+1) | Free

10 November 2026



Delft-FEWS - Advanced Configuration Training

09:00 - 13:00 (GMT+1) | € 360



Probabilistic Forecasting - Short Course

09:00 - 16:30 (GMT+1) | € 629

11 November 2026



ON-SITE Delft-FEWS User Days 2026 (Day 1)

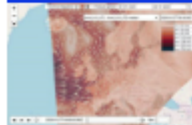
09:00 - 17:00 (GMT+1) | Free



ONLINE Delft-FEWS User Days 2026 (Day 1)

09:00 - 17:00 (GMT+1) | Free

12 November 2026



Delft-FEWS - Web Services Course

14:00 - 17:30 (GMT+1) | € 360



ON-SITE Delft-FEWS User Days 2026 (Day 2)

09:15 - 17:00 (GMT+1) | Free

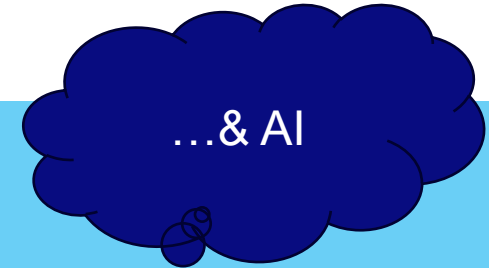


ONLINE Delft-FEWS User Days 2026 (Day 2)

09:15 - 17:00 (GMT+1) | Free

Department OWM strategy

**Enabling better forecast,
enabling better decisions**



Decision making

Real time control

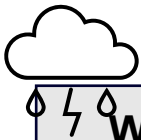
Improving forecasts

Drought forecasting

Impact forecasting

Urban flooding and nowcasting

Hydrological (flood) forecasting



Weather information and pre-processing

Title: **Operational usage and limitations of AI weather forecasting in hydrological forecasting**

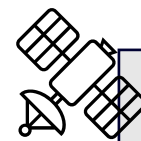
Team: Bob van Rongen, Jing Zhao, Henrique Moreno Dumont Goulart, Ruben Imhoff, Jaap Schellekens, Albrecht Weerts, Antonio Moreno Rodenas

Title: **Machine-learning based downscaling and correction for post-processing rainfall forecasts**

Team: Ruben Imhoff, Henrique Moreno Dumont Goulart, Jing Deng, Albrecht Weerts

Title: **Nowcasting storm growth with a hybrid approach**

Team: Christos Paraschakis, Ruben Imhoff



Large-language models and agents

Title: **LLMs for Delft-FEWS**

Team: Kun Yan, Jurian Beunk, Ruben Dahm & Dave de Koning

Title: **AI Agents in hydrological modeling**

Team: Ali Meshgi

AI for Flood Forecasting 2026



Rapid model emulators and flood forecasting approaches

Title: **Surrogate flood modelling based on LSG and SFINCS**

Team: Roel de Goede, Dirk Eilander & Tim Leijnse

Title: **A GNN based model for storm surge forecasting**

Team: Jing Zhao and Martin Verlaan

Title: **Differentiable wflow_sbm exploration**

Team: Jurian Beunk



Post-processing, control and decisions

Title: **Benchmarking AI-based post-processing for probabilistic forecasting for the Meuse**

Team: Maarten Smoorenburg, Jing Deng, Maarten Verbrugge, Jurian Beunk, Hans Korving

Title: **Operational Data Fusion of Model and EO Flood Maps**

Team: Arjen Haag, Albrecht Weerts, Jaap Schellekens, Arnejan van Loenen, Tjalling de Jong

Image created with Microsoft Copilot using input terms: "artificial intelligence", "flooding" and "forecasting"



Enhancing the knowledge base in transnational regional river basins

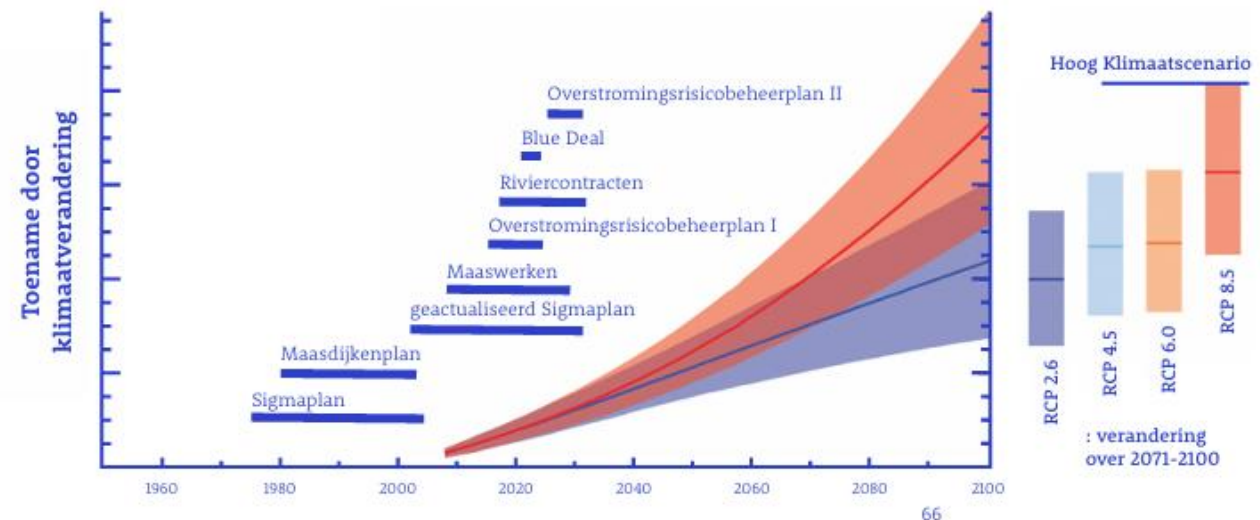
www.jcar-atrace.eu

Deltares



Why JCAR ATRACE?

- - Floods in 2021 -> evaluations -> recommend focus on smaller transnational river basins
- - Many weather extremes (also droughts, heat waves etc.) around us we are not well prepared for and which we do not well understand
- - Better preparedness and adaptation requires more time (decennia) than we have
- - Joint knowledge development accelerates and deepens cooperation



Weerbaar Waterland, 2022

Objective



Better prepared

Facilitate regional governments in Belgium, Germany, Luxembourg and the Netherlands in improving integrated planning, development and management of regional river basins, preparing for extreme climate events.

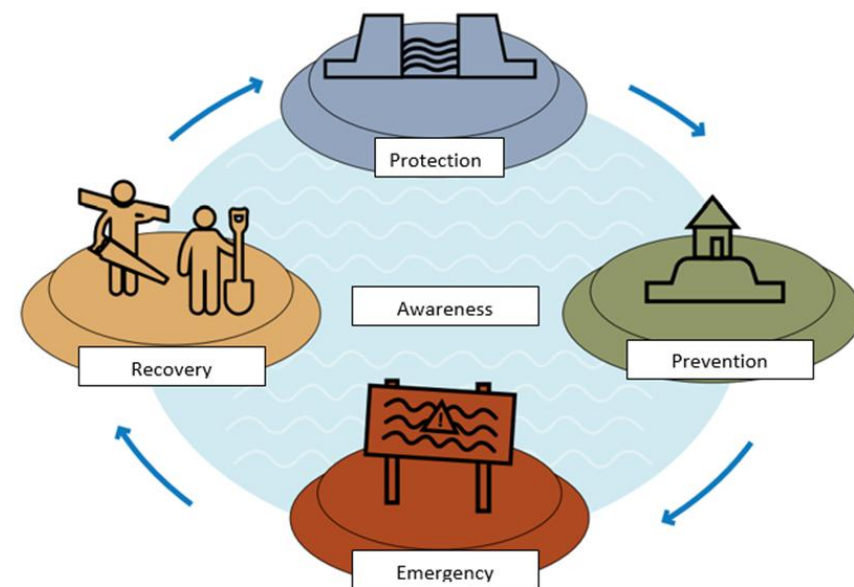
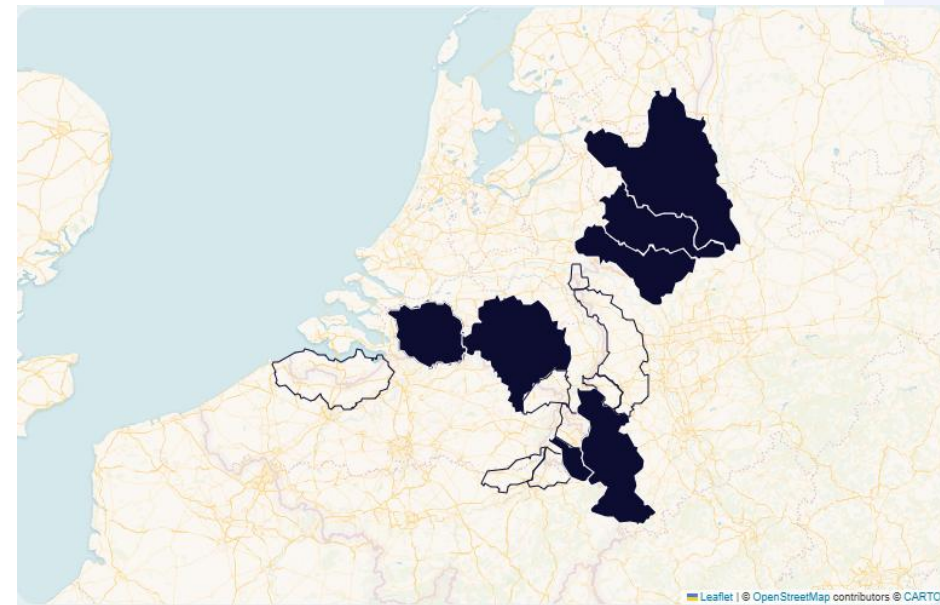


Transboundary collaboration

Foster long-term partnerships between European knowledge institutes to enhance the knowledge base and inform flood and drought strategies in transboundary regional river basins.

- **diagnosis: extreme floods and droughts (vs.)**
- **potential treatment: impacts of measures**
- **regional transnational river basins**
- **long-term cooperation**

Deltares



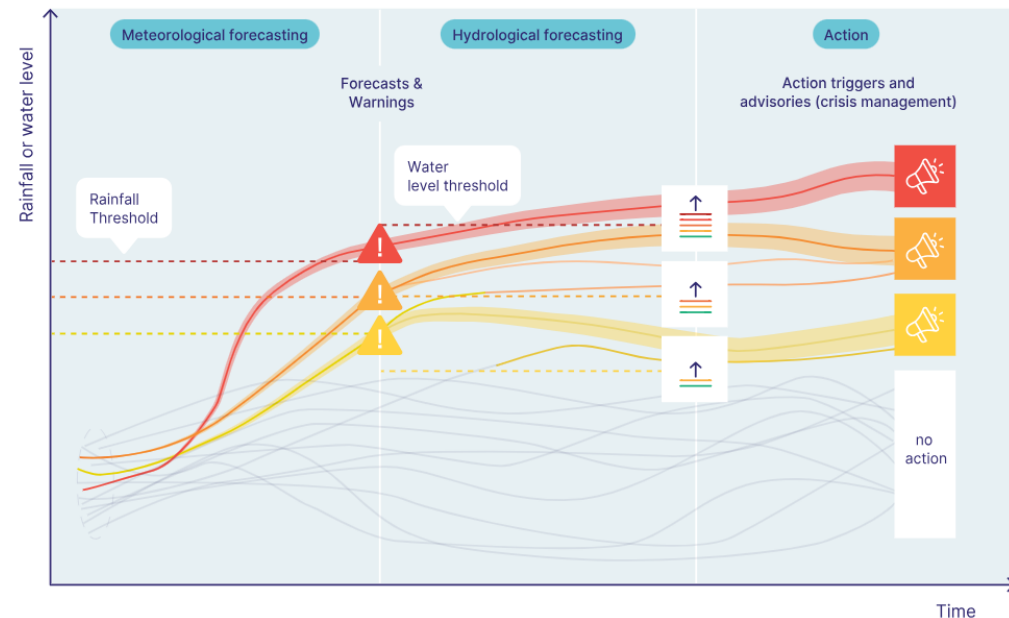
FEWS challenges

- 1) There are strong differences in flood warning levels and colour codes between and within countries (such as new purple warning levels, only in some countries and federal states);
- 2) Highest warning thresholds are often too low (e.g. water nuisance), and therefore do not align with impactful events like the 2021 floods;
- 3) Impact-based forecasting is not yet operationally implemented in most of the regions;
- 4) We observed bottlenecks in the communication chains between stakeholders and to the local population.

Comparing flood forecasting and early warning systems in northwestern Europe











Tim Busker^{1,9}, Daniela Rodriguez Castro², Sergiy Vorogushyn³, Jaap Kwadijk^{5,8}, Davide Zoccatelli⁷, Rafaella G. L. Oliveira¹, Heather J. Murdock⁴, Laurent Pfister⁷, Benjamin Dewals², Kymo Slager⁵, Annegret H. Thieken⁴, Jan Verkade⁵, Patrick Willems⁶, and Jeroen C. J. H. Aerts^{1,5}

Communication of forecasts, warnings and action advisories



Recommendations

- investigate the benefit of streamlined warning levels and colour codes between and within countries
- assess the added value of more extreme warning levels for catastrophic events
- implement a structural evaluation of warning communication chains
- accelerate the development of operational impact-based forecasting systems

WARNING LEVELS AND THRESHOLDS			
Country	Pluvial floods (National Meteorological Services)	Fluvial floods (Hydrological services)	
 <p>The Netherlands</p>	<p>⚠️ ≥ 30 mm in 1 h (thunderstorms) or ≥ 50 mm in 24 h</p> <p>⚠️ ≥ 50 mm in 1 h or ≥ 75 mm in 24 h (heavy rain)</p> <p>⚠️ On the decision of the Weather Impact Team</p>	<p>Large rivers: based on impact-adjusted return periods</p>  <p>$\frac{1}{25}$ to $\frac{1}{50}$ years RP $\frac{1}{5}$ to $\frac{1}{10}$ years RP Yearly RP sub-yearly RP</p>	<p>Regional rivers (Local water authorities): Thresholds depending on the water authority</p>
 <p>Belgium</p>	<p>⚠️ 20 to 30 mm in 1 h or 20 to 40 mm in 6 h or 25 to 50 mm in 24 h</p> <p>⚠️ 31 to 50 mm in 1 h or 41 to 60 mm in 6h or 51 to 100 mm in 24 h</p> <p>⚠️ Already flooding problems and heavy rain still forecasted or 50 mm in 1 h or 60 mm in 6h or 100 mm in 24h</p>	<p>Flanders: Alarm states: water level thresholds, based on impact to water infrastructures Flood warnings: water level thresholds, based on distance between water level and dike crest</p>  	<p>Wallonia: Thresholds not present, warning level selected based on expert-judgement</p>
 <p>Luxembourg</p>	<p>⚠️ Awareness level yellow / Be aware (low risk / potential danger) 15-30 mm in 6h or 20-40 mm in 12h or 30-50 mm in 24h</p> <p>⚠️ Awareness level orange / Be careful (medium risk / danger) 31-45 mm in 6h or 41-60 mm in 12h or 51-81 mm in 24h</p> <p>⚠️ Awareness level red / Utmost vigilance (high risk / significant danger) >45 mm in 6h or >60 mm in 12h or >80 mm in 25h</p> <p>⚠️ Imminent danger / Immediate action (flash floods)</p>	 <p>Based on local flood impact</p>	
 <p>Germany</p>	<p>⚠️ 15 to 25 mm in 1 hour or 20 to 35 mm in 6 h or 25 to 40 mm in 12 h or 30 to 50 mm in 24 h or 40 to 60 mm in 48 h or 60 to 90 mm in 72 h</p> <p>⚠️ 25 to 40 mm in 1 hour or 35 to 60 mm in 6 hours or 40-70 mm in 12 h or 50-80 mm in 24 h or 60-90 mm in 48 h or 90-120 mm in 72 h</p> <p>⚠️ > 40 mm in 1 hour or > 60 mm in 6 h or > 70 mm in 12 h or > 80 mm in 24 h or > 90 mm in 48 h or > 120 mm in 72 h</p>	<p>North Rhine Westphalia Based on local flood impact</p> 	<p>Rhineland-Palatinate Based on return periods</p>  <p>≥ 100 year RP ≥ 50 year RP ≥ 20 year RP ≥ 10 year RP ≥ 2 year RP ≥ 2 year RP</p>

Stay in touch



• **Maarten Smoorenburg**

Maarten.Smoorenburg@deltares.nl



www.deltares.nl



info@deltares.nl



[linkedin.com
/company
/deltares](https://www.linkedin.com/company/deltares)



[@deltares](https://www.instagram.com/deltares)



[facebook.com
/deltaresNL](https://www.facebook.com/deltaresNL)

Deltares