



Deltares

Introducing Deltares and OWM

FEWS Anwendertreffen 2025

Ben van Kester – Head of Operational Water
Management Department – Deltares

Thursday, July 3rd, 2025

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

HOW?

Research and Development

Software and support

Data and Services

Courses and Trainings

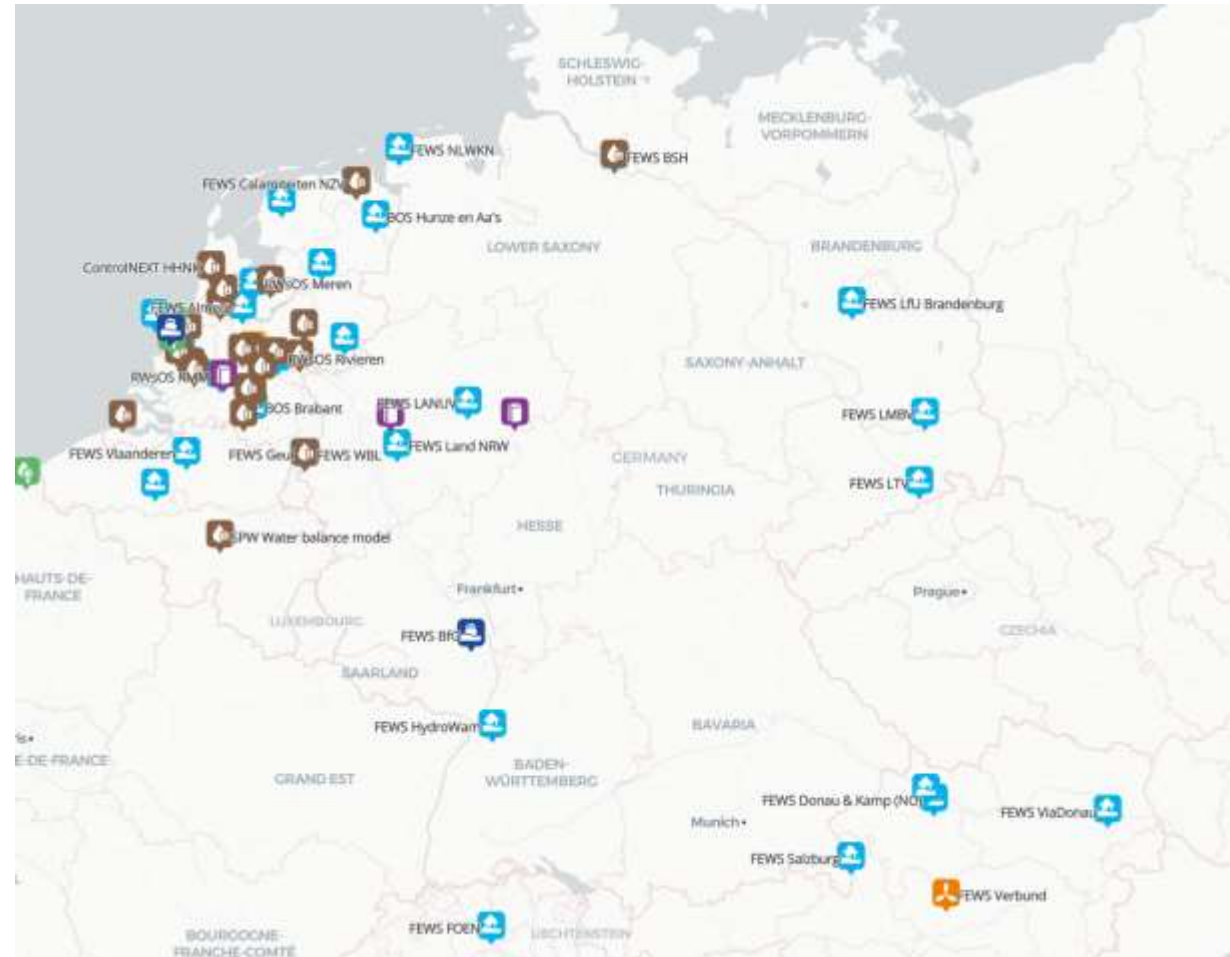
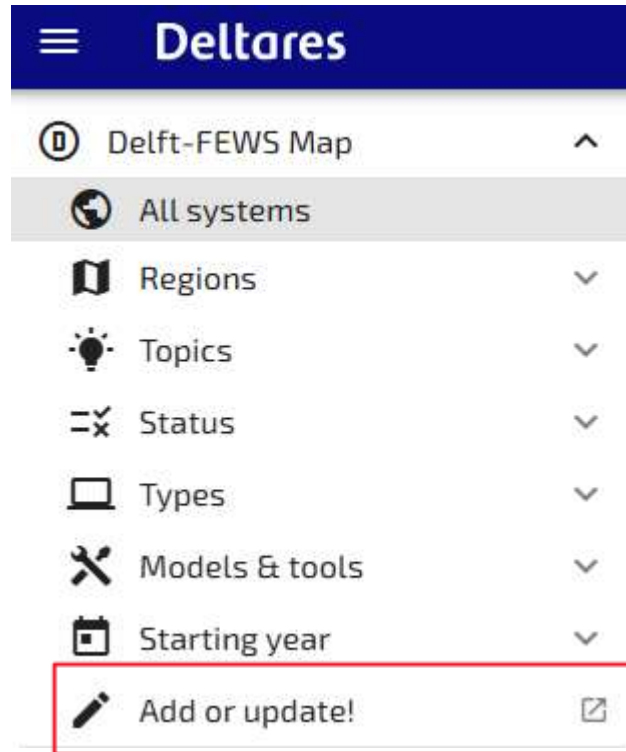
Expert consultancy



As software tools we use FEWS and RTC-Tools



But: Many are still missing



OWM¹ Mission:

**Enabling better forecast,
enabling better decisions**

¹OWM: Deltares' Operational Water Management department

Department OWM strategy – Recap of '24

**Enabling better forecast,
enabling better decisions**

ML & AI

Decision making

Real time control

Improving forecasts

Drought forecasting

Impact forecasting

Urban flooding and nowcasting

Hydrological (flood) forecasting



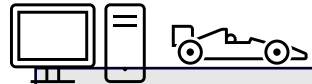
Weather information and pre-processing

Title: Investigate the feasibility of applying an **AI weather forecasting** model for pre-processing within Delft-FEWS

Team: Bob van Rongen & Jing Zhao

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

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



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: **GNN-based urban surrogate model** for flood hazard quantification in urban flood forecasting

Team: Xiaohan Li, Anaïs Couasnon, Peter Nelemans & Ruben Imhoff

Title: Machine Learning Demonstrator for Flood Forecasting using the **emulator of wflow_sbm**

Team: Ali Meshgi, Peter Nelemans, Tycho Bovenschen

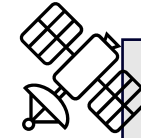
Title: A **GNN** based model for **storm surge forecasting**

Team: Jing Zhao and Martin Verlaan

Title: **Hybrid-AI** for storm surge forecasting

Team: Martin Verlaan

AI for Flood Forecasting



Earth observation and global data for model derivation and initial states

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

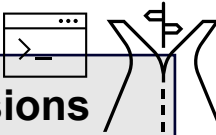
Team: Arjen Haag, Albrecht Weerts, Jaap Schellekens, Arnejan van Loenen, Tjalling de Jong

Title: **Generative AI for bathymetry**

Team: Willem Tromp & Martin Verlaan

Title: **LLMs for Delft-FEWS**

Team: Martijn Kwant, Jurian Beunk, Ruben Dahm & Dave de Koning



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 & Thies Blokhuisen

Title: Hybrid usage of **AI and OR** for **real-time operational management of hydraulic structures** under flood conditions

Team: Ailbhe Mitchell & Bernhard Becker

Operational Forecasting: LobithNN – data-driven model for hourly discharge forecasting at Lobith 48h ahead



- Background

RWsOS has a linear regression model (LobithW) for 2-day ahead daily discharge forecasting at Lobith.

- Objectives

Upgrade the data-driven model to carry out hourly discharge forecasting with a lead time of 48 hours.

Performance of the new model (LobithNN) should be equal or better than LobithW.

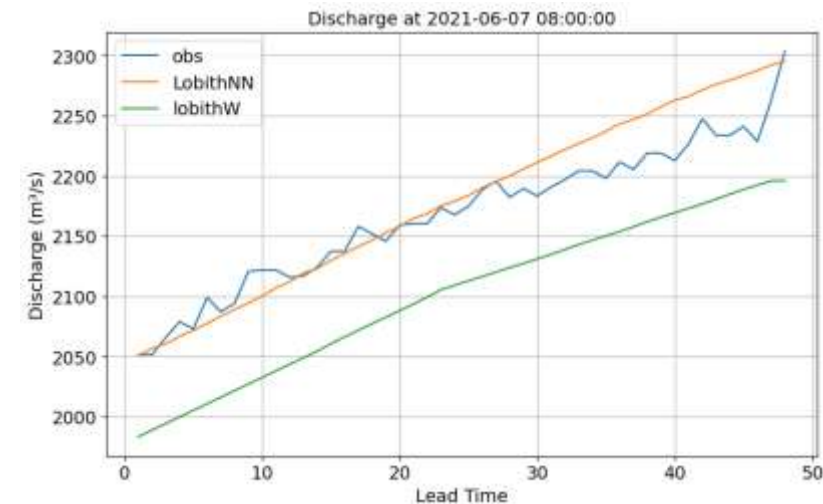
- Method

Model: single layer LSTM

Inputs: upstream station water levels + Lobith historical Q

- ML for operation (MLOps)

Input reliability, model performance robustness, development workflow, etc.



Operationalisation of AI in the flood forecast, warning, response chain¶

Deltares, March 2025: Jan Verkade, Jan Talsma, Jurian Beunk¶

The advance of Artificial Intelligence has resulted in a wave of research in the scientific realm, but when it comes to *operationalising* AI in the hydrological forecasting, warning, and response chain, progress has been far less visible. Many agencies responsible for these chains are now confronted with the question of whether they are taking full advantage of AI's potential. Numerous reports explore AI's capabilities, but there remains a clear gap in *establishing best practices* for its real-world implementation. The challenge now is not just understanding what AI can do, but determining how to integrate it effectively into decision-making and response systems.¶

The present document aims to outline current thinking as to what could comprise such best practice. As the field is highly dynamic, our thinking is likely to change and new versions of this document are likely to come into existence.¶

Scope: flood early warning and 'the four pillars'¶

The present document is about *operationalising* AI-based technology in the forecast, warning, and response chain. It is hoped that it provides some guidance in the decisions that need to be taken: which processes can benefit from AI? What are the expected benefits? What concerns should be addressed? What are the requirements to the technologies? What are the implications, in legal terms, in terms of maintenance and development, in terms of cost?¶

The present document discusses *flood* early warning systems. The findings may well apply to early warning systems for other hazards than floods. However, the 'flood' scoping will keep the present document as concise as possible. Starting point for the analysis that is presented in the present document is the "four pillars of early warning systems" design:¶

1. → Risk awareness¶
2. → Monitoring, detection and forecasting¶
3. → Dissemination and communication¶
4. → Preparedness and response capability¶



DSD-INT 2025

DSD-INT 2025 – on-premises sessions Deltares Campus Delft				
10 NOV	11 NOV	12 NOV	13 NOV	14 NOV
Delft3D User Days 10 full plenarys & 7 smaller sessions • Delft3D • Delft3D • Delft3D • Delft3D	Delft3D User Days 10 full plenarys & 7 smaller sessions • Delft3D • Delft3D • Delft3D • Delft3D	Delft3D User Days 10 full plenarys & 7 smaller sessions • Delft3D • Delft3D • Delft3D • Delft3D	Delft3D User Days 10 full plenarys & 7 smaller sessions • Delft3D • Delft3D • Delft3D • Delft3D	Delft3D User Days 10 full plenarys & 7 smaller sessions • Delft3D • Delft3D • Delft3D • Delft3D
Delft3D Stream 2025				

DSD-INT 2025 - Hydrology Software Days Deltares Campus Delft				
17 NOV	18 NOV	19 NOV	20 NOV	21 NOV
Hydrology Hydrology Hydrology Hydrology	Hydrology Hydrology Hydrology Hydrology	Hydrology Hydrology Hydrology Hydrology	Hydrology Hydrology Hydrology Hydrology	Hydrology Hydrology Hydrology Hydrology
Hydrology Stream 2025				

Delft-FEWS User Days and related sessions Deltares Campus Delft				
3 NOV	4 NOV	5 NOV	6 NOV	7 NOV
Delft-FEWS Delft-FEWS Delft-FEWS	Delft-FEWS Delft-FEWS Delft-FEWS	Delft-FEWS Delft-FEWS Delft-FEWS	Delft-FEWS Delft-FEWS Delft-FEWS	Delft-FEWS Delft-FEWS Delft-FEWS
Delft-FEWS Stream 2025				

ON-INTERFILL ACCESS
ONLINE ACCESS
Courses / hands-on training / project meetings
Dinner

DSD-INT 2025

09 Sep 2025 - 08 Dec 2025

08:00 - 17:00 (CET)

Online / Delft, Netherlands

Welcome to the DSD-INT 2025!

Deltares

Delft Software Days

September - November 2025

The world is currently experiencing a huge digital transformation. Our simulation products, such as the Delft3D-FM Suite, the D-Geo Suite and the IMCD Suite, and our 24/7 operational platform Delft-FEWS are more important than ever, as they keep the user community at the forefront of innovation in unprecedented times.

Join us to exchange your software experiences and engage in evolved networking opportunities. In September - November, we will offer both on-premises programmes and an online programme filled with interactive workshops, symposia, user days and courses, in total 40+ sessions. All workshops, symposia, user days and break-out sessions are free of charge.



REGISTRATION

1. Sign in (top right corner) using your MyDeltares account or register first if you don't have an account yet.
Note: If you already have a DSD-INT account but not yet a MyDeltares account, simply click "Forgot Password" to initiate the setup of your MyDeltares account.
After completing the password reset process, you'll be able to log in seamlessly.

2. Click "GO TO CART" button for your session of interest.

3. Go to your "Shopping cart" (top right corner) to finalise your registration.

If you come across any problems with the registration, please contact our team at mydeltares@deltares.nl

LOGIN / REGISTER

<https://softwaredays.deltares.nl/program>

International FEWS userdays

- Upcoming Events

03 Jul 2025

Regionales Delft-FEWS
Anwendertreffen 2025

03 July 2025 - 04 July 2025
beim Ruhrverband in Essen, Germany



03 Sep 2025

Delft-FEWS User Days Australia 2025

03 September 2025 - 05 September 2025
Melbourne



24 Sep 2025

Delft-FEWS 2025.01 New Features
Webinar, 4 PM CET (GMT+1)

24 September 2025
16:00 - 17:00 CET (GMT+1)
online



02 Oct 2025

FEWS Community Talk 11 - October 2,
2025

02 October 2025
16:00 - 17:00 PM (CET)
online



15 Oct 2025

Latin American Delft-FEWS Users
Meeting

15 October 2025 - 16 October 2025
Argentina



05 Nov 2025

Delft-FEWS international user meeting
2025

05 November 2025 - 06 November 2025
Deltares and online



Sign up for the sessions and presentations

05 November 2025



ON-SITE Delft-FEWS User Days 2025 (Day 1)

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



ONLINE Delft-FEWS User Days 2025 (Day 1)

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

06 November 2025



ON-SITE Delft-FEWS User Days 2025 (Day 2)

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



ONLINE Delft-FEWS User Days 2025 (Day 2)

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

Or: Join workshops or courses on FEWS and RTCTools

03 November 2025



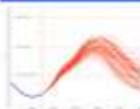
Delft-FEWS - Basic Configuration Course
09:00 - 17:00 (GMT+1) | € 1259

07 November 2025



Delft-FEWS - Advanced Configuration Training
09:00 - 13:00 (GMT+1) | € 360

04 November 2025



Probabilistic Forecasting - Short Course
09:00 - 16:30 (GMT+1) | € 629

13 November 2025



Delft-FEWS - Web Services Course
14:00 - 17:30 (GMT+1) | € 360

17 November 2025



RTC-Tools - Course
13:00 - 17:00 (GMT+1) | € 629

20 November 2025



Delft-FEWS - Water Quality Configuration Course
09:00 - 13:00 (GMT+1) | € 360

Or other parts of Deltares' fields and software suite

- Delft3D-FM Hydrodynamic and/or Morphodynamic Modelling
 - Wflow Hydrological Modelling
 - Xbeach – Hydrodynamics and morphology
 - IMOD – MODFLOW groundwater modelling
 - WANDA – Pipeline systems design and control
 - Many more
-
- Feel free to reach out to me or visit: <https://academy.deltares.nl/en/home>