



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



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

The screenshot shows the Delft-FEWS Map interface. On the left, a sidebar lists navigation options: Delft-FEWS Map, All systems (selected), Regions, Topics, Status, Types, Models & tools, Starting year, and Add or update! (with a red border). The main area is a map of Europe with numerous monitoring systems plotted. Labels on the map include: SCHLESWIG-HOLSTEIN, MECKLENBURG-VORPOMMERN, BRANDENBURG, SAXONY-ANHALT, GERMANY, THURINGIA, CZECHIA, HESSE, LUXEMBOURG, SAARLAND, BAVARIA, BADEN-WÜRTTEMBERG, MUNICH, AUSTRIA, BURGUNDY, GRAND-EST, LORRAINE, HAUTS-DE-FRANCE, and ILE-DE-FRANCE. Specific monitoring systems labeled include: FEWS Calandkerten NZW, FEWS NLWKN, FEWS BSH, FEWS LfU Brandenburg, FEWS LMSV, FEWS LTV, FEWS Vlaanderen, FEWS Rijn, FEWS Meren, FEWS Rivieren, FEWS Brabant, FEWS LANUV, FEWS Land NRW, FEWS Geul, FEWS WIL, SPW Water balance model, FEWS BRF, FEWS HydroWam, FEWS Donau & Kamp (NOT), FEWS Salzburg, FEWS ViaDona, FEWS Verbund, FEWS POEN, and FEWS HICHTENSTEIN.

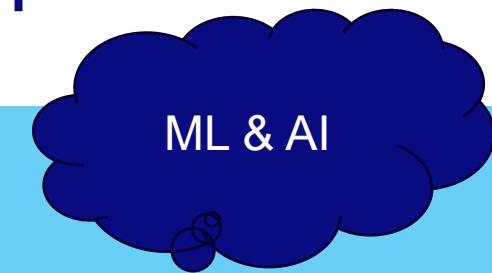
OWM¹ Mission:

**Enabling better forecast,
enabling better decisions**

¹OWM: Deltares' Operational Water Management department

Department OWM strategy – Recap of '24

**Enabling better forecast,
enabling better decisions**



Decision making

Real time control

Improving forecasts

Drought forecasting

Impact forecasting

Urban flooding and nowcasting

Hydrological (flood) forecasting



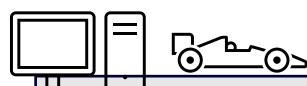
Weather information and pre-processing

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

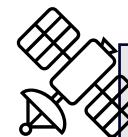
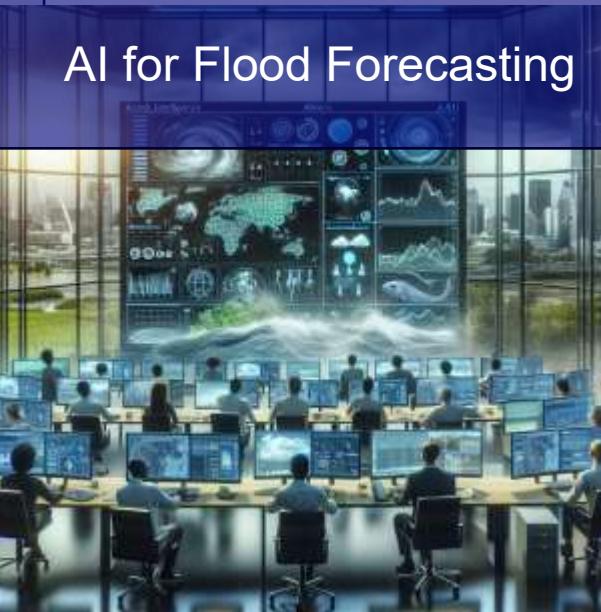
Title: A **GNN** based model for **storm surge forecasting**

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**

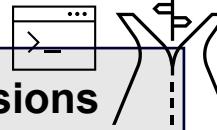
Team: Arjen Haag, Albrecht Weerts, Jaap Schellekens, Arnejan van Loenen, Tjalling de Jong

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 Blokhuijsen

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

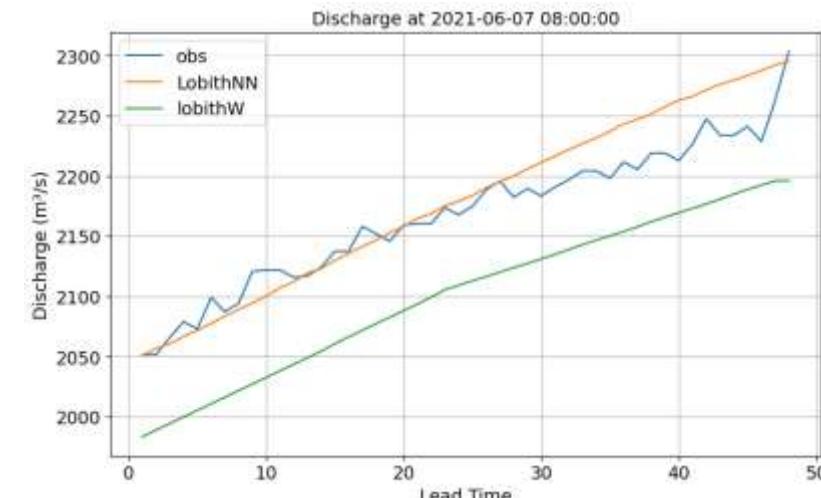
Model: single layer LSTM

Inputs: upstream station water levels + Lobith historical Q

- ML for operation (MLOps)

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

Deltimes



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'¶

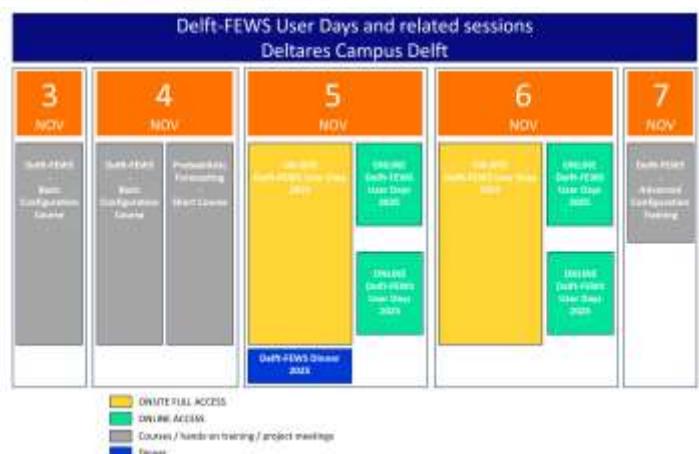
The present document is about operationalising AI-based technology in the forecast, warning, and response chain. It is hoped that it provides some guidance in the decisions that need to be taken: which processes can benefit from AI? What are the expected benefits? What concerns should be addressed? What 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
10 Nov 2025 - 18 Nov 2025
0800 - 17:00 (CET)
Deltarès / Delft, Netherlands

Welcome to the DSD-INT 2025!

The world is currently experiencing a huge digital transformation. Our simulation products, such as the Deltarès-FM Suite, the D-ICE2 Suite and the IMOD 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 excellent 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 dinner-level sessions are free of charge.



REGISTRATION

- Sign in (use right corner) using your MyDeltarès account or register here if you don't have an account yet.
Note: If you already have a DSSD or DSSD account but not yet a MyDeltarès account, simply click [Create Account](#) to create the info of your MyDeltarès account.
- After completing the password reset process, you'll be able to log in successfully.
- Click >ADD TO CART < button for your session of interest.
- Go to your "Shopping cart" (use right corner) to finalize your registration.

If you come across any problems with the registration, please contact our team at registrar@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

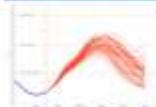
07 November 2025



[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>