

Delft-FEWS Stable 2023.01 **New features**

Gebruikersdag Delft-FEWS 2023

Delft-FEWS Product Management

Marcel Ververs and Gerben Boot

Introduction...

- Welcome
- What's new in 2023.01?
- Events & webinars
- Vision & Roadmaps: update & outlook
- Outlook to 2023.02

As usual: [Links for more info](#) 



Delft-FEWS organisation

- **Delft-FEWS Product Management Team**



Ilonka ten Broeke

focus: community



Gerben Boot

focus: developments



Marcel Ververs

focus: support



fews-pm@deltares.nl

- **NEW Delft-FEWS Developers**



Michael Topsom

Started: November 2022



Anass Drif

Started: February 2023



Delft-FEWS 2023.01 Benchmarks



±115 new features



± 150 bugs reported (**100+** fixed)



11 new import modules



13 new features in FEWS-webservices



WFS as a new service



Tomcat 10 migration



Web OC configuration



Migrated to **Java 17**



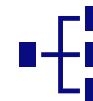
Many new and **updated** 3rd party libraries



10+ improvements to the open archive



Integration with Azure DevOps

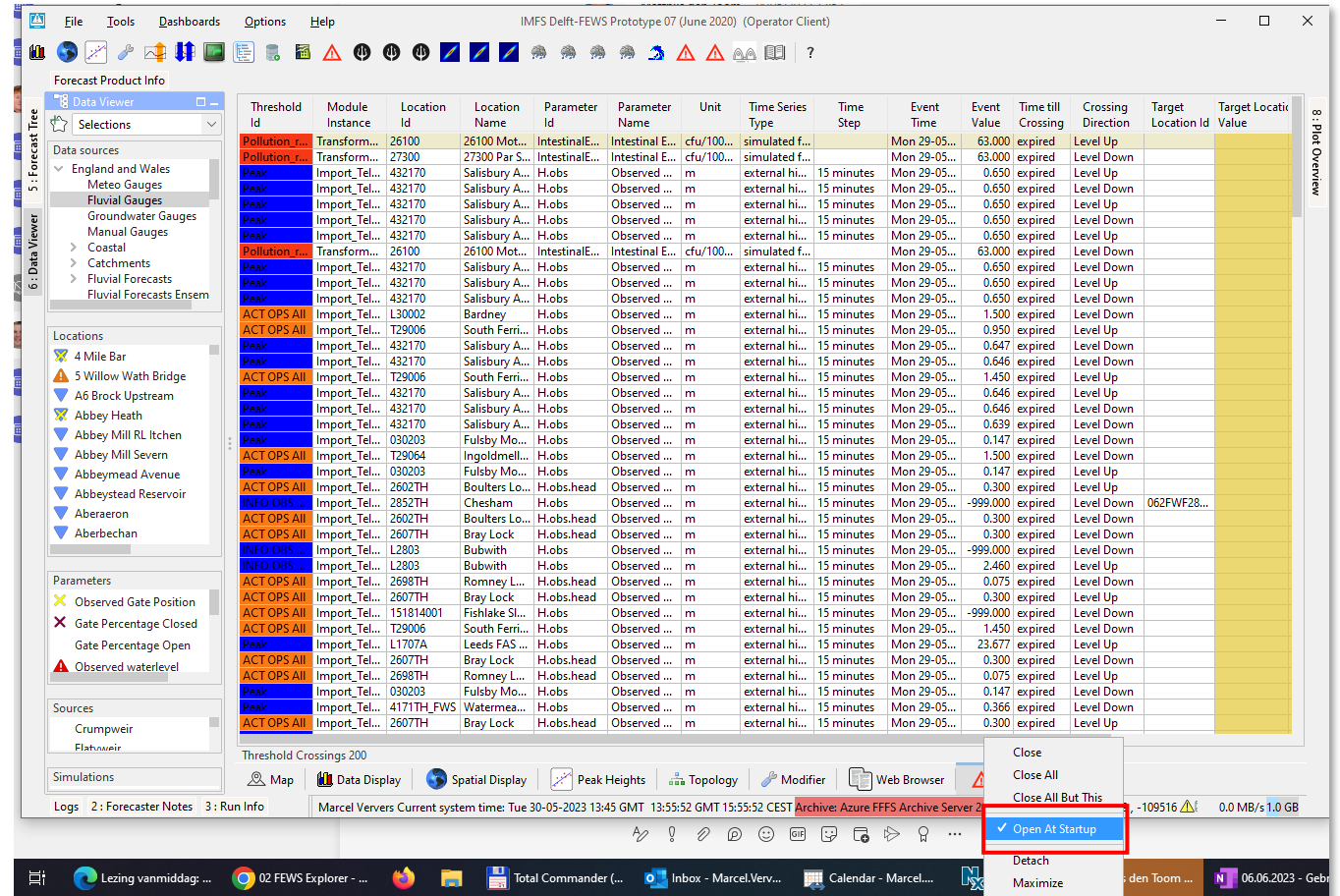


continuous improvements to what-if functionality



Explorer

- "Open At Startup" menu item
- Only available when not already opened at start-up
- Last selected tab also saved in user settings



- 'powerpoint' approach for aligning
- 'Shift + space' will toggle between free dragging / resizing and fixed steps





Workflow navigator

ModuleConfigFiles/LSTM_Vecht_Prep_Forecast.xml

Next difference Previous difference Switch split

Forecast Tree

5: Forecast Tree

6: Data Viewer

Configured

```
14 <data monthofYear="September" value="3"/>
15 <data monthofYear="October" value="2"/>
16 <data monthofYear="November" value="1"/>
17 <data monthofYear="December" value="0.2"/>
18 </inputProfile>
19 <type>cyclic</type>
20 <outputVariable>
21 <timeSeriesSet>
22 <moduleInstancel>MODULE_INSTANCE_IDS</moduleInstancel>
23 <valueType>scalar</valueType>
24 <parameterId>E.profile</parameterId>
25 <locationId>N_Backup</locationId>
26 <timeSeriesType>temporary</timeSeriesType>
27 <timeStep unit="day" timeZone="GMT+1"/>
28 <relativeViewPeriod unit="day" start="-365" end="35"/>
29 <readWriteMode>add originals</readWriteMode>
30 </timeSeriesSet>
31 </outputVariable>
32 </timeSeries>
33 </profile>
34 </transformation>
35 <transformation id="interpolate typical profil evap">
36 <interpolationSerial>
37 <linear>
38 <inputVariable>
39 <timeSeriesSet>
40 <moduleInstancel>MODULE_INSTANCE_IDS</moduleInstancel>
41 <valueType>scalar</valueType>
42 <parameterId>E.profile</parameterId>
43 <locationId>N_Backup</locationId>
44 <timeSeriesType>temporary</timeSeriesType>
45 <timeStep unit="day" timeZone="GMT+1"/>
46 <relativeViewPeriod unit="day" start="-365" end="35"/>
47 <readWriteMode>add originals</readWriteMode>
```

Resolved

```
14 <data monthofYear="September" value="3"/>
15 <data monthofYear="October" value="2"/>
16 <data monthofYear="November" value="1"/>
17 <data monthofYear="December" value="0.2"/>
18 </inputProfile>
19 <type>cyclic</type>
20 <outputVariable>
21 <timeSeriesSet>
22 <moduleInstancel>LSTM_Vecht_Prep_Forecast</moduleInstancel>
23 <valueType>scalar</valueType>
24 <parameterId>E.profile</parameterId>
25 <locationId>N_Backup</locationId>
26 <timeSeriesType>temporary</timeSeriesType>
27 <timeStep unit="day" timeZone="GMT+1"/>
28 <relativeViewPeriod unit="day" start="-365" end="35"/>
29 <readWriteMode>add originals</readWriteMode>
30 </timeSeriesSet>
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42 <parameterId>E.profile</parameterId>
43 <locationId>N_Backup</locationId>
44 <timeSeriesType>temporary</timeSeriesType>
45 <timeStep unit="day" timeZone="GMT+1"/>
46 <relativeViewPeriod unit="day" start="-365" end="35"/>
47 <readWriteMode>add originals</readWriteMode>
```

Close

Deltares

- Project Manager → webapplication to kick-off Azure DevOps pipeline
- Build a new system based on Delft-FEWS images in Azure Cloud
- Delete an existing system in Azure Cloud
- Using Kubernetes, Docker images and GIT repository

Delft-FEWS Project Manager - Yazor

System Status

Dashboard

Logout
Rudie.Ekkelenkamp@deltares.nl

Timezone: GMT
© Deltares
Build version: development_2023.01 (119556)
Build date: March 29 2023, 03:34 PM

Start

Stop

Logfiles

Projects

failed
mc00

0 Running and 0 Pending Tasks

0 Active Users

mc00 Components Status

Task Run Manager Status
failed

MC Rolling Barrel Status
failed

System Alserter Status
failed

FSS Status
Failed

MC ID	FSS Group ID	FSS ID	Status	Running Workflow ID	Last Workflow Status	Last Run Workflow ID	Last Task Run Dispatch Time	Last Heartbeat
mc00	windows	201	Fss Killed					14/04/2023 19:38:24
mc00	windows	261	No Heartbeat					15/04/2023 19:34:56
mc00	windows	281	No Heartbeat					15/04/2023 19:45:17
mc00	windows	301	Fss Killed		Unknown	RunHistoric	17/04/2023 08:07:54	17/04/2023 12:44:24

Open Archive

- Area selection automatically
- History of data edits in archive
- Import grids as references

HyFS-SA (FEWS-2021.01-1.0.0) (Stand alone)

search and download datasets | create a new event | search and download events | Upload to Archive

Upload data to Archive

time series is between

Tue 07-02-2023 02:45:00

Fri 17-02-2023 02:45:00

Check availability in catalog

Upload to archive

Location ^	Area	Parameter	Qualifiers	Time step	Edited values	Period in archive
Boat Harbour (Rous River) - H058204	tweed, NSW	Calculated Discharge (Q.rated)	15m	15 minutes		
Chillingham - H058011	tweed, NSW	Calculated Discharge (Q.rated)	15m	15 minutes		
Kynnumboon - H058051	tweed, NSW	Calculated Discharge (Q.rated)	15m	15 minutes		

search and download datasets | create a new event | search and download events | Upload to Archive

Search for events

area test

start time 12-31-1899 18:00:00

end time 07-13-2018 09:00:00

thresholds No threshold selected

import grids as references

Summary of archive data

simulated data: --

observed data: --

parameters in observed data: --

locations in observed data: --

external forecast data: --

messages files: --

rating curves files: --

configuration files: --

report files: --

snapshots: --

name	description	creation time ^	start time	end time	area	event type
anotherTest	anotherTest	04-24-2021 13:01:17	07-12-2018 09:00:00	07-13-2018 09:00:00	test	Review event

Open Archive – Seamless Integration

Search and select forecasts

☒ search period
 start time
end time

☒ nr of recent forecasts

☐ include historical run

☐ persist selection

☒ search in archive

search

☐ Select all	workflow	time	description	dispatch time	status
☐	Calculate_RateOfRise	Fri 02-06-2023 09:45	Rate of Rise on Observed Levels	Fri 02-06-2023 09:45	
☐	Calculate_RateOfRise	Fri 02-06-2023 09:30	Rate of Rise on Observed Levels	Fri 02-06-2023 09:30	
☐	UK_MeteoProcessing_Nowcast	Fri 02-06-2023 09:30	Nowcast rainfall processing	Fri 02-06-2023 09:46	
☐	Calculate_RateOfRise	Fri 02-06-2023 09:15	Rate of Rise on Observed Levels	Fri 02-06-2023 09:15	
☐	UK_MeteoProcessing_Nowcast	Fri 02-06-2023 09:15	Nowcast rainfall processing	Fri 02-06-2023 09:31	
☐	UK_MeteoProcessing_Nowcast	Fri 02-06-2023 09:00	Nowcast rainfall processing	Fri 02-06-2023 09:21	
☐	Calculate_RateOfRise	Fri 02-06-2023 09:00	Rate of Rise on Observed Levels	Fri 02-06-2023 09:00	
☐	UK_MeteoProcessing_Nowcast	Fri 02-06-2023 08:45	Nowcast rainfall processing	Fri 02-06-2023 09:06	
☐	Calculate_RateOfRise	Fri 02-06-2023 08:45	Rate of Rise on Observed Levels	Fri 02-06-2023 08:45	
☐	UK_MeteoProcessing_Nowcast	Fri 02-06-2023 08:30	Nowcast rainfall processing	Fri 02-06-2023 08:46	
☐	External	Fri 02-06-2023 06:00	-	-	
☐	External	Fri 02-06-2023 03:00	-	-	
☐	External	Fri 02-06-2023 00:00	-	-	
☐	External	Thu 01-06-2023 21:00	-	-	
☐	External	Thu 01-06-2023 18:00	-	-	

Time zero: Fri 02-06-2023 10:00

Forecast length: default

edit run options

- Felton UG Coquet
- Fenay Bridge
- Fence Bridge Gate RL
- Fender Lateral Wirral
- Fenny Bridges

Map

Data Display

Spatial Display

Peak Heights

Topology

Modifier

Web Browser

Events

OK

Close

Apply

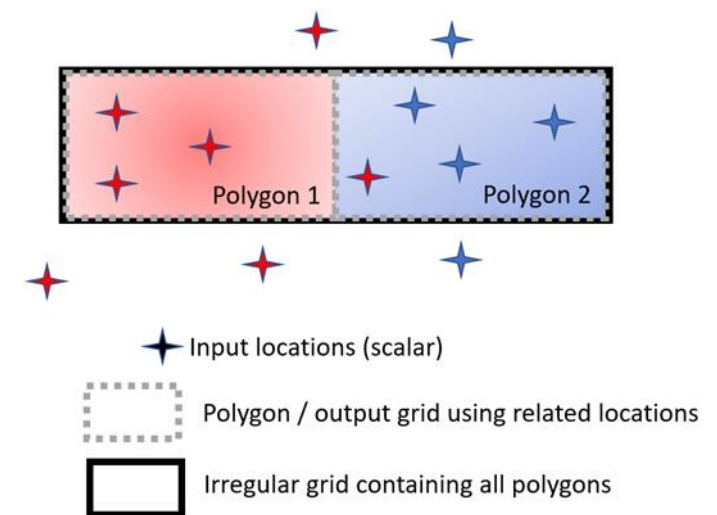
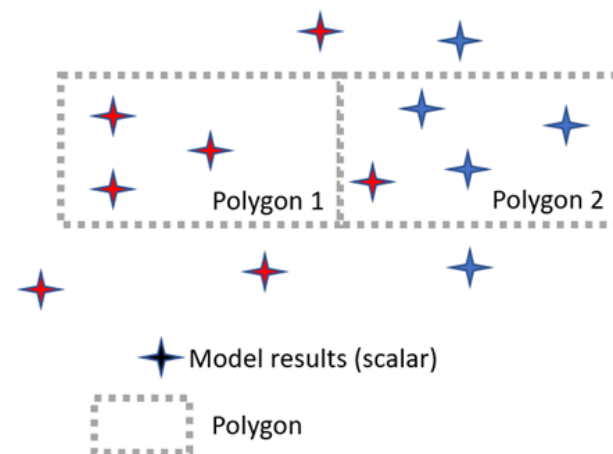
Transformations

- New transformation to write values to output series when threshold values are crossed on input series
- Use case: threshold crossing one location should lead to warnings for another location
- Multi-valued attributes consisting of different output locationId's and different threshold levels

```
<transformation id="MultipleOutputLocationThresholdsDown">
  <multipleLocationAttributes>
    <multipleOutputLocationThresholds>
      <inputVariable>
        <variableId>input</variableId>
      </inputVariable>
      <thresholdValueAttributeId>thresholdValue</thresholdValueAttributeId>
      <crossingDirection>down</crossingDirection>
      <filterAttribute id="filter" value="include"/>
      <outputValue>1</outputValue>
      <outputLocationAttributeId>outputId</outputLocationAttributeId>
      <outputVariable>
        <variableId>output</variableId>
      </outputVariable>
    </multipleOutputLocationThresholds>
  </multipleLocationAttributes>
</transformation>
```

Transformations

- New transformation to convert point model results to irregular grid
- For each output cell:
 - find polygon that contains grid cell
 - find related locations for polygon
 - lookup resolved locations in input data
 - copy weighted average (=inverse distance) of found input to output grid cell



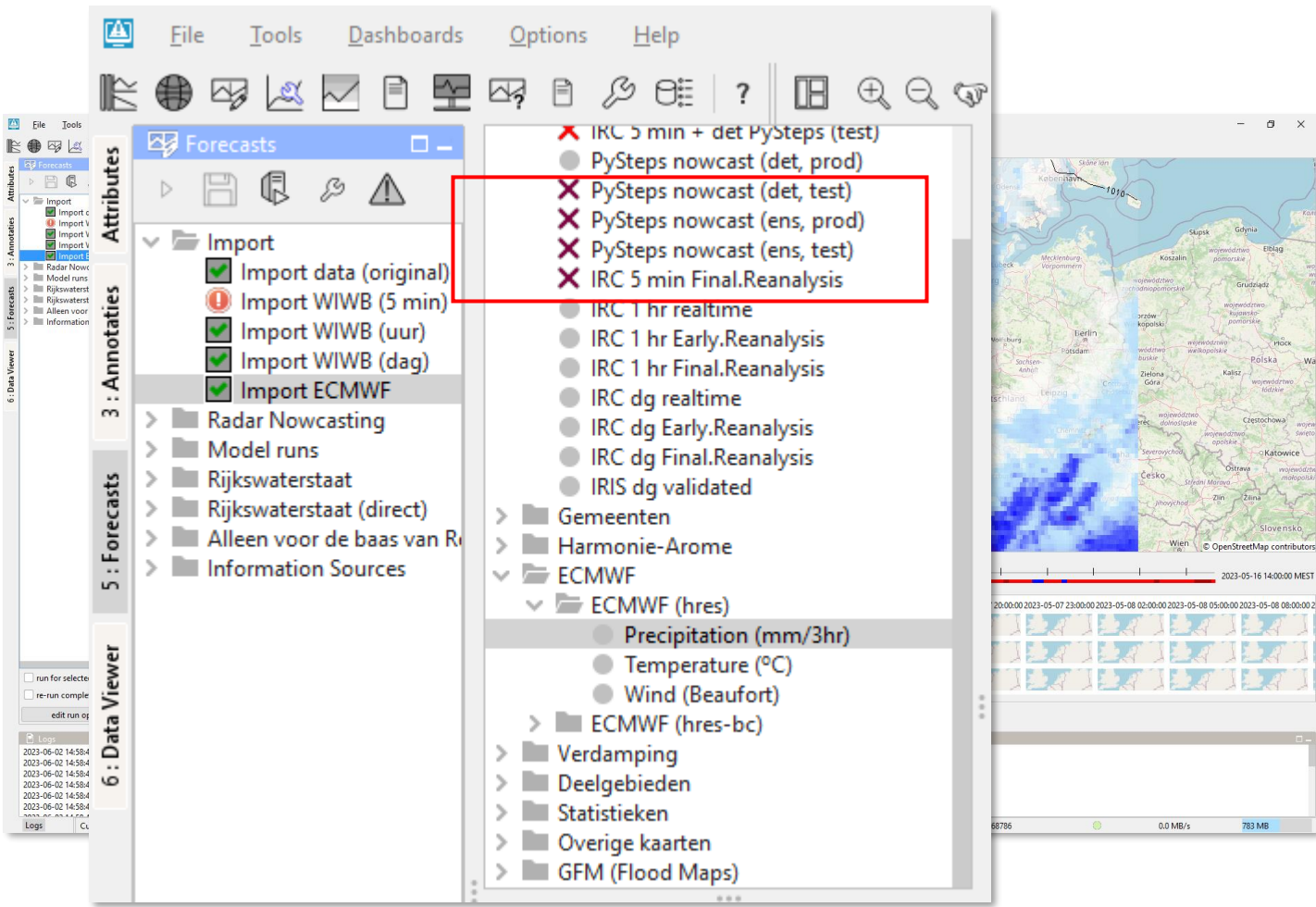
IFD - Topology

- From the **Topology** you can open a **Spatial Display** and select a specific groupId and plotId from the tree.
- **<gridDisplaySelection>** element

Node in Topology.xml:

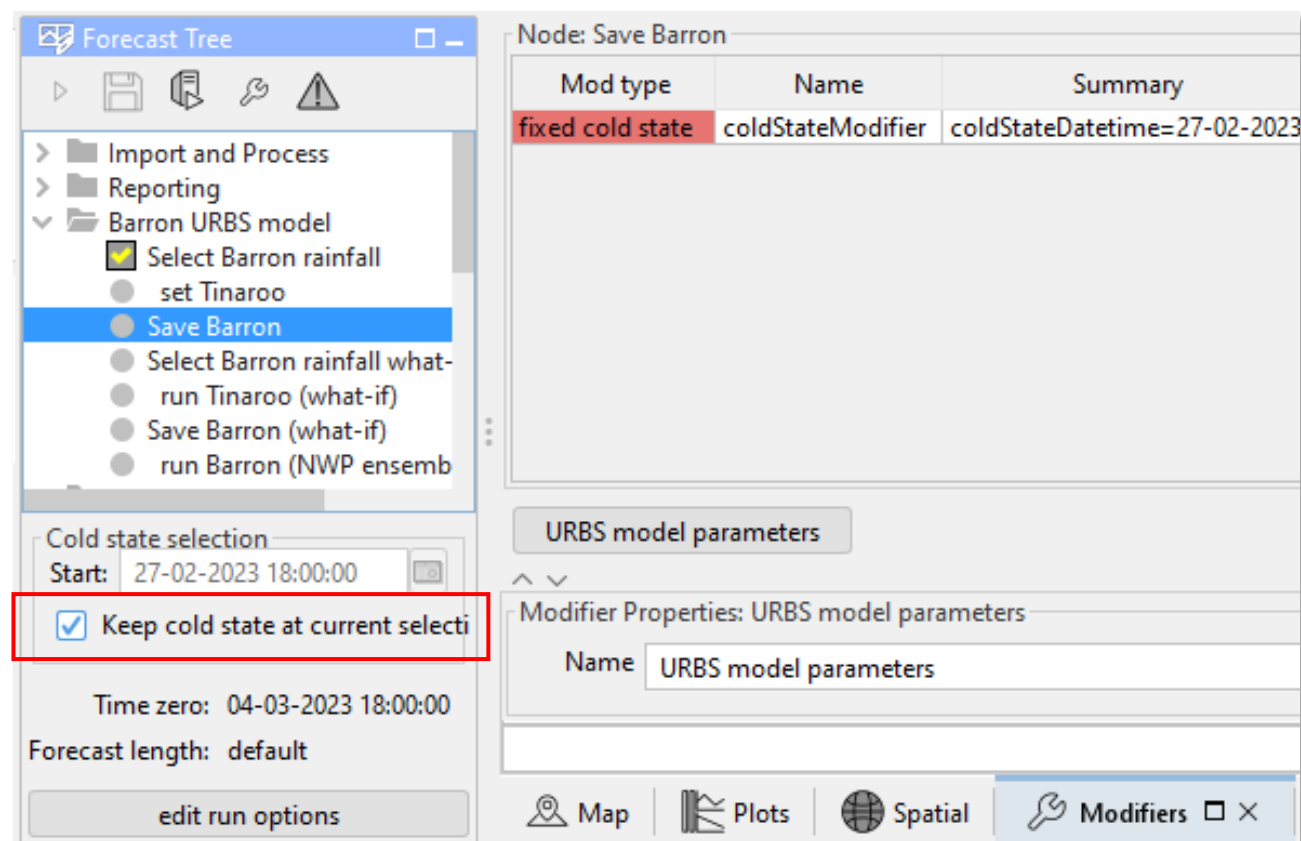
```

<node id="node-id" name="Node Name">
  <workflowId>workflow</workflowId>
  <gridDisplaySelection>
    <groupId>group name</groupId>
    <plotId>plot name</plotId>
  </gridDisplaySelection>
</node>
  
```



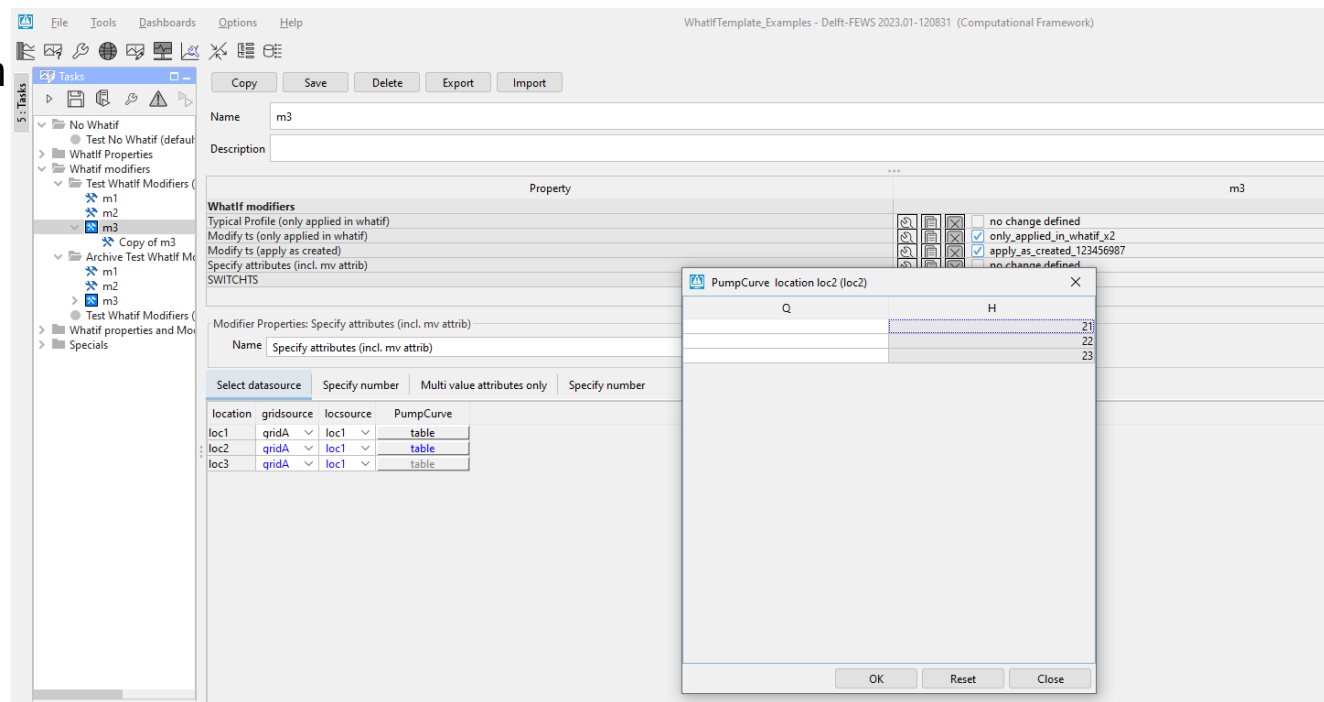
IFD - Topology

- From the **Topology** you can open a **Spatial Display** and select a specific groupId and plotId from the tree.
- **<gridDisplaySelection>** element
- **Fixed** coldstate start time/date



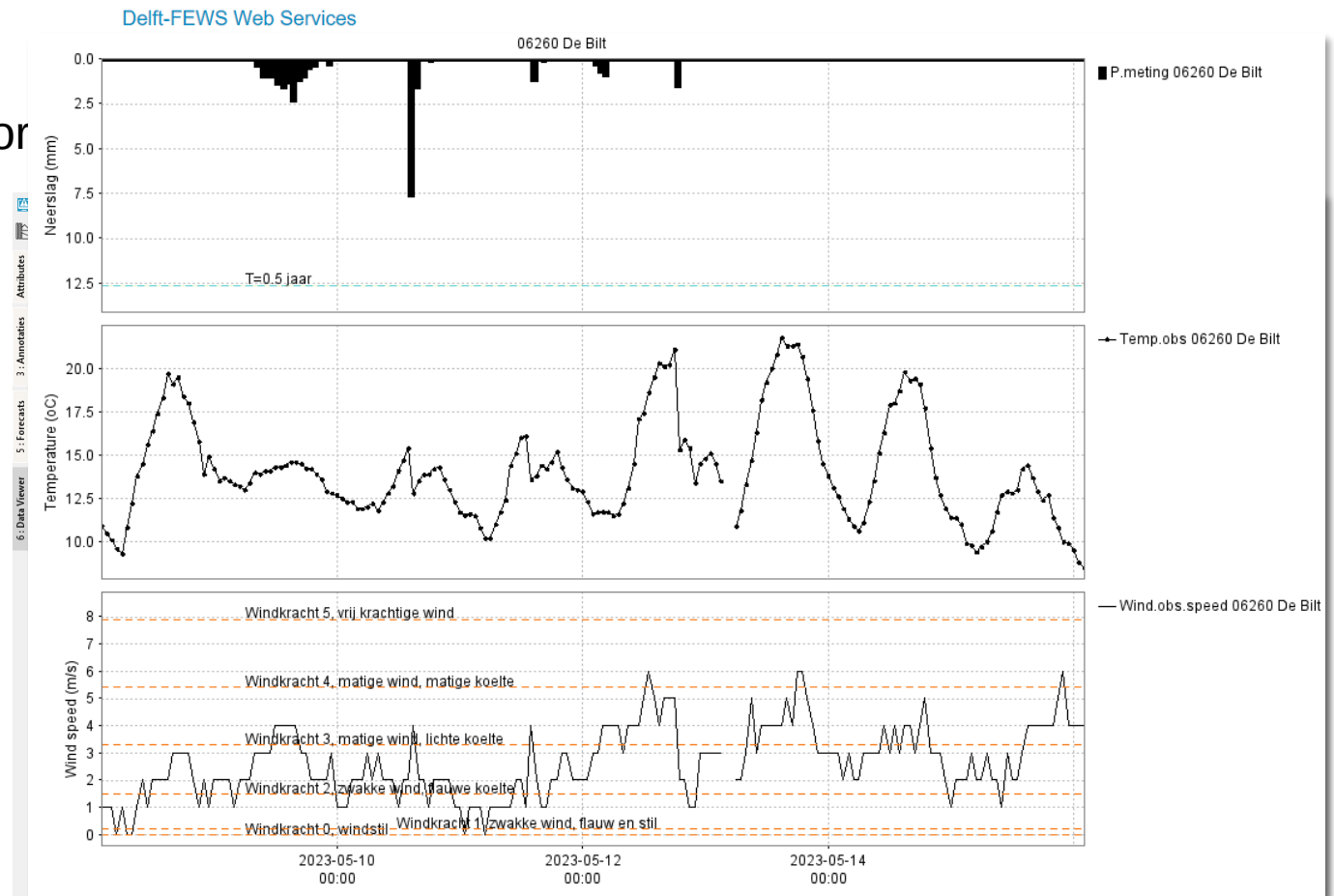
WhatIf Editor (Scenarios)

- New WhatIf **ModifierType**
 - “apply according to creation method”
 - Modifier created in ModifierDisplay → apply in regular forecast workflow only
 - Modifier created in Whatif Editor → apply in what-if workflows only
- The **Import button** is now always enabled in the What-if editor
- Improvements:
 - Robustness (general)
 - Consistency (icons)
 - Logic (automatic re-run of sub workflows)
 - Visibility of modifiers (type of node)
 - [Documentation](#)



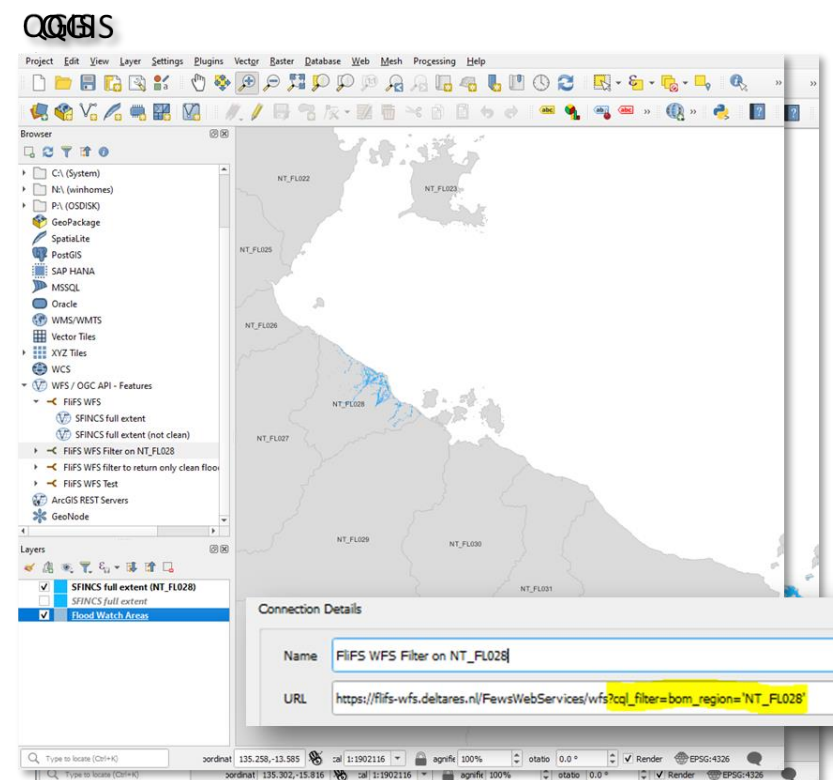
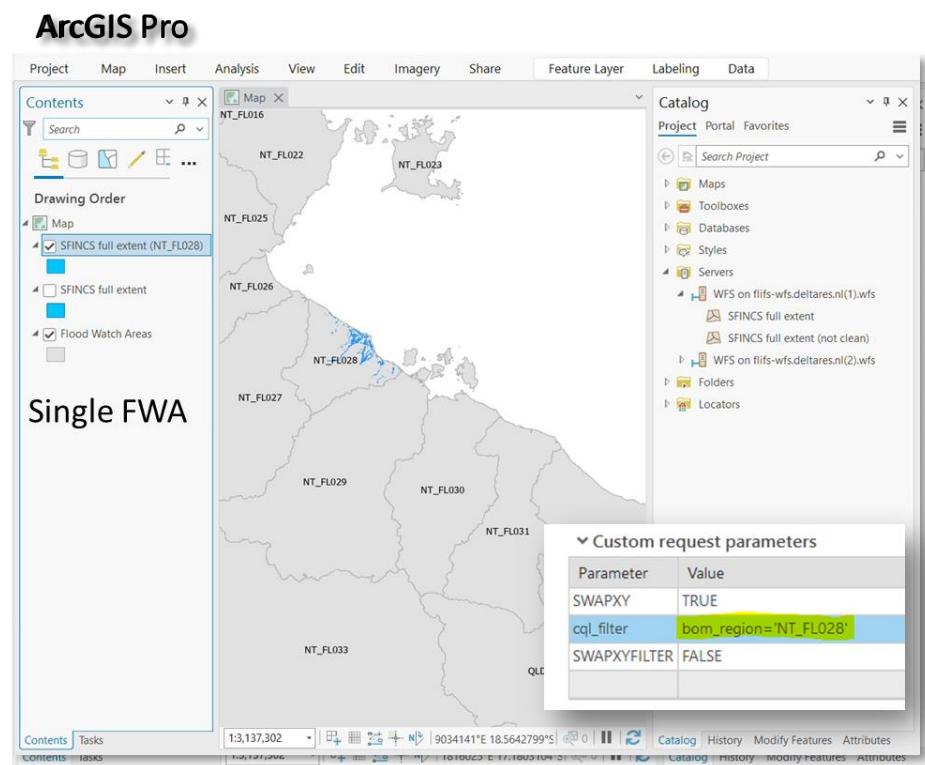
FEWS Web services

- Web Feature Service (WFS) 1.0
- Locations endpoint: get GeoJSON file for associated polygons
- Get **plot** directly in PNG (thumbnails)
- **Rating Curve** endpoints
 - Convert values (POST)
 - Add key-value pairs (for recognizability)
 - Retrieve headers only
- **EnsembleMemberIds** endpoint
- SOAP → REST migration (NWS)
 - GetLastModificationTime
 - Get timeseries in binary format
 - Get Cold/Warm States
 - Enabling UnitConversions
 - Get GUI selections

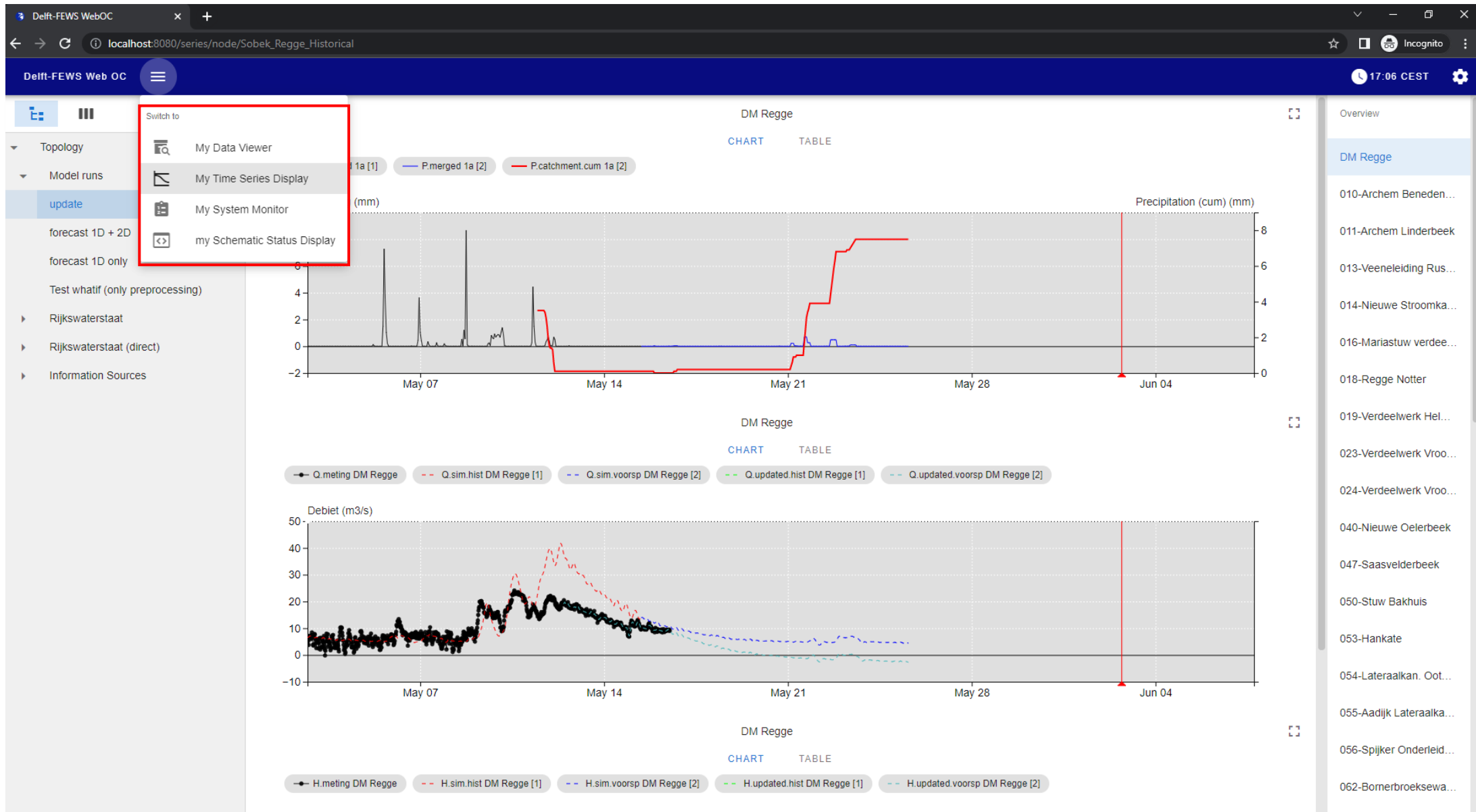


Web Feature Service (WFS) 1.0

- The FEWS Web Feature is the Delft-FEWS implementation of the **OpenGIS WFS 2.0 OGC** standard
- WFS complimentary to WMS service to provide **underlying vector data**
- It allows requesting **GML3** or **GeoJSON** data for plots that have been configured in the FEWS grid display.

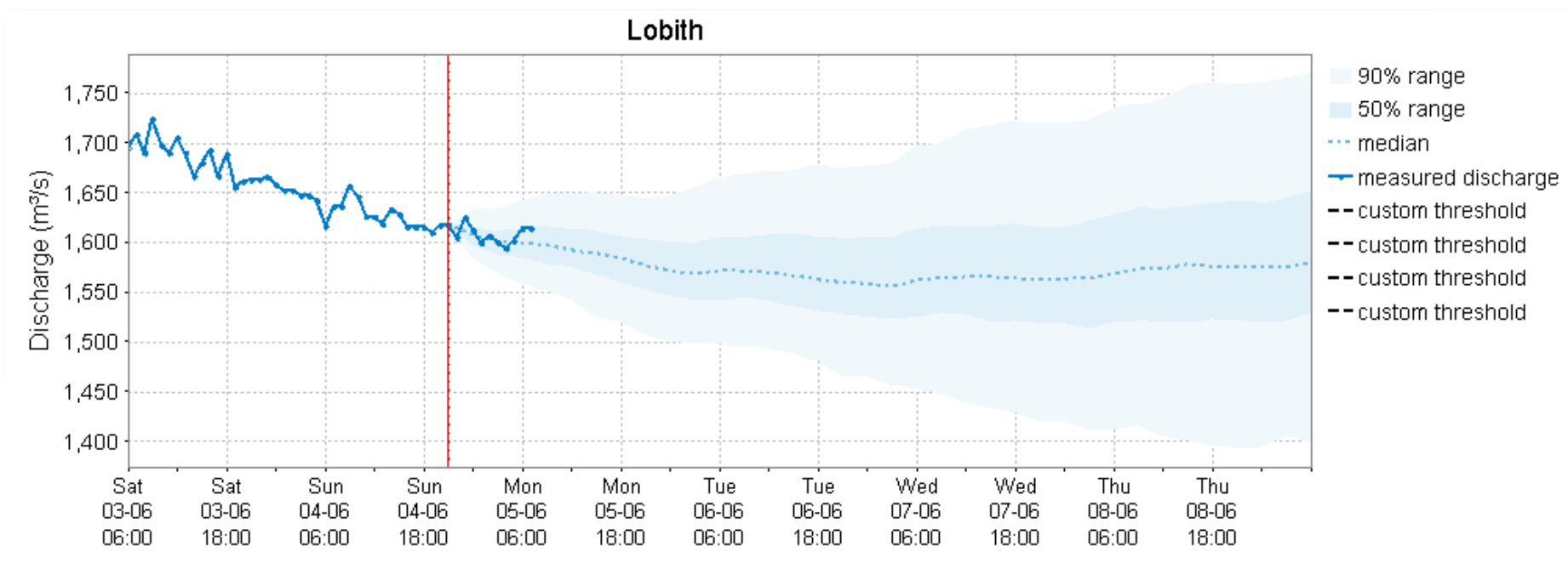


Web OC



Report Module

- [THRESHOLDCROSSINGLABEL](#) function added → add threshold crossing information for the specific threshold.
- Add [custom class](#) to “RowPerLocation” table to define style/appearance
- [Legend](#) improved for ensemble series

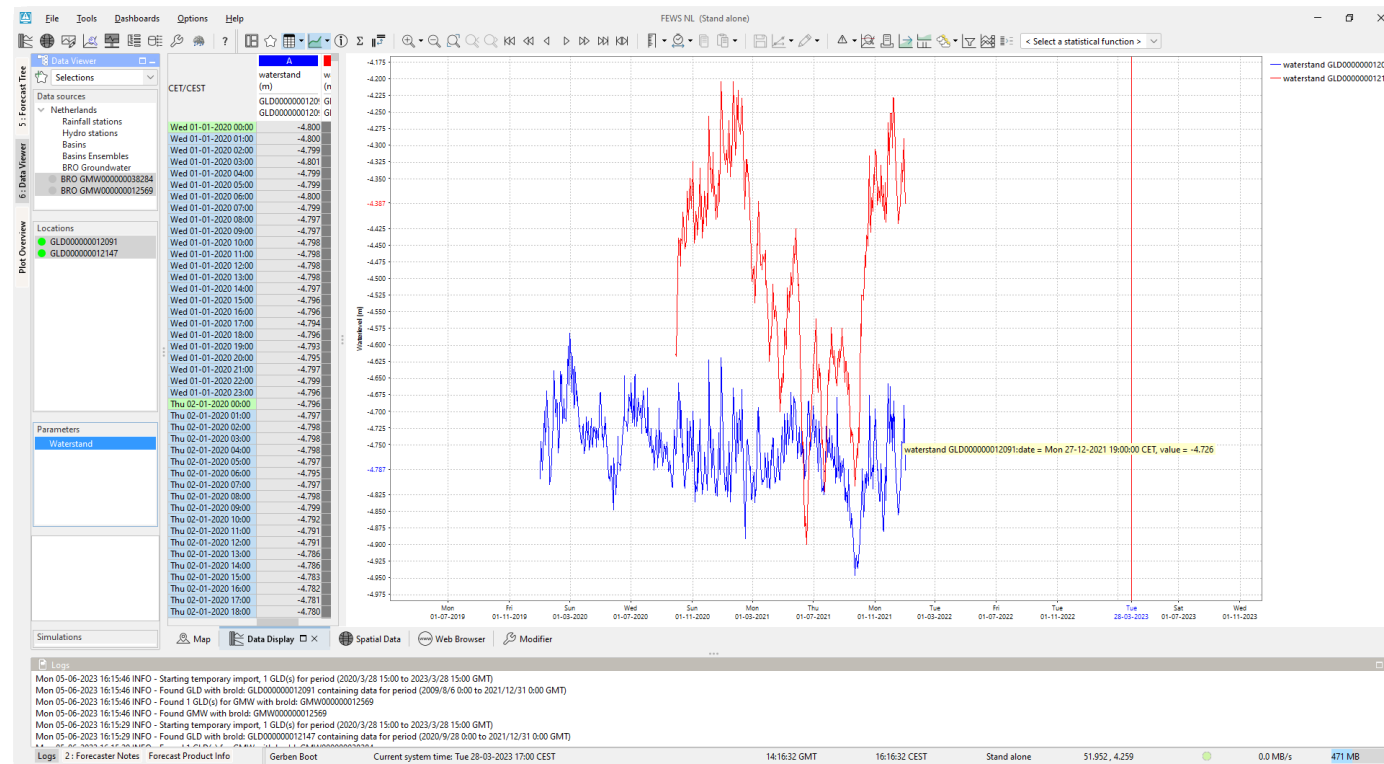


Data Imports/Exports

- [EFAS SOS Server](#) (DWD ICON, COSMO-LEPS, ECMWF-HRES & ECMWF-ENS)
- Extension of [Landsat-HDF5](#) (parameter: DSSF-TOT)
- Extension of [Radolan](#) (Parameter YW + grid dimensions dynamically)
- Extension of [MeteoCanadaWCS](#) (authentication added and visualize hidden layers)
- Improved [GeoTIFF](#) import (support for all possible floats, integer and byte values)
- Import module now [ModuleInstance](#) aware.
- Improved [PI REST](#) import: chunking of URL path to avoid exceedance

BRO fine tuning

- Extension of [export](#): metadata options with key-value pairs to define:
 - ObservationType
 - StatusCode
 - ProcessReference
 - MeasurementInstrumentType
 - ProcessType
 - EvaluationProcedure
 - AirPressureCompensationType
- Map selection of (random) Groundwater Monitoring Wells to visualize together your data.



Community & (online) events

- Delft-FEWS User Days ([programmes and presentations](#))
 - Gebruikersdag Netherlands/Belgium: 6th of June 2023 (Delft, NL)
 - Anwendertreffen: 15th +16th of June 2023 (Aachen, D)
 - Australia: 23rd - 25th of August 2023 (Brisbane, QLD)
 - International Delft-FEWS User Days: 8th+9th of November 2023 (Delft, NL)
- Courses
 - Around User events
 - [Schedule](#)
- Online events (recordings via [portal](#))
 - Community Talks: next: 8th of June
 - Webinar: next: 14th of September



**Community
Talk**

#4

WIS systems

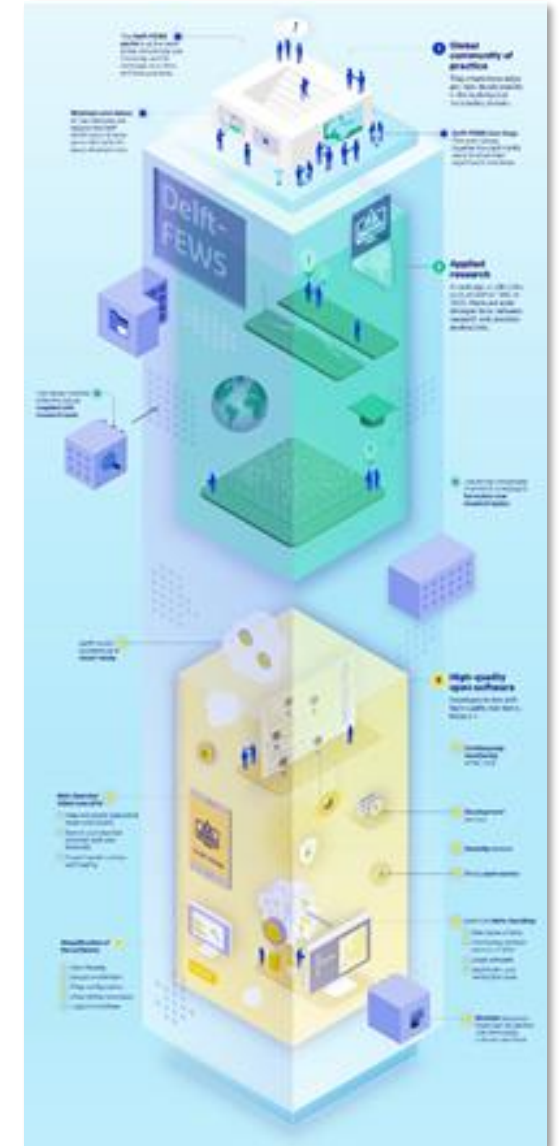


2023.01 features

Outlook Roadmap 2023

Outline

- Continuation:
 - [Code clean-up](#) & code quality
 - Release test automation
- Security (2023.01)
 - Security Matrix + **descriptive document**
 - Connectivity Guide **extended with security aspects**
 - Admin Guide **extended with security aspects**
- Python Integration
- Archive Vision (Q3)
- Start of preparation of the Delft-FEWS Vision 2025 successor



Outlook Developments 2023.02

- **Web OC MVP** (1) + enabling data edits (2)
- **Flood Warnings & Thresholds**: Generation AND dissemination (AUS)
- **Metadata** management tool (AUS)
- **Open Archive**: Create separate Vision (together with CSB)
- **Cloud**: High availability of the MasterController (without using dual MC)
- Make **web service patchable**
- **Seamless integration** with (different, external) web services, like WISKI
- Improve **Import status page** and add **Export status page** to Admin Interface
- Improved **NetCDF** for **non-equidistant** timeseries (basis is already in 2023.01)
- **Co-creation** activity on **Scaling** of Forecasting Shell Servers.
- And more...(in proposals for GO-FEWS, RWS etc)

Contact

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