

Delft-FEWS

Regionales Delft-FEWS Anwendertreffen

Delft-FEWS Vision 2025, yearly roadmaps and highlights of new developments in 2020.02 and 2021.01

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Delft-FEWS Product Management

Deltares

1st of July 2021



Programme

- Introduction
- Delft-FEWS Vision 2025 and yearly roadmaps
- Videos (intermezzo)
 - Recent developments in the Spatial Display...
 - How to work with dashboards in Delft-FEWS...
- Highlights of recent developments in 2021.01
- Questions and discussion (use the chat!)



Gerben Boot



Maarten Smoorenburg

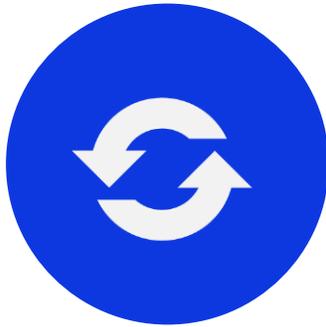


Marcel Ververs

Introduction...



Delft-FEWS Vision 2025



QUICK RECAP



STATUS UPDATE



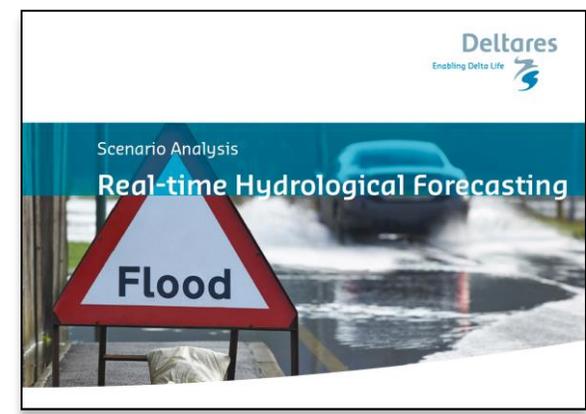
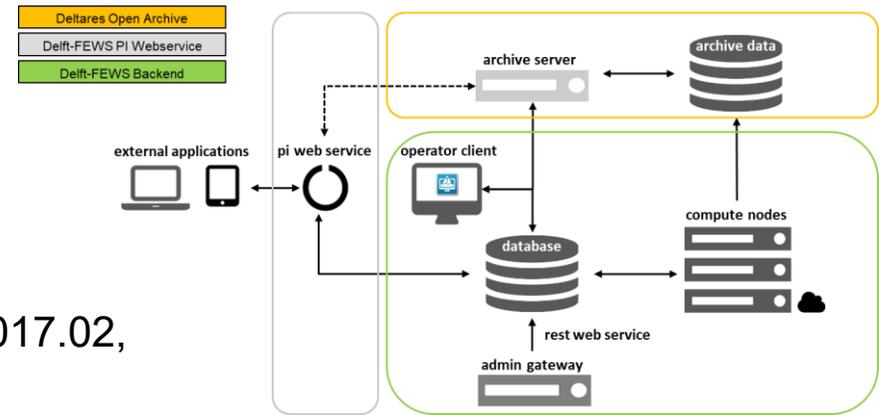
OUTLOOK



Delft-FEWS Vision 2025: looking back...

- End of 2019: finalized **Roadmaps 2020** on:
 - Backends
 - Open Archive
 - FEWS Web Services
 - Community funding: major ‘under the hood’ improvements in 2017.02, 2018.02 and 2019.02

- Defined a new **Delft-FEWS Vision 2025** based on:
 - Scenario Analysis on the “Future of Hydrological Forecasting”
 - Expert sessions within Deltares
 - Interaction with the Delft-FEWS user community
 - Sessions with the Delft-FEWS International Community Strategy Board
 - Results of “Roadmaps 2020”



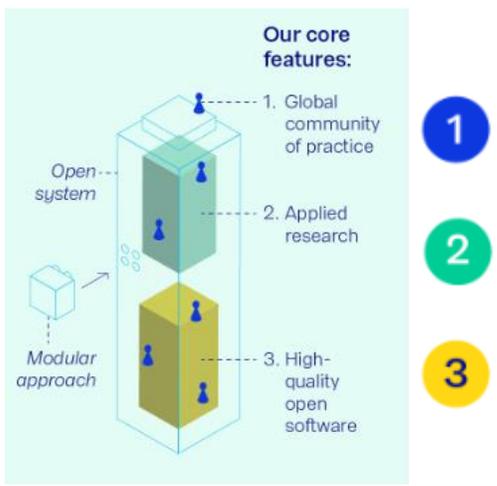
[download](#)



Delft-FEWS Vision 2025: visualized...

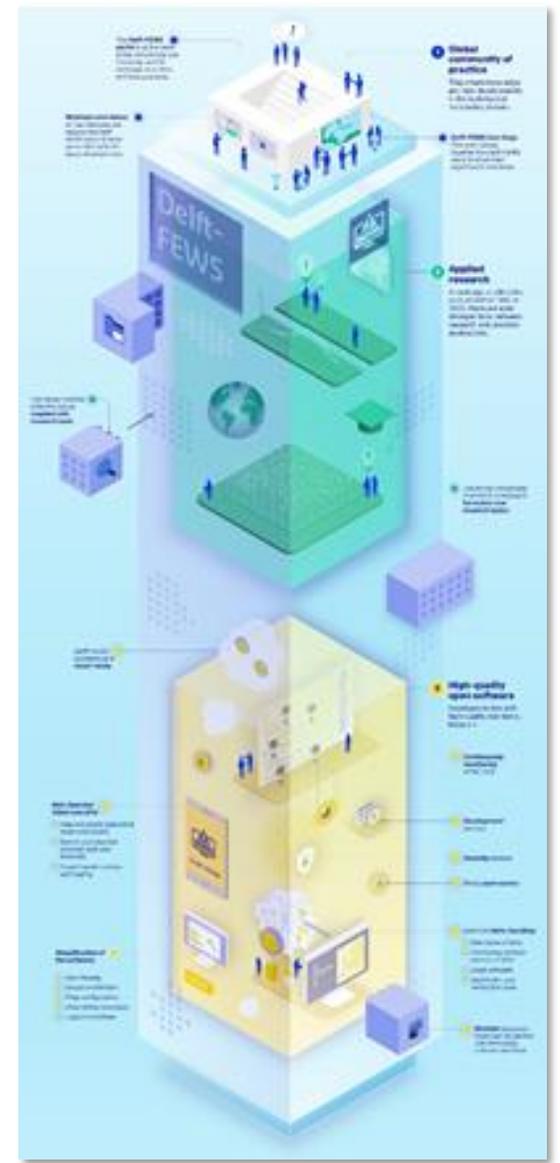
- Delft-FEWS Vision 2025 core features

- 1 Global Community of Practice
- 2 Applied Research
- 3 High quality open software



- Show and tell...story, presentations and infographic

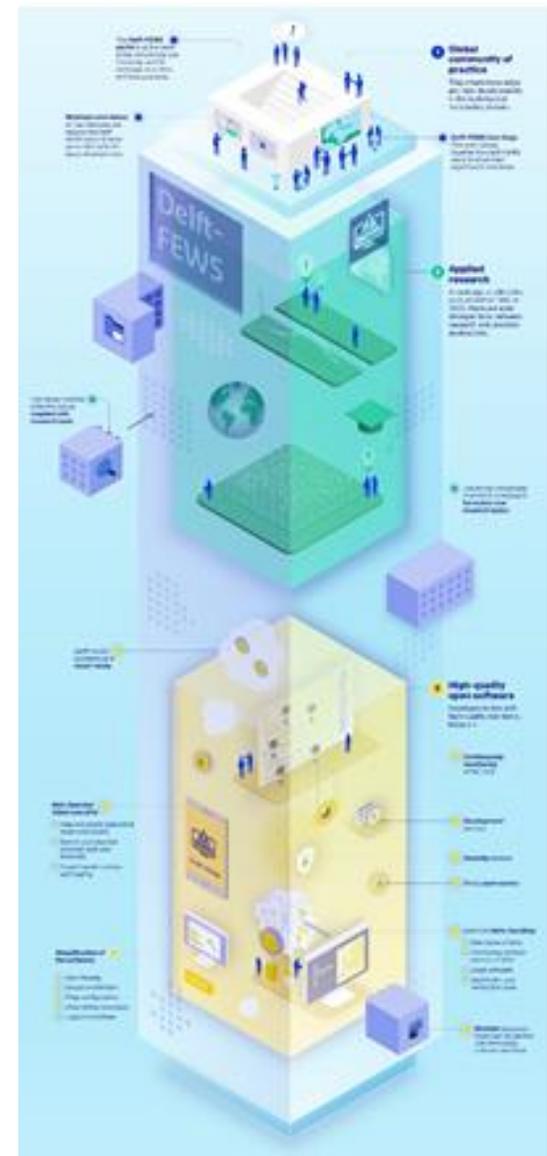
- Delft-FEWS [portal](#)
- [Video](#)
- [User Days / Events](#)
- Updates to the [CSB](#)





Delft-FEWS Vision 2025: key characteristics...

- Delft-FEWS Vision 2025: a 5 year vision
- 10 releases: 2020.01 – 2024.02
- Yearly development (thematic) roadmaps
- Topics can be on **multiple** roadmaps
- Initial **planning** (shared in 2019)
- Funding:
 - Combining with ongoing (large) implementation projects
 - Contributions from standardized S&M contracts → **from 1/1/2022**
 - Deltares investments

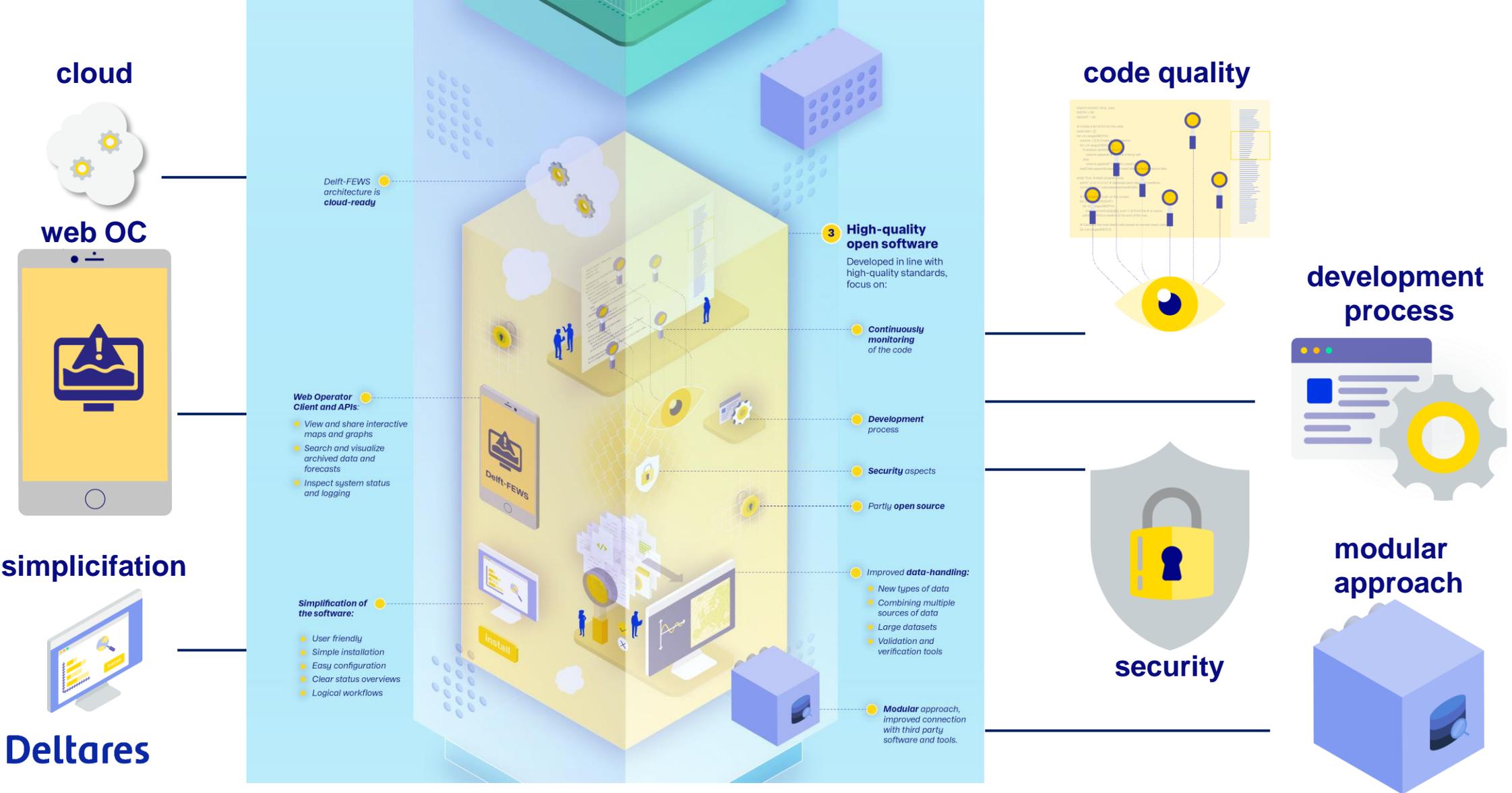




Delft-FEWS Vision 2025: roadmap 2020

Feature / Theme	Parallel projects	Deltares Investments
Backlog (old) roadmaps <ul style="list-style-type: none"> Master Controller (patchable) Roll-out facilitation (Admin Interface-API) 	RWS (NL)	
Computational Framework <ul style="list-style-type: none"> Composed what-if concept Comparing runs in TimeSeries Display Comparing runs in Spatial Display 	BlueEarth WarmingUp	BlueEarth RIBASIM
Cloud experiences	MDBA (AUS) EA (UK)	Deltares Private Cloud
Development Process & Code Quality <ul style="list-style-type: none"> Description of workflows Implementation of tools: Sonarqube Review of Release testing Process: SYSQA 		FEWS-PM
Web-based Operator Client Outline for development		FEWS-PM

Roadmap 2021: What are the plans?





Roadmap 2021: What are the plans?

Feature / Theme	Parallel projects (launching customer)	Deltares Investment	Community Funding
Backlog (old) roadmaps <ul style="list-style-type: none"> Automatic FSS scaling Finalize seamless integration grids 			
Computational Framework <ul style="list-style-type: none"> Scenario (case) Management Coupling to Python (?) 			
Development Process <ul style="list-style-type: none"> Sonarqube: set objectives (per release) SYSQA Release Testing Process Security Aspects Code Clean-Up 			
Web-based Operator Client Design and MVP implementation			
Open Archive Extension Open Database (MongoDB)			
Cloud Experiences Continued usage, deployments, supporting and experiencing			

Funding (partly) arranged
 Looking for funding



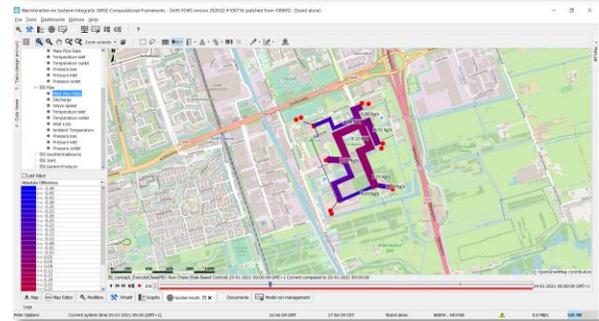
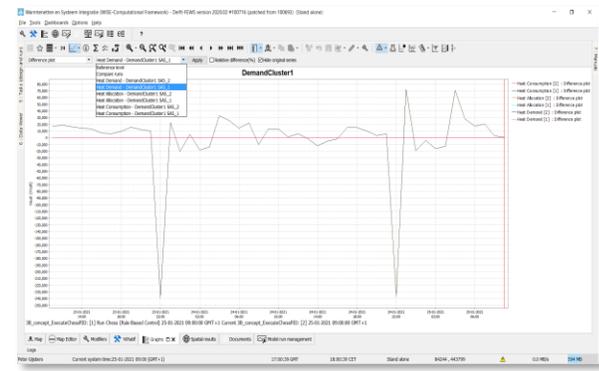
Roadmap 2021 theme: computational framework (CF)



CF: objective... *model execution and analysis application (not strictly in an operational context)*

- CF-mode: operator clients (OC) in combination with an open archive
- Define input for runs, compare runs and manage (store, delete, retrieve) scenarios

Property	whatif.3	whatif.2	whatif.1
Whatif Examples			whatif1.XXXXXXXXXXXXXXXXXX...
Whatif Properties			
Simulation length (hours)	3	3	3
Select model data set	moduledataset B	moduledataset A	moduledataset B
Select model parameter file	moduleparfile fixed 20	moduleparfile fixed 10	moduleparfile fixed 20
Select gridded datasource	arid B	arid B	arid B
Double property (min/max)	18.18	18.18	18.18
Double property (unlimited)	-5.0	-5.0	-5.0
Integer property	-4	-4	-4
Boolean property	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
String property	test_string	test_string	test_string
Whatif modifiers			
Modify time series (only appli...	numbers serious low	nothing selected	nothing selected
Specify attributes	ABA 121 15 10 5	nothing selected	nothing selected
Modify time series (never ap...	multiply * 2	nothing selected	nothing selected

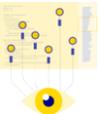




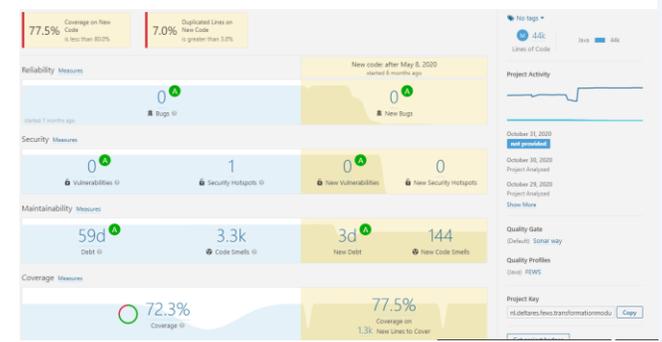
Roadmap 2021 theme: development process



- Topic: **code clean-up plan**
 - Available: [plan](#) what functionality and configuration options will be removed and by when (2021 – 2023)
 - Documentation on (configuration) alternatives
 - Delft-FEWS 2021.01: <F12> option to assess your configuration for “end of life” functionality
 - Technical: code will be *moved* to temporal libraries *before* libraries are *removed*



- Topic: **code quality and review**
 - Continuous monitoring of code (SonarQube, SIG monitor)
 - Tooling integrated with development environments, build/compile-facilities
 - Structural attention for code-reviews in combination with knowledge transfer
 - Top-3 displays/modules for improving code coverage, code modularity





Roadmap 2021 theme: development process



- Topic: **release test and test automation**

- Implementation of SYSQA recommendations: PRA, retrospectives and master test plan
- Use of Docker for integration-tests (client-server)
- Automatic deployment van new builds (archive-test system, pilot RWS-NL)
- Central repositories for test configurations and test scripts



- Topic: **security aspects**

- Delft-FEWS Security Principles (Security arrangements)
- Delft-FEWS Security Guidelines (Architecture, developing)
- Code improvement thema #1: Role based access
- Code improvement thema #2: Encrypted data and connections
- Code improvement thema #3: 3rd Party modules/libraries → build server plugin (OWASP)



Roadmap 2021 themes (other)



- **Open Archive**: new module: scalar data storage in MongoDB for coupling with BI tools



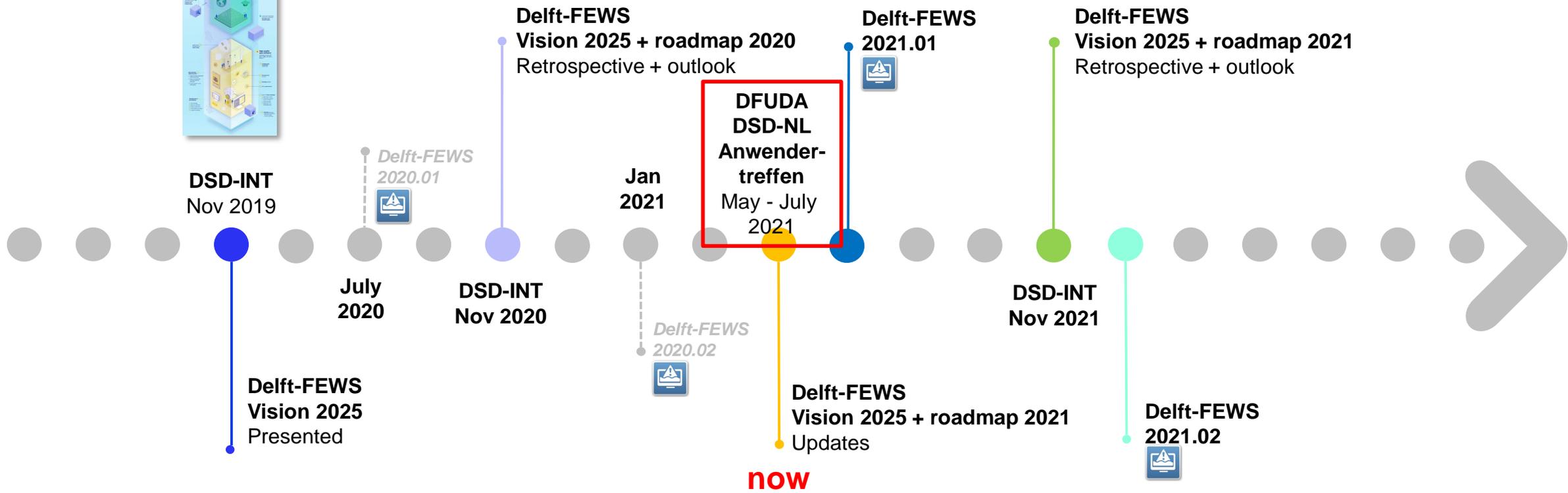
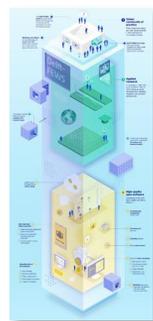
- Delft-FEWS is (even more) **cloud-ready**, cloud agnostic
- Continued attention for: (own) usage, deployment/offered services, supporting, migrating & testing
- Sharing and documenting outcomes



- **Web-based Operator Client** (WebOC)
 - Initial (external) funding found
 - Architecture: **base plate** (design) available
 - (inter)national **collaboration** and **funding**
 - **Rough estimates** for **developments** (MVP approach)
 - **Updates** will follow before **DSD-INT** (Nov 2021)
 - **Aim: MVP launch**: end of 2021



Delft-FEWS Vision 2025: timeline



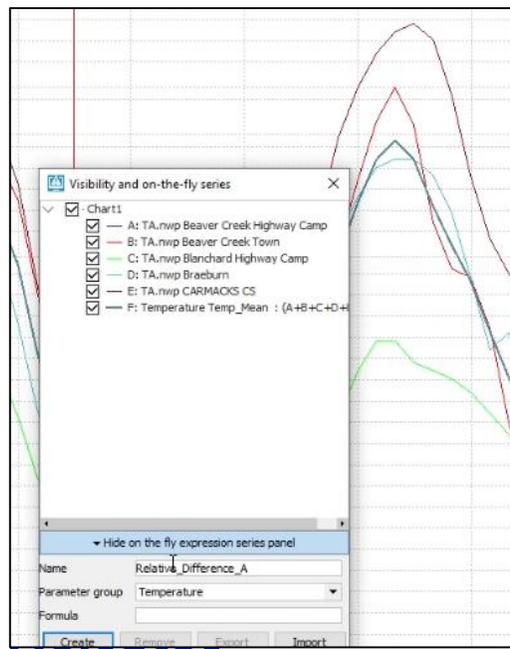
- Fine-tuning and implementing the 2021 plans
- Continuously seeking (internal AND external) opportunities (research, projects)
- Communicating updates and results within the Delft-FEWS community
- Scoping roadmap 2022 plans

Webinar Videos...

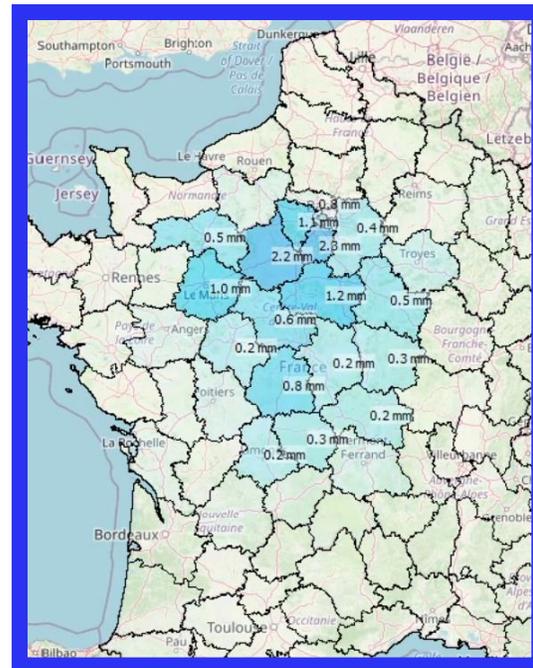
Some highlights from the 2020.02 new features webinar of Ivo Miltenburg (11 May 2021). Full webinar:

<https://vimeo.com/548052023>

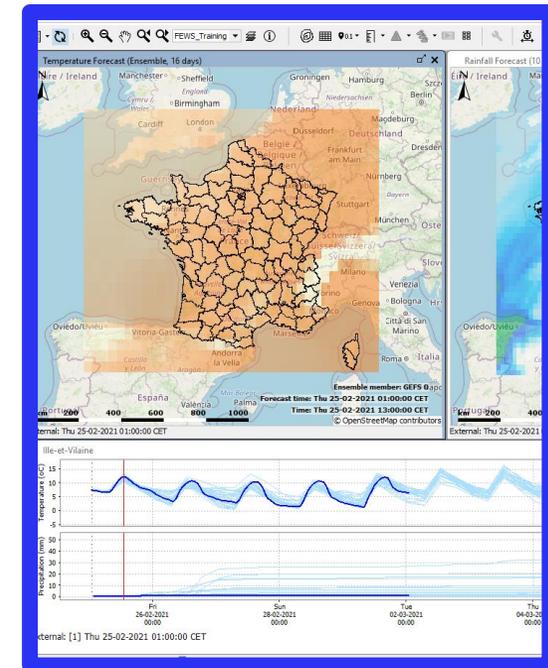
- Timeseries Display Features



- Spatial Display Enhancements



- New Dashboard Functionality



Spatial Display features video

1. Multiple Legend Classbreaks + hiding Value Labels
2. **Connect displayPlotGroup to spatial GridPlot**
3. **Thumbnail resizing**
4. **Show all ensemble members when clicking a grid cell (ALT-Double click)**
5. **Show min/max/mean for area (manual sketch or from shape)**
6. Link to config Metadata + Interaction between table and map
7. Last import time by Coupling the datafeedId

Dashboard features video

- **General introduction**
- **Link both spatial and *timeseries* displays**
- **Accumulation slider can be used for dashboards**
- **Pre-defined vs User-defined dashboards and Managing user dashboards**

Overview

deployment transformation
seamless integration

annotation display cloud readiness

time series display few webservices

flat look auto calibration display

module run time spatial display

admin interface new import

computational framework

- In this presentation...[link to documentation](#) or other relevant information (portal, video)
- The [2021.01 Release Notes](#)

Admin Interface (API)

The screenshot displays a web browser window with the address bar showing the URL: `ai-nldefedmc00.avi.directory.intra/admin-interface/ui/configmanagement/mcconfig`. The browser tab is titled "Delft-FEWS Admin Interface". The page header includes a hamburger menu icon and the text "Delft-FEWS Admin Interface - MC Configuration".

The left sidebar contains a navigation menu with the following items:

- System Status
- Forecast Tasks
- Workflow and FSSs
- Files
- User Administration
- System Control
- Software and Configuration Management
 - Upload Base Build
 - Upload Master Controller and Config Management Patch
 - Master Controller Configuration**
 - Delft-FEWS Configuration
- Database Analysis
- Documentation

The main content area is titled "Master Controller Configuration" and features two primary actions:

- Download Master Controller Configuration XML file**: Accompanied by a download icon.
- Upload Master Controller Configuration file***: Includes a "Choose File" button and the text "No file chosen". An information icon is present below this section.

An "Upload" button is located at the bottom of the configuration area.

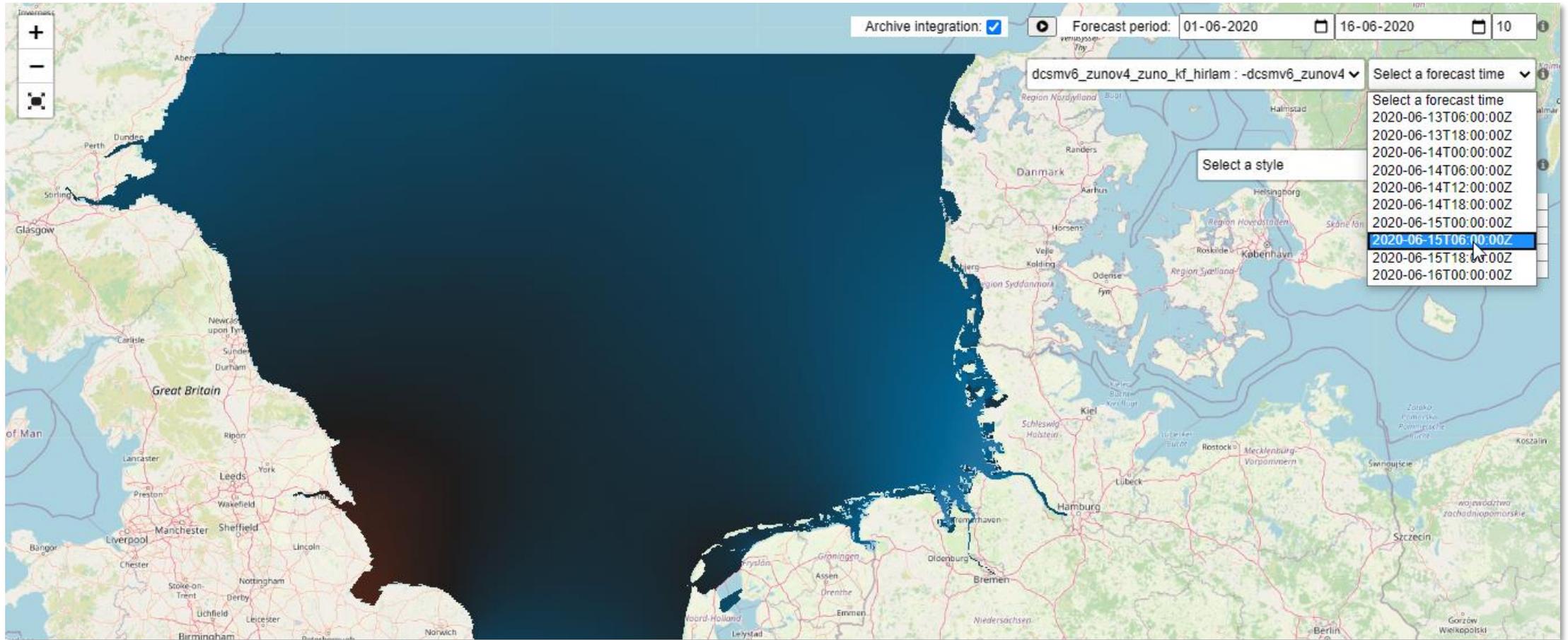
Admin Interface (API)

- Upload Master Controller Configuration
- Upload (zipped) Delft-FEWS configuration
- Manage (delete) base builds
- Logging in with Single Sign on using Active Directory (AD) or Azure AD (OAuth2)
- Statistics on Model Run Times
- More information
 - [Single Sign on](#)
 - [Admin Interface](#)
 - [Admin Interface API](#)

The image displays two overlapping screenshots of the Delft-FEWS Admin Interface. The top screenshot shows the 'Master Controller Configuration' page, which includes a 'Download Master Controller Configuration XML file' button and an 'Upload Master Controller' file upload area. The bottom screenshot shows the 'Upload Base Build' page, which features a 'Base Build File*' upload field. Below these, a 'Single Sign-On' login form is shown with fields for 'Username' and 'Password', and a 'Login' button. To the right, a table lists base builds with columns for 'Version', 'Build', and 'Actions'. The 'Actions' column contains delete icons (marked with an 'x') for each row, which are highlighted by a red dashed box. The table data is as follows:

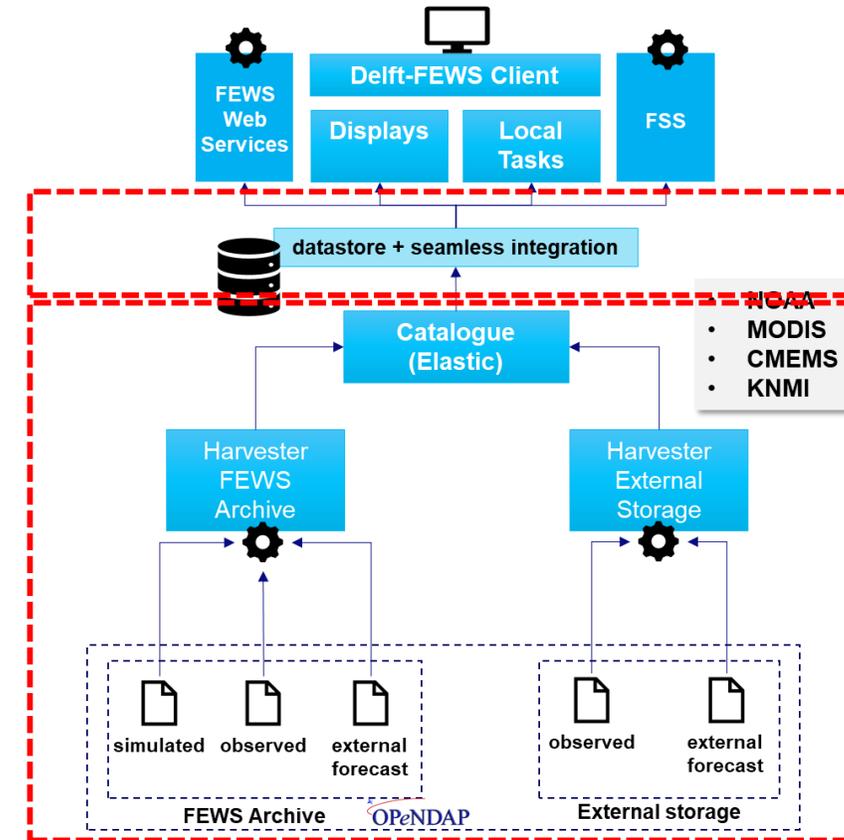
Version	Build	Actions
2020.01	93468	<input type="button" value="x"/>
2020.01	97394	<input type="button" value="x"/>
2021.01	102382	

Open Archive and Seamless Integration



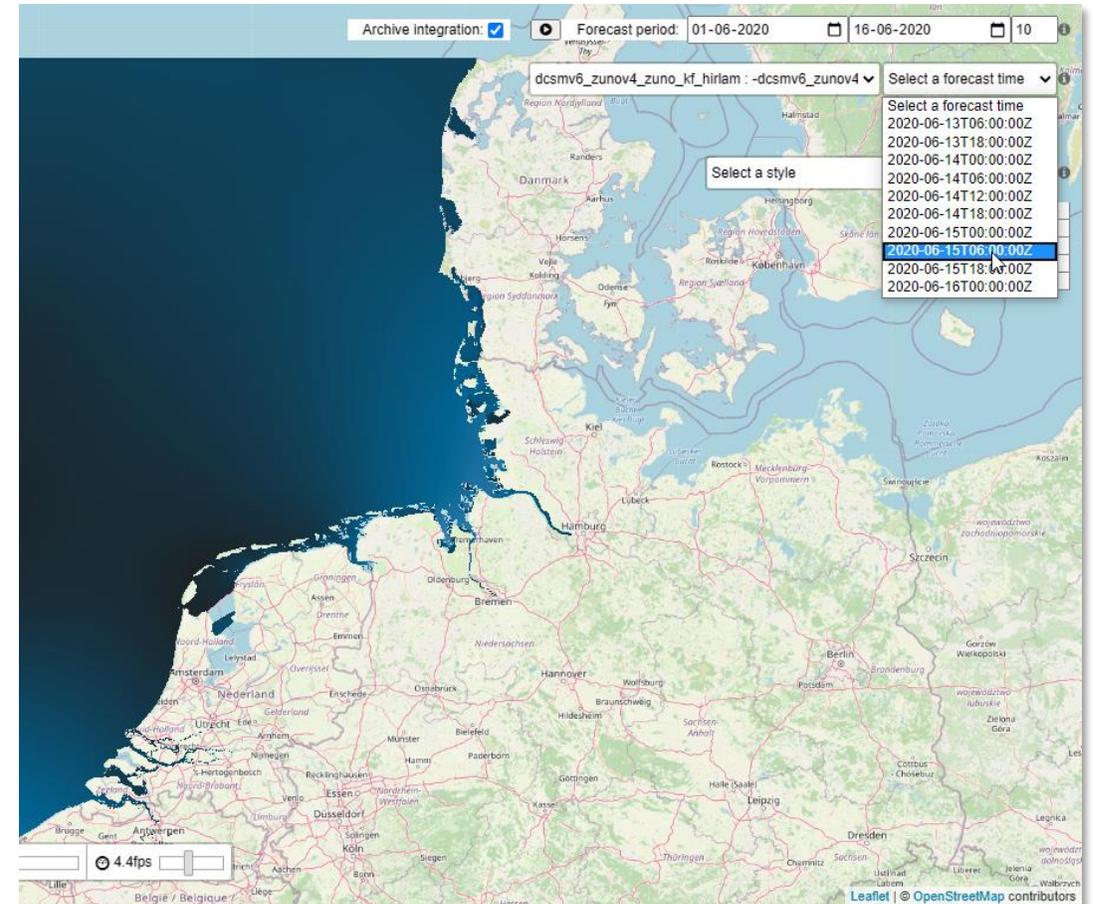
Open Archive and Seamless Integration (intermezzo)

- Open Archive
 - FEWS archive
 - External storage
 - Catalogue
- Seamless integration
 - Knowledge AND mechanism to find, retrieve AND serve the data
- What makes this complex?
 - Different data types (sources): external data (observations, forecasts) and simulated data (historical runs, forecast runs)
 - Different data dimensions: scalar, 2d, 3d
 - Different data 'end points' (receivers): PI Webservice (WMS), various displays in the OC (TimeSeries Display or Grid Display) or to run a workflow with (Transformation)



Open Archive and Seamless Integration

- **Backend improvements:** integrating the different timeseries types and different dimensions (scalar, 2d grids, 3d grids) in the various archive solutions.
- Making sure the **seamless integration** has the knowledge *where to fetch the data from* and *how to serve it*
- **Configuration options** added to define in which external data storage (Open Archive, NetCDF storage) certain timeseries are stored. This results in quicker searches in 2021.01
- More information
 - [Open Archive](#)
 - [2020.02 new features presentation](#)



Annotation Display

Bestand Extra Dashboards Opties Help Delft-FEWS Waternet 2017-01 64T (Stand alone)

6 : Data viewer

Actions	Location	Creation time	Start time	End time	Annotation	Categorie	Sub-Categorie
<input checked="" type="checkbox"/>	KNMI-RADAR	01-01-1900 01:00:00			goed	Grondwater	hemelwater
<input checked="" type="checkbox"/>	KNMI-RADAR	18-11-2020 14:00:00	18-11-2020 14:00:00	30-12-2020 14:00:00	Goed	Peilbesluiten	Peilbesluit kan niet ingesteld worden.
<input checked="" type="checkbox"/>	KNMI-RADAR	09-12-2020 14:00:00	09-12-2020 14:00:00		Is	Alarmen CAW	
<input checked="" type="checkbox"/>	KNMI-RADAR	25-03-2021 13:24:26	18-11-2020 14:00:00	30-12-2020 14:00:00	Goed	Peilbesluiten	Peilbesluit kan niet ingesteld worden.
<input checked="" type="checkbox"/>	KNMI-RADAR	25-03-2021 13:24:27		30-12-2020 14:00:00	Zelfs nog beter	Peilbesluiten	Peilbesluit kan niet ingesteld worden.
<input checked="" type="checkbox"/>	KNMI-RADAR	25-03-2021 13:24:27	18-11-2020 14:00:00		Nog beter	Peilbesluiten	Peilbesluit kan niet ingesteld worden.
<input checked="" type="checkbox"/>	KNMI-RADAR	25-03-2021 13:24:28	18-11-2020 14:00:00	30-12-2020 14:00:00	Heel Goed	Peilbesluiten	Peilbesluit kan niet ingesteld worden.
<input checked="" type="checkbox"/>	KNMI-RADAR	25-03-2021 13:28:20			goed	Grondwater	hemelwater
<input checked="" type="checkbox"/>	KNMI-RADAR	25-03-2021 13:28:21			goed	Grondwater	hemelwater
<input checked="" type="checkbox"/>	KNMI-RADAR	26-03-2021 15:39:11			Z	Grondwater	Grondwater
<input checked="" type="checkbox"/>	KNMI-RADAR	26-03-2021 15:40:02				Alarmen CAW	
<input checked="" type="checkbox"/>	KNMI-RADAR	01-04-2021 14:53:00	18-11-2020 14:00:00	30-12-2020 14:00:00	Goed	Peilbesluiten	Peilbesluit kan niet ingesteld worden.
<input checked="" type="checkbox"/>	KNMI-RADAR	06-04-2021 12:03:52		30-12-2020 14:00:00	Zelfs nog beter	Peilbesluiten	Peilbesluit kan niet ingesteld worden.
<input checked="" type="checkbox"/>	KNMI-RADAR	06-04-2021 16:32:53			Text close after apply		
<input checked="" type="checkbox"/>	NEERSLGDB-RADAR	26-03-2021 11:41:25			My first annotation		
<input checked="" type="checkbox"/>	AHN25	25-03-2021 13:28:20			goed		
<input checked="" type="checkbox"/>	EPS_SCHIP_WINDS_MIN	26-03-2021 11:48:37	09-12-2020 14:00:00		My second		
<input checked="" type="checkbox"/>	EPS_SCHIP_WINDR_GEM	26-03-2021 11:48:37	09-12-2020 14:00:00		My second		
<input checked="" type="checkbox"/>	62079_Debiet_Westslu...	31-03-2021 16:32:47		09-12-2020 14:00:00	Veranderde locatie en eindtijd		
<input checked="" type="checkbox"/>	Noordse buurt	01-04-2021 14:27:14			Test location dropdown		
<input checked="" type="checkbox"/>	Noordse Dorpsweg	01-04-2021 14:28:58			Test location dropdown		
<input checked="" type="checkbox"/>	Achterweg Krooshep...peil	02-04-2021 11:36:45			Gevonden		

4 : Documentatie bekijken

Annotation Display

- Create a [new annotation](#) and specify the details
- Overview of [existing annotations](#)
- [Filter](#) for the [active selection](#) you made in e.g. the timeseries display or spatial display
- If (no) annotations are available for a certain selected location, the user is informed.
- Annotations can be [imported](#) and [exported](#).
- [More information](#)

The screenshot displays the 'Annotation Editor' interface. At the top, there is a table listing existing annotations with columns for edit/delete icons, name, and timestamp. Below the table is the 'Annotation Editor' form with fields for creation time, start/end times, location, text, category, and sub-category. At the bottom, a toolbar contains buttons for 'Create', 'Filter for selection' (checked), 'Kaart', 'Grafiek2', 'Grafiek', and 'Annotation Display'.

		<input checked="" type="checkbox"/>	KNMI-RADAR	06-04-2021 16:32:53	
		<input checked="" type="checkbox"/>	NEERSLGDB-RADAR	26-03-2021 11:41:25	
		<input checked="" type="checkbox"/>	AHN25	25-03-2021 13:28:20	
		<input checked="" type="checkbox"/>	EPS_SCHIP_WINDS_MIN	26-03-2021 11:48:37	09-12-2020 14:00:00
		<input checked="" type="checkbox"/>	EPS_SCHIP		
		<input checked="" type="checkbox"/>	62079_Deb		
		<input checked="" type="checkbox"/>	Noordse bu		
		<input checked="" type="checkbox"/>	Noordse Do		
		<input checked="" type="checkbox"/>	Achterweg		

Annotation Editor

Creation time: 09-04-2021 12:44:48

Start time: 09-04-2021 12:00:00

End time: 09-04-2021 12:00:00

Location: KNMI-RADAR

Text:

Categorie:

Sub-Categorie:

Toolbar: Create Filter for selection | Kaart | Grafiek2 | Grafiek | Annotation Display X

Computational Framework

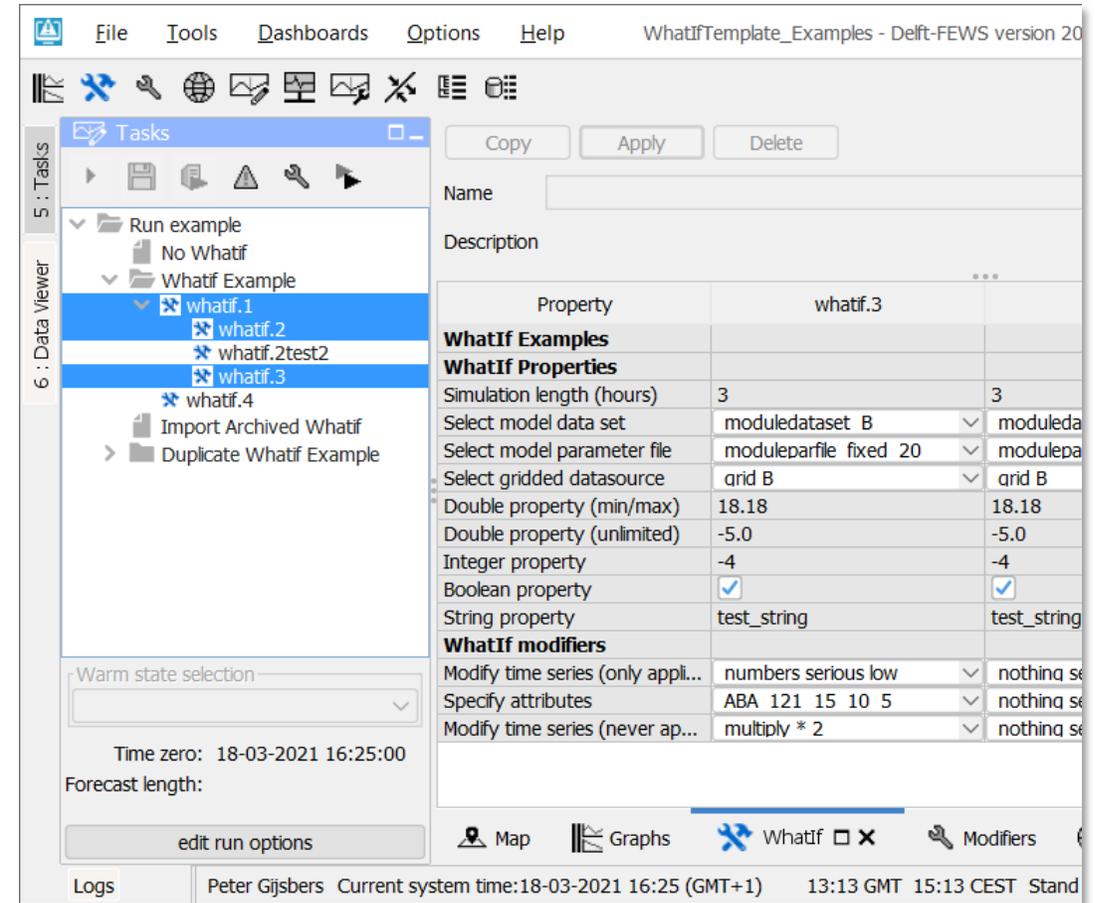
The screenshot shows a software interface with a 'Data Viewer' on the left and a configuration table on the right. The 'Data Viewer' shows a tree structure with 'whatif.1', 'whatif.2', 'whatif.2test2', and 'whatif.3' selected. The configuration table on the right is titled 'WhatIf Examples' and 'WhatIf Properties' and compares properties for 'whatif.3', 'whatif.2', and 'whatif.1'.

Property	whatif.3	whatif.2	whatif.1
WhatIf Examples			whatif1.XXXXXXXXXXXXXXXXXX...
WhatIf Properties			
Simulation length (hours)	3	3	3
Select model data set	moduledataset B	moduledataset A	moduledataset B
Select model parameter file	moduleparfile fixed 20	moduleparfile fixed 10	moduleparfile fixed 20
Select gridded datasource	grid B	grid B	grid B
Double property (min/max)	18.18	18.18	18.18
Double property (unlimited)	-5.0	-5.0	-5.0
Integer property	-4	-4	-4
Boolean property	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
String property	test_string	test_string	test_string
WhatIf modifiers			
Modify time series (only appli...	numbers serious low	nothing selected	nothing selected
Specify attributes	ABA 121 15 10 5	nothing selected	nothing selected
Modify time series (never ap...	multiply * 2	nothing selected	nothing selected

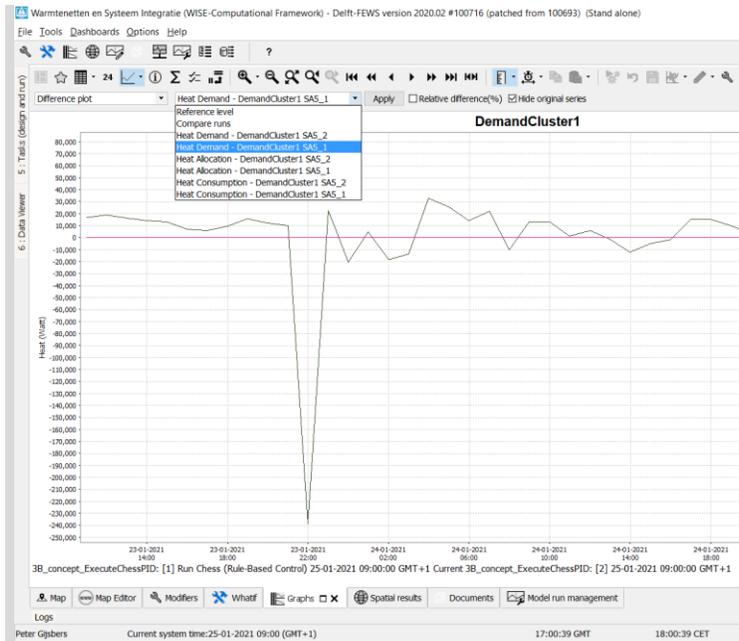
Time zero: 18-03-2021 16:25:00

Computational Framework

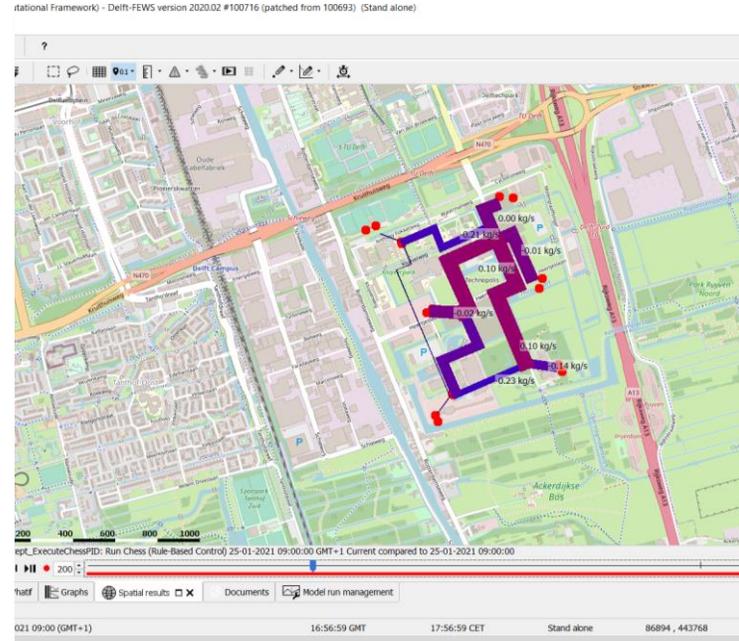
- Functionality to define, execute, navigate to and manually delete (one or more) **scenario runs**
- **Composed what-if concept** → 'new' way of creating scenario input for model runs
- Combination of **what-if** and **modifier** functionality



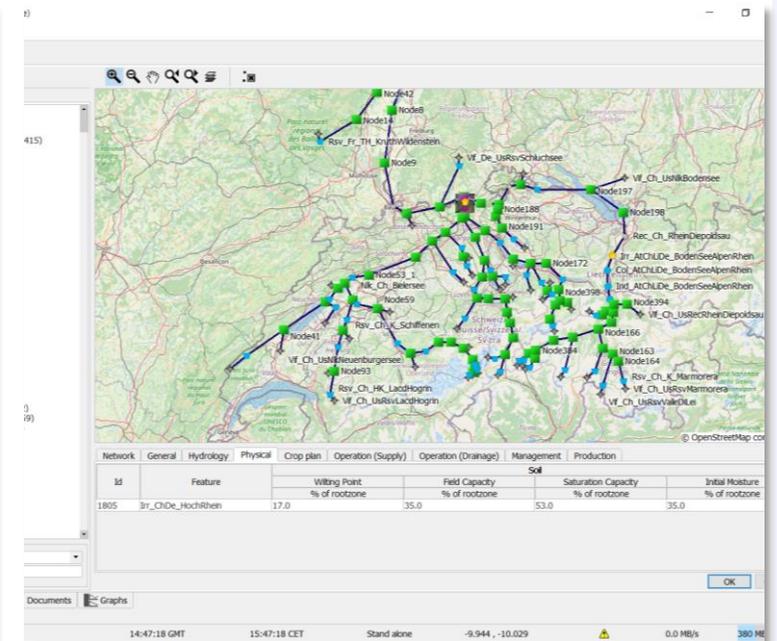
Computational Framework



Compare runs in TimeSeriesDisplay



Compare runs in Spatial Display



Display plug-in framework

Auto Calibration Display

^ v
 Modifier Properties: snow17 calibration
 Name:

Setup auto calibration run

Parameter name	KLCA2LWR		modified value	AC	KLCA2UPR		modified value	AC
	original value	original value			original value	original value		
SCF	1	2		AC	1	2		AC
MFMAX	0.85	0.85		AC	0.85	0.85		AC
MFMIN	0.1	0.1		AC	0.1	0.1		AC
NMF	0.15	0.15		AC	0.15	0.15		AC
UADJ	0.05	0.05		AC	0.1	0.1		AC
SI	9999	9999		AC	9999	9999		AC
DAYGM	0	0		AC	0	0		AC
MBASE	0	0		AC	0	0		AC
PXTEMP	1.7	1.7		AC	1.7	1.7		AC
PLWHC	0.05	0.05		AC	0.05	0.05		AC
TIPM	0.1	0.1		AC	0.1	0.1		AC
AREA_DEPLETION_CURVE		curve				curve		
MV	0	0			0	0		
TAELEV	180	180		AC	387	387		AC
SASC_OUTPUT_TS_INTERVAL	6	6			6	6		
ELEV	180	180		AC	387	387		AC
PXADJ	1	1		AC	1	1		AC
AREA_ELEV_CURVE(METR)		Table				Table		
SWE_OUTPUT_TS_INTERVAL	6	6			6	6		

Include paramaters in auto calibration

Cold state selection
 Start:

Time zero: 10-01-2013 0...
 Forecast length:

Preserve ratio/difference
 preserve ratio
 preserve difference
 no relation

Auto Calibration Display

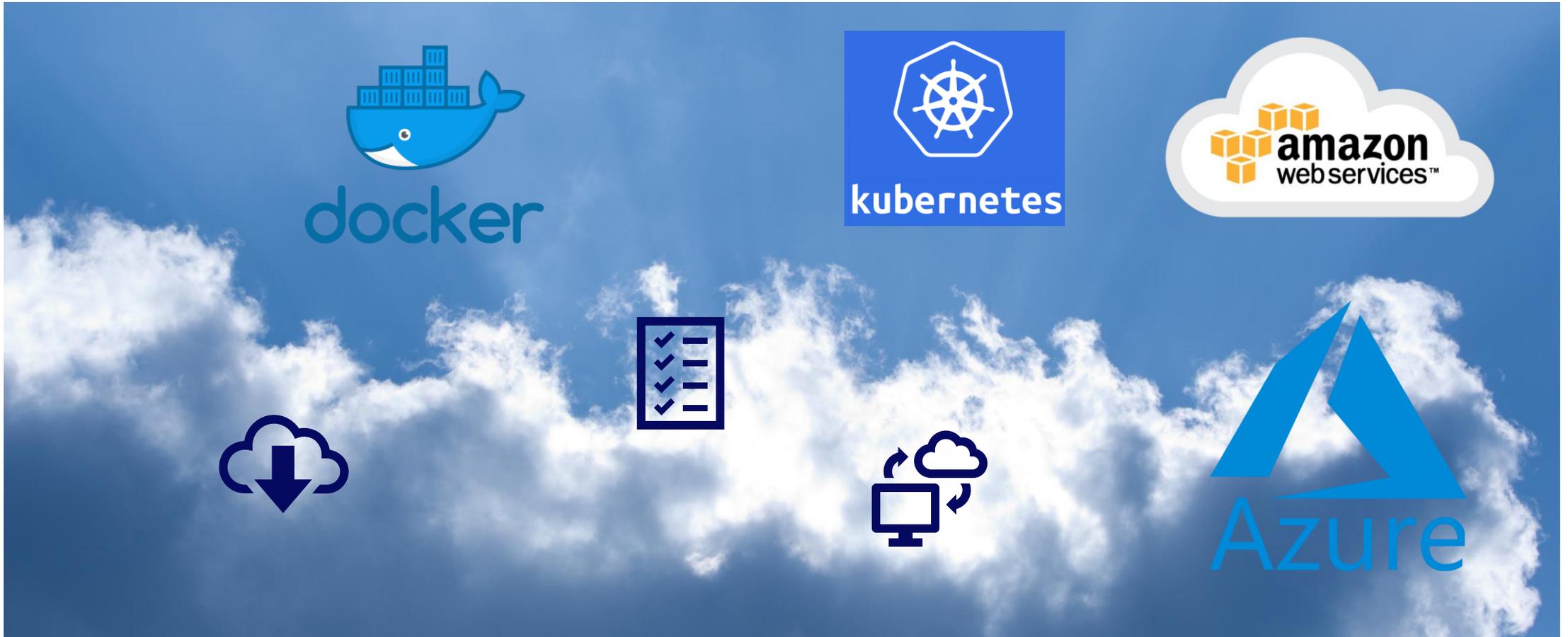
- Selection of parameters to include
- Change the upper & lower boundaries
- Change the auto calibration settings for the calculation: start- and end times, number of iterations
- [More information](#)

The screenshot displays the 'Auto Calibration' interface within a software application. The main window shows a table of parameters with columns for 'original value', 'modified value', and 'AC'. A dialog box titled 'Auto Calibration' is open, showing settings for 'Workflow start time', 'Calibration start time', 'Calibration end time', 'Max Iterations Inner Loop', 'Max Iterations Outer Loop', and 'Number of complexes'. Another dialog box is open for setting 'Upper boundary' (3.0) and 'Lower boundary' (0.0). A third dialog box shows 'Include' checked. The background shows a data viewer with a table of parameters.

Mod type	Name	Summary
snow1...	snow17 calibration	
secsm...	secsm calibration	
MAT	MAT_ANKA2LWR_AN...	Add 5.0
lagk	lagk	
setmgng	QME_KLCA2	QME_KLCA2 : Missing
setmgng	QME_KLCA2	QME_KLCA2 : Missing
setmgng	QME_KLCA2	QME_KLCA2 : Missing

original value	modified value	AC	original value	modified value	AC
0.85	0.85	AC	2.215	0.85	AC
0.1	0.1	AC	0.1	0.1	AC
0.15	0.15	AC	0.15	0.15	AC
0.05	0.05	AC	0.1	0.1	AC
9999	9999	AC	9999	9999	AC
0	0	AC	0	0	AC
0	0	AC	0	0	AC
1.7	1.7	AC	1.7	1.7	AC
0.05	0.05	AC	0.05	0.05	AC
0.1	0.1	AC	0.1	0.1	AC

Cloud (readiness) and Deployment of Delft-FEWS



Cloud (readiness) and Deployment of Delft-FEWS

Cloud

- (automated) Installation of Delft-FEWS components cloud- ready
- Development of ARM* templates for:
 - Creating the Virtual Machines AND
 - Deploying the Delft-FEWS components
- All of our test systems in Delft are now on cloud based technology
- More information: fews-pm@deltares.nl

*Azure Resource Manager



Cloud (readiness) and Deployment of Delft-FEWS

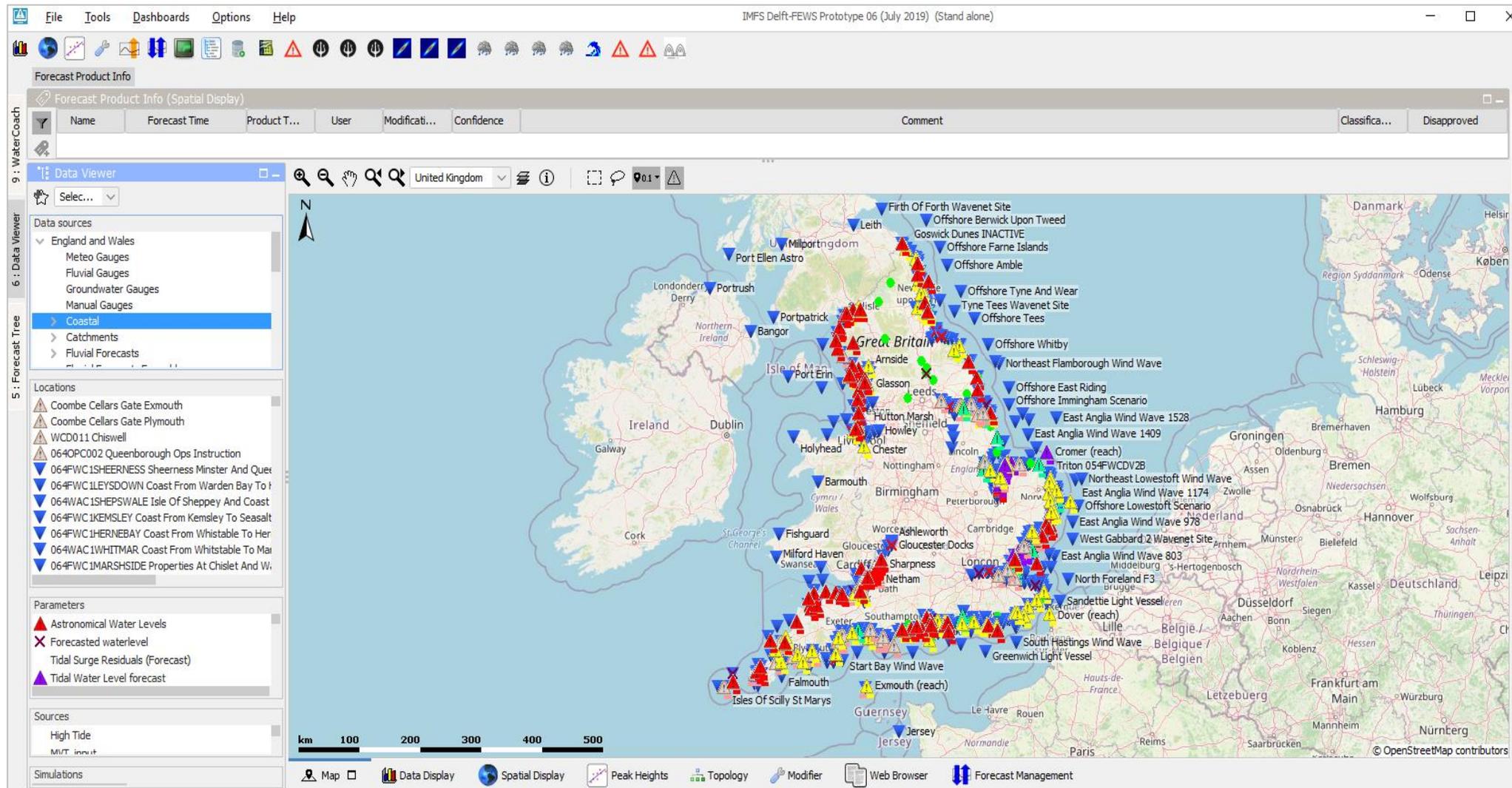
Deployment

- MC, FSS installation *without* launchers to keep Docker images 'frozen'
- Pilot (in NL): automated *dev-ops* pipeline using Docker images
- Deltares-USA: Dual MC system using Docker for synchronization and rolling barrel - performance test

- More information
 - [Master Controller](#)
 - [Forecasting Shell Servers](#)

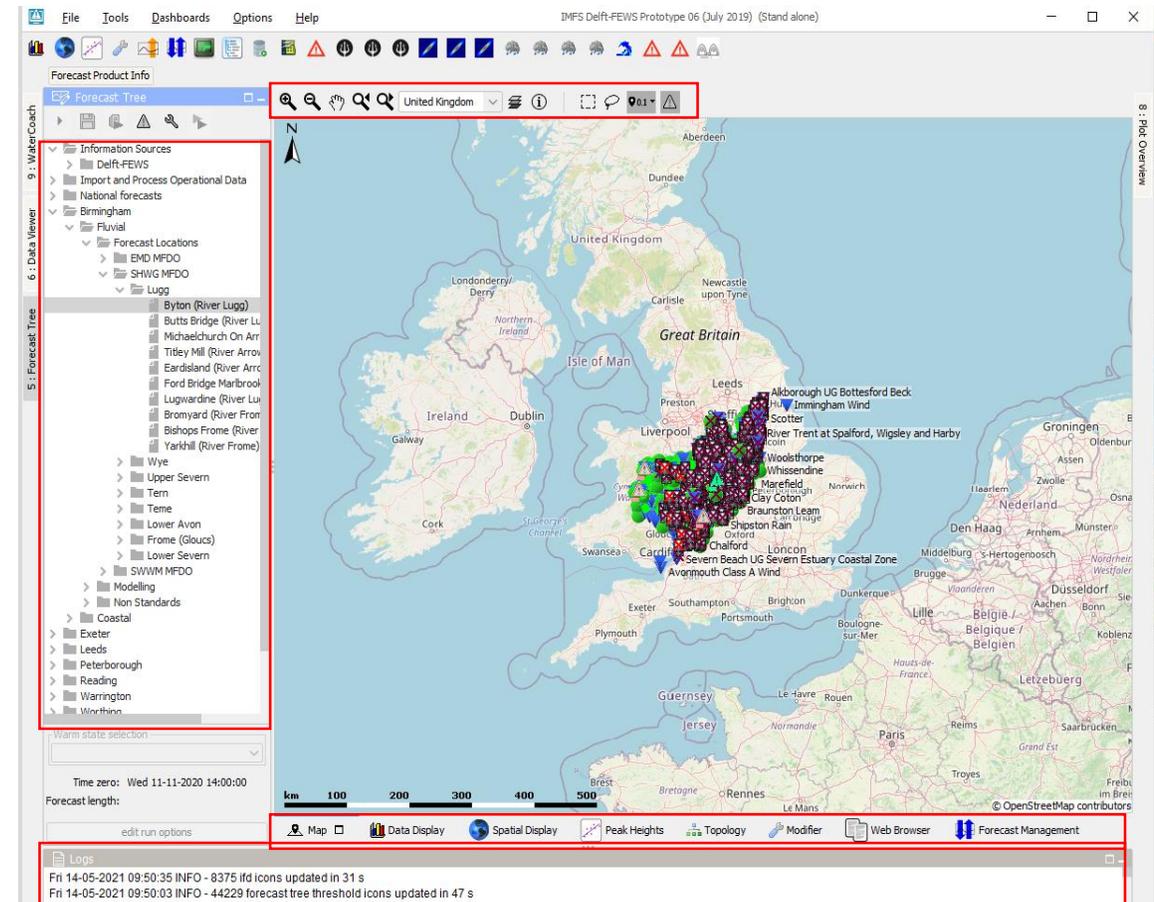


Flat Look and Feel

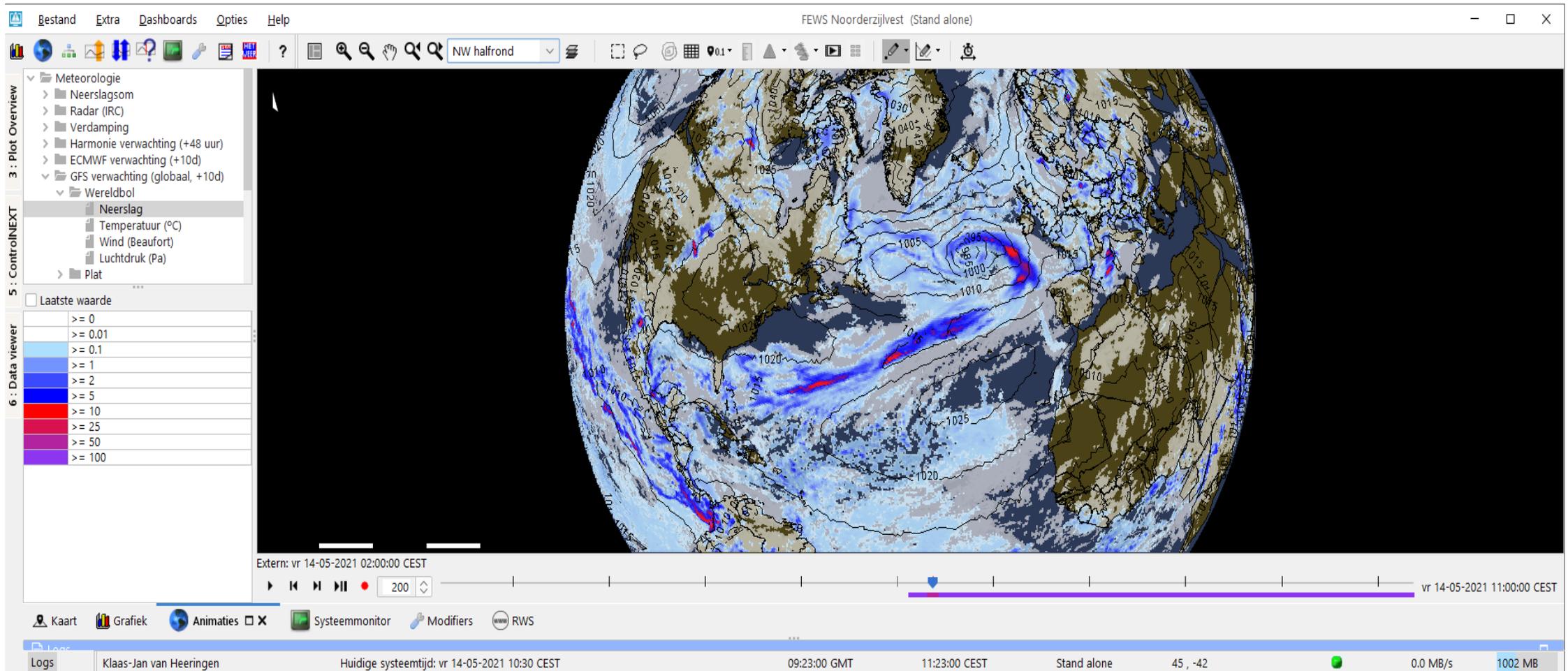


Flat Look and Feel

- Default look & Feel (Windows & linux)
- Font identical as 2020.02
- Also in combination with own color schemes

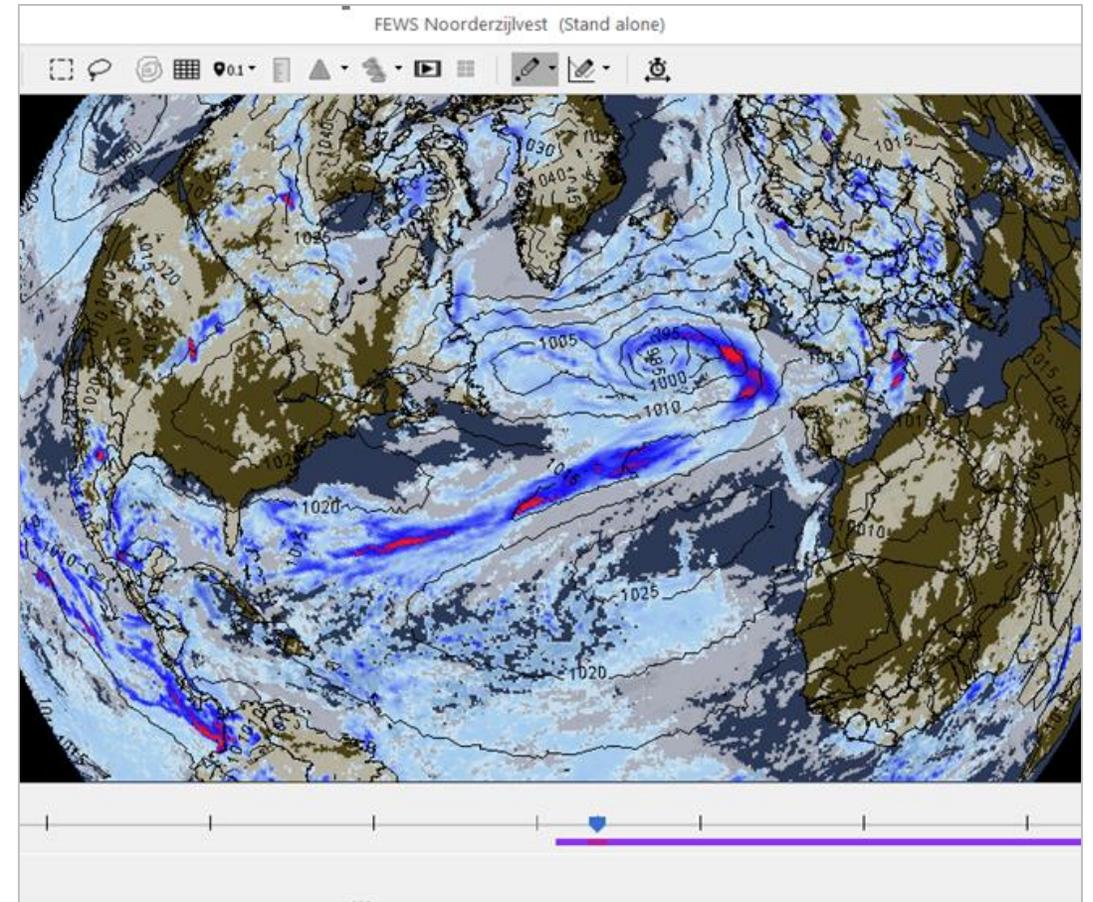


Improvements to Spatial Display



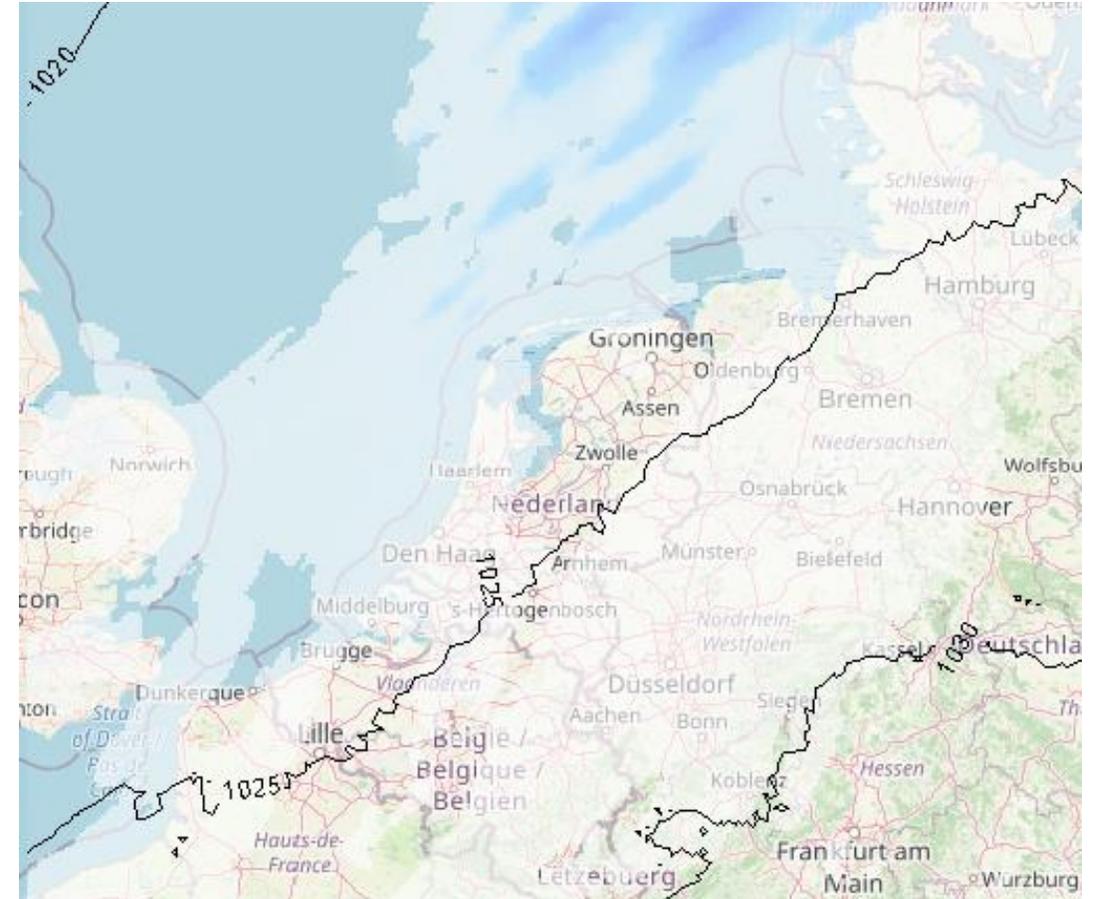
Improvements to Spatial Display

- Smoothing of isolines
- Display [true color image](#) and normal grid together



Improvements to Spatial Display

- Smoothing of isolines
- Display [true color image](#) and normal grid together



Module Run Times

Delft-FEWS Admin Interface - Module Run Times

System Status <

Forecast Tasks <

Scheduled Tasks

Running Tasks

Module Run Times

Workflow and FSSs <

Files <

User Administration <

System Control <

Software and Configuration Management <

Database Analysis <

Documentation <

Logout nldfedmc00

Timezone: GMT

Show 1000 entries

Workflow Id	Module Instance Id	Expected Pending Duration	Expected Running Duration	Expected Start Time	Expected Completion Time
Spatial_Forcing_ECMWF_ENS_EXT	Dummy	0s	0s	22/04/2021 13:13:54	22/04/2021 13:13:54
Spatial_Forcing_ECMWF_ENS	Dummy	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Spatial_Forcing_DWD_ICON_EU	Dummy	0s	0s	22/04/2021 13:13:54	22/04/2021 13:13:54
Spatial_Forcing_DWD_ICON	Dummy	0s	0s	22/04/2021 13:13:54	22/04/2021 13:13:54
Spatial_Forcing_DWD_COSMO_LEPS	Dummy	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Rhine_WFLOW_HBV_Spatial_Forcing_Update	GENRE_CalculateRain	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Rhine_WFLOW_HBV_Spatial_Forcing_Update	CalculateHourlyTemp	4s	0s	22/04/2021 13:13:57	22/04/2021 13:13:57
Rhine_WFLOW_HBV_Forecast	Rhine_WFLOW_HBV_Forecast	54s	0s	10/05/2021 16:30:54	10/05/2021 16:30:54
Rhine_WFLOW_HBV_Forecast	HYRAS_Temperature_ModelGrid	23s	0s	10/05/2021 16:30:23	10/05/2021 16:30:23
Rhine_WFLOW_HBV_Forecast	HYRAS_Temperature_DEM	22s	0s	10/05/2021 16:30:22	10/05/2021 16:30:22
Rhine_WFLOW_HBV_Forecast	Export_Rhine_WFLOW_HBV_Forecast	3m 52s	0s	10/05/2021 16:33:52	10/05/2021 16:33:52
Rhine_WFLOW_HBV_Forecast	CalculateDailyTemp	1s	0s	10/05/2021 16:30:01	10/05/2021 16:30:01
Rhine_Spatial_Forcing_Update	GENRE_CalculateRain	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Rhine_Spatial_Forcing_Update	CalculateHourlyTemp	9s	0s	22/04/2021 13:14:02	22/04/2021 13:14:02
Rhine_NO_RAIN	Dummy	0s	0s	10/05/2021 16:15:00	10/05/2021 16:15:00
Rhine_ECMWF_HRES	Rhine_MeteoPreprocessing	1s	0s	11/05/2021 01:00:01	11/05/2021 01:00:01
Rhine_ECMWF_HRES	Dummy	2s	0s	11/05/2021 01:00:02	11/05/2021 01:00:02
Rhine_ECMWF_ENS_EXT	Dummy	0s	0s	22/04/2021 13:13:54	22/04/2021 13:13:54
Rhine_ECMWF_ENS	Dummy	0s	0s	11/05/2021 00:00:00	11/05/2021 00:00:00

Module Run Times

- Estimate run times based on history of results
- For longer workflows to know:
 - Progress status
 - How long to complete
- Information is stored in database
- Now info only in Admin Interface + REST API
 - In future also in client
- Approval while running workflow is possible

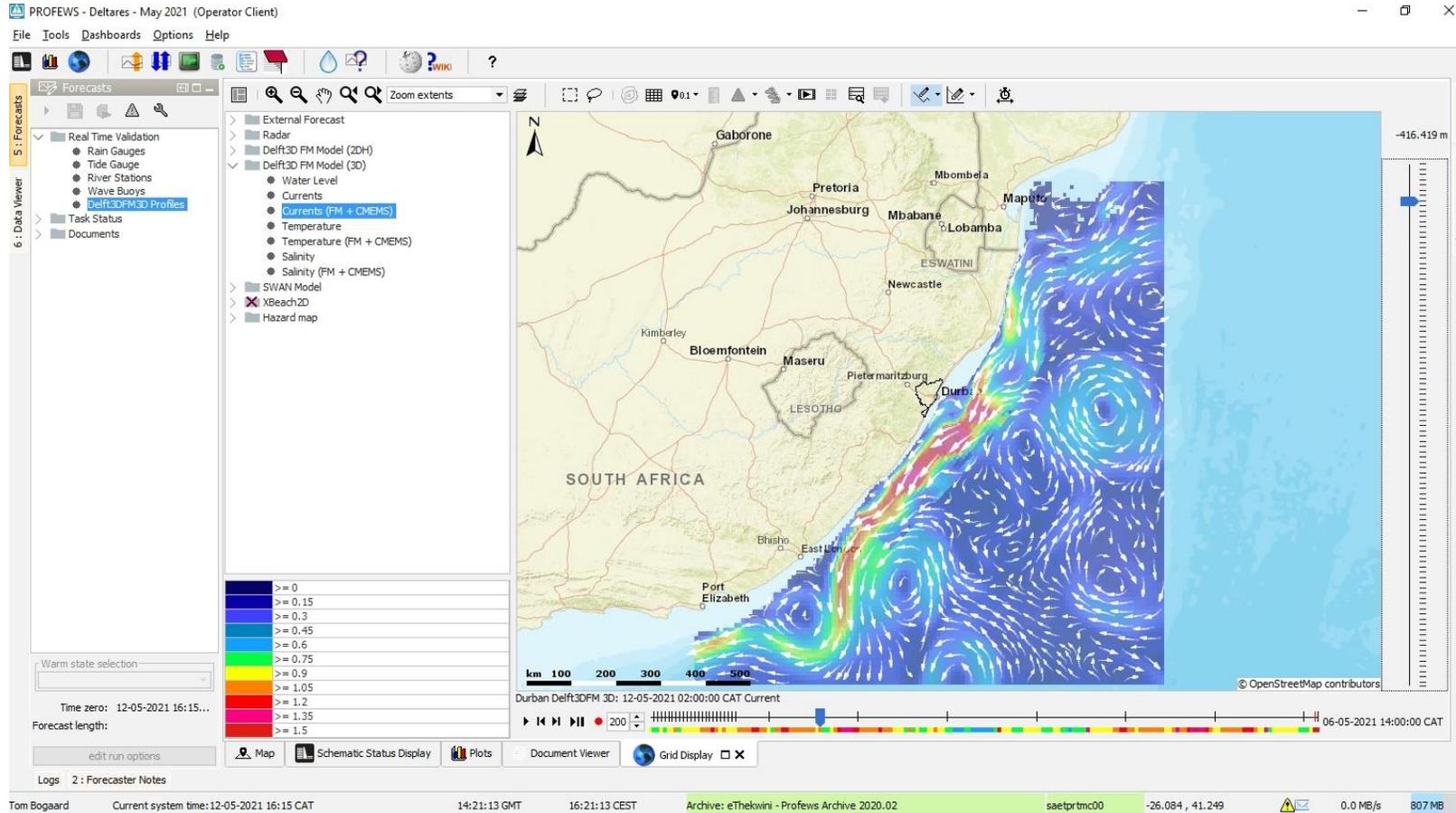
Admin Interface - Module Run Times

Show 1000 entries

Workflow Id	Module Instance Id	Expected Pending Duration	Expected Running Duration	Expected Start Time	Expected Completion Time
Spatial_Forcing_ECMWF_ENS_EXT	Dummy	0s	0s	22/04/2021 13:13:54	22/04/2021 13:13:54
Spatial_Forcing_ECMWF_ENS	Dummy	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Spatial_Forcing_DWD_ICON_EU	Dummy	0s	0s	22/04/2021 13:13:54	22/04/2021 13:13:54
Spatial_Forcing_DWD_ICON	Dummy	0s	0s	22/04/2021 13:13:54	22/04/2021 13:13:54
Spatial_Forcing_DWD_COSMO_LEPS	Dummy	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Rhine_WFLOW_HBV_Spatial_Forcing_Update	GENRE_CalculateRain	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Rhine_WFLOW_HBV_Spatial_Forcing_Update	CalculateHourlyTemp	4s	0s	22/04/2021 13:13:57	22/04/2021 13:13:57
Rhine_WFLOW_HBV_Forecast	Rhine_WFLOW_HBV_Forecast	54s	0s	10/05/2021 16:30:54	10/05/2021 16:30:54
Rhine_WFLOW_HBV_Forecast	HYRAS_Temperature_ModelGrid	23s	0s	10/05/2021 16:30:23	10/05/2021 16:30:23
Rhine_WFLOW_HBV_Forecast	HYRAS_Temperature_DEM	22s	0s	10/05/2021 16:30:22	10/05/2021 16:30:22
Rhine_WFLOW_HBV_Forecast	Export_Rhine_WFLOW_HBV_Forecast	3m 52s	0s	10/05/2021 16:33:52	10/05/2021 16:33:52
Rhine_WFLOW_HBV_Forecast	CalculateDailyTemp	1s	0s	10/05/2021 16:30:01	10/05/2021 16:30:01
Rhine_Spatial_Forcing_Update	GENRE_CalculateRain	0s	0s	22/04/2021 13:13:53	22/04/2021 13:13:53
Rhine_Spatial_Forcing_Update	CalculateHourlyTemp	9s	0s	22/04/2021 13:14:02	22/04/2021 13:14:02
Rhine_NO_RAIN	Dummy	0s	0s	10/05/2021 16:15:00	10/05/2021 16:15:00

Rhine_WFLOW_HBV_Forecast	Rhine_WFLOW_HBV_Forecast	54s	0s	10/05/2021 16:30:54	10/05/2021 16:30:54
Rhine_WFLOW_HBV_Forecast	HYRAS_Temperature_ModelGrid	23s	0s	10/05/2021 16:30:23	10/05/2021 16:30:23
Rhine_WFLOW_HBV_Forecast	HYRAS_Temperature_DEM	22s	0s	10/05/2021 16:30:22	10/05/2021 16:30:22
Rhine_WFLOW_HBV_Forecast	Export_Rhine_WFLOW_HBV_Forecast	3m 52s	0s	10/05/2021 16:33:52	10/05/2021 16:33:52
Rhine_WFLOW_HBV_Forecast	CalculateDailyTemp	1s	0s	10/05/2021 16:30:01	10/05/2021 16:30:01

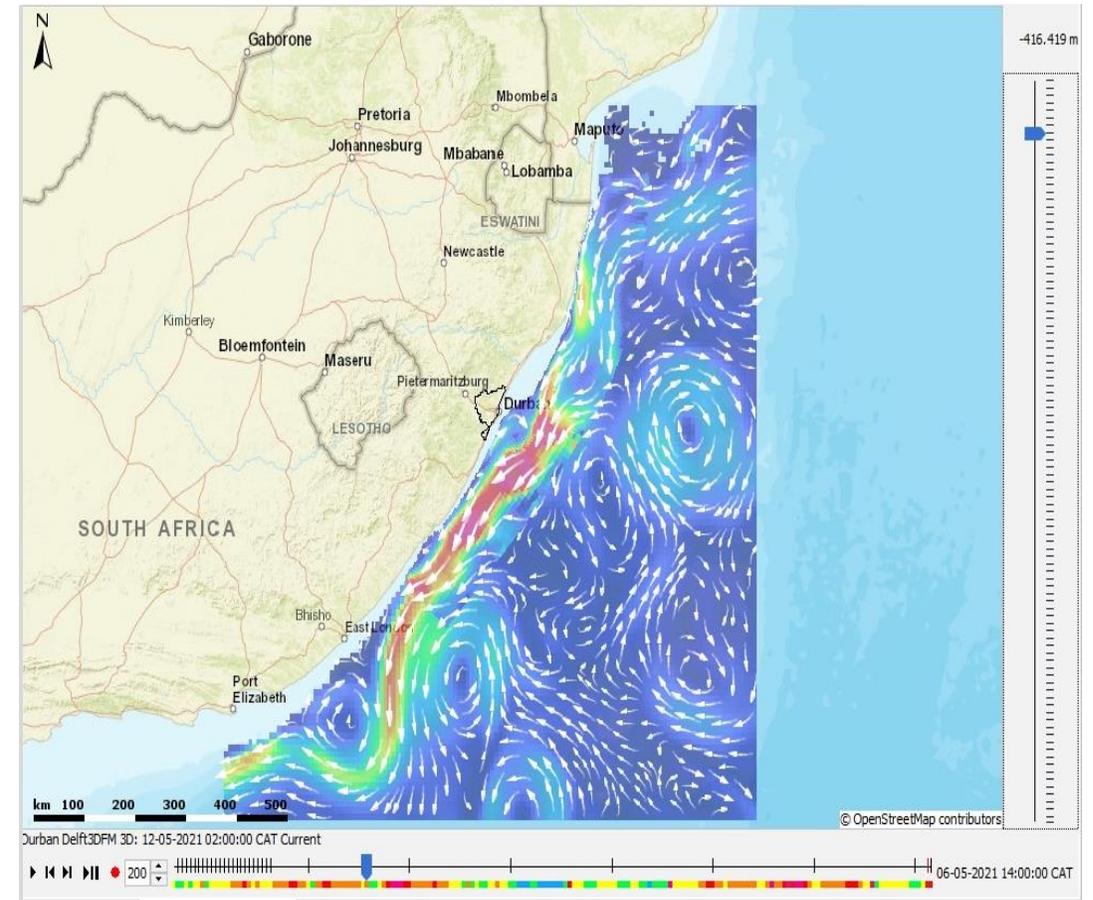
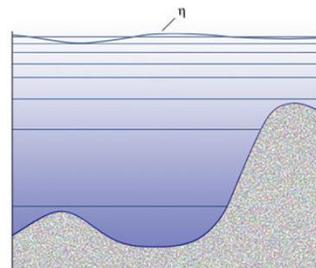
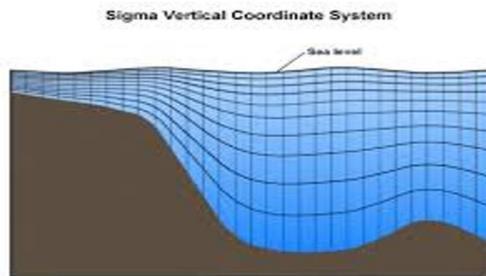
Transformation: Vertical interpolation/averaging



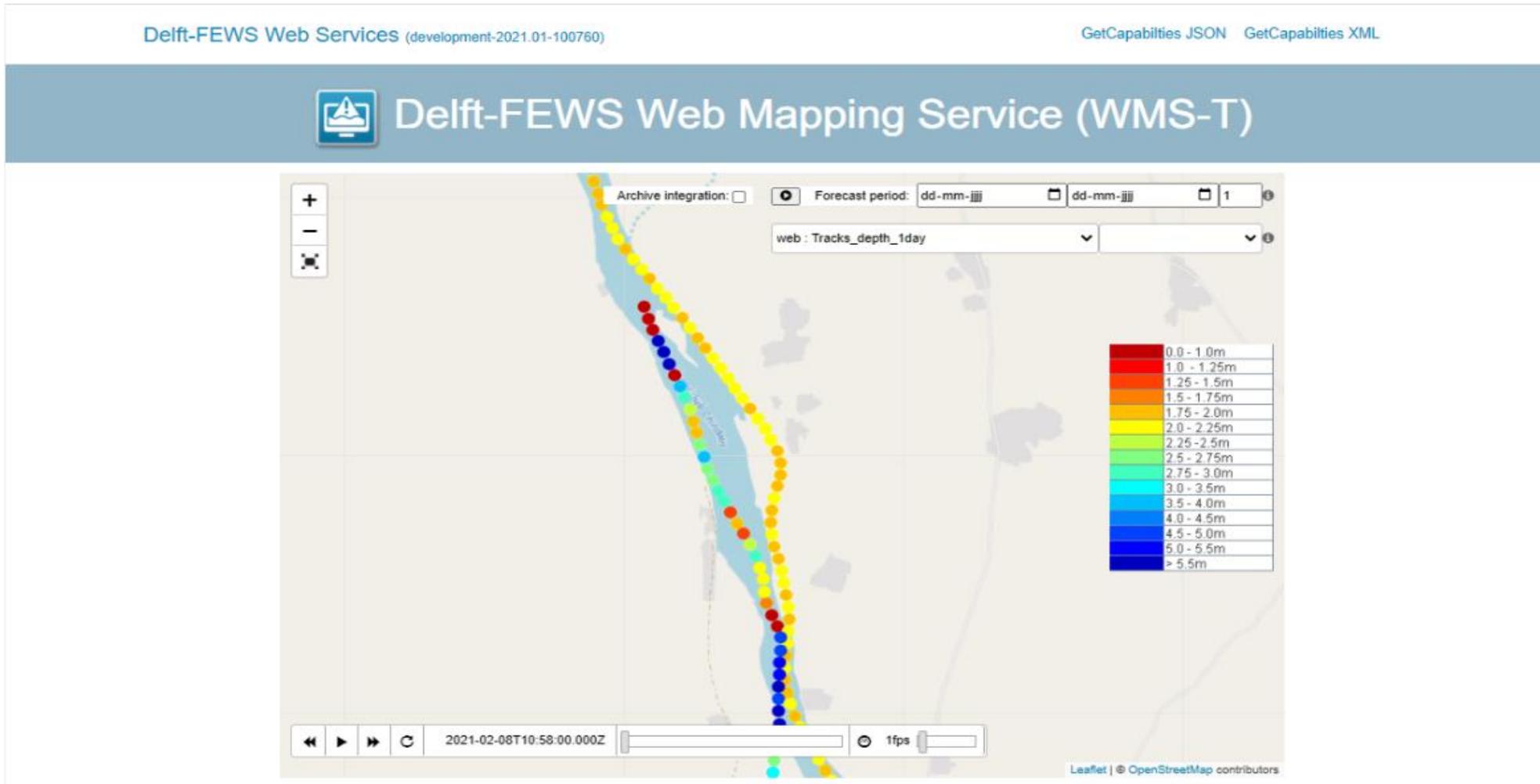
Transformation: Vertical interpolation/averaging

Transformations to average velocities for:

- Sigma layers
- Z-layers
- Specific domain
- Specific time window
- [More Information](#)

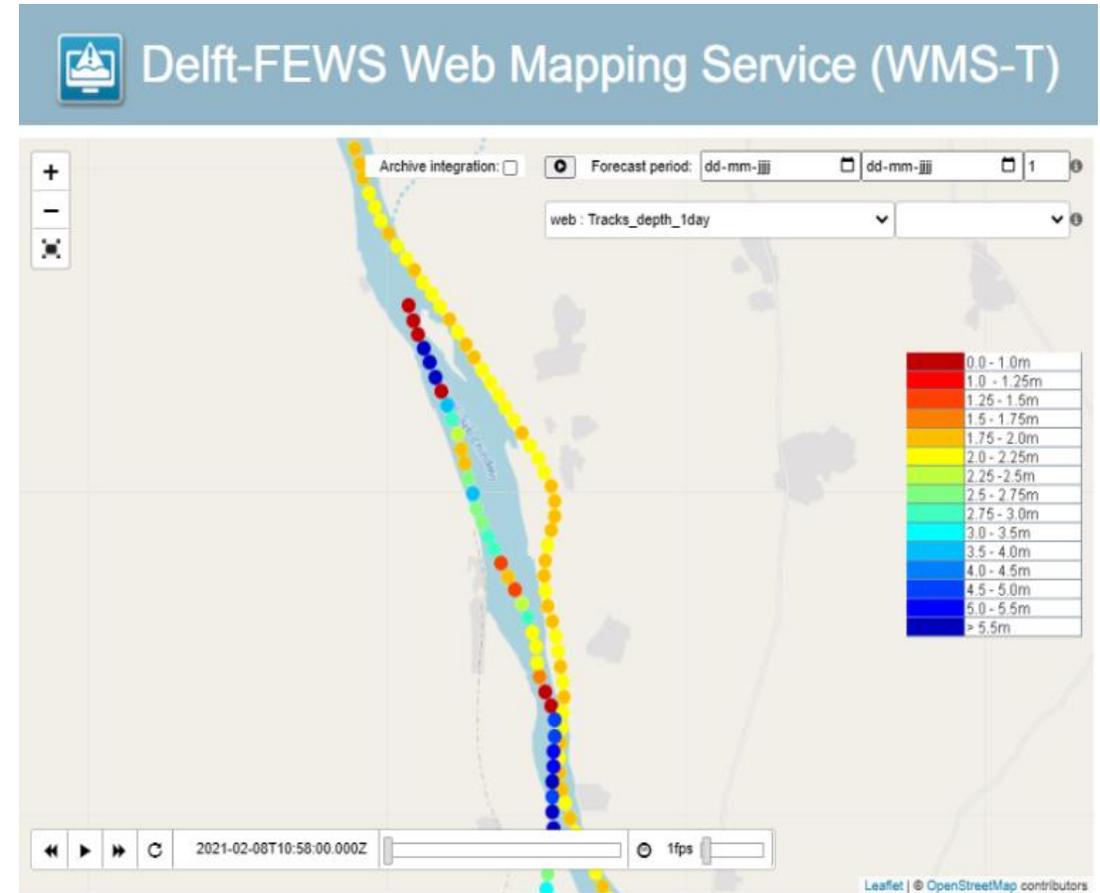


FEWS Webservices improvements



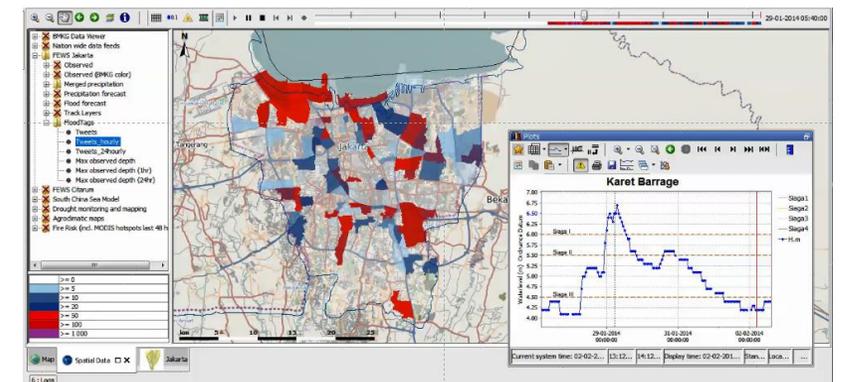
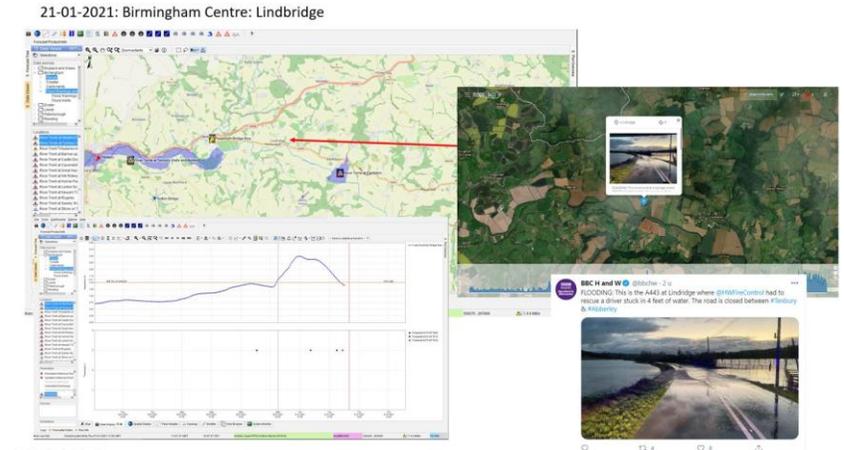
FEWS Webservices improvements

- Tracklayer (spatial display) in webservice
- Get time series for point, layer or vertical profile for 3D data
- WMS get latest forecast (database & archive)
- WMS GetCapabilities also reports:
 - Keywords
 - Styles
 - Elevation (3D layer)
 - [default time](#)

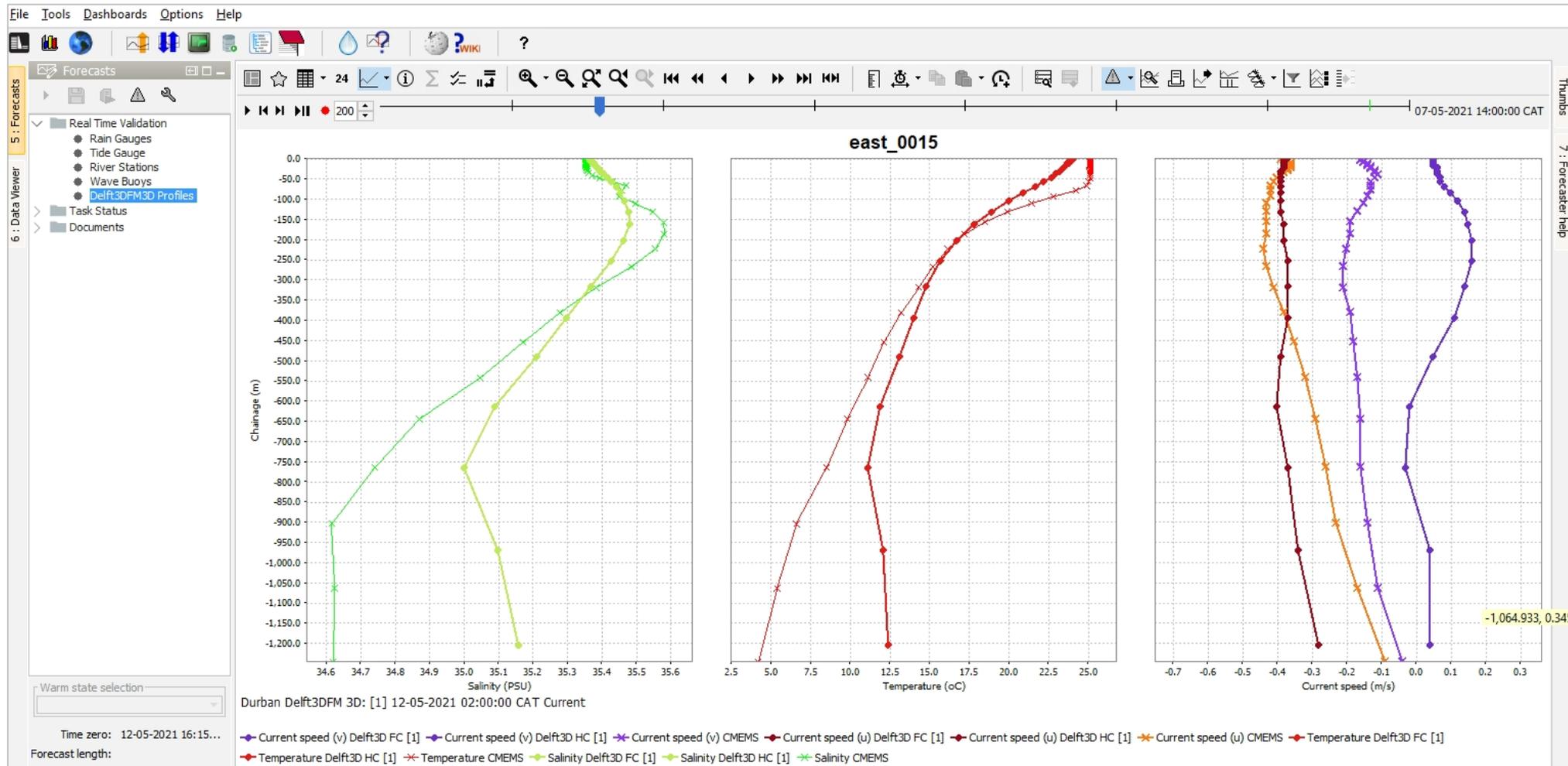


Other applications using the Delft-FEWS web service: FloodTags

- FloodTags: Online and Social Media Mining
- Social media feeds into Delft-FEWS to improve situational awareness and combine with forecast models in Delft-FEWS.
- Example: twitter information via Delft-FEWS PI webservice to show e.g. number of tweets in time and/or content-related tags (“flood”, “flooding” etc.)
- Projects in: Jakarta, Tanzania and the UK
- [More information](#)

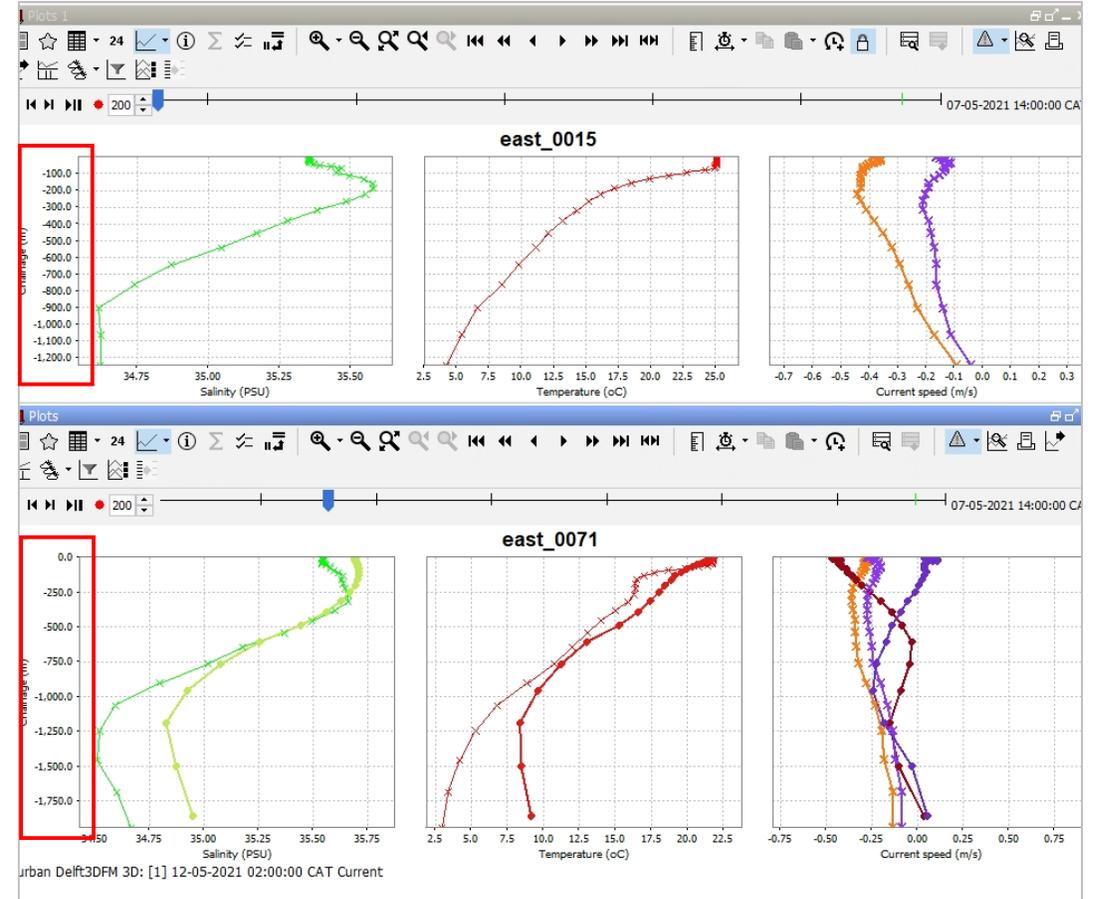


Time Series Display Improvements



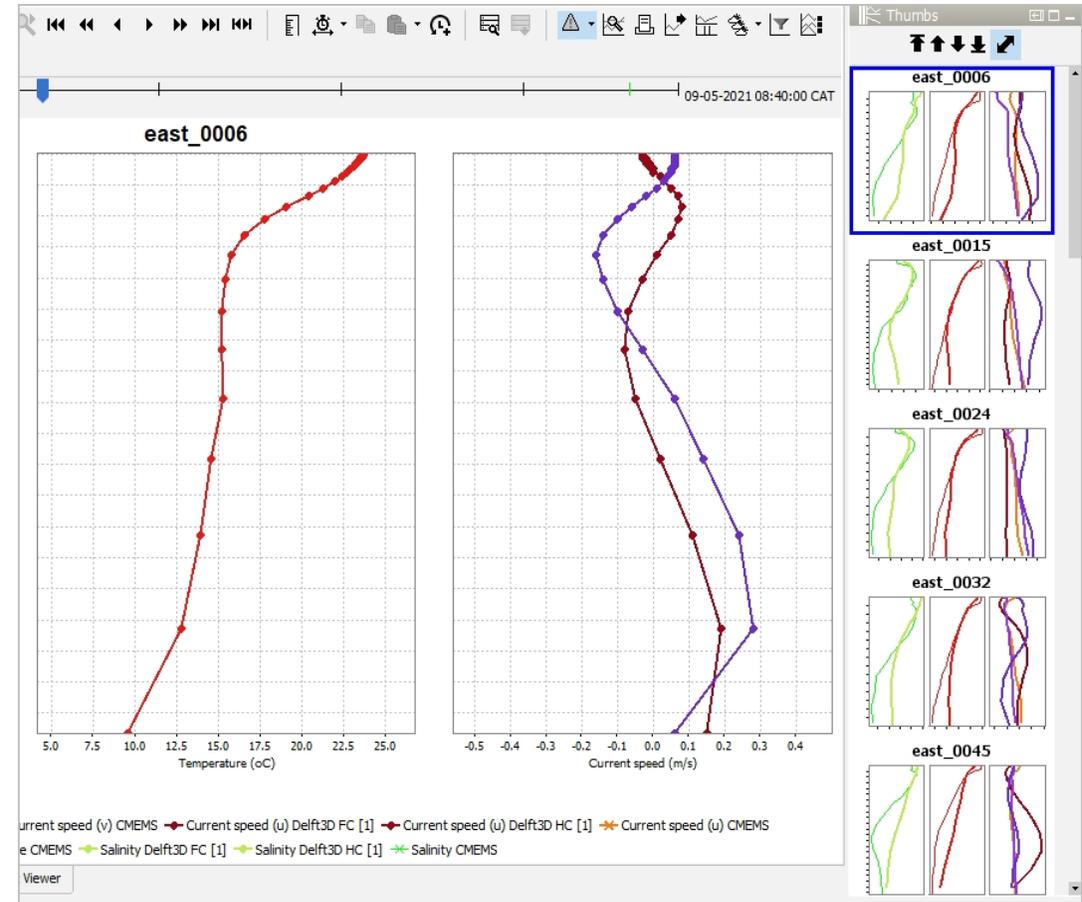
Time Series Display Improvements

- Vertical profiles from different sources in one plot
- Automatic scaling to vertical data range
- Different sources also in Thumbnails

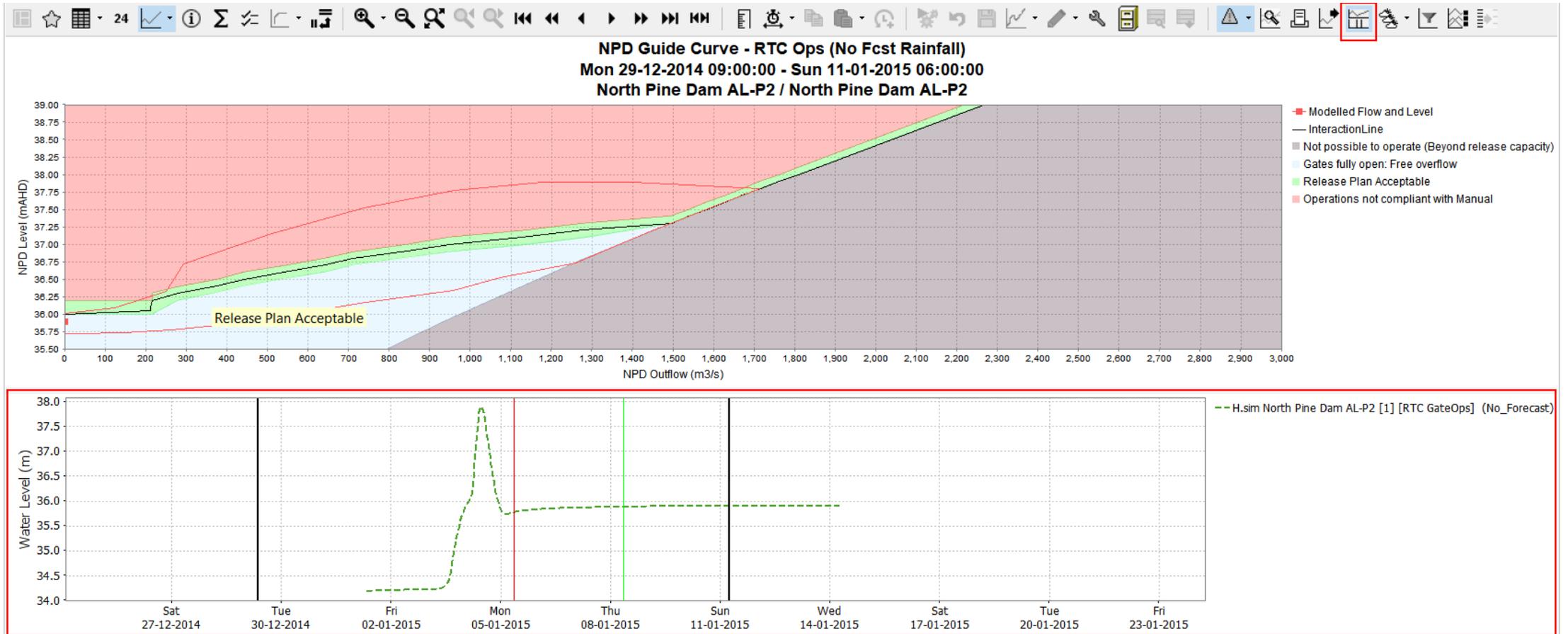


Time Series Display Improvements

- Vertical profiles from different sources in one plot
- Automatic scaling to vertical data range
- Different sources also in Thumbnails



Time Series Display Improvements



Interval statistics

- [Add extra columns to interval statistics display](#)
- Use right mouse click
- Selected columns stored in user settings

Start: 06-09-2012 13:00:00
 End: 13-05-2013 13:00:00
 Current date: 02-10-2018 13:00:00

Interval: calendar month

Statistic:

- % soft min (SN)
- % hard min (HN)
- % soft max (SX)
- % hard max (HX)
- % rate of change (ROR/ROF)
- % same reading (SR)
- number of periods same reading (SR)

Threshold value: _____

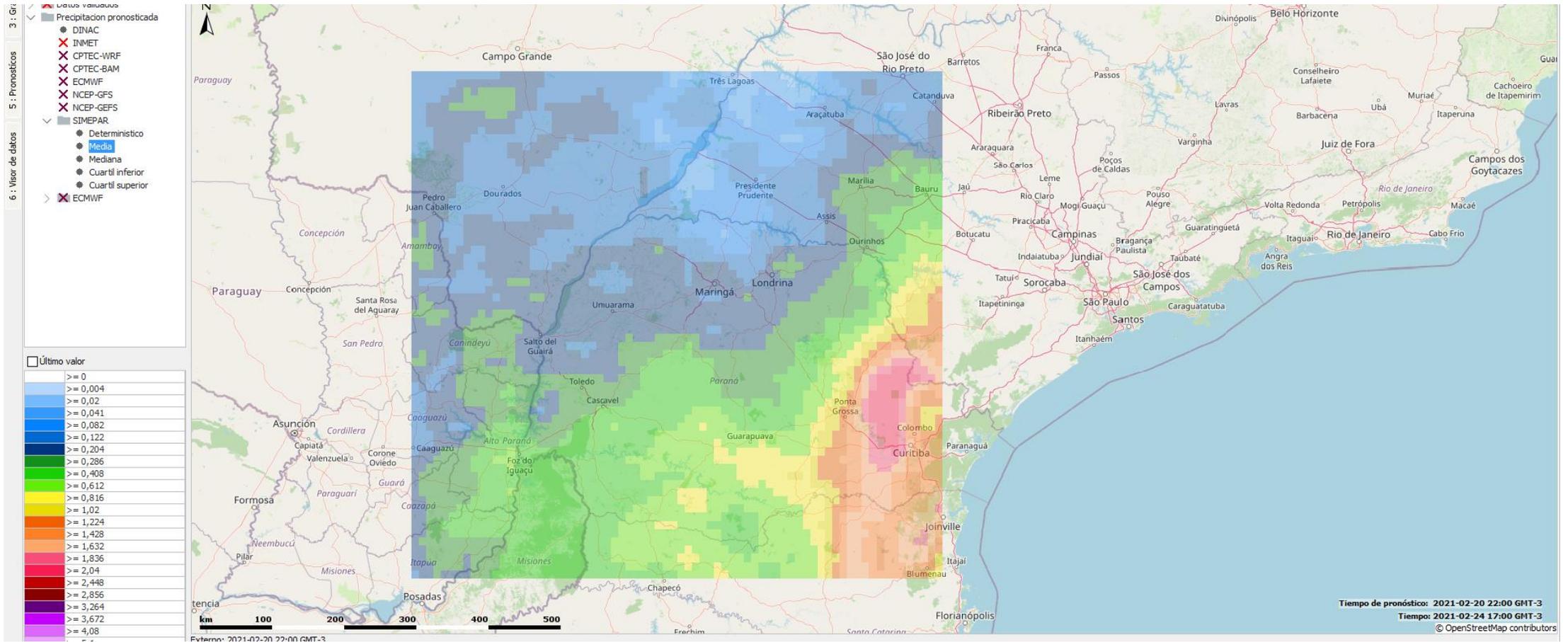
Hide rows: >= 99 <= 1

Export Apply Close

Location Id	Location Name	Parameter Group	Parameter Id	Parameter Name	Module Instance	Location Start Time	Location End Time	Statistic	Sep-2012	Oct-2012	Nov-2012	Dec-2012	Jan-2013	Feb-2013	Mar-2013	Apr-2013	May-2013
21	21	1	1	1	1			5	7	7	8	12	9	9	3	6	4
0030	0030 - He...	Hoogte	K.meting	Gemeten ...	ImportTMX	01-01-202...		% soft min (SN)	0	12	0	29	38	1	0	0	0
0033	0033 - Cr...	Hoogte	K.meting	Gemeten ...	ImportTMX	01-01-202...		% soft min (SN)	0	0	0	5	5	0	0	0	0
0035_krui...	0035 - Ne...	Hoogte	K.meting	Gemeten ...	ImportTMX	01-01-202...		% soft min (SN)	0	0	0	20	2	4	0	0	0
0035_krui...	0035 - Ne...	Hoogte	K.meting	Gemeten ...	ImportTMX	01-01-202...		% soft min (SN)	53	0	0	0	0	0	0	0	0
0045_krui...	0045 - Stu...	Hoogte	K.meting	Gemeten ...	ImportTMX	01-01-202...		% soft min (SN)	2	6	0	39	14	41	0	0	0
0067	0067 - We...	Hoogte	K.meting	Gemeten ...	ImportTMX	01-01-202...		% soft min (SN)	0	0	1	20	0	0	0	0	0
0115								% soft min (SN)	0	0	0	7	0	0	0	0	0
0118_krui...								% soft min (SN)	0	0	0	31	20	12	0	0	0
0118_krui...								% soft min (SN)	0	0	0	4	0	0	0	0	1
0181								% soft min (SN)	0	0	32	22	33	33	0	6	0
0024								% hard min (HN)	15	2	0	0	0	0	0	0	0
0115								% hard min (HN)	0	0	0	4	0	0	0	0	0
0163								% hard min (HN)	0	0	0	0	99	99	100	100	100
0181								% hard min (HN)	0	6	2	0	0	0	0	0	0
0041								% soft max (SX)	0	0	8	0	0	0	0	0	0
0074								% soft max (SX)	10	1	0	0	0	0	0	0	0
0080_krui...								% soft max (SX)	0	0	0	0	0	0	0	10	65
0118_krui...								% soft max (SX)	1	1	5	0	0	0	0	0	0
0151								% soft max (SX)	100	100	19	1	0	0	0	0	0
0153								% soft max (SX)	0	0	0	0	5	0	0	1	0
0162								% soft max (SX)	0	0	0	0	0	62	42	7	0
0022_krui...								% hard max (HX)	0	0	0	0	2	15	0	0	0
0084								% same reading (SR)	15	17	1	15	30	1	0	0	0
0125								% same reading (SR)	0	0	54	100	99	0	0	0	0

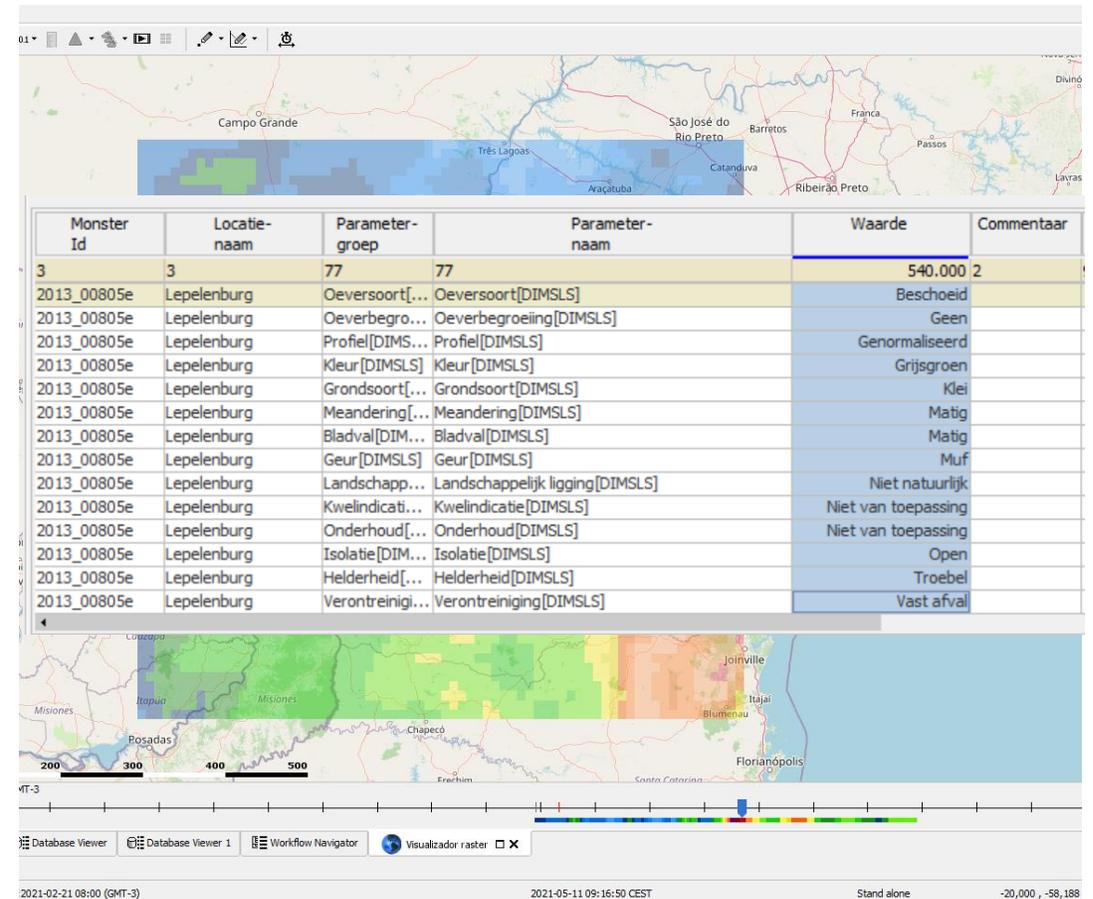
Context menu options: Copy Selection, Paste Selection, OK, Cancel

New Imports



New Imports

- GRADS Gridded data import
- Extend WIWB [import for older forecasts](#)
- Import from database BDH ([REST API](#))
- API import for [SENCROP](#) sensors
- API import [Soil Moisture](#) sensors
- JSON import for [observed BMA data](#)
- Import for [RivDaily Limits](#)
- Import Alpha numerical values for waterquality data



Questions



Deltares

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